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Claim Nos. HQ16X01238, HQ17X02637 & HQ17X04248

IN THE HIGH COURT OF JUSTICE

QUEEN'S BENCH DIVISION

The Post Office Group Litigation

Before the Honourable Mr Justice Fraser

BETWEEN:

ALAN BATES & OTHERS

Claimants

– and –

POST OFFICE LIMITED

Defendant

POST OFFICE'S WRITTEN CLOSING SUBMISSIONS: HORIZON ISSUES TRIAL

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A. INTRODUCTION

A1. Summary

1. The written evidence presented by Cs, particularly that contained in Mr Roll's two witness statements and Mr Coyne's first and second reports ("Coyne 1" and "Coyne 2") made for ominous reading. On any view, they suggested that:

   1.1 there were probably hundreds if not thousands of branch account affecting bugs in Horizon, each of which might itself have had thousands of impacts; and

   1.2 Fujitsu, casually, routinely and without following any proper procedures, accessed SPMs' branch accounts and more or less did what it wanted, when it wanted, behind SPMs' backs and without regard to their interests or concerns.

2. Following the Horizon Issues trial, the position now is very different:

   2.1 It is agreed by the experts that the Horizon system is robust (comparing well with other similar systems which have to be highly reliable) and that it has been robust throughout all its life (albeit perhaps less robust in the early years of Legacy Horizon and Horizon Online).

   2.2 Nobody has identified a material design flaw in Horizon. The focus has been on whether that design has been properly implemented and supported over 20 years – hence the detailed consideration of the volume and nature of bugs.

   2.3 Mr Coyne has worked very hard with his team to identify as many bugs as possible. He thinks he has found 29 bugs which were or might have been branch account affecting, and considers that there might have been up to 40 such bugs in total. He maintains that these bugs might have had thousands of branch impacts. Post Office challenges each of these points, but even if he were right on them, they demonstrate that the extent of bugs in Horizon is nowhere near what Cs need it to be. In order for Cs' generic case to have even a material chance of success, tens of

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thousands of bugs would be required, each with multiple impacts. The evidence does not begin to support that scale of bugs or impacts.

2.4 The experts accept that Fujitsu were careful and conscientious and operated thorough systems for recording, diagnosing and fixing occurrences of problems.

2.5 All forms of remote access are agreed, and it is clear that any remote access was done rarely and carefully and generally in consultation with the SPM.

3. The evidence shows that, at a generic level at least, it is extremely unlikely that the Horizon system will be the cause of an individual shortfall. In other words, when looking at a set of accounts for a particular branch and a particular month, in the absence of special features indicating that a bug affected that set of accounts or that some instance of remote access was incorrectly carried out, it should be recognised that the chances of Horizon or an instance of remote access having caused a shortfall in those accounts are extremely low.

4. The central issue in this litigation is: was a particular SPM's shortfall likely to have been caused by a bug in Horizon? It is not: were there sometimes bugs in Horizon?; or were SPMs sometimes frustrated by Post Office's attitude?; or were helpdesk operatives less well-informed, polite or reassuring than they might have been?

5. Cs' approach is necessarily impressionistic. They invite the Court to draw wide inferences from a few examples and from narrow classes of document and refrain from rigorous analysis. They have still not shown any clear cut example of bugs in Horizon that could have caused the shortfalls of around £19 million for which they claim to have been falsely held responsible.

6. Cs' case theory appears to be if it can be shown to be a possibility (however remote) that some of their losses were caused by bugs in Horizon then the Court should conclude that this was likely: in other words, they persist in equating possibility with probability.

7. Post Office accepts that it is possible that any given C's losses (or some part of them) were caused by a bug. But the evidence shows that, in the absence of special circumstances, this is very unlikely and that it is overwhelmingly unlikely that any

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significant amount of the overall shortfall claimed was caused by the matters complained of. Cs have not wrestled with the fundamental issue of likelihood in any way.

8. Contrary to the Court's directions, Cs led evidence from specific claimants which can be presumed to be the best examples available to them of how bugs have affected individual SPMs. However, putting the point at its lowest, there are plausible explanations for all the instances cited in this evidence that the problems asserted did not involve any fault in Horizon. This evidence did not advance Cs' case on the Horizon Issues in any way.

9. Mr Coyne's approach took matters little further. In his reports, he did not seek to give a balanced view of the Horizon system or Fujitsu's activities: instead, his energies were directed at finding evidence of bugs and of exceptions to Fujitsu's standard practices. Resisting any form of systematic analysis, he cast his net as widely as possible for stray examples of instances, gathered over 20 years, of practices which he considered less than perfect. The inferences he apparently invites the Court to draw from the arguments he presents are unsupportable.

10. Mr Coyne's reports were directed at establishing the admitted fact that it is possible for there to have been branch-account affecting bugs. He had nothing to say about the generic likelihood that SPMs' shortfalls were actually caused by bugs in Horizon, still less the extent to which any such bugs are likely to have caused shortfalls of the sort Cs allege. He gives no sense of the extent or even scale of the bugs he has identified in the operation of Horizon over 20 years. Such bugs are not put in their proper context, against either the volume of transactions conducted by Horizon, the number of branches in the Post Office network, the number of branch accounts that have been generated by Horizon or the number and scale of the shortfalls that Cs wish to challenge. His reports show that he has set out to prove a thesis – that Horizon is full of problems – rather than to present a balanced view of the Horizon system.

11. Cs' essential case is that Horizon is so unreliable that no store can be set by the branch accounts it generates. It is striking that, notwithstanding all the problems Mr Coyne purports to have found, his analysis does not begin to support this case. Horizon has operated satisfactorily for some 20 years, and only a tiny fraction of the thousands of

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SPMs who have operated over that time have joined this action. One of Cs' own witnesses, Mrs Angela Burke, gave evidence that in her many years of experience working in post offices she had had only had one issue (dealt with below) which she had not been able to understand.

12. This begs the obvious question: namely, how can Horizon have operated satisfactorily so much of the time if it is as unreliable as Cs would have the Court believe? How can Cs even say that Horizon is unreliable or lacking robustness? How could this be credibly said to have caused the scale of losses alleged by Cs as a group?

13. What do Cs make of the evidence from someone such as Mrs Burke? How can they coherently account for the fact that for the vast majority of the time, for the vast majority of SPMs, Horizon works satisfactorily?

14. More fundamentally: what are Cs inviting the Court to do in this trial and on what basis? Do they simply invite the Court to share a sense of outrage and hope that this sense will row them home even though they have produced no evidence of any widespread failings in Horizon and seek to assign no probability to the scale of bugs that their case requires?

15. Cs fail to wrestle with any of these questions. They cannot answer them in any convincing way.

B. STRUCTURE OF THESE SUBMISSIONS

16. This is a trial of expert issues in relation to which expert evidence should have primacy. To some extent, the expert evidence depends on factual foundations provided by the Fujitsu witnesses (in particular, Mr Roll and Mr Parker and, to a lesser extent, Mr Godeseth). However, it is right to point out that many facts have been established by the experts. Most of these (e.g. the architecture of the Horizon system and the details of Fujitsu's operations and organisation) can now be seen to be largely uncontroversial.

17. A significant amount of factual witness evidence has been given which is of little or no relevance to the Horizon Issues (for example, the claimant-specific evidence called by

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Cs contrary to the Court's directions) or which provides largely uncontroversial background with regard to Post Office's processes and systems (for example, much of the factual evidence called from Post Office employees).

18. Post Office proposes to arrange these submissions according to this view of the relative importance of the evidence bearing on the Horizon Issues.

19. Accordingly, following a very brief section on procedural background (Section C) and a section summarising Post Office's case on the Horizon Issues (Section D), the evidence of the Fujitsu witnesses are considered (Section E). This is followed by a section considering the expert evidence (Section F). There is then a section on the remaining Post Office witnesses (Section G), a section on the claimant-specific witnesses (Section H1) and a very brief section on Mr Henderson (Section H2). These closing submissions end with a section on disclosure (Section I) and finally a section on some miscellaneous points not dealt with elsewhere (Section J).

20. Appendix 1 contains analysis of the documents that Mr Coyne provided references to on the morning of Day 15 of the trial in support of his view that bugs are often deferred or not dealt with at all on a cost benefit basis. Appendix 2 contains submissions on the 29 "bugs" referred to by the experts in JS2.

C. PROCEDURAL BACKGROUND

21. The Court will of course be familiar with the procedural background to this trial.

22. Many of the procedural steps which led up to this trial are naturally no longer of any significance. But it is important not to lose sight of some features of this case which have had a continuing impact.

23. The first is that Cs have not pleaded a case in anything like the kind of detail that is typically seen in comparable technical cases in the High Court. Consequently, Post Office has had to deal with an evolving case which was not really articulated until it saw

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Coyne 1 in October 2018 and Coyne 2 in February 2019. It had been hoped that the outline document which Cs provided on 17 August 2018[1] would enable Post Office to identify and understand the issues that were being raised against it, but this hope was frustrated. The outline was a vague document which was of no practical use and has hardly been referred to by either side.

24. So Post Office based its understanding of the case it had to meet on Mr Coyne's expert reports. The evolution in that case between Coyne 1 and Coyne 2 was very substantial. This meant that Post Office had to address a case that was only articulated a few weeks before trial. Some supplemental witness evidence was required.

25. It would be hard to exaggerate the difficulty that Post Office faced in reviewing Mr Coyne's reports, which are sprawling and scatter-gun documents. They seem designed to persuade any but the most assiduous reader (one who has the time to follow up the innumerable document references) that there is so much smoke that there must be a fire somewhere. Further, Mr Coyne's "supplemental" report was no such thing. It was even longer than Coyne 1, it contained new analyses put in new ways and, given its cross references and repetitions, it required considerable time to assimilate and understand – more time than was available in the run up to the Horizon Issues trial.

26. These observations are not made by way of complaint. They are made because, without bearing them in mind, there is a danger of relying on hindsight when looking at the procedural history of this case. Points which seem obviously relevant now were not obviously relevant to Post Office in 2018. The same is true of documents.

27. Many complaints are made by Cs as to Post Office's late disclosure of documents, and these are addressed in detail in Section I below. In considering these complaints, it is important to bear a number of points in mind.

28. First, the documents concerned were generally Fujitsu documents whose significance was not clear to Post Office and its legal team during much of the history of this case.

[1] {C1/2}. The outline was served pursuant to para 15 of Third CMC Order {C7/12/5}, as amended by paragraph 4 of the Fifth CMC Order {C7/22/2}.

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29. Second, Post Office has taken a cooperative approach to disclosure. It has discussed and agreed all but a few aspects of the disclosure orders made in relation to the Horizon Issues and it has complied with each of those orders. There have been no applications by Cs for specific disclosure nor even any threatened applications.

30. Third, Pilot Scheme Model C disclosure was ordered in this case. Not only does this form of disclosure require only particular documents or narrow classes of documents to be disclosed, but it also requires the party requesting disclosure to explain why its requests are reasonable and proportionate and, if the requests are not agreed, to raise them at a CMC so that they can be decided by the Court. In this case, wide requests for disclosure were made by Mr Coyne (in documents he called "Requests for Information"). In the light of these requests, a specific mechanism was agreed to ensure that Cs would explain the relevance, reasonableness and proportionality of any disputed requests by mid-August 2018 so that such requests could either be agreed or raised with the Court.

31. That mechanism was approved by the Court and formed part of the Fifth CMC Order.[2] Had it been followed, with the benefit of the explanations provided by Cs, the solicitors on each side would have been able to liaise and cooperate with each other with a view to achieving an agreed position on any further disclosure to be given, just as they have in relation to the hundreds of thousands of documents disclosed by Post Office for this trial. And if any issues remained on further disclosure, these could and should have been determined by the Court long before trial.

32. None of these things happened. Cs were silent on disclosure during the whole of August 2018. And although they produced what was described as a "draft" Request for Information from Mr Coyne towards the end of September, they did not respond to Post Office's contemporaneous requests for them to explain the relevance, reasonableness or proportionality of the requests that it contained. This remained the position even when the requirements of the Fifth CMC Order were pointed out in correspondence. It was only in December that a formal request was made. By this time Cs had served Coyne 1, and Post Office's legal team were better placed to understand why it might be said that

[2] See paras 1 and 2 of that Order {C7/22}.

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the requested documents were relevant and that their disclosure was reasonable and proportionate.

33. Against this background, it will be seen that Cs, rather than Post Office, have taken an uncooperative approach to disclosure. They paid scant regard to the requirements of Model C disclosure and they effectively sabotaged the Order that was designed to ensure that any important requests for disclosure could be properly debated and if necessary decided before any written evidence was served.

34. Further detail on disclosure is given in Section I below. Cs' complaints about piecemeal and late disclosure are a reflection of the piecemeal and late case advanced by Cs: a case that which as at the date of these submissions is still not clear.

D. THE HORIZON ISSUES

D1. Introduction

35. In this section, Post Office summarises the approach that it submits the Court should take when makings its findings on the Horizon Issues. In the interests of brevity, it adopts the introductory submissions it made in Section A3 of its written opening submissions, without repeating them.[3] Amongst other things, that section explains Post Office's essential case as to the meaning, effect and relative importance of the Horizon Issues. And also their limits (see, in particular para 25, where Post Office noted that the Court's judgment will not involve the determination of any C's claim).

36. In the section immediately below, Post Office considers some approaches to the Horizon Issues that Cs may possibly be intending to take. In the following sections, Post Office: (1) re-states the categorisation of the Horizon Issues that it adopted in its written opening submissions and then, in the following sections, (2) respectfully sets out its submissions as to what the evidence in this trial shows and the findings that should be made. The Court will of course have its own views as to the exact nature, extent and formulation of

[3] See paras 22 to 26 at {A2/10} to {A2/12}.

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the findings that it wishes to make, but Post Office hopes that it will find those sections a useful reference point and summary of Post Office's case on the principal issues.

37. For this reason, those sections have been kept as short as possible. Many of the Horizon Issues involve many possible permutations and combinations of findings. The sections below would be unhelpfully long and complicated if there was an attempt to cover them all. For similar reasons, those sections do not seek to identify the evidence and arguments relied on for each of their propositions. These matters are covered elsewhere in these submissions. On the relatively rare occasions where propositions are based on material that it may assist to identify here, it is identified in footnotes.

D2. Extent, Likelihood and Risk

38. In Section A3 of its written opening submissions,[4] Post Office notes the repeated use of words such as "*extent*", "*likely*" and "*risk*". The Court will understand the significance of these words. They are what give this trial much of its practical utility. For example, if the Court's judgment were to contain no findings as to the extent to which it was likely for bugs in Horizon bugs to cause lasting shortfalls in SPMs' accounts, the utility of deciding Issues 1 and 3 in this trial would be difficult to discern. Similarly, if the judgment were to contain no findings regarding the extent of the risk posed to the accuracy of branch accounts by data errors in Horizon and/or of Fujitsu failing to detect/correct/remedy bugs in Horizon, it would be difficult to understand the utility of deciding Issues 4 and 6. And if the Horizon Issues did not include Issues 1, 3, 4 and 6, it would be hard to justify a separate trial of the other Horizon Issues.

D3. Cs' Apparent Attempts to Dilute the Horizon Issues

39. During the course of Cs' cross-examination of Dr Worden, they appeared to make some surprising suggestions regarding the meaning and scope of some of the Horizon Issues. Most surprising was the apparent suggestion that, by asking to what extent it was

[4] Paras 22 to 26 at {A2/10} to {A2/12}.

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possible or likely for bugs to have "*the potential*" to cause shortfalls, Issue 1 did not call for any findings about the extent or likelihood of these things actually happening. At one point, Cs also appeared to suggest that the real focus of Issue 1 is Issue 1(b), which asks about undermining the reliability of Horizon accurately to process and record transactions.

40. Post Office does not know how or even whether Cs will run these points in their closing submissions. For the moment, it simply makes a few observations:

40.1 First, the points seem to be designed to avoid giving any meaning to the words "*extent*" and "*likely*" in Issue 1. It has always has been common ground on the pleadings that there are various sources of potential error in Horizon, that there are measures to address these and that there have been instances in which those measures did not prevent bugs creating shortfalls.[5]

40.2 Second, Cs' retreat behind the word "*potential*" would have the effect of collapsing Issue 1 into Issue 4.

40.3 Third, even if Issue 1 were to be collapsed into Issue 4, that still leaves Issue 3 (to what extent and in what respects is the Horizon system robust and extremely unlikely to be the cause of shortfalls in branches?). The questions arising under Issue 1 would have to be addressed in any case under Issue 3.

40.4 Fourth, and crucially, the central issue in this litigation is whether Horizon has caused SPMs to be held liable for false shortfalls in their branch accounts. If the Horizon Issues trial does not result in a finding being made as to the generic likelihood of Horizon causing a false shortfall to be recorded in a given set of branch accounts, it will not have achieved much of real value to the parties.

41. A further suggestion that Cs appeared to make during Dr Worden's cross-examination was that, whenever it was suggested in a document that Horizon could be improved in some way, the fact that Horizon had not been improved in that way demonstrates that there was a "*defect*" in Horizon within the meaning of Issue 1. This point is misconceived:

[5] See, most notably, paras 53 to 56 of the GDXC {C3/3/22}.

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41.1 Horizon, like any IT system, is always capable of improvement. This too has always been common ground. It is common ground between the experts that Horizon has improved over time. The fact that someone may at some point have suggested an improvement somewhere within the Horizon system does not mean that the system was defective before or even that adopting the suggestion would have resulted in an overall improvement. A proposed improvement may or may not be aimed at fixing something that can properly be called a defect, but the question whether that something is a defect requires a consideration of far more than simply the fact that an improvement was proposed.

41.2 By the same token, nor does it reveal a defect that, when a particular scenario was put to a Post Office witness, that witness may have agreed that the way that Horizon dealt with that scenario was not ideal or could have been better. Amongst other things, the witness might be wrong, especially where he or she does not have the expertise and experience needed to evaluate the technical advantages and disadvantages (including risks) of addressing the scenario differently. The purpose of instructing experts was to avoid having to rely on inexpert assessments.

41.3 Facts of this sort are not evidence of defects. That Cs may be intending to argue otherwise in their closing submission may be based on Mr Coyne's "doctrine of perfection" and his "reducing risks as far as possible" approach discussed in paras 150 to 155 of Post Office's opening submissions and further in the body of these submissions. Both of those approaches are fallacious, and they are not what the Horizon Issues require the parties to address.

D4. Categorising the Horizon Issues

42. As explained in Section A3, para. 22 of Post Office's written opening submissions, the Horizon Issues can be seen as raising three core groups of issues: the robustness issues (Issues 1, 3, 4 and 6); the remote access issues (Issues 7, 10, 11, 12 and 13); and the operational issues (Issues 2, 5, 8, 9, 14 and 15). There is only minor, if any, disagreement in relation to these categorisations. In the following paragraphs, Post Office summarises the findings which it invites the Court to make on those issues.

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D5. The Robustness Issues

(1) To what extent was it possible or likely for bugs, errors or defects of the nature alleged at §§23 and 24 of the GPOC and referred to in §§ 49 to 56 of the Generic Defence to have the potential to (a) cause apparent or alleged discrepancies or shortfalls relating to Subpostmasters' branch accounts or transactions, or (b) undermine the reliability of Horizon accurately to process and to record transactions as alleged at §24.1 GPOC?

(3) To what extent and in what respects is the Horizon System "robust" and extremely unlikely to be the cause of shortfalls in branches?

(4) To what extent has there been potential for errors in data recorded within Horizon to arise in (a) data entry, (b) transfer or (c) processing of data in Horizon?

(6) To what extent did measures and/or controls that existed in Horizon prevent, detect, identify, report or reduce to an extremely low level the risk of the following:

a. data entry errors;

b. data packet or system level errors (including data processing, effecting, and recording the same);

c. failure to detect, correct and remedy software coding errors or bugs;

d. errors in the transmission, replication and storage of transaction record data; and

e. the data stored in the central data centre not being an accurate record of transactions entered on branch terminals?

43. As the Court will be aware, Post Office contends:

43.1 that the Horizon system is and was very robust (being more robust than most comparable systems);

43.2 that strong measures and controls were and are in place to prevent, detect, identify, report and reduce to an extremely low level the risk of the things specified in Issues 4 and 6; and

43.3 that Horizon was an extremely unlikely to produce the effects specified in Issues 1 and 3.

44. In the following paragraphs, Post Office sets out some more detailed propositions that it submits are supported by the evidence.

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Issue 3 (first half) and 6(c): General robustness of Horizon.

45. Regarding these issues:

45.1 The key concept in this context is robustness. That concept occupies a large and mature area of modern IT practice.

45.2 During its life, Horizon has been a very robust system, relative to comparable systems.

45.3 During its life, Horizon has incorporated and been supported by many robustness countermeasures. These countermeasures are designed to ensure the accuracy of accounts, have been designed well and have been applied effectively in practice (which is not the same as saying that no errors have ever got through).

45.4 Fujitsu has supported Horizon well, including in monitoring for bugs, investigating potential bugs and remedying such bugs as are found.

45.5 These matters have reduced to an extremely low level the risk of bugs arising and not being detected, corrected and remedied.

Issue 1(a) and Issue 3 (second half): Impact on branch accounts

46. Regarding these issues, the evidence shows that:

46.1 The robustness of Horizon made it extremely unlikely to be the cause of any lasting discrepancy in a given branch account.

46.2 If there was a material lasting shortfall in a given branch account, the chances of that shortfall having been caused by a bug in Horizon are very small indeed.

46.3 The number of bugs that there have been over Horizon's lifetime is very small relative to the scale of the system, the duration of its operation and, in particular, the number of branch accounts generated.

46.4 Those bugs that did exist were very unlikely to be of a type that had the potential to cause discrepancies or shortfalls in branch accounts, and even less likely to be of a type that had the potential to cause lasting discrepancies or shortfalls. (That

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bugs (or potential bugs) rarely cause such effects on accounts can be seen by comparing (1) the dozens, perhaps hundreds, of "issues" raised by Mr Coyne across his two reports to (2) his final tally of only 22 issues that he says were actually bugs and actually had lasting effects on branch accounts.)

Issue 1(b), 4(b), 4(c), 6(b), 6(d) and 6(e): Communication and recording of transactions

47. Regarding these issues:

47.1 During its life, Horizon has incorporated and been supported by many countermeasures that, in the vast majority of cases, ensure the reliability of the data that are being transmitted, replicated and recorded. Horizon's countermeasures in these respects have been well designed and have been applied effectively.

47.2 Those measures did reduce to an extremely low level the risk of transmission, replication or recording errors, whether caused by data packet errors or otherwise. The robustness of Horizon meant it provided a very reliable record of transactions (which is different from saying that no errors ever occurred).

47.3 There was only an extremely low risk that any given transaction recorded at the central data centres did not accurately reflect the transactions entered on the branch terminal.

48. Issue 1(b), which relates to the "*processing*" and "*recording*" of transactions, cross refers to paragraph 24.1 of the GPOC, which states as follows: "*Insufficient error repellency in the system (including sufficient prevention, detection, identification and reporting of errors), both at the data entry level and at the data packet or system level (including data processing, effecting and reconciling transactions, and recording the same)*".[6]

49. Cs have put forward no evidence of a lack of repellency against data packet errors. Mr Coyne does not mention the word "*repellency*" in his report, and he does not comment on

[6] {C3/1/8}

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data packet errors. No question was put to any witness in cross-examination on data packet errors.

50. Post Office invites the Court specifically to find that the Claimants' case in para. 24.1 of the GPOC in relation to data packet errors is not made out and that there is no evidence that Horizon suffered from data packet errors (beyond the admitted possibility for such errors even in a robust system).

4(a) and 6(a): Data entry

51. Regarding the above issues:

51.1 Horizon, like all comparable IT systems, faces a risk of a user entering incorrect data.

51.2 Horizon deployed industry-standard measures to reduce such risk.

51.3 There is no evidence to the effect that Horizon was at a greater risk of data entry error than other comparable IT systems or that it did not deploy industry-standard measures to reduce such risks.

D6. The Remote Access Issues

(7) Were Post Office and/or Fujitsu able to access transaction data recorded by Horizon remotely (i.e. not from within a branch)?

(10) Whether the Defendant and/or Fujitsu have had the ability/facility to: (i) insert, inject, edit or delete transaction data or data in branch accounts; (ii) implement fixes in Horizon that had the potential to affect transaction data or data in branch accounts; or (iii) rebuild branch transaction data:

a. at all;

b. without the knowledge of the Subpostmaster in question; and

c. without the consent of the Subpostmaster in question.

(11) If they did, did the Horizon system have any permission controls upon the use of the above facility, and did the system maintain a log of such actions and such permission controls?

(12) If the Defendant and/or Fujitsu did have such ability, how often was that used, if at all?

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(13) To what extent did use of any such facility have the potential to affect the reliability of Branches' accounting positions?

Issue 7

52. Given that Issue 10 addresses abilities to make changes to data, Issue 7 must logically be using the word "*access*" to refer to read-only access to transaction data. This is how the issue is addressed by the experts in JS4.[7] As to this, it is common ground that:

52.1 Post Office had access to transaction data copied onto its Management Information Systems ("MIS"). Under Horizon Online, Post Office also has read-only access to branch data held in the BRDB for business reasons such as monitoring levels of cash held in branches.

52.2 Fujitsu had direct access to the branch database (in Legacy Horizon, messagestores held on the correspondence servers and, in Horizon Online, the BRDB). Under Horizon Online, Fujitsu can also download logs stored on the counters (including a log that records the buttons pressed on the screen and messages displayed on the screen).

Issue 10

53. Laying aside TCs and TAs, which are not mentioned in or encompassed by this Issue,[8] the evidence shows that Post Office had no ability to do any of the things referred to in Issue 10. (For the avoidance of doubt, changes made to reference data are prospective only so cannot alter existing transaction data or data in branch accounts.)

54. Turning to Fujitsu, the evidence shows that:

54.1 In Legacy Horizon, Fujitsu had the ability to do the following:

(a) Insert transaction data into branch accounts, either (i) at the correspondence server or (ii) at the counter. The former was the standard method.

[7] {D1/4/10}.

[8] It is apparent from the generic pleadings that "remote access" concerns changes made to the branch accounting data other than at the counter (by the user interacting with the system, e.g. to enter the details on an Error Notice or to process a TC or TA sent to the branch).

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(b) Insert, edit or delete data (including transaction data and other data forming part of a branch's accounts) via the use of privileged user rights (but not at the messagestore level).

(c) Rebuild transaction data at the branch by replication from some other copy of the data in another messagestore (initiated automatically by the deletion of all the data held on the relevant counter). A small number of rebuilding operations required manual intervention to recover specific transactions that could not be replicated automatically because they were not recorded other than in a faulty counter or a counter that had been removed from the branch.

54.2 In Horizon Online, Fujitsu had the ability to do the following:

(a) Insert transaction data into branch accounts by using the Transaction Correction Tool.

(b) Insert, edit or delete data (including transaction data and other data forming part of a branch's accounts) via the use of privileged user rights.

55. As to Issues 10(b) and (c), Fujitsu had the technical ability to do the things listed in para. 20 above without the knowledge or consent of the SPM. However, the evidence shows that:

55.1 In Legacy Horizon:

(a) The insertion of transaction data at the correspondence server would have been visible to the SPM as a transaction inserted at a non-existent counter with a number greater than 32.

(b) The insertion of transaction data at the counter required the cooperation of the SPM (it could not be done when the counter was being used). Moreover, the SSC's practice when injecting transaction data in this way was to include information in the data making it clear that this had been done (e.g. by changing the counter numbers associated with the transactions to non-existent counters or adding a comment to the data).

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(c) The SSC's practice was to inform SPMs and secure their cooperation when any of these things were done. There is evidence of one occasion when this did not happen, in 2007.

(d) There is evidence[9] of an occasion in which a stock unit had rolled over into the next trading period with an erroneous starting position (zero). Privileged user access rights were used to move the affected stock unit back into the original trading period and to delete the erroneous opening position, thereby allowing the branch accounts to be aggregated and rolled over in the usual way, resulting in the correct opening position. The SPM was informed of the change.

(e) Save as set out above, there is no evidence of transaction data (or other branch account data) being inserted, edited or deleted via privileged user access.

55.2 In Horizon Online:

(a) On the single occasion on which the Transaction Correction Tool was used to insert transaction data into a branch's accounts, the SPM was informed and her consent was obtained.

(b) There is evidence[10] of an occasion in which, because of a problem that arose during the migration of a branch from Legacy Horizon to Horizon Online, stock units had been moved into a new trading period with incorrect stock opening positions (zeros), which prevented effective rollover from the current trading period. Privileged user access rights were used to move the affected stock units back into the branch's current trading period and to delete the erroneous stock unit opening positions, thereby allowing the branch accounts to be aggregated and rolled over in the usual way, resulting in correct opening positions. The SPM was kept informed as to what was being done to enable the branch to rollover.

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[9] {F/312}.

[10] {F/611}

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(c) Save as set out above, there is no evidence of transaction data (or other branch account data) being inserted, edited or deleted via privileged user access.

56. As to Fujitsu implementing fixes in Horizon, the experts have interpreted this to include both (1) prospective fixes to the code (or other system changes designed to prevent the problem re-occurring) and (2) measures to address the effects of the specific occurrence of a bug that triggered the investigation. As to this:

56.1 Measures within the first category would have prospective effect only, rather than affecting existing transaction data in branch accounts. It is common ground that implementing a code fix carries a risk of introducing a new bug, although this is reduced by testing and monitoring.

56.2 Measures within the second category could, in the rare instances that they involved changes to branch transaction data, self-evidently affect such data. In the absence of error in designing or implementing the change, however, the effect would be to improve the accuracy of the transaction data and branch accounts. The risks here were reduced by testing and monitoring of changes.

Issue 11

57. The various abilities identified above were subject to permission controls. Specifically:

57.1 Aside from in respect of emergency measures, Fujitsu was required to obtain specific permission from Post Office before making any change that may have an impact on branch accounts. There were process documents for seeking permission for changes – namely, OCPs (for changes to branch accounting data) and OCRs (for changes to data in the TPS). A record of such changes was also kept in the MSC system. Permission could also be obtained informally - there is evidence of instances where permission was obtained by email or telephone and then documented retrospectively in an OCP or OCR.

57.2 Permission to use the privilege user role ("APPSUP") was limited to certain Fujitsu employees in system support and database roles. From 2012 (for new SSC

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users) and August 2016[11] (for all SSC users), specific permission from another department within Fujitsu was required for each use of that role by SSC staff, rather than it being generally available.

57.3 There were also process controls within Fujitsu as to the witnessing and/or monitoring of changes.

58. There were logs and/or other records generated in respect of the various abilities identified above. Specifically:

58.1 There was an audit log that records the use of the Transaction Correction Tool.

58.2 There was a record of other changes in the OCPs, OCRs and now MSCs. Where any change was made, there was a Peak addressing the problem which required the change and that Peak typically recorded (in varying degrees of detail) the fact and nature of the change.

58.3 As to uses of privileged user rights, all such uses were recorded in privileged user access logs from 2009. From 2015, these logs also provided information as to the steps taken (although not necessarily the specific database tables accessed).

Issue 12

59. The facilities identified above were used very infrequently. Specifically:

59.1 Under Legacy Horizon:

(a) Transaction data was inserted at the correspondence server in a small number of instances.

(b) There were very rare instances in which transaction data was injected at a counter. Such injections are recorded in the Peak at {F/377.1} and the OCP at {F/432.2}.

(c) The rebuilding of transaction data on a counter by its deletion and automatic replication from some other copy of the data in another messagestore was

[11] {F/1844}, row 17808 which confirms, under MSC 045J0451867 the APPSUP database role was removed for all SSC users.

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rare. In very few instances (at least 4[12] and perhaps as many as 10)[13] some manual intervention was required to rebuild the counter messagestore.

(d) There is evidence[14] of one occasion in which a stock unit had been rolled over into the next trading period with an erroneous starting position (zero) Privileged user access rights were used to move the affected stock unit back into the original trading period and to delete the erroneous stock unit opening position, thereby allowing the branch accounts to be aggregated and rolled over in the usual way, resulting in the correct opening position. The SPM was informed of the change.

(e) Save as set out above, there is no evidence of any transaction data (or other branch account data) having been inserted, injected or deleted via the use of privileged user rights.

59.2 Under Horizon Online:

(a) The Transaction Correction Tool was used on one occasion to insert a balancing transaction.

(b) There is evidence[15] of an occasion in which, because of a problem that had arisen during the migration of a branch from Legacy Horizon to Horizon online, stock units were moved into a new trading period with incorrect stock opening positions (zeros), which prevented effective rollover from the current trading period. Privileged user access rights were used to move the affected stock units back into the branch's current trading period and to delete the erroneous stock unit opening positions, thereby allowing the branch accounts to be aggregated and rolled over in the usual way (resulting in correct opening positions). The SPM was kept informed as to what was being done to enable them to rollover.

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[12] The number of Peaks which Post Office has identified in its evidence and correspondence: Parker 2, para. 38.3 {E2/12/9} and the letter at {H/253}.

[13] The number of instances Mr Coyne said he had seen in cross-examination: {Day16/33:23}.

[14] {F/312}

[15] {F/611}

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(c) Save as set out above, there is no evidence of any transaction data (or other branch account data) having been inserted, injected or deleted via the use of privileged user rights (other than to the extent required for the instance identified above).

Issue 13

60. The use of the facilities identified in Issue 10 had a limited potential to affect the reliability of branch accounting positions. Specifically:

60.1 The number of times in which those facilities were used, and the number of branch accounts affected by such uses, was extremely small relative to the total number of branch accounts.

60.2 The facilities were used by highly skilled staff at the SSC and were directed at improving the reliability of the relevant branch's accounting position. In the vast majority of instances, the SPM was aware of the changes made by the SSC and could raise any new accounting problem that might arise. The changes made were substantially more likely to improve, rather than reduce, the accuracy of the branch accounts at issue. The risk of human error in designing and implementing changes was very low, and the risk of such human error going undetected was extremely low.

60.3 There is no evidence of a change made using the facilities having ever introduced a lasting inaccuracy into a branch account.

60.4 It follows that the use of the facilities is likely to have caused a small improvement to the overall reliability of branch accounting positions.

D7. The Operational Issues

(2) Did the Horizon IT system itself alert Subpostmasters of such bugs, errors or defects as described in [Horizon Issue 1] and if so how?

(5) How, if at all, does the Horizon system itself compare transaction data recorded by Horizon against transaction data from sources outside of Horizon?

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(8) What transaction data and reporting functions were available through Horizon to Post Office for identifying the occurrence of alleged shortfalls and the causes of alleged shortfalls in branches, including whether they were caused by bugs, errors and/or defects in the Horizon system?

(9) At all material times, what transaction data and reporting functions (if any) were available through Horizon to Subpostmasters for:

a. identifying apparent or alleged discrepancies and shortfalls and/or the causes of the same; and

b. accessing and identifying transactions recorded on Horizon?

(14) How (if at all) does the Horizon system and its functionality:

a. enable Subpostmasters to compare the stock and cash in a branch against the stock and cash indicated on Horizon?

b. enable or require Subpostmasters to decide how to deal with, dispute, accept or make good an alleged discrepancy by (i) providing his or her own personal funds or (ii) settling centrally?

c. record and reflect the consequence of raising a dispute on an alleged discrepancy, on Horizon Branch account data and, in particular:

i. does raising a dispute with the Helpline cause a block to be placed on the value of an alleged shortfall; and

ii. is that recorded on the Horizon system as a debt due to Post Office?

e. enable Subpostmasters to produce (i) Cash Account before 2005 and (ii) Branch Trading Statement after 2005?

f. enable or require Subpostmasters to continue to trade if they did not complete a Branch Trading Statement; and, if so, on what basis and with what consequences on the Horizon system?

(15) How did Horizon process and/or record Transaction Corrections?

61. As noted in Post Office's opening submissions, there do not appear to be any differences of substance between the experts on these issues.

Issue 2

62. The experts agree that Horizon did not, in general, alert SPMs to any significant bugs or other defects in the system itself.[16] They also agreed that the extent to which any IT system can automatically alert its users to bugs within the system itself is necessarily

[16] JS2, para 2.1 {D1/2/38}.

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limited and that while Horizon has automated checks which would detect certain bugs, there are types of bugs which would not be detected by such checks.[17]

63. Even if it were possible for the Horizon system to alert SPMs to bugs, it would be positively unhelpful to alert users to precise details of abnormal conditions beyond their day-to-day experience of the system. It is far more efficient and useful for a system to record unexpected or significant events in logs that can then be interrogated in the course of any investigation into unexplained discrepancies. That is what Horizon does.

64. In Coyne 2, Mr Coyne clarifies that he did not intend to suggest in his first report that it would be a "*good thing*" for SPMs to be provided with more information about the inner workings of Horizon.[18] He appears to agree that it would be counter-productive to do so. He does not consider that there is any useful automatic way in which SPMs could be alerted to Horizon faults;[19] nor does he consider that SPMs could benefit from information about the back-end systems of Horizon.[20]

65. It follows that neither expert supports Cs' pleaded case that SPMs should have been provided with more detailed information from Horizon, including (at least implicitly) information as to potential bugs or errors in the system.[21]

Issue 5

66. The experts agree that reconciliation between transactions from Horizon and transactions recorded by Post Office's clients is largely automated.[22] Such reconciliation takes place between Post Office's back-end accounting systems and its clients' systems.

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[17] JS2, para 2.1 {D1/2/38}.

[18] Coyne 2/5.380 (1st row of the table) {D2/4/226}.

[19] Coyne 2/5.380 (2nd row of the table) {D2/4/226}.

[20] Coyne 2/5.380 (4th row of the table) {D2/4/228}.

[21] See, e.g., Generic Reply, paras 13-16 {C3/4/6} and 21.11 {C3/4/17}.

[22] JS3, para. 5.1{D1/4/8}

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Issue 8

67. The experts agree that Post Office had access to variety of reports through its own MIS and through the ability to request information from Fujitsu.[23] They agree that Post Office had access to information that was not available to SPMs.[24]

68. The experts also agree that the descriptions of the facilities for Post Office in the experts reports are consistent and can be taken together.[25] Such facilities include the following:

    68.1 The primary sources of data are fed by the Transaction Processing System, which provides transaction and other data to various Post Office back-end accounting systems.

    68.2 These Post Office accounting systems include Credence and POLSAP.

    68.3 Post Office has analytical facilities that are not available to and not required by SPMs.

    68.4 Post Office can run standard database reporting tools, on demand, to retrieve and analyse information about branch transactions.

    68.5 Post Office can also request transaction data from Fujitsu's audit system.

    68.6 Post Office may also obtain from Fujitsu information as to system events that are detected by the System Management Centre.[26]

Issue 9

69. The experts agree in JS2[27] that:

    69.1 The causes of some types of apparent discrepancies and shortfalls may be identified from reports or transaction data available to SPMs. Other causes may

[23] See Worden 1/1083-1088 {D3/1/238} and Mr Coyne's views on Issue 8 in JS1 {D1/1/15}.

[24] Coyne 2/5.411 {D2/4/236}.

[25] JS3, para 8.2 {D1/4/10}.

[26] See Worden 1/1083-1088 {D3/1/238}.

[27] JS2, paras 9.1-9.3 {D1/2/39}.

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be more difficult or impossible to identify from reports or transaction data available to SPMs.

69.2 SPMs would not be expected to have detailed knowledge of the Horizon system.

69.3 Any competent IT support operation is grateful to its users, when they draw its attention to any problem which can be fixed, to reduce the future costs of support.

70. Although the experts have not spelt out the following in a JS, it appears that the experts also agree that:

70.1 SPMs could run various (more than one hundred) different types of report covering transactions conducted in the branch.[28]

70.2 These reports provide a useful source of information when performing normal reconciliation activities.[29]

70.3 In the ordinary course, the reports show enough information for an SPM to balance transactions.[30]

71. Mr Coyne agrees with the account given by Dr Worden of the reports that are available.[31] They include the following: reports by stock unit on a daily or weekly basis, reports by user, balance reports and journals such as transaction and event logs.[32]

72. Dr Worden gives descriptions of certain of the reports and logs and how they could be used to investigate discrepancies. He gives specific consideration to the Transaction Log,[33] the Event Log,[34] the Balance Snapshot[35] and the Stock on Hand report.[36] There are also highly-specific reports available to SPMs, such as the transfer reconciliation report

[28] Coyne 1/8.12 {D2/1/143}; Worden 1/991 {D3/1/220}.

[29] Coyne 1/8.12 {D2/1/143}.

[30] Coyne 1/8.20 {D2/1/146}.

[31] JS2/14.1 {D1/2/40}.

[32] Worden 1/991 {D3/1/220}.

[33] Worden 1/1000 {D3/1/222}.

[34] Worden 1/1004 {D3/1/224}.

[35] Worden 1/1007 {D3/1/225}.

[36] Worden 1/1007 {D3/1/225}.

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that identifies any transfers out of stock units for which there is not a corresponding transfer in.[37]

73. The SPM will be aware of many substantial financial discrepancies caused by user error or system error at the latest at the end of the trading day on which they arise, as such discrepancies are often revealed by conducting a mandatory cash declaration. A trial balance would also reveal these and other common discrepancies.

74. At the end of the accounting period, when balancing the account for rollover, Horizon provides automatic notifications to the SPM of certain types of problem, including (most notably) receipts and payments mis-matches.

75. Accordingly, there is a great deal of information available to an SPM in branch. The reports that can be run on the Horizon system enable the SPM to carry out a wide range of investigations into what has happened in the branch and in particular as to cause of apparent discrepancies and shortfalls.

76. Mr Coyne states that the information available to SPMs is what he would expect to see given that they are the users of the Horizon system and "*would not typically be given access to anything beyond what was necessary for them to carry out their 'business as usual' activities*".[38]

77. Disputes and investigations involving SPMs and Post Office are not triggered by a dispute button on Horizon. Disputes are raised via the Helpline. Neither of the experts has criticised that element of the design of the system. Investigations and the resolution of disputes rely on cooperation between Post Office and SPMs.

Issue 14

78. The experts agree:[39]

    78.1 That their respective descriptions of facilities available to SPMs are consistent with each other.

[37] See, e.g., {F/1782/158}.

[38] Coyne 1/8.11 {D2/1/143}.

[39] JS2, paras 14.1-14.3 {D1/2/40}

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78.2 About the functionality enabling SPMs to deal with, dispute, accept or make good alleged discrepancies.

78.3 That comparison of cash and stock in branch and figures recorded within Horizon can be determined by the SPM/auditor physically counting the cash and stock in branch and inputting those values into Horizon for a comparison to be made against the electronically derived figures held by Horizon.

79. The experts also agree various details about processes to be followed, including the processes for trading, correction/dispute processing and discrepancies.[40]

Issue 15

80. The experts agree that the TC process arises on the majority of occasions as a result of either Post Office of an SPM identifying an imbalance or discrepancy. Between 2006 to 2017, TCs were applied more than 100,000 times each year. It is also agreed that the TC process could lead to TCs being issued in error and, when disputed, some TCs are corrected by issuing another TC.[41]

E. FUJITSU WITNESSES

E1. Mr Roll's Evidence

81. The relevant evidence is as follows:

81.1 Mr Roll's first witness statement dated 11 July 2016 {E1/7}.

81.2 Mr Parker's first witness statement dated 16 November 2018 {E2/11}.

81.3 Mr Roll's Amended second witness statement dated 16 January 2019 {E1/12}.

81.4 Mr Parker's second witness statement dated 16 November 2018 {E2/12}.

81.5 Mr Parker's third witness statement dated 16 November 2018 {E2/13}.

[40] JS2, paras 14.4-14.6 {D1/2/42}

[41] JS2, paras 15.1 - 15.2 {D1/2/43}

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81.6 Transcript: Mr Roll's evidence at {Day3/106:13};{Day4/165:3} to {Day4/165:3}; Mr Parker's evidence at {Day12/4:18} to {Day12/95:12}.

The Importance of Mr Roll's Evidence to Cs' Case

82. Mr Roll's evidence is of central importance to Cs' case. He is described by Cs as a whistleblower.[42] The date of his first witness statement (signed a few months after the first claim form was issued and Cs' pre-action letter was sent)[43] may reflect the significance Cs attach to what he has to say.

83. Like the witness statements of the claimant-specific witnesses (whose evidence is considered in detail below), Mr Roll's first witness statement is vague and unparticularised. But it was plainly drafted with the intention that it would be explosive: it appeared to make far-reaching claims about Fujitsu practices and about the reliability and integrity of the Fujitsu procedures. So was his second witness statement.

84. The true position which emerged during Mr Roll's cross examination is far removed from the impression created by those documents. Mr Roll's oral evidence, in contrast to his witness statements, was careful and precise. He was at pains to assist the Court and to give accurate answers. His memory of events was, unsurprisingly, hazy in many respects but nevertheless a clear picture emerged of Fujitsu as an organisation which was thorough, professional and conscientious and which took considerable care to ensure that matters were properly investigated and dealt with.

Mr Roll's Recollection

85. According to his first witness statement, Mr Roll worked in the SSC between 2001 and 2004[44] i.e. his evidence covers a period of between 15 and 18 years ago. Mr Roll, quite understandably, frequently referred to the fact that he was unable to remember details and that his recollection might not be accurate. For example:

85.1 He said that he started at Fujitsu in 2000, not 2001.[45]

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[42] Cs' Opening Submissions para 61 {A/1/21}.

[43] {H/1}.

[44] {E1/7/1} para 1.

[45] {Day3/121:6} to {Day3/121:14}.

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85.2 He accepted that his recollection that he spent 70% of his time doing tasks which were "*not mundane*" could be wrong – and that it might be that one simply remembers more clearly things which were not mundane.[46] He could not remember what proportion of his work involved supporting engineers, for example.[47]

85.3 He could not remember what work he carried out in relation to a particular KEL,[48] or what a "*marooned transaction*" was.[49]

85.4 He could not remember the detail of how codes were allocated to Peaks or what the codes were.[50]

85.5 He suggested that there was sometimes time pressure on the SSC but accepted that that is just how he remembered feeling since *"it was a long time ago"*[51] and that his recollection was *"quite hazy"*.[52] He was unable to say how many times he had such a feeling but accepted it was *"[n]ot very often"*.[53]

86. There are many other examples.

87. Perhaps inevitably, some of Mr Roll's evidence remained unhelpfully vague. In his witness statements, he makes serious allegations and gives the impression of widespread problems. In cross examination it became apparent that all he had was a vague sense of unease about some aspects of the work performed for example in relation to investigations:

> *Q. So are you suggesting that on every occasion that a problem came in, something was reported in in relation to reconciliation, you were the one that investigated them all?*
>
> *A. Oh, no, I wasn't -- everybody -- it would have been farmed out.*

[46] {Day3/125:25} to {Day3/126:8}.

[47] {Day3/131:15} to {Day3/131:21}.

[48] {Day3/127:4} to {Day3/127:11}.

[49] {Day3/128:22} to Day3/129:14}.

[50] {Day3/144:16} to {Day3/145:15}.

[51] {Day4/19:24} to {Day4/20:8}.

[52] {Day4/23:10} to {Day4/23:20}.

[53] {Day4/22:2} to {Day4/22:10}.

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Q. So are you saying that you knew enough about everybody else's investigations to be uncomfortable about the investigations your colleagues were doing?

A. No.

Q. Right, so are you saying that you were uncomfortable with the investigations that you did?

A. No.

Q. So what were you uncomfortable with?

A. Sometimes the pressure we were under, the timescales. I think that's what it must have been. Again –

Q. So are you suggesting that there was a particular timescale issue with respect to reconciliation processes that had a particular application to reconciliation problems that didn't apply to other problems that you were investigating in Horizon?

A. All I can remember is that I felt uneasy about something, about this process, but I can't tell you why, so ...[54]

88. He could not recall any instances where the recovery process – a form of resilience – did not operate properly.[55]

89. Similarly Mr Roll described his recollection that the sense of SLAs might have affected how the SSC did their job as *"vague"*[56] and said that his assertion that the test team felt under enormous pressure to complete the testing within certain timescales such that the test regime was negatively affected[57] was based on ancient office gossip.[58] (Note that ultimately Mr Roll accepted that it was wrong to suggest that fixes or work-rounds were not done properly because of SLAs;[59] and that he was not aware of any SLA targets which related to incidents with which the Horizon trial is concerned).[60]

90. The Court should be slow to give weight to vague and impressionistic evidence of this sort.

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[54] {Day4/59:20} to {Day4/60:18}.

[55] {Day4/64:18} to {Day4/65:6}.

[56] {Day4/79:3} to {Day4/79:12}.

[57] {E1/10/5} para 15.

[58] {Day4/82:2} to {Day4/82:13}.

[59] {Day4/81:4} to {Day4/81:12}.

[60] {Day4/86:3} to {Day4/86:9}.

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Mr Roll's Position in the SSC and Experience of Issues

91. Mr Roll worked in 3rd line support: he accepted the suggestion that this was the elite but that the 4th line support, who actually fixed software problems, were the super elite: he thought that some members of the 3rd line belonged to this category as well, although not him.[61] He agreed that he had been well trained by Fujitsu, although could not recall the period of training.[62]

92. He accepted that generally it was a small group of 5 or so people who would actually examine code "*[f]rom a PINICL perspective*" i.e. for the purposes of establishing whether there was a problem with the code itself.[63]

93. Mr Roll accepted that when he said in his second witness statement that some 70% of his workload involved looking for faults on data stores[64], that was:

A. ... not technically looking for a bug in the code, more a bug in the data, a corruption in the data.[65]

And:

Q. So when you describe 70 per cent of your work as including looking for faults on data stores, you are not saying, are you, that that work was looking for software bugs? That's not what you mean? A. Not 70% of it, no.[66]

94. Mr Roll agreed that Horizon continually produced a large number of automatic reports to monitor its performance and look for problems and that people at his level would look at them and see if anything needed to be done – and that as time went on they wrote more reports or programmes themselves to monitor the system.[67]

95. Mr Parker's evidence[68] was that:

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[61] {Day3/115:1} to {Day3/115:14}.

[62] {Day3/125:13} to {Day3/125:19}.

[63] {Day3/124:21} to {Day3/125:9}.

[64] {E1/10/8} para 25.

[65] {Day3/133:13} to {Day3/133:14}.

[66] {Day3/134:16} to {Day3/134:20}.

[67] {Day3/137:7} to {Day3/137:23}.

[68] {E2/11/9} para 34.

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Mr Roll was primarily used in Operational Business Change (OBC), which involved supporting the engineers who were opening and closing branches and increasing and decreasing the number of counters in branches. Mr Roll would also have been regularly correcting the application environment after engineers had replaced failed counter hardware and clearing temporary files to increase disk space. This could fairly be described as 2nd line work and it was done by the SSC because it required a higher level of access to the system than other support teams had.

96. Although Mr Roll's recollection was different, he accepted that this might be an accurate summary.[69] He also accepted the accuracy of Mr Parker's evidence[70] that he did not play a significant part in the process of source code examination and that a software fix would be written by 4th line support, not 3rd line.[71]

97. Mr Roll fairly accepted that the impression given in his first witness statement[72] that he regularly worked through thousands of lines of code was something he was no longer sure about.[73] Mr Roll was taken through Mr Parker's analysis of the categorisation of issues during the time of Mr Roll's tenure in SSP1.[74] On the basis of that evidence, Mr Roll accepted that fire-fighting coding problems was a tiny amount of his work.[75]

98. Similarly, Mr Roll candidly accepted that he could no longer be sure that his evidence that the SSC *"regularly identified issues with the computer coding in the Horizon system"*[76] was correct.[77]

99. He also clarified:

99.1 Paragraph 8 of his first witness statement:[78]

Q. I'm grateful. Then paragraph 8 -- this may have been carefully drafted, or it may actually have been carelessly drafted and I'm not attributing any motives to you, I'm genuinely not, but if you look at the last sentence of paragraph 8,

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[69] {Day3/138:12} to {Day3/139:9}.

[70] {E2/11/9} para 35.

[71] {Day3/139:20} to {Day3/141:8}.

[72] {E1/7/1} para 7.

[73] {Day3/142:21} to {Day3/143:19}.

[74] {F/1839}.

[75] {Day3/158:4} to {Day3/158:19}.

[76] {E1/7/2} para 9.

[77] {Day3/158:22} to {Day3/159:6}.

[78] {E1/7/2} para 8.

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you say: " If an error was referred to us then it was extremely unlikely to be due to a mistake made by a postmaster; the vast majority of errors I dealt with were due to coding errors or data corruption." Just to be clear, Mr Roll, you are not saying that the vast majority of errors you dealt with were coding errors, are you?

A. No.

Q. And when you say " or data corruption", that includes all sorts of problems –

A. All sorts of problems –

Q. -- that had nothing to do with software bugs?

A. Yes.[79]

99.2 And what he meant by "*software bugs*":

Q. I see. So when you say "software issues" we should -- would it be fair to say that whenever you refer to "software issues" we should probably read in the possibility of other data issues that aren't concerned with software bugs?

A. Yes.

Q. I'm grateful.

MR JUSTICE FRASER: By "software bugs" I think Mr De Garr Robinson is talking about code issues.

A. Yes.

MR JUSTICE FRASER: That's how you are putting it. You are using in your statement, as far as I can tell, "software" in a rather more generic way, is that correct? A. I'm afraid so, yes. I should have -- it has been a long time.[80]

99.3 And that the SSC was not routinely encountering coding issues:

Q. So you are not saying that you were routinely encountering coding issues, are you?

A. Bugs, no.[81]

99.4 And that data issues which were the result of coding issues were a small proportion of overall data issues – and even in those situations it did not mean

[79] {Day3/159:7} to {Day3/159:24}.

[80] {Day3/161:11} to {Day3/162:1}.

[81] {Day3/163:11} to {Day3/163:13}.

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there was a software problem, just the potential for one.[82] Mr Roll accepted that coding errors which caused a financial impact on branch accounts were extremely rare:

> *Q. Well, let me continue with what Mr Parker says: "As stated in paragraph 16 above, such errors were extremely rare." That's coding errors which caused a financial impact on branch accounts. As a proportion of the work coming into the SSC, coding errors causing financial impact on branch accounts was extremely rare, would you agree?*

A. Yes.[83]

99.5 And that, as Mr Parker says,[84] in the vast majority of cases a software issue that caused a discrepancy would be caught by a receipts and payments mismatch.[85]

99.6 And that when he referred in paragraph 19 of his second witness statement[86] to a software fix, he was not talking about the kind of error an SPM would be aware of – i.e. not one that would have affected his accounts.[87]

99.7 And that, as Mr Parker says,[88] it is quite normal in a contract such as that between Fujitsu and Horizon to have service level agreements, and that the same level of diligence was applied to all incidents whether an SLA was relevant or not.[89]

100. Mr Roll accepted that paragraph 19 of his first witness statement,[90] which states that he and other colleagues were "*routinely*" working on coding issues causing financial discrepancies, was not correct:

> *Q. And then you say: "Furthermore, the coding issues impacted on transaction data and caused financial discrepancies on the Horizon system at branch level." Would you accept that the proportion of coding issues that had that effect was even smaller? A. Yes.*

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[82] {Day3/164:8} to {Day3/166:4}.

[83] {Day3/167:5} to {Day3/167:12}.

[84] {E2/11/11} para 42.

[85] {Day3/168:13} to {Day3/169:9}.

[86] {E1/10/6}.

[87] {Day4/71:3} to {Day4/71:9}.

[88] {E2/11/12} para 43.

[89] {Day4/74:18} to {Day4/75:4}.

[90] {E1/7/3}.

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Q. And the next sentence: "It was those issues that I, and other colleagues at Fujitsu, were routinely working on daily." Well, that's not really right, is it, Mr Roll? You and others were not working on these issues daily, were you, they were a very small proportion of the work that was being done?

A. From the bugs then yes.

Q. Thank you.

MR JUSTICE FRASER: By bugs you mean coding?

MR DE GARR ROBINSON: Coding.[91]

101. He also accepted that his manager wanted him to get to the bottom of problems:

Q. But it would be fair to say -- I think I'm -- I hope I'm drawing the right inference from what you said a minute ago -- it would be fair to say that Mr Peach would want you to bottom out the issue, to get to the bottom –

A. Yes.

Q. -- of that issue that was reported to you. He didn't want you to close your eyes to a problem, did he?

A. No.

Q. I'm very grateful, Mr Roll.[92]

and that everyone in the SSC tried to do a professional, rigorous and thorough job.[93]

102. Indeed, Mr Roll could not recall ever working on a coding issue which caused a financial impact:

Q. But you don't recall ever having encountered, in all the PEAKs that you worked on, a coding issue that definitely caused a financial impact?

A. I don't recall discovering one, no.[94]

103. He made it clear that he was not suggesting that if someone phoned in with a problem, that problem is not diagnosed at that time but was later diagnosed when some other SPM raised it, then the original caller would not be left high and dry: in that scenario

[91] {Day3/176:9} to {Day3/177:1}.

[92] {Day3/179:4} to {Day3/179:12}.

[93] {Day4/20:22} to {Day4/20:25}.

[94] {Day3/179:24} to {Day3/180:2}.

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information would be provided to Post Office to allow the first SPM to be made whole.[95] Similarly if, for example, a problem with reference data was spotted, the SSC would set up a system to monitor where problems might be occurring, fix them, look in the past to see if the problem had occurred before and deal with that – even though that would not have any effect on branch accounts.[96]

104. Mr Roll also accepted that it was unlikely that Fujitsu would be unable to determine the root cause of a problem and that in such a situation the relevant symptoms would be recorded so that Fujitsu would maintain knowledge of the symptoms and this would be passed onto the 4th line of support.[97] In any case where there was a lingering suspicion that there might be a coding issue, it would be passed on.[98]

105. Mr Roll suggested that on one occasion he was told to close down an investigation when it had not been completed. The situation involved a mobile system which was rebooting unexpectedly.[99] This was not software related.[100] He accepted that people in the SSC were not told not to perform checks that they felt were required in order to do their job properly.[101]

106. Mr Roll also accepted that it was in Fujitsu's interest to carry out its support role properly:

> *MR DE GARR ROBINSON: Could I just advance some general propositions and see if you will agree with me. Isn't it the case that Fujitsu had every incentive to make the support operation work, to minimise the problems requiring changes and to minimise the problems requiring fixes down the line; wouldn't that be right?*
>
> *A. Yes.*
>
> *Q. It would be more expensive in the long-run for a company such as Fujitsu to do the support work badly than it would be to do it properly, wouldn't it?*

A. Yes.[102]

[95] {Day4/26:6} to {Day4/27:8}.

[96] {Day4/54:18} to {Day4/55:6}.

[97] {Day4/29:20} to {Day4/30:10}.

[98] {Day4/32:20} to {Day4/33:1}.

[99] {Day4/35:9} to {Day4/36:21}.

[100] {Day4/35:2} to {Day4/35:5}.

[101] {Day4/39:20} to {Day4/39:25}.

[102] {Day4/83:24} to {Day4/84:9}.

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Acceptance of Mr Parker's Evidence

107. Contrary to the impression given by the drafting of his witness statements, it seemed that Mr Roll had very little quarrel with Mr Parker's evidence. Before giving evidence in Court, he had only looked "*briefly*" at Mr Parker's statements and did not think he had even read all of them.[103]

108. In addition to the passages referred to above, Mr Roll expressly accepted that the following parts of Mr Parker's evidence were accurate:

108.1 He accepted[104] Parker 1 para 25:[105]

> *It is common within the industry to have a multi-level support model. Generally, as you move up through the levels of support the cost of the staff providing the service increases because they are more qualified. Having said that, there is often overlap of skills between adjacent lines of support and while a team may be responsible for a particular level of support, staff within that team can have skills which allow them to perform a role that is more usually performed by the next level of support.*

108.2 He accepted[106] Parker 1 para 26.1.3:[107]

> *If a branch required assistance to attempt to determine the cause of a discrepancy they would contact NBSC in the first instance. Discrepancies are not unusual in a retail system. They indicate a difference between the operator's declaration of cash and stock on hand and the systems calculation and as such are a business operation issue. However, it was not always possible for NBSC to identify the cause of a discrepancy. For example, a user may enter a deposit of £100 into a customer's bank account on Horizon but rather than taking £100 from the customer, they may make a mistake and give the customer £100 as if it had been a withdrawal. In that scenario, NBSC would not have been be able to identify the cause of a discrepancy. Clearly, NBSC is also unable to assist when losses have been caused by theft.*

108.3 He accepted[108] Parker 1 para 26.3:[109]

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[103] {Day3/108:14} to {Day3/108:23}.

[104] {Day3/109:3} to {Day3/109:8}.

[105] {E2/11/5}.

[106] {Day3/110:14} to {Day3/110:16}: Mr Roll agreed "From what I remember".

[107] {E2/11/6}.

[108] {Day3/114:3} to {Day3/114:8}.

[109] {E2/11/7}.

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3rd line: the SSC also provided 3rd line support. The staff that provided 3rd line support had a detailed knowledge of the Horizon application based on documentation and some inspection of source code. They:-

26.3.1 designed, tested and documented work rounds for the 1st and 2nd lines of support;

26.3.2 applied analytical skills to the symptoms and evidence gathered by the 1st and 2nd line functions and undertook in-depth investigation into incidents (incidents are the basic unit of work for the support team and come from helpdesk calls and other Horizon support teams);

26.3.3 undertook complex configuration (configuration items can be used to alter the behaviour of the application) and data fixes which might have required the generation of special tooling;

26.3.4 designed, wrote and documented new support tools;

26.3.5 undertook source code examination, complex diagnosis and documentation (including methods to recreate faults) of new application problems before sending them to the 4th line support group for root cause software fix; and

26.3.6 provided technical support to other internal Fujitsu teams working on Horizon.

The 3rd line support function used a system called Peak (until 2003 it was called PINICL) to log and manage incidents passed to them which were suspected to be faults. It also maintained a Known Error Log (KEL) which describes the symptoms of problems with some analysis of causes, (potential) solutions to the problems and workarounds that might be needed before a permanent solution can be implemented. The Peak and KEL systems are still in use today and are described further in paragraph 62 onwards below.

108.4 He accepted[110] Parker 1 para 26.4:[111]

4th line: 4th line support staff had an intimate knowledge of narrow areas of the system and were (and are) ultimately responsible for the production of permanent
fixes to repair the root cause of an incident or problem in the live application. They had knowledge of computer languages which they used to amend source code to fix problem in the live application code. There was often overlap between 4th line and developers, who added new features into the application.

108.5 He accepted [112] Parker 1 para 26.9:[113]

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[110] {Day3/114:9} to {Day3/114:24}: Mr Roll: "Broadly speaking, yes".

[111] {E2/11/8}.

[112] {Day3/116:13} to {Day3/117:4}.

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A very small proportion of calls transferred to 4th line support would have concerned software errors requiring resolution, so it would be interesting to know the number of calls transferred to them.

108.6 He accepted[114] Parker 1 para 37 (first sentence):[115]

The SSC had (and has) access to view, but not amend, source code.

108.7 He accepted[116] Parker 1 paras 41.2 and 41.3:[117]

a major part of 1st line's raison d'être is to deal with user error and therefore the percentage of issues attributable to user error would be much higher at 1st line;

very few hardware incidents reached the SSC because they were the preserve of the HSD (i.e. they were relatively easy to spot and therefore filtered out by 1st line support);

108.8 He accepted[118] Parker 1 para 46:

In paragraph 14 Mr Roll states, "I would reiterate that the main recurring issues were software issues." It is a symptom of working within a software support team that the majority of issues that come in have been attributed to a software issue by, for example, a lower line of support. This can lead to a mind set of "look at all these Horizon errors", but what this indicates to me is that the previous levels of support are functioning correctly, removing the majority of other causes (user / hardware problems). It does not indicate that the majority of Horizon errors could
be attributed to software.

108.9 He accepted[119] Parker 2 paras 20-21:[120]

20. Once an issue has been raised, Fujitsu is experienced in providing support and will go to great lengths to investigate the root cause. In paragraph 61 of my first statement I explained that Fujitsu use a custom solution, developed and administered by the SSC, which allows us to record support knowledge into a Known Error Log (KEL). KELs record support knowledge which is intended to assist staff in the support and understanding of the Horizon system.

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[113] {E2/11/8}.

[114] {Day3/142:1} to {Day3/142:10}.

[115] {E2/11/10}.

[116] {Day3/142:1} to {Day3/142:10}.

[117] {E2/11/11}.

[118] {Day4/16:15} to {Day4/17:4}.

[119] {Day4/43:24} to {Day4/44:21}.

[120] {E2/12/7}.

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> *21. Mr Roll's statement that "subpostmasters would have been held responsible for problems which had not at any time been identified as software errors… because when they were raised we (Fujitsu) were ultimately unable to identify the problem at the time" assumes that if Fujitsu was not able to get to the root cause of an issue, it must have been a software error rather than a human error. But as I explain in paragraph 15 above, if Fujitsu was unable to identify any software issues after carrying out a careful investigation, human error would be by far the most likely explanation.*

109. Mr Roll also accepted, or did not dispute:

109.1 Mr Parker's evidence concerning the number and nature of calls made to the SSC 3rd and 4th line support.[121] He accepted that only a small proportion of calls going to 4th line support would have required software fixes[122] and that software problems requiring a software fix represented a tiny fraction of the work handled by 3rd line support.[123] He was not in a position to dispute the figures relating to the number of calls etc put forward by Mr Parker in exhibit SPP1[124] to his first witness statement.[125]

109.2 Mr Parker's evidence[126] that 8.3% of the calls during Mr Roll's time were attributed to potential software errors which included duplicates and trivial problems.[127]

109.3 Mr Parker's evidence[128] that since the introduction of Horizon there had been 735 live incidents referring to "payments and receipt mismatch", that this would include a lot of duplicates and that Mr Parker's method of searching for them was reasonable.[129]

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[121] {E2/11/8} paras 30-32.

[122] {Day3/119:12} to {Day3/119:17}.

[123] {Day3/121:20} to {Day3/121:24}.

[124] {F/1839}.

[125] {Day3/119:22} to {Day3/119:23}; and see {Day3/148:9} to {Day3/155:19}.

[126] {E2/11/11} para 41.3.

[127] {Day3/146:13} to {Day3/147:14}.

[128] {E2/11/11} para 42.1.

[129] {Day3/169:17} to {Day3/170:15}.

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109.4 Mr Parker's evidence[130] that less than 1.5% of incidents going into the SSC were potentially caused by software incidents.[131]

109.5 Mr Parker's analysis of closure codes, as dealt at paragraphs 168 - 183 below.

109.6 Further, because Mr Roll could not recall having encountered any coding issue that caused a financial impact, he was not in a position to say what was done when that happened[132] and accordingly was not in a position to contradict Mr Parker's evidence that the standard practice where it is discovered that a bug has caused discrepancies in branch accounts so as to create an incorrect shortfall or surplus is to take steps to identify all branches that have been impacted.[133]

110. Further:

110.1 Mr Roll's recollection was that sometimes there were time constraints on how long the SSC had to find a problem and produce an answer but that occurred "*[v]ery infrequently*".[134]

110.2 He accepted Mr Parker's evidence[135] that the majority of issues reported in a system, whether to 1st, 2nd or 3rd line support, are attributable to user action or user misunderstanding of system functionality.[136]

110.3 He accepted that generally Fujitsu's investigative and analytical procedures were thorough, that their diagnosis was correct in the majority of cases and that he was not suggesting that Fujitsu were happy to assume that SPMs were at fault.[137]

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[130] {E2/11/12} para 42.3.

[131] {Day3/173:20} to {Day3/174:24}.

[132] {Day 3/179:24} to {Day3/180:12}.

[133] {E2/13/3} para 3.

[134] {Day3/171:15} to {Day3/172:2}.

[135] {E2/11/14} para 49.

[136] {Day4/17:20} to {Day4/18:3}.

[137] {Day4/46:7} to {Day4/46:20}.

[138] {E2/12/9} para 25.4.

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110.4 He accepted Mr Parker's evidence[138] that if an issue was causing a financial impact in a branch's accounts it would be treated as a high priority and as high impact.[139] Mr Parker's evidence is that any increase in priority would not adversely affect the diligence with which the work was done: Mr Roll said he still felt that some work was rushed although *"I can't tell you why"*.[140]

111. Mr Roll was asked about paragraph 13 of his first witness statement,[141] which suggests that fixes were delayed and branches often affected by coding issues for weeks after they were identified. In response:

111.1 Mr Roll accepted that multiple upgrades were normal for an IT infrastructure of this sort and that it was unavoidable that there would be a limited number of time windows for such upgrades. He agreed that an urgent fix dealing with a high priority, high impact problem would be treated as an urgent matter requiring a hot fix and that this would be within two or three days.[142]

111.2 He accepted that Fujitsu had a mechanism in place to ensure that all branches affected by a bug would be identified and sorted out.[143]

111.3 He clarified that when he said that developers would sometimes be working on an out of date version of the code, what he meant was that a later update might undo the things done by an earlier update – although accepted that that was *"rare"*.[144]

Functionality in and Features of Horizon

112. Mr Roll suggested in his amended second witness statement[145] that it was possible for there to be a mismatch in figures if data corruption occurred just as a transaction was

[138] {E2/12/9} para 25.4.

[139] {Day4/86:12} to {Day4/86:22}.

[140] {Day4/86:23} to {Day4/87:2}.

[141] {E1/7/2}.

[142] {Day4/87:10}to {Day4/88:11}.

[143] {Day4/88:18} to {Day4/89:13}.

[144] {Day4/90:3} to {Day4/90:20}.

[145] {E1/12/5} para 14.

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being written to disc. In cross examination, he accepted that one of the countermeasures in Horizon is cyclic redundancy checks:

> *Q. Well, could I suggest to you, Mr Roll, that where that happens there are cyclic redundancy checks being constantly done which check to see whether the amount typed in is the same as the amount that goes into the system. It is something that's continually done within the Horizon system, isn't it?*
>
> *A. You are probably right there.*
>
> *Q. It is done at both levels. We're talking about Legacy Horizon. It is done at the Riposte level which operates the message store, as it were, and it is done at the operating system level, the NT which operates -- sorry, the NT, the Windows that operates the counter itself. There are cyclic redundancy checks that are applied as these processes are being done at both of those levels, aren't there?*
>
> *A. I don't remember that precise detail.*
>
> *Q. But I suggest to you that that is the case and are you in a position to dispute that?*
>
> *A. I'm not in a position to dispute that, no.*[146]

113. Mr Roll accepted that what he had said in paragraph 14 of his amended second statement was purely hypothetical, that he could not remember a situation where a cyclic redundancy check had missed an error of that sort and that such a check would both send an event to the SSC and prevent the counter actually accepting the transaction.[147]

114. He also accepted that his evidence in paragraph 8 of his first witness statement[148] – that if an error was referred to the 3rd line support it was extremely unlikely to be due to a mistake made by a SPM – was wrong.[149]

115. Mr Roll agreed that *"the vast majority of problems that were caused by the system would have manifested themselves in some kind of reporting"*.[150] He agreed that it would be very rare for a bug not to be detected.[151]

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[146] {Day4/10:2} to {Day4/10:20}.

[147] {Day4/11:15} to {Day4/12:23}.

[148] {E1/7/2}.

[149] {Day4/15:3} to {Day4/15:10}.

[150] {Day4/42:10} to {Day4/42:13}.

[151] {Day4/43:7} to {Day4/43:16}.

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116. He agreed that in criticising[152] what Dr Worden says about zero sum baskets in paragraph 156 of Worden 1[153], he had misunderstood what Dr Worden was saying.[154] He could not in fact think of an example where a non-zero-sum basket was accepted into Horizon.[155] He also agreed that any true transaction integrity issue would be picked up in reconciliation reporting and investigated.[156] Post Office's case is that it would also have been visible to the branch when they balanced at the end of the trading period.[157]

Hardware Failures

117. Mr Roll's evidence was that he was involved in a hardware failure once a month,[158] although when asked during cross examination, he could not recall how they would affect branch accounts.[159] He accepted that the example he gives in paragraph 7 of his second witness statement, concerning a stuck transaction, was very rare and would have been spotted by Fujitsu by its own monitoring.[160]

118. Mr Roll accepted that problems with peripheral devices, such as keyboards, were unlikely to affect branch accounts.[161]

119. In paragraph 8 of his second witness statement[162] Mr Roll gave an example about branch data not being replicated from a mobile post office correctly. In cross examination, he had this to say about it:

> *Q. I see. So if the problem caused a persistent failure to replicate, that is a problem that –*
>
> *A. Yes.*

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[152] {E1/10/3} para 9.

[153] {D3/1/38}.

[154] {Day4/48:16} to {Day4/49:17}.

[155] {Day4/50:12} to {Day4/50:25}.

[156] {Day4/51:23} to {Day4/52:9}.

[157] Parker 2 para 10 {E2/12/4}.

[158] {E1/10/2} para 6.

[159] {Day4/92:15] to {Day4/92:19}.

[160] {Day4/92:20} to {Day4/95:6}.

[161] {Day4/95:8} to {Day4/95:21}.

[162] {E1/12/2}.

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Q. -- was always going to be spotted?

A. Yes.

Q. So when you say it wouldn't necessarily be spotted, that's because the system itself might deal with it appropriately?

A. Yes.

Q. But if it didn't, it was always going to be spotted?

A. Yes.

Q. Very good. And in this particular case the problem was spotted and the data was replicated, yes?

A. Yes.

Q. And again, that would always be the position, wouldn't it: once the problem is spotted this is very easy to deal with?

A. In this case, yes.

Q. Well, in all cases of this sort, yes?

A. Yes.

Q. Thank you.[163]

120. Mr Roll was taken to the various Peaks associated with this particular issue.[164] Mr Roll suggested that there was an occasion where there had been some sort of cover-up about a batch of faulty laptops.[165] He speculated that this was done as some sort of favour although accepted that he had no basis for this.[166] He accepted that it was not in the interests of the SSC or of Fujitsu for such machines to remain in circulation: and that once again, all Mr Roll could offer was an *"impression"* about what had happened.[167] It is submitted that reliance cannot be placed on evidence of this sort.

121. In summary, the impression that Mr Roll gave during live evidence was hugely different to the impression set out in his two witness statements. Mr Roll agreed that:

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[163] {Day4/97:2} to {Day4/97:22}.

[164] {F/197} & {F/201}.

[165] {E1/10/2} to {E1/10/2} para 8.

[166] {Day4/108:18} to {Day4/109:10}.

[167] {Day4/109:20} to {Day4/110:22}.

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121.1 Coding errors that caused a financial impact on branch accounts were extremely rare.[168]

121.2 He could not recall a coding issue that definitely caused a financial impact.[169]

121.3 In most cases the right diagnosis was reached.[170]

121.4 Mr Parker's description of the careful, thorough and conscientious procedures followed by Fujitsu were correct.

Remote access

122. Mr Roll's evidence on remote access has been largely superseded by that of the experts. Remote access is addressed in greater detail at paragraphs 184 - 191 below. The paragraphs that follow set out Mr Roll's evidence specifically on remote access.

123. Mr Roll accepted that a distinction was to be drawn between what can referred to as "transaction data" on the one hand, i.e. data relating to transactions which actually has an impact on branch accounts, and "operational data" on the other, which may have all sorts of functions, but is not seen by the SPM and does not have a financial impact on the branch accounts.[171]

124. Mr Roll's evidence concerning certain aspects of remote access was difficult to follow. Despite the technical complexity of the subject, it is of primary importance to understand that what is being referred to is something which only happened very rarely – which is of central importance to this trial. (A good example of the sort of process which Fujitsu followed is provided by a document which Cs asked to be added to the trial bundle shortly before Mr Coyne started his evidence[172]: this is considered in detail below in the context of the expert evidence).

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[168] {Day 3/167:5} to {Day3/167:12}.

[169] {Day 3/179:13} to {Day3/180:2}.

[170] {Day 4/45:12} to {Day4/46:20}.

[171] {Day4/3:19} to {Day4/4:24}.

[172] {F/377.1}.

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125. Notwithstanding the distinction agreed between transaction data and operational data, Mr Roll appeared to think that, for example, the process by which a counter is unlocked – which involved the flipping of a bit from 1 to 0 – did involve a change to transaction data.[173] Nevertheless he accepted[174] that paragraphs 35 and 37 of Mr Godeseth's witness statement[175] were accurate:

> *35. All counter data was held in a bespoke message store (which was part of the Riposte product supplied by Escher Inc.). This data was replicated within each branch to all counter positions and from each branch to the data centres where it was held in the correspondence server message stores. Similarly, any data inserted into the message store at the data centre (for example reference data or authorisations for banking transactions) would be replicated back to the branch counters. Selected data was then extracted from the correspondence servers to update Post Office's back end systems.*
>
> *37. All accounting at the counter was carried out based on the data held in the message store. The Riposte product managed the message store and it did not allow any message to be updated or deleted, although it did allow for data to be archived once it had reached a sufficient age (this varied by message type and also over time; it was never less than 34 days and by 2009 it was effectively 80+ days).*

126. It is right to point out that Mr Roll did refer in his cross-examination to a particular form of remote alteration of data which apparently involved flipping one bit of data.[176] Post Office believes that what Mr Roll was probably referring to are the "marooned transactions" which Mr Parker refers to in his second witness statement[177] but if Mr Roll was talking about something else (i.e. some sort of remote access used to download, correct and re-insert corrupted data), then it is not mentioned by the experts and it is inconsistent with what Mr Godeseth said in paragraph 37 of his witness statement (quoted above).

127. Mr Roll accepted Mr Parker's evidence[178] that if Fujitsu were to change anything it would be the envelope around the transaction data.[179] Mr Roll also accepted that Fujitsu

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[173] {Day4/114:17} to {Day4/115:12}.

[174] {Day4/115:21} to {Day4/117:2}.

[175] {E2/1/11}.

[176] E.g. {Day 4 136:21} to {Day4/137:9}.

[177] {E2/12/2} para 5.

[178] {E2/12/12} para 38.2.

[179] {Day4/122:5} to {Day4/122:13}.

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would never, for example, change a line of code to change transaction data from £100 to £10.[180] And although Mr Roll said that his recollection was that Fujitsu would not change more than the envelope data, he accepted that this *"was a long time ago"*.[181] Post Office's case is that no one at the SSC would manually change a line of transaction data (i.e. the nature and terms of the relevant transaction) and then reinsert that changed line of transaction data into the message store (the closest equivalent of which now is the BRDB or the Audit Store) of any branch.

128. Although Mr Roll's recollection was that there were times when Fujitsu needed to carry out work for the SPM while the SPM was already logged on, there was a strict procedure in place which was taken very seriously:

> *Q. So you can't think of a specific reason why it would have to be the same person, but you're saying that it did sometimes?*
>
> *A. Yes, it -- sorry.*
>
> *Q. I didn't let you finish.*
>
> *A. I have lost my train of thought now, sorry. It often made it much cleaner for accounting reasons, from what I remember, if it was the same user ID. All of this -- all of these actions would be detailed in the PINICL and if -- from what I remember, if you were accessing a counter in this way, two people had to be there, one as an independent witness to make sure that everything was going correctly.*
>
> *Q. So there would have to be what we now call PEAKs and there would have to be two pairs of eyes –*
>
> *A. That was what –*
>
> *Q. -- it would never be left to one particular member of the SSC team to do it on his own?*
>
> *A. It was never supposed to be and I don't think it ever was but I'm not sure.*
>
> *Q. So this is a formal process then, is it –*
>
> *A. Yes.*
>
> *Q. -- which the SSC took very seriously?*
>
> *A. It was developed and taken very seriously, yes.*

[180] {Day4/123:4} to {Day4/123:12}.

[181] {Day4/123:15} to {Day4/123:23}.

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Q. And is it also the case that Post Office consent was always needed for this kind of process?

A. When I was there we were supposed to speak to the postmaster to get his consent. So from Post Office consent, that's what I believe you mean by that. Formal consent from the Post Office itself, maybe not.[182]

129. Mr Roll also confirmed that if Fujitsu were to log on to a counter remotely they were supposed to speak to the SPM and get their consent, and that he ensured that these protocols were properly followed.[183] He also accepted that his evidence that some errors were corrected remotely without the SPM being aware[184] was not referring to errors that affected branch accounts:

Q. Thank you. So in paragraph 16 of your first witness statement {E1/7/3}, you say: "Still on the subject of remote access to branch systems, as I recall some errors were corrected remotely without the subpostmaster being aware." Those errors are not errors -- or rather those corrections were not corrections which changed branch accounts in the way that we discussed?

A. No.

Q. You're talking about other errors, aren't you?

A. Yes.

Q. Could you give some examples of the kind of errors you are talking about?

A. I can't remember I'm afraid.

Q. But would it be things like changing configuration items?

A. Probably, yes.

Q. That sort of thing, which would not have an impact on the branch accounts in the way that we have previously discussed?

A. I think so, yes.[185]

130. Mr Roll stated that the SSC would only remotely access a counter where potentially catastrophic circumstances might arise but cannot name any instance of that.[186] Mr Roll

[182] {Day4/127:15} to {Day4/128:19}.

[183] {Day4/129:6} to {Day4/129:24}.

[184] {E1/7/3} para 16.

[185] {Day4/130:19} to {Day4/131:14}.

[186] {Day 4/158:23} to {Day4/159:23}.

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also accepted that he believed that the situation he describes in paragraph 15 of his first witness statement,[187] i.e. that Fujitsu would frequently access a post office counter remotely, only applied in circumstances where the cyclic redundancy check had been triggered so that the system had identified that some attention was required.[188] Although he thought it was possible to insert a transaction, he had not done so himself.[189]

131. Mr Roll's recollection was that very occasionally – he thought for him it was perhaps every couple of months[190] – Fujitsu had to repair corrupt data. He accepted that this was something which Fujitsu did only when they absolutely had to[191] and that the preference was always to use the correspondence server i.e. to make the change through the front door.[192]

132. It was suggested to Mr Roll that if the SSC did need to insert transactions, it was the practice to use additional properties so that this could be identified. Mr Roll said that was not his recollection but accepted that he might have overlooked or forgotten this.[193]

133. Mr Roll did accept that there were processes in place to minimise the risks when copying data from a counter – and that that was something he had not covered in his witness evidence.[194] He also accepted that when the data was inserted there would be another person sitting there making sure that matters were completed correctly.[195] He added that the SSC did not like carrying out fixes that required remote access.[196] Further, that any instance would be documented.[197] He also accepted the following:

> *Q. So it is absolutely standard SSC practice, isn't it, when you are dealing with a branch and correcting problems that the branch has got that the branch will see, it*

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[187] {E1/7/3} para 15.

[188] {Day4/131:15} to {Day4/132:1}.

[189] {Day4/135:9} to {Day4/135:19}.

[190] {Day4/139:20} to {Day4/139:22}.

[191] {Day4/140:9} to {Day4/140:15}.

[192] {Day4/147:22} to {Day4/148:4}.

[193] {Day4/154:19} to {Day4/155:9}. For examples of where this happened, see {F/485/3}.

[194] {Day4/156:10} to {Day4/157:6}.

[195] {Day4/157:7} to {Day4/158:9}.

[196] {Day 4/147:22} to {Day4/148:4}.

[197] {Day 4/148:5} to {Day4/148:15}.

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is absolutely standard that you will communicate with the subpostmaster to ensure that the subpostmaster knows what changes you are making?

A. Yes.[198]

134. As with other parts of Mr Roll's evidence, the impression which his witness statements sought to create is far removed from the position which emerged during cross-examination. In summary, as set out above, Mr Roll accepted that:

134.1 SSC did not like carrying out fixes that involved remote access;

134.2 When they did use remote access, procedures were in place which were conscientiously followed which included documenting and witnessing where appropriate;

134.3 When he referred to errors being corrected remotely without the SPM being aware, he was not referring to errors that affected branch accounts;

134.4 SSC would not change a line of code so that transaction data went from, say, £100 to £10.

E2. Mr Godeseth's Evidence

135. Mr Godeseth is Fujitsu's Chief Architect on the Post Office account and he has worked on Horizon in various roles since it was first procured. Much of his evidence is uncontroversial and unchallenged. However, some of it is unsatisfactory. With the benefit of hindsight, Post Office would not have asked Mr Godeseth to cover several matters that were addressed in his first two witness statements – although it is right to point out that if Post Office had only called first-hand evidence, the trial would have been wholly unworkable.[199]

136. Before considering Mr Godeseth's evidence, it may be helpful to consider the circumstances in which Post Office asked him to provide evidence.

[198] {Day4/159:17} to {Day4/159:23}.

[199] Post Office calculates that this would have required calling approximately 34 additional witnesses.

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Background

137. The Horizon Issues schedule[200] provided that the Horizon Issues require limited if any evidence of fact. This reflected the Court's guidance regarding the proper scope of the non-expert evidence to be called at the Horizon Issues trial (*"My intention is in March to resolve the Horizon Issues that ... do not require evidence of fact or if they do require the very barest evidence of fact"*).[201] The four-week Horizon Issues trial was to be an expert-led process and it was anticipated that most of the time for evidence would be devoted to the experts. This suggested that the parties would only have limited time for factual witnesses.

Godeseth 1, 27 September 2018

138. Post Office wanted to provide a simple and uncontroversial overview of Horizon and its relevant features. It recognised that it was not possible for one person to have a complete understanding of all the corners of the Horizon system[202] but, on the basis that there would not be room in the timetable for multiple witnesses, it took the view that this overview should be provided by one person. Two possible candidates were Torstein Godeseth and Gareth Jenkins. Taking into account the involvement that Mr Jenkins had had in a number of criminal prosecutions that are currently being looked at by the Criminal Cases Review Commission (e.g. the Misra case), Post Office asked Mr Godeseth to do so.

139. This resulted in Mr Godeseth making his first witness statement in September 2018.[203] As he indicated in that statement, he had consulted colleagues to ensure that his understanding was correct.[204] Thus, as he had not worked for Fujitsu when Legacy Horizon was in operation, he had consulted Mr Jenkins in relation to the Riposte system.[205] In addition, at Post Office's request, he included some figures about ARQs

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[200] i.e. Schedule 1 to the Order dated 23/03/18 {C7/14}.

[201] Transcript of the CMC on 22 February 2018 at p.54E {C8.4/4/54}.

[202] As Mr Godeseth notes in Godeseth 1, para 7 {E2/1/2} and again in Godeseth 2, para 8 {E2/7/1}.

[203] Godeseth 1 {E2/1}.

[204] Godeseth 1, para 7 {E2/1/2}.

[205] Godeseth 1, para 34 {E2/1/11}.

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issued between 2014/15 and 2017/18 which were provided by Jason Muir, Fujitsu's Operational Security Manager.[206]

140. It subsequently became apparent that, when addressing the forms of remote access that were possible with Riposte, the possibility of injecting transactions directly into counters had been overlooked, rather than into the correspondence server with a counter position of greater than 32.[207] Fujitsu was reminded of this possibility by Roll 2, served on 17 January 2019.[208] Accordingly, Mr Godeseth corrected his evidence on 28 February 2019.[209] As it related to the detailed operation of the Riposte system, it was not something which was within his own knowledge when he addressed it in Godeseth 1, para 34. This could and should have been made clearer.

Godeseth 2, 16 November 2018

141. On 16 October 2018, Coyne 1 was served. This contained innumerable actual or apparent criticisms of or queries regarding the Horizon system and various Post Office operations to which Post Office wished to respond. There was little time in which to do so: even with an extension agreed by Cs, Post Office had only a month in which to produce 7 witness statements.[210] Consequently, these statements were prepared under considerable time pressure.

142. Godeseth 2 was one of these statements.[211] This:

142.1 addressed various matters raised by Professor McLachlan (an expert who had acted for Mrs Misra in her criminal trial and on whom Cs appeared to be seeking to rely as a second expert), including the Callendar Square bug. In the event,

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[206] Godeseth 1, para 31{E2/1/10}. Post Office could of course have provided these figures by way of further information. ARQ figures for the period back to 2004 have now been provided in correspondence: {H/301}and {H/332}.

[207] See also Parker 1, paras 53 - 57 {E2/11/15} to {E2/11/17}.

[208] Roll 2, para 20, {E1/10/6}.

[209] Godeseth 3, para 25 {E2/14/7}. Mr Parker had already made the position clear on 29 January 2019: Parker 2, para 27 {E2/12/9}.

[210] Pursuant to para 11 (a) of the Fourth CMC Order {C7/18/3}; {C7/18/4}, Post Office's supplemental evidence was due by 16 October 2018, but in the light of Coyne 1, Post Office sought and Cs agreed an extension to 16 November 2018 {H/136}.

[211] {E2/7}.

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Professor McLachlan was not called and so this evidence did not need to be adduced, but Post Office did not know this at the time: paras 8 to 29;

142.2 gave more details about global branches: paras 30 to 33;

142.3 gave short accounts of how the receipts and payments mismatch bug, the local suspense bug and the Dalmellington bug came to light and were resolved: paras 35 to 61;

142.4 explained why certain process metrics/performance indicator documents that Mr Coyne believed Fujitsu should have did not in fact exist: paras 62 to 68; and

142.5 in response to a query raised in Mr Henderson's witness statement, explained the distinction between journal sequence numbers ("**JSNs**") and session sequence numbers ("**SSNs**"): para 69.

143. As was made clear in the statement, in certain respects Mr Godeseth's evidence was based on information provided by others. His account of the Misra trial was based on information provided by WBD and Mr Jenkins; his accounts of the Callendar Square, receipts and payments mismatch, local suspense and Dalmellington bugs were based on the contemporaneous documents and discussion with Mr Jenkins and on one point of information provided by Matthew Lenton, Fujitsu's Post Office Account Document Manager; his account of the documents held by Post Office was based on information provided by Steve Bansal, Fujitsu's Senior Service Delivery Manager.

144. Cs understandably complain that Mr Jenkins and the other source of Mr Godeseth's information could have given some of this evidence first hand. However:

144.1 Taking into account that Professor McLachlan's evidence specifically addressed things said or done by Mr Jenkins in relation to the Misra trial, Post Office was concerned that the Horizon Issues trial could become an investigation of his role in this and other criminal cases.

144.2 Moreover, Post Office was conscious that if it only adduced first hand evidence in the trial, it would end up having to call more witnesses than could be accommodated within the trial timetable.[212]

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144.3 Furthermore, so far as Post Office was aware, the relevant parts of Godeseth 2 were most unlikely to be controversial. For example, the Misra trial was a matter of public record, the four bugs were covered by contemporaneous documentation and Post Office had no reason to doubt Fujitsu's account of the documents it held.

Godeseth 3, 28 February 2019

145. Godeseth 3[213] was prepared in response to certain questions raised by Coyne 2 regarding global branches, the TIP repair tool and remote access. It was not based on information provided by others, except where identified at paragraph 11 of Godeseth 3 and its correction in para 25 to Mr Godeseth's previous assertion that a transaction insertion in Legacy Horizon would record a counter number of greater than 32. Paragraphs 14 & 15 and references to 'APPSUP' in Godeseth 3 were discussed with colleagues, however Mr Godeseth had discussed these so often that he felt they were within his own knowledge.

Conclusions on Mr Godeseth's written evidence

146. As matters stand, it appears that the contents of Godeseth 1 and Godeseth 3 are largely unchallenged. However, Godeseth 2 is challenged. In Mr Godeseth's cross examination, some of the points he made on the basis of information provided by others were shown to require correction or at least clarification. This took Post Office by surprise. With the benefit of hindsight, Post Office accepts that there are points on which, if it wished to adduce any evidence at all, it should have ensured that witness statements were prepared for the individuals who were the sources of the relevant information. Had such witness statements been prepared, the errors contained in Godeseth 3 may well have been avoided.

147. The errors in Godeseth 2 were significant. They include:

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[212] By this stage, it seemed that Cs were calling 8 witnesses, and having originally served 4 witness statements Post Office was now proposing to call 10 witnesses. As noted above, had its witnesses only given first hand evidence, Post Office estimates that some 34 additional witnesses would have been required.

[213] {E2/14}.

[214] {E2/7/3}.

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147.1 In para 13,[214] Mr Godeseth said that the Callendar Square bug occurred in 2005, without making it clear that this was not its first occurrence and that the underlying problem in Riposte had probably been in existence since 2000. A similar error was made in para 36,[215] where he said that the receipts and payments mismatch bug caused a mismatch in some branches in September 2010, when in fact it also caused mismatches between March and October 2010.

147.2 In para 15,[216] he said that he understood from Mr Lenton that Fujitsu had, using event logs, established for the purposes of Godeseth 3 how many branches the Callendar Square bug affected. Although Mr Lenton may have been asked to establish this, what he in fact did was locate a spreadsheet that was not prepared for the purposes of Godeseth 3 but had been prepared by Anne Chambers in 2015.[217] Moreover, the document was not an exhaustive list of all the branches affected, it identified the majority that had reported a problem or caused a reconciliation report. Para 15 should have been redrafted to reflect these points.

147.3 At the beginning of his oral evidence, he corrected the number of branches referred to in para 15[218] to reflect the fact that one of the branches identified in Ms Chambers' spreadsheet was affected twice.[219] However, although the correction was right, in cross examination it became apparent that he had not checked it himself. He did a similar thing regarding the number of branches affected by the receipts and payments mismatch bug referred to in para 42[220] – the correction was right (there were 64 impacts affecting 62 branches)[221] but he had not checked it. This should not have happened.

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[214] {E2/7/3}.

[215] {E2/7/10}.

[216] {E2/7/5}.

[217] {F/322.1}.

[218] {E2/7/5}.

[219] {F/322.1}: rows 20 and 22.

[220] {E2/7/11}.

[221] This can clearly be seen from {F/754.1}: Branch 208020 appears twice at rows 13 and 51 and branch 159632 appears twice at rows 3 and 62.

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147.4 In para 63,[222] he appeared to be saying that Fujitsu's Post Office Account Customer Service Problem Management Procedure document[223] was not implemented following Mr Salawu's departure as Horizon Head Lead Service Delivery Manager, when in fact it was merely section 1.4 of that document that was not implemented.

148. These things should not have happened. Post Office therefore accepts that Mr Godeseth's evidence was unsatisfactory. But without wishing to play down the significance of the errors that were made, it also notes that the vast majority of the written evidence given by Mr Godeseth is either incontrovertible or not controverted.

Mr Godeseth's oral evidence

149. Mr Godeseth's oral evidence lasted from {Day7/73} to {Day 8/124}. Post Office notes he was cross-examined on a number of areas which could more usefully have been addressed with different witnesses, in particular Mr Parker.[224] In this section, Post Office does not seek to anticipate the arguments that Cs will make on his oral evidence, but it notes as follows:

149.1 Regarding the change from Legacy Horizon to Horizon Online, Mr Godeseth was clear that the changes were geared towards "*refreshing the solution*".[225] He confirmed that Horizon Online was not an end of life version of Legacy Horizon but was a rejuvenated version, using the words "*radical*", "*pretty dramatic*" and a "*big overhaul*" to describe the change.[226]

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[222] {E2/7/16}.

[223] {F/1692}.

[224] See for example {Day7/150} to {Day7/164} (Problem Management); {Day7/166} to {Day7/167} (Dalmellington; Low Level Design Document for Transaction Correction Tool); {Day7/186} to {Day7/186:10} (the difference between OCPs and OCRs); {Day8/8:18} to {Day8/9:16} (informing SPMs of remote access to their accounts); {Day8/12:24} to {Day8/14:5} (whether the forms of remote access remote used in the $1,000 Peak {F/432} and recorded in the OCR and OCP at {F/434.1} and {F/432.2} caused a discrepancy to the relevant branch's accounts); {Day8/41:21} to {Day8/42:3} (what Anne Chambers meant when she said "*go off piste*" in the Appsup Peak {F/768}; and {Day8/78:6} to {Day8/78:23} (what Post Office communicated to SPMs about bugs and why).

[225] {Day7/108:24} to {Day7/109:22}.

[226] {Day7/127:12} to {Day7/128:12}.

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149.2 Mr Godeseth explained why it was not possible to maintain an operating version of Legacy Horizon available for inspection.[227]

149.3 When the so-called $1,000 Peak[228] and its associated OCR and OCP were put to him,[229] Mr Godeseth agreed that the form of remote access used in that case caused a loss at the branch.[230] However, this was because – no doubt by mistake – his attention was not drawn to the fact that the document put to him for this purpose was an OCR which involved a change to the data in Post Office's back-end systems (POL FS) and no change to branch data in Horizon. Post Office was not alive to this mistake at this time, but fortunately it was able to address the point with Mr Coyne.[231]

149.4 On the basis of a letter from WBD regarding the audit log to which the Transaction Correction Tool writes (BRDB TXN CORR TOOL JOURNAL),[232] Mr Godeseth agreed that the Transaction Correction Tool must have gone beyond its original design.[233] However, on the basis of a clarificatory letter written by WBD on 29 May 2019,[234] it can be seen that this agreement was based on a misconception. However, this point need not be pursued, since the experts are agreed that the Transaction Correction Tool has only been used to change branch transaction data on the one occasion discussed in Godeseth 1.[235]

Conclusions on Mr Godeseth's oral evidence

150. Post Office submits that in his oral evidence, Mr Godeseth gave open, frank and direct answers.

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[227] {Day8/48:2} to {Day8/48:13}.

[228] {F/432}.

[229] {F/432.1} and {F/432.2}.

[230] {Day8/12:24} to {Day8/14:5}.

[231] {Day16/103:1} to {Day 16/132:6}.

[232] {H/218}.

[233] {Day7/177:19} to {Day 7/179:10}.

[234] {H/302}.

[235] See JS4, para 12.2 {D1/5/14} and {Day16/140:1} to {Day 16/140:4}.

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E3. Mr Parker's Evidence

151. The relevant evidence:

151.1 Mr Parker's first witness statement dated 16 November 2018 {E2/11}, with corrections at {E2/16}.

151.2 Mr Parker's second witness statement dated 29 January 2019 {E2/12}, with corrections at {E2/16}

151.3 Mr Parker's third witness statement dated 28 February 2019{E2/13}, with corrections at {E2/17}

151.4 Transcript: {Day12/2:20} to {Day12/97:24}

152. Mr Parker is employed at Fujitsu as Head of Post Office Application Support. Mr Parker's written evidence deals largely with the role of the SSC, Mr Roll's evidence, remote access and, more generally, factual matters relevant to the experts' consideration of the Horizon Issues.

153. Much of Mr Parker's evidence does not appear to be controversial. Large sections of it were confirmed by Mr Roll (as identified above). Mr Parker was cross-examined fairly extensively, but he was not challenged substantially on the core of his evidence as to how the SSC worked and, in particular, the diligence with which it addressed potential software issues that might have adverse effects on branch accounts. That is not a criticism of Cs or their Counsel – it simply reflects that Mr Parker was able to give useful and reliable evidence as to the SSC's practices, which evidence is supported in large part by the contemporaneous documents reviewed by the experts and by Mr Roll's oral evidence.

Peaks and KELs

154. Mr Parker helpfully explains that Peaks are records of potential issues in Horizon that may need to be addressed by the SSC and development teams.[236] As noted above, many issues addressed in Peaks ultimately turn out not to be caused by bugs in Horizon, but

[236] Parker 1, para.62 {E2/11/20}.

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that often cannot be ascertained without fairly intensive investigation. There is ample evidence of such investigation in the thousands of Peaks considered by the experts.

155. As addressed in Post Office's opening submissions,[237] Mr Parker's first witness statement sets out in an Appendix a table that addresses 58 KELs referred to by Mr Coyne in Coyne 1, providing Fujitsu's comments on those.[238] Importantly, the Fujitsu analysis includes the question of whether the problems addressed in the KELs had any financial impact on branch accounts and, if so, whether that impact was a lasting one or merely temporary (because it would be corrected through the application of what Dr Worden describes as Horizon's robustness countermeasures). Of the 58 KELs considered, the following conclusions are drawn:

155.1 There are 39 that had no financial impact (including those which would have had no impact if recovery process was followed correctly in the branch).[239]

155.2 There are 12 that had or might have had a temporary financial impact, but this would have been resolved either by mechanisms within Horizon or through Post Office's client reconciliation processes.[240]

155.3 There are 4 that had a financial impact that would not inevitably have been resolved: these relate to the Payments Mismatch and Local Suspense Account bugs. These bugs were detected, and the shortfalls caused by them were ultimately resolved by Post Office.[241]

155.4 There are 3 that cannot be addressed further because the KEL is not available, or was generic or is not known due to its age.[242]

156. These are of course not the views of an independent expert, but they can be given considerable weight given that Mr Coyne does not dispute the accuracy of the Fujitsu

[237] {A/2/41} to {A/2/42}.

[238] Appendix 1 at {E2/11/23}.

[239] Items: 2, 3, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 23, 26, 27, 28, 29, 30, 33, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 54, 56, 57, 58.

[240] Items: 4, 5, 6, 7, 12, 20, 21, 22, 31, 35, 36, 38.

[241] Items: 1, 32, 50, 55.

[242] Items: 24, 25, 34.

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analysis in Coyne 2 and Dr Worden's own review of the KELs was broadly consistent.[243] Mr Coyne did not re-visit in Coyne 2 the points that he made in reliance on those KELs in Coyne 1. His reliance on them, aside from the 4 mentioned above, seems to have largely fallen away. Mr Coyne's evidence in this regard is addressed elsewhere in these closing submissions.

157. In addition to presenting the KEL analysis, Mr Parker also addressed automatic reporting of system exceptions and other indicators of potential problems. Both Fujitsu and Post Office monitor the system in different ways and using automatically generated reports. As a result, many bugs may be detected without any SPM whose branch may be affected having to report a problem to Post Office. Mr Parker refers to the BIMS process for flagging discrepancies raised in automated reports and drawing them to Post Office's attention for manual reconciliation.[244] There are many BIMS reports in evidence, and the Court will recall Mrs Burke being taken through the report that was used to identify the need for a TC in her case.

158. Mr Parker also addresses Horizon's operations, audits and data extractions.[245] Mr Parker was not challenged on this important evidence. It appears to be largely uncontroversial.

"User error bias"

159. Cs have focused on user error in their opening submissions and during the cross-examination of other witnesses. The thrust of Cs' case here appears to revolve around the concept of "user error bias". Cs have adduced no evidence to support that this is a known concept, the concept is not addressed by either expert, and there is no evidence on it from any of Cs' other witnesses. Dr Worden had never seen the acronym "UEB" before this case.[246] It appears to be a line of attack devised by lawyers. This line of argument should be dismissed as lacking any evidential support.

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[243] A (privileged) draft of Dr Worden's analysis was provided to Fujitsu during the course of Mr Parker preparing his evidence and his review of KELs, hence the similarity of Fujitsu's approach to that previously taken by Dr Worden.

[244] Parker 3, para.10 {E2/13/3}.

[245] Parker 1 {E2/11}and Parker 2 {E2/11}.

[246] {Day19/146:20} to{Day19/147:13}.

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160. If "UEB" was to form part of Cs' case in relation to the SSC's functions, it was incumbent on them to at least raise the point with Mr Parker. In the event, it was not suggested to Mr Parker that the SSC suffered from "UEB" or even that he had seen any evidence of bias in Post Office's treatment of problems raised by SPMs.

161. Mr Parker was, however, asked whether software errors may look like user errors.[247] It is uncontroversial that the symptoms of bug may be very similar to the symptoms of user error. Mr Parker commented that if errors that looked like user errors were reoccurring, one would immediately think there may be more to this and investigate.[248] That is consistent with the documents reviewed by the experts, many of which show Fujitsu working hard to uncover the cause of a discrepancy that, on the face of it, could well have resulted from user error.

162. On the face of it, Cs' case on "UEB" appears to be limited to the contention that some Post Office employees were sometimes overly quick to diagnose user error, rather than that Fujitsu too suffered from some bias in favour of finding user error. The Court will recall Mr Roll's evidence to the effect that Fujitsu would seek to bottom out problems reported to it, rather than being happy to put the problem down to user error: see above at paragraph 108.9. Fujitsu (even more so than Post Office) had a strong incentive to get to the bottom of and resolve system errors, rather than leaving them to keep arising and taking up support time and resources. Fujitsu would, even if acting purely in self-interest, wish to find and fix errors in the system, lightening its own workload and improving its product and its relationship with Post Office, a very valuable customer.

SLAs

163. Mr Parker covered SLAs briefly in his evidence. He stated that the team did not have SLAs but OLAs.[249] He also confirmed that these did not apply to software faults – only for hardware.[250] Mr Parker was not questioned as to whether the existence of SLAs and/or OLAs had an impact on the care taken by Fujitsu to resolve issues. Mr Roll's oral

[247] {Day12/39:1} to {Day12/39:14}.

[248] {Day12/39:1} to {Day12/39:14}.

[249] {Day12/69:4} to {Day12/70:1}.

[250] {Day12/69:4} to {Day12/70:1}.

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evidence, addressed above, was to the effect that there was no adverse impact on the SSC's approach to its work.

Role of the SSC and Mr Roll's position within the SSC

164. Mr Parker was deputy manager of the SSC at the time Mr Roll was employed, although did not have that formal title.[251] He explained that he would stand in for the manager in his absence.[252] He would also make decisions on approving actions for him and other operational decisions in general.[253] He was very well-placed to provide an overview of the SSC's work and practices.

165. Mr Parker stated that the level of skill, knowledge and experience varied from person to person in the SSC.[254] Experience varied, including whether that person had detailed and deep knowledge of the system based on documentation and source code inspection.[255] Mr Parker stated that Mr Roll did not have this detailed knowledge,[256] which is consistent with Mr Roll's own oral evidence to the effect that he was not one of the "super elite" within the SSC. Training also varied, including whether a person was trained in the coding languages used within the application.[257]

166. Mr Roll was in a relatively junior position in the SSC team, which performed 2nd and 3rd line support. He was primarily focused on Operational Business Change.[258] He was not working at a level where he would be required to review much code and did not play any significant part in extensive source code examination.[259]

167. Mr Parker confirmed in oral evidence that his witness evidence was an accurate reflection of Mr Roll's skills.[260] If Cs had obtained the impression that Mr Parker was

[251] Parker 1, para.8 {E2/11/2}.

[252] {Day12/24:25} to {Day12/25:13}.

[253] {Day12/24:25} to {Day12/25:13}.

[254] {Day12/27:21} to {Day12/29:7} and {Day12/30:12} to {Day12/30:19}.

[255] {Day12/27:21} to {Day12/29:7}.

[256] {Day12/27:21} to {Day12/29:7}.

[257] {Day12/27:21} to {Day12/29:7}.

[258] Parker 1, para.34 {E2/11/9}.

[259] Parker 1, para.35 {E2/11/9}.

[260] {Day12/30:8} to {Day12/30:11}.

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trying to criticise Mr Roll in any way, that impression is unwarranted – Mr Parker's evidence was directed at providing the detail on Mr Roll's position and responsibilities at the SSC that was not set out in any detail in Mr Roll's own evidence. Mr Roll accepted in his oral evidence much of what Mr Parker said in this regard.

Final response codes

168. As set out in Post Office's opening submissions, Mr Roll's suggestion that "*much of the work*" carried out by himself and other SSC workers involved "*fire fighting coding problems in the Horizon system*" is not supported by the records to which Mr Parker refers.[261] Mr Parker did his best, based on a review of Peak final response codes, to estimate the likely proportion of Mr Roll's work that related to potential bugs in the system. He concluded from the review of response codes that that proportion was very low, which matched his own recollection and impression. He made clear that he had not carried out a detailed review of the content of the many thousands of Peaks produced during Mr Roll's employment.

169. On the face of the witness statements, there appeared to be a substantial disagreement between Mr Roll and Mr Parker as to what Mr Roll, and the SSC more generally, did in the relevant period. But that apparent disagreement largely melted away in oral evidence. Mr Roll fairly accepted in cross-examination that the account in his first witness statement was not a fair reflection of the powers of the SSC [262] and that his written evidence could have provided a misleading impression.[263]

170. Given the frankness with which Mr Roll approached his oral evidence on this and other points, it is regrettable that his written evidence had not been drafted to reflect more closely the content and quality of his recollection. It led to the impression of extensive disagreement between Mr Roll and Mr Parker when, in fact, they are in large agreement as to the SSC's functions and the work that it was required to perform in 2001-2003.

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[261] Parker 1, para.51 {E2/11/14}. See also Parker 2, para.39 {E2/12/13}.

[262] {Day3/113:2} to {Day 3/114:24}; {Day3/122:13} to {Day 3/126:8}.

[263] {Day3/143:4} to {Day3/143:14}.

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171. Nonetheless, Mr Parker was cross-examined as to the spreadsheet attached to his first witness statement. Mr Parker relied on that spreadsheet to estimate the various categories of work carried out by the SSC during the time of Mr Roll's employment.[264]

172. The majority of Mr Green QC's cross-examination of Mr Parker concerned the final response codes assigned to Peaks. The thrust of the case put to Mr Parker was that the final response codes were not applied consistently, such that any numerical analysis based on them would not provide an accurate record of the nature of the issue in Peaks and their resolutions.

173. There was some limited force to this point. It is true to say that the response codes provide an imperfect means of identifying the nature of the issue addressed in a Peak and its resolution. Contrary to the impression that might have been formed by Mr Parker's cross-examination on this point, however, he had never presented the response codes as anything like a perfect source of information. On the contrary, Mr Parker was frank about their limitations in his written evidence: "*While guidance is provided on when to use each response code….allocation is the subjective view of the technician closing the incident and there is no re-examination of response codes later to ensure consistency*": Parker 1, para. 39.[265] He made clear that the numbers he presented should be considered "*With that in mind…*" (para.40). He was only ever presenting a best estimate, along with the detail of the workings that informed that estimate. That approach is both fairer and more transparent than merely setting out a subjective impression and recollection.

174. In this context, the challenge made to Mr Parker's reliance on the response codes was overblown and, in some respects, unfair, for two reasons.

175. First, Mr Green QC referred to nine Peaks in total over the course of Mr Parker's oral evidence. It was suggested, with some justification, that the response codes used in those Peaks appeared to be inappropriate to the content of the Peak. The dates of the nine Peaks were not specifically put to Mr Parker. That was an important omission, given the following:

[264] {Day12/30:21} to {Day12/32:1}.

[265] {E2/11/10}.

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175.1 The majority of the Peaks did not even relate to the period in which Mr Roll was employed at Fujitsu and so were not within the Peaks analysed by Mr Parker in his spreadsheet. Mr Roll was employed at Fujitsu from 5 March 2001 to 17 September 2004.[266] Only three of the Peaks put to Mr Parker relate to the period of Mr Roll's employment: PC0063914;[267] PC0068327;[268] and PC0065021.[269] The other six Peaks did not relate to that period: PC0055964;[270] PC0027887;[271] PC0204765;[272] PC0241771;[273] PC0195511;[274] and PC0229446.[275]

175.2 The Peaks that Cs relied on in cross-examining Mr Parker span a 17 year period[276] – virtually the entire life of Horizon. It seems that Cs could not find very many poorly-assigned response codes amongst the many thousands of Peaks that were covered by Mr Parker's analysis, so they had to go looking elsewhere.

175.3 It is important, then, to maintain a sense of scale and perspective. In order to find as many as nine Peaks with poorly-assigned response codes, Cs had to go outside the huge sample covered by Mr Parker's analysis and search through the hundreds of thousands of Peaks generated over the lifetime of Horizon. On that basis, the

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[266] Parker 1, para.8 {E2/11/2}.

[267] {F/93/1}, referred to at {Day12/76:12} to {Day12/76:12}. Opened on 15 March 2001 and closed on 27 March 2001.

[268] {F/100.1/1}, referred to at {Day12/63:25} to {Day12/63:25}. Opened on 25 July 2001 and closed on 6 September 2001.

[269] {F/97/1}, referred to at {Day12/57:14} to {Day12/57:14}. Opened on 17 April 2001 and closed on 12 November 2001.

[270] {F/66/1}, referred to at {Day12/82:24} to {Day12/82:24}. Opened on 17 October 2000 and closed on 3 November 2000.

[271] {F/16/1}, referred to at {Day12/40:20} to {Day12/40:20}. Opened on 21 July 1999 and closed on 31 August 2000.

[272] {F/718/1}, referred to at {Day12/68:1} to {Day12/68.1}. Opened on 25 September 2010 and closed on 1 November 2010.

[273] {F/1326/1}, referred to at {Day12/46:4} to {Day12/46:4}. Opened on 11 March 2015 and closed on 16 November 2016.

[274] {F/589/1}, referred to at {Day12/81:2} to {Day12/81:2}. Opened on 3 March 2010 and closed on 5 March 2010.

[275] {F/1156/1}, referred to at {Day12/81:25}. Opened and closed on 12 November 2013.

[276] The earliest Peak being PC0027887 {F/16/1}, referred to at {Day12/40:20} to {Day12/40:20}. Opened on 21 July 1999 and closed on 31 August 2000. The latest Peak being PC0241771 {F/1326/1}, referred to at {Day12/46:4} to {Day12/46:4}.That Peak was opened on 11 March 2015 and closed on 16 November 2016.

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error rate appears to be very low indeed (and certainly well within what would fairly have been taken from Mr Parker's caveat in his witness evidence as to the consistency of response code allocation).

176. Nine Peaks, limited to two categories, across 17 years does not suggest that the final response codes were regularly applied incorrectly. It does not suggest that even a sizable percentage of final response codes were wrong. Mr Parker accepted that there may be a few Peaks where the final response codes do not tally.[277] However, this is in the context of 220,000 Peaks.[278]

177. It is also of note that the Cs' cross-examination of these final response codes was limited to only two of codes used across the Peaks and categorised by Mr Parker, namely codes 70 and 68. That is unlikely to be a coincidence. Cs did not challenge the other response codes that were assigned or suggest that they were mis-assigned in any substantial number of instances.

178. Mr Parker fairly pointed out that his categorisation of final response codes was based on a combination of the guidance documentation and his own experience.[279] This is an appropriate method in order to give a fair reflection of how final response codes were assigned in practice and the likely practical significance of each code. Again, Mr Parker was clearly striving to find some objective basis on which to estimate the approximate proportion of time spent on various types of work, using his best judgment where appropriate.

179. Further, just as in his written evidence, Mr Parker was clear in oral evidence that assigning the final response code involved subjectivity.[280] He nonetheless considered that, although response codes are not always right, they are right in most cases.[281] He stated that accuracy is important.[282] He also confirmed that the final response codes were

[277] {Day12/93:22} to {Day12/95:12}.

[278] {Day12/93:22} to {Day12/95:12}.

[279] {Day12/74:13} to {Day12/75:22}.

[280] {Day12/51:6} to {Day12/52:5}.

[281] {Day12/51:6} to {Day12/52:5}.

[282] {Day12/52:15} to {Day12/53:2}.

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used to assess workload.[283] A code allocation that has a practical importance to day-to-day operations is unlikely to be used in an entirely haphazard manner (and any such usage by an employee is unlikely to be tolerated).

180. Cs could of course have examined the particular Peaks in which Mr Roll had been involved in and used those to suggest that they showed him to have been involved in a higher proportion of software problems than Mr Parker's analysis would suggest. That was not done or, if it was done, the results of the exercise were not presented to Mr Parker.

181. Further, even were it to be the case that Mr Roll worked on a significant number of Peaks which had (or should have had) a closure code indicating that the issue being dealt with was a software problem, that obviously does not necessarily mean that he would have been identifying or addressing a new bug. Given Mr Roll's position at SSC, much of his work will have been relatively low level, applying workarounds already developed by others which will not have involved researching, working on or fixing bugs. It is possible that some of the workarounds may have related to previously identified bugs but Mr Parker's categorisation indicates that he did not think this applied to many.

182. There is also an important point of context here. Mr Parker's high-level analysis of Peaks based on response codes pre-dates the completion of the experts' intelligent searching and review of Peaks. We now know that the results of Mr Parker's high-level review are strongly consistent with the outcome of the expert's more detailed review, including that they have identified very few bugs across all the Peaks. It follows that, unless Mr Roll was (for some unknown reason) unusually likely to be involved in the investigation of what turned out to be bugs, Mr Parker's estimates are likely to be fairly accurate. That is all he ever claimed.

183. Mr Roll did not himself challenge the estimates or suggest that he had a strong and reliable recollection that would call them into question. His oral evidence was far more consistent with Mr Parker's evidence on this than his written evidence had been.

[283] {Day12/52:15} to {Day12/53:2}.

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Remote access

184. As Post Office set out in its opening submissions, it is regrettable that Mr Parker's witness evidence in relation to remote access required correction and clarification prior to the trial.[284] Any criticism of him for that would, however, have to be tempered by the following points:

184.1 Many of the relevant events took place many years ago, and neither Mr Parker nor Mr Roll would pretend to have a perfect recollection of them. It is perhaps inevitable that the detail and accuracy of the accounts given by the two witnesses improved over time as they read each other's statements and reviewed additional contemporaneous documents that shed light on the issues.

184.2 The points raised by Mr Roll in his witness evidence, particularly his first witness statement, were undeniably expressed in somewhat vague and general language. Mr Roll very fairly accepted that some of the relevant evidence in that statement was or might be wrong or was at least expressed in an unfortunate way (including in that it might be misleading): see paragraph 169 above. These points were highlighted by Mr Parker in his oral evidence.[285]

184.3 Many of the issues as to remote access relate not to what was done (or at least done with any real frequency) by the SSC but to what could have been done or might in fact have been done in very rare cases. A witnesses might reasonably find it difficult to get it right the first time when asked to comment on issues of this kind.

184.4 Mr Parker quite properly sought to correct his written evidence in later statements, rather than leaving inaccurate or misleading evidence to be corrected only at trial and in the course of cross-examination.

185. It must also be remembered that much of this concerns fairly difficult and complex material. The experts have themselves had to reconsider and re-visit their views over

[284] {A/2/92}.

[285] {Day12/10:10} to {Day12/11:3}.

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time, taking account of each other's evidence and the inferences to be drawn from the contemporaneous documents (of which there is fortunately a vast number).

186. Nonetheless, Post Office entirely accepts that Mr Parker's evidence required more correction and clarification than should have been the case, and that is regrettable.

187. On the substance of these points, however, Mr Parker's evidence has proved to be accurate and reliable. He was clear that he had not suggested in his written evidence that the SSC had never changed branch data.[286] He has always been consistent on the points, both in written and oral evidence, that branch data is not changed frequently and that, where it is, the SSC would involve the SPM wherever possible.[287] Mr Roll gave the same evidence in response to cross-examination (although not before).[288] Mr Coyne's oral evidence was also to similar effect: see section F below.

188. Mr Parker's evidence on the scope of remote access was set out in Post Office's opening submissions.[289] Mr Parker's evidence is that:

188.1 The assertion that Fujitsu edited or deleted transaction data was not correct. In Legacy Horizon, it was not possible to delete or edit messages that had been committed to the message store.[290]

188.2 This is to be distinguished from the wholesale deletion of corrupted data stored on one terminal in a branch so that a mirror copy of the (uncorrupted) data could be automatically replicated from another source, usually another terminal in the branch or the central data store. This process would be used where the data on the first terminal had been corrupted or the hard disk in that terminal had suffered a physical failure. Mr Parker explains this process at Parker 1, para. 55.4.[291] He draws an analogy with the use of a back-up hard drive.[292] Mr Parker identifies rare

[286] {Day12/22:3} to {Day12/23:8}.

[287] {Day12/22:3} to {Day12/23:8}.

[288] {Day 4/139:24} to {Day4/140:15}.

[289] {A/2/90} to {A/2/92}.

[290] Parker 1, para.19 {E2/11/4}, referring to Godeseth 1, para. 37 {E2/1/11}.

[291] {E2/11/16}.

[292] Parker 3, para.21 {E/2/13/5}.

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cases in which a more involved process might be required at Parker 2, para. 38.[293]

188.3 It was also possible to inject transactions into counters. The standard way of doing this was via the correspondence server, which resulted in a counter number of 32 or higher being associated with the transaction in the transaction log, making the insertion immediately identifiable.[294]

188.4 Any injections of transactions required compliance with strict change controls. Two staff were required to be present when the change was made, and all changes had to be audited (identifying both the specific alteration and the person making it).[295]

188.5 System misuse would have been discovered by consistency checks or colleagues (all access was controlled and audited), and would have resulted in the instant dismissal of the relevant employee.[296] Mr Coyne's oral evidence was that he had no reason to believe that system misuse had ever occurred.[297]

188.6 Mr Roll's suggestion that software issues in Horizon "*routinely*" caused discrepancies in branch accounts was incorrect. In the vast majority of cases, such an occurrence would cause a receipts and payments mismatch that would be flagged by the branch system as part of the balancing process (the Horizon system carries out self-consistency checks which generate alerts in the event of a receipts and payments mismatch that are picked up by SMC and incidents raised for the SSC) and appear on MSU reporting).[298] These would then be investigated and resolved by the SSC. Mr Roll largely agreed.

188.7 While a hardware issue could very occasionally affect a branch's accounts, the vast majority of hardware issues were not capable of having any impact on such accounts (in the sense of leading to a financial discrepancy). Mr Parker explained

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[293] {E2/12/12}.

[294] Godeseth 1, para.58.10 {E2/1/17}.

[295] Parker 2, para.33 {E2/12/11}.

[296] Parker 2, para.35 {E2/12/11}.

[297] See para. 826 below.

[298] Parker 1, para.42 {E2/11/11}.

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that, in the rare circumstance that data was not replicated accurately, Fujitsu would inform both the SPM and Post Office and provide them with any information that it could to help resolve any discrepancies.[299]

188.8 Mr Parker is not aware of any case in which baskets were not zero sum (i.e. any case in which a non-zero-sum basket of transactions was accepted into Horizon).[300]

188.9 Mr Parker cannot recall any instances of incorrect reference data misdirecting payments while Mr Roll was employed by Fujitsu. Although one example did occur to Mr Parker's knowledge much later (in 2012), this was picked up and resolved quickly.[301]

189. It is important to note that almost all of these points were accepted, in whole or in large part, by Mr Roll and/or by Mr Coyne in his oral evidence. The distance between Mr Parker, Mr Roll and the experts closed considerably in the cross-examination of Cs' factual and expert witnesses.

190. Mr Parker also explained the purpose and use of the TIP Repair Tool in paragraphs 11 to 13 of his third witness statement.[302] It does not involve remote access or alteration in the sense of Horizon Issue 10. This accords with the expert evidence as it stood after cross-examination.

191. Mr Parker explained the various reasons for which remote access functions were used, none of which involved any improper manipulation of branch data.[303] Mr Parker's evidence was that the "*SCC was (and is) hugely reluctant to change financial data as that was not their job and they recognised the seriousness of doing so*".[304] This is a

[299] Parker 2, para.5.2 {E2/12/2}.

[300] Parker 2, para.10 {E2/12/4}.

[301] Parker 2, para.11 {E2/12/4}.

[302] Parker 3, para.3{E/2/13/1}.

[303] Parker 1, para. 55-57 {E2/11/15}.

[304] Parker 2, para.34 {E2/12/11}.

[305] See paras 127 to 131 above.

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point that came across in Mr Roll's oral evidence.[305] It is also supported by the experts.[306]

Data insertions at the counter (rather than via the correspondence server)

192. Mr Parker's evidence on this topic requires separate consideration only because he was subjected to extensive and misconceived criticism in relation to it. It is important to set the record straight, as a matter of fairness to Mr Parker. In short, no further correction was needed to his evidence, because his evidence was not incorrect. The complaint from Cs appears to be that Mr Parker should have given more evidence. Had he done so, one could then imagine the Cs complaining about late evidence. Mr Parker was placed in an impossible position, but addressed it correctly by bringing the new information to light promptly and then that information being passed to the Cs similarly promptly by way of a letter.

193. In para. 29 of his second witness statement, Mr Parker specifically identified the searches that had been carried out by a colleague, Mr John Simpkins, aimed at identifying instances in which data had been inserted into the counter, rather than into the correspondence server. Mr Parker than stated as follows:

From these results I can determine that this was only carried out in the following circumstances <u>while Mr Roll was employed by Fujitsu</u>.[307](emphasis added).

194. It was always clear that the 14 instances then set out by Mr Parker were taken "*From these results*", i.e. from the documents identified using the searches set out in para.29 itself. There was, however, an unrelated mistake in para. 29 – the underlined text above was wrong, as the searches had covered not only the period of Mr Roll's employment but the whole life of Legacy Horizon.

195. In the corrections to this witness statement, Mr Parker corrected this to state that the instances identified in that paragraph covered the lifetime of Legacy Horizon: see the correction at {E2/16/4}. It is not in dispute that this correction was rightly made – the

[306] See para. 811 below.

[305] See paras 127 to 131 above.

[307] {E2/12/10}.

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searches and documents identified through them covered the whole life of Legacy Horizon (as is clear from the dates of the Peaks themselves).

196. Before that correction was made, the mistake in para. 29 had also been carried forward into para. 19 of Mr Parker's third witness statement. The relevant part of that paragraph referred back to para. 29 in the following terms:

...In paragraph 29 of my second witness statement I listed the circumstances in which data was injected into a counter in Legacy Horizon <u>while Richard Roll was employed</u>...[308] (emphasis added)

197. A similar correction was therefore required to that sentence. That correction was made by the document at {E2/17}. It was as follows:

> *In paragraph 29 of my second witness statement I listed the circumstances in which data was injected into a counter in Legacy Horizon <u>found as a result of the searches described in that paragraph</u> ~~while Richard Roll was employed by Post Office~~*

198. That correction brought para. 19 of the third witness statement into line with para. 29 of the second statement as corrected, in two respects:

198.1 The time period covered by the searches was corrected (i.e. the whole period of Legacy Horizon, rather than only Mr Roll's employment).

198.2 It was clarified that the list in para. 29 was based on the searches identified in that paragraph. That was stated in para. 29 itself, using the words "*From these results...*", and it was appropriate for that to also be recorded in the reference back.

199. It was discovered shortly before Mr Parker gave oral evidence that Mr Simpkins (the person who did the searches referred to in para. 29 of Mr Parker's second statement) had since carried out further searches and identified several further relevant Peaks. This was immediately notified to Cs in correspondence: see {H/253}. Mr Parker explained in oral evidence that it was not his decision whether to send a letter or to prepare an additional witness statement to set out the new information.[309]

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[308] {E2/13/4}.

[309] {Day12/20:6} to {Day12/20:11}.

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200. It was suggested to Mr Parker in cross-examination that he should have taken steps to "*correct*" his second witness statement to reflect the results of the new searches, but that criticism is difficult to follow. The statement had always made clear on its face that Mr Parker was presenting documents that had been found using the search terms set out in para. 29. Since those results had been presented, and only shortly before he gave evidence, Mr Parker became aware that some additional Peaks had then been identified by using further search terms, and he had made sure that this was brought to the parties' attention. He had not been involved in those further searches.[310]

201. It is difficult to see on what basis Mr Parker could properly be criticised here.

202. Mr Parker was nonetheless cross-examined extensively on this topic, apparently on the (implicit) basis that he had done something wrong or sought to hide something.[311] The accusation was not put in clear terms, so Mr Parker was only given the opportunity to comment on it directly in re-examination. He denied it in clear terms.[312]

203. Notably, Mr Parker was not asked in cross-examination about the further Peaks that had been identified using the extra searches carried out by Mr Simpkins. That is no doubt because those Peaks are nothing more than a few further examples of the kind of corrective actions already identified and summarised by Mr Parker in para. 29 of his second statement (which summary Mr Coyne did not dispute, himself having reviewed the relevant Peaks).[313] Mr Parker was nonetheless subjected to repeated questions about the "*real reason*" for the corrections that he had made to his witness statements. The insinuation of some wrongdoing on his part was entirely unfair.

204. On the substance of the data insertions at the counter, Mr Parker's evidence is strongly supported by the documents and the work carried out by the experts:

    204.1 Mr Parker was clear in his written and oral evidence that it was only when he began to investigate the matter in detail that he became aware of this non-standard

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[310] {Day12/91:20} to {Day12/93:19}.

[311] {Day12/13:24} to {Day12/15:17};{Day12/16:8} to {Day12/17:7};{Day12/18:7} to {Day12/18:24};{Day12/20:1} to {Day12/20:11} and {Day12/92:22} to {Day12/93:8}.

[312] {Day12/93:9} to {Day12/93:19}.

[313] See para. 764 below.

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method of inserting a transaction.[314]

204.2 That is unsurprising given the very few instances that have been identified and the nature of the insertions that were made (as summarised by Mr Parker in para. 29 of his second witness statement).[315] It is clear that data insertion at the counter was not something that was done any real frequency or that was in any way high-profile when it was done. It is unsurprising that Mr Parker should have not known or should have forgotten that the standard method was not always used.

Evidence that was not challenged

205. Large parts of Mr Parker's written evidence was not challenged during cross-examination. It appears likely that much of this evidence is not genuinely controversial, especially in light of it according with Mr Roll's evidence and/or the views of the experts. The unchallenged evidence includes the following:

205.1 Although Mr Parker was cross-examined as to Mr Roll's role and the SSC, Mr Parker's evidence regarding the wider Horizon support team structure was not challenged.[316]

205.2 Mr Parker was cross-examined on final response codes 68 and 70 but not the other final response codes and any inaccuracy in the use of those other codes (as noted above)

205.3 Mr Parker's description of the purposes and content of KELs and Peaks.[317]

205.4 Mr Parker's KEL analysis.[318]

205.5 Mr Parker's evidence on transactional integrity.[319]

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[314] {Day12/86:19} to {Day12/88:9}.

[315] {E2/12/10}.

[316] Parker 1, paras 24-27{E2/11/5} to {E2/11/8}.

[317] Parker 1, paras 60-62{E2/11/17} to {E2/11/21}.

[318] Parker 1, paras 63-66{E2/11/21} to {E2/11/22}.

[319] Parker 2, paras 8-15 {E2/12/4} to {E2/12/6}.

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205.6 Although Mr Parker was asked about issues tangential to user error, he was not directly challenged in relation to his evidence on TCs and patterns of software errors.[320]

205.7 Although Mr Parker was briefly asked about SLAs, Mr Parker's evidence that SLAs would not have impacted the level of diligence was not challenged.[321]

205.8 Mr Parker was not challenged regarding his evidence on how the SSC identified branches affected by bugs.[322]

205.9 Mr Parker's evidence on the use of the APPSUP role was not challenged.[323] This includes his evidence that he cannot recall any instance in which the APPSUP role has been used to change transaction data, although he cannot state unequivocally that it has not happened.

Conclusion on Mr Parker's evidence

206. Mr Parker's evidence was ultimately helpful to the experts and, it is submitted, to the Court. He gave fairly extensive evidence about the SSC's processes, especially in relation to the detection and resolution of bugs, and the core of his evidence in those regards went unchallenged. He also gave evidence in relation to Mr Roll's work that, although challenged by Cs in cross-examination, was largely consistent with Mr Roll's own oral evidence.

207. Much of Mr Parker's cross-examination was focused on two issues of relatively low importance: (1) final response codes, where the challenge was overblown and based largely on documents from outside the relevant period and (2) the unfair suggestion that he had done something wrong in relation to the correction of para. 19 of his third witness statement and/or the further searches carried out for Peaks relating to data insertion at the

[320] Parker 2, paras 16-23 {E2/12/6} to {E2/12/7}.

[321] Parker 2, paras 24-25 {E2/12/7} to {E2/12/8}.

[322] Parker 3, paras 3-12{E2/13/1} to {E2/12/3}.

[323] Parker 3, para.13-16{E2/13/3} to {E2/13/4}.

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counter. Neither of those two challenges should undermine the usefulness and reliability of Mr Parker's evidence in addressing the Horizon Issues.

208. Large sections of Mr Parker's evidence was not challenged, as set out above.

E4. Mr Dunk's Evidence

209. The relevant evidence:

209.1 Mr Dunks' witness statement dated 16 November 2018: {E2/10}

209.2 Transcript: {Day7/27:19} to {Day7/73:23}

210. Mr Dunks is an Information Technology Security Analyst at Fujitsu. His short witness statement addressed the processes used in extracting archived data from the audit store. He provided evidence to explain the processes behind the ARQ data that he had extracted from the audit store for use in these proceedings: see para. 7 of his witness statement.[324] His experience and evidence is confined largely to the Horizon Online.[325]

211. Mr Dunks did not purport to be able to give to evidence on Horizon more generally. His evidence as to the extraction process itself appears to be largely uncontroversial, although he was cross-examined on various points that were outside his knowledge and experience (and on which he made clear he could not comment).

Extracting and filtering data

212. In Mr Dunks' witness statement he states:

> *"When information relating to individual transactions is requested, the data is extracted from the audit archive media of the Horizon System via the Audit Workstations (AWs). Information is presented in exactly the same way as the data held in the archive although it can be filtered depending upon the type of information requested."*[326]

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[324] {E2/10/3}.

[325] {E2/10/1}, para 4 and {Day7/34:2} to {Day7/34:23}.

[326] {E2/10/2}, para 5

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213. Mr Dunks confirmed during cross-examination that filtered data is provided to Post Office.[327] He does not recall providing unfiltered data to Post Office.[328] It is unsurprising that Fujitsu and Post Office should agree that the data be filtered and presented in a form that Post Office is able to interpret and use effectively (given that it can always rely on Fujitsu to interpret the raw data and advise as appropriate).

214. Extractions from the audit store can only be made at audit workstations, and these are located at Fujitsu sites in Bracknell and Stevenage. Both are subject to rigorous security controls.[329] These security controls include both physical security control, password control and two step authorisation.[330]

Data integrity

215. In Mr Dunks' witness statement he states:

"*[t]he integrity of data retrieved for audit purposes is guaranteed at all times from the point of gathering, storage and retrieval to subsequent despatch to the person making the request. Controls have been established that provide assurances to Post Office Internal Audit (POIA) that this integrity is maintained.*"[331]

216. During cross-examination Mr Dunks highlighted that data integrity entailed completeness.[332] He agreed with a definition suggested to him, namely that data integrity is the overall completeness, accuracy and consistency of that data which you can measure by comparing between sources.[333]

217. As set out above, Mr Dunks then goes on in the following paragraphs to set out the controls that apply to audit data extractions.[334] The checks and controls that Mr Dunks describes are identified in the technical document reviewed by the experts (see, for example, {F/1716}. A schematic of the retrieval process is set out at {F/1716/11}. Dr

[327] {Day7/35:9} to {Day7/35:15}.

[328] {Day7/35:9} to {Day7/35:15}.

[329] {E2/10/2}, para 6.1.

[330] {E2/10/2}, paras 6.1 and 6.2.

[331] {E2/10/2}, para 5.

[332] {Day7/35:21} to {Day7/36:12}.

[333] {Day7/35:21} to {Day7/36:12}.

[334] {E2/10/2} to {Day7/3 para 6}.

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Worden's consideration of the audit process is in section 4.4 of his first report.[335]

218. The controls identified by Mr Dunks include the following:

218.1 The Fujitsu extraction sites are subject to rigorous security checks.[336]

218.2 Audit extractions are only made by authorised individuals.[337]

218.3 Extractions are logged on the audit workstation and supported by documented ARQs, authorised by nominated persons within Post Office.[338]

218.4 This log can be scrutinised on the audit workstation.[339]

218.5 The required files are identified and marked using the dedicated audit tools.[340]

218.6 Checksum seals are calculated for audit data files when they are written to audit archive media and re-calculated when the files are retrieved.[341]

218.7 The files are copied to the audit workstation where they are checked and converted into the file type required.[342]

218.8 Digital signatures that were generated at the time that messages were originally sent from the counters to the data centre are checked as being correct.[343]

218.9 Checks are made using the JSN that all audited messages for each counter in the branch have been retrieved and that no messages are missing.[344]

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[335] {D3/1/45}.

[336] {E2/10/2} para 6.1 and 6.2.

[337] {E2/10/2} para 6.4.

[338] {E2/10/2} para 6.3.

[339] {E2/10/2} para 6.3.

[340] {E2/10/2} para 6.5.

[341] {E2/10/2} para 6.6.

[342] {E2/10/2} para 6.7.

[343] {E2/10/2} para 6.8.

[344] {E2/10/2} para 6.9.

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218.10 System events generated when the transactions at the branch were recorded are checked to ensure the system was functioning correctly.[345]

218.11 The retrieved audit data is encrypted using PGP encryption.[346]

218.12 The requested information is copied onto removable CD media and virus checked using the latest software.[347]

219. It is important to clarify the meaning of "audit" in this context. There appears to have been some confusion on Cs' part here.[348] "Audit data" in this context does not denote data that has been subject to review or comparison against some other source of information. It is used in the sense of "audit trail", whereby there is a secure and properly recorded sequence of activities – here, the copying and archiving of branch data from the BRDB into the audit store.

220. In Mr Dunks' oral evidence he was clear that maintaining data integrity is "*extremely important*".[349] He agreed that the data is highly secure and tamper proof.[350] Mr Dunks agreed that the process for extractions was "*gold standard*".[351]

The "party line" point

221. Mr Dunks stated in his witness statement "*there is no reason to believe that the information set out in the statement is inaccurate due to improper use of the system*".[352] Furthermore he stated that the system was operating properly and that to any extent that the system was not operating properly, this would not have an effect on the information held within it.[353] Mr Dunks explained in cross-examination that what he meant by this was that the audit workstation was working correctly and that any problems with it (such

[345] {E2/10/2} para 6.10.

[346] {E2/10/2}para 6.11.

[347] {E2/10/2 para 6.12.

[348] {Day7/33:6} to {Day7/33:21}.

[349] {Day7/36:13} to {Day7/37:23}.

[350] {Day7/37:8} to {Day7/37:9}, Mar. 20, 2019).

[351] {Day7/37:10} to {Day7/37:18}.

[352] {E2/10/2} para 8.

[353] {E2/10/2} para 8.

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as needing to reboot) would not have affected the data extracted.[354]

222. Mr Dunks was cross-examined as to the origins of paragraph 8. It was put to Mr Dunks that the choice of words at paragraph 8 was a "*party line*".[355] It was not suggested to Mr Dunks that this information was incorrect, but only that it was standard wording that had been used by other Fujitsu employees when describing the extraction process.[356] Mr Dunks confirmed that it could well be part of a template witness statement used in relation to ARQs that he had adopted without thinking too much about the specific content of para. 8.[357]

223. Mr Dunks confirmed that he was not aware of any issues with data integrity, being careful to make clear that he could only speak to the integrity of the data extracted and not how it might compare to other sources of data.[358]

224. Mr Dunks could not recall even one case where the system the data extracted was not accurate because of a problem with the extraction process.[359] He was asked where there were any instances where the integrity checks revealed problems – and again he was not aware of any issues.[360]

225. Mr Dunks was at all times careful to make clear that he was confirming only the reliability of the extraction process and that he had not seen any problem with the integrity of the data extracted (as distinct from broader questions as to data accuracy and reconciliation, which were outside his knowledge and experience). That is what he addressed in his witness statement and what he was able to speak to.

The standard of perfection

226. The experts have considered the audit store and the ARQ process. Neither of them has identified any flaw in the design of the audit system and the extraction process. Mr

[354] {Day7/41:10} to {Day7/42:6}.

[355] {Day7/43:7} to {Day7/43:21}.

[356] {Day7/58:25} to {Day7/59:13}.

[357] {Day7/59:22} to {Day7/60:8}.

[358] {Day7/44:6} to {Day/45:4}.

[359] {Day7/41:3} to {Day7/43:6}.

[360] {Day7/44:21} to {Day7/44:24}.

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Coyne agreed with Dr Worden that the design principles for audit information were "*theoretically sound*".[361]

227. Despite this, and despite the clear limitations on what Mr Dunks was addressing in his evidence, it was twice suggested to Mr Dunks that he had somehow given misleading evidence because he had not addressed the process of comparing the audit data, once extracted, with other data sources and identifying any inconsistencies that might be relevant to disputes over branch discrepancies.[362]

228. That was unfair. As Mr Dunks fairly explained, he was only addressing the "*the integrity of the data once we have extracted it…and the controls around the extraction*"; he was certainly not trying to speak to whether the data was correct (as opposed to being extracted properly) in relation to any dispute between Post Office and an SPM.[363] Any dispute over whether transaction data is correct in that sense, or would require correction following reconciliation, is entirely outside Mr Dunks' knowledge and experience.

The possibility for duplicates and gaps in extracted data

229. Mr Dunks was asked about duplicate records in the data extracted. He explained that resolving any duplicate entries would not have been a matter for him.[364]

230. Mr Dunks was asked whether he had himself encountered duplicate entries in the many years that he had been extracting data through the ARQ process. He said that could not say that he had not but, if he had, it was a long time ago.[365]

231. The case put to Mr Dunks was that the possibility for there to be duplicate entries would not "*give much comfort*" to anybody seeking to rely on ARQ data as a gold standard. That was not a matter for this witness, given that he was not involved in resolving any duplicates that were identified through extraction. He frankly acknowledged that he would not know what had caused any duplicates and that he was not the person to

[361] Coyne 2/5.59 {D2/1/135}. Mr Coyne goes on to raise criticisms of Horizon, but none of them seems to relate to the audit system itself or the extraction process (aside, perhaps, from a concern over JSN).

[362] {Day7/66:14} to {Day7/66:19} and {Day7/71:7} to {Day7/71:21}.

[363] {Day7/70:25} to {Day7/71:21}. See also {Day7/66:1} to {Day7/66:8}.

[364] {Day7/57:18} to {Day7/58:8}.

[365] {Day7/51:25} to {Day7/52:4}.

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investigate them – he would pass the issue to audit support to resolve.[366]

232. More importantly, it was not put to Fujitsu witness (or, for that matter, Dr Worden) that any duplicates identified in the extraction process would be difficult to investigate and remove or that, for some mysterious reason, any genuine duplicate entries would not be removed. The Audit Extraction Client User Manual, to which Mr Dunks was referred, shows both that any duplicate entries are clearly identified in the extraction process and that these are to be drawn to the attention of the audit support team: see {F/716/43}.

233. This is another area in which Cs appear to set a standard of perfection, seeking to undermine the reliability of ARQ extracts on the basis that there were (it seems) sometimes duplicate entries that had to be resolved. Mr Dunks, who is the man who would know, was not even sure that he had seen any duplicates and that, if he had, it was a long time ago. There is no reason to think that duplicates would not have been removed.

234. The possibility for there to be duplicate entries is addressed further below in relation to Mr Worden's evidence.[367]

Conclusion on Mr Dunks' evidence

235. Mr Dunks provided clear evidence, both in his written evidence and in cross-examination. He had been asked to extract ARQ data (see para.7 of his statement)[368] and he had done so, providing evidence as to the extraction process used and the controls and checks used to validate the integrity of the extracted data. Much of his cross-examination covered other matters, that were outside his knowledge, and he was careful to make this clear and to limit his answers to what he knew.

236. As to the subject matter of his evidence, Mr Dunks gave clear oral evidence that the extraction process is reliable. He stated that he could not recall even one example where the data extraction had gone wrong[369] or any instance where the integrity checks revealed

[366] {Day7/52:5} to {Day7/53:9}.

[367] See para. 617 below.

[368] {E2/10/3}.

[369] {Day7/41:10} to {Day7/43:6}.

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issues.[370] Mr Dunks confirmed that data integrity is seen as being "*extremely important*",[371] and that the process of extraction is highly secure and tamper proof.[372] That coincides with the evidence of other Fujitsu witnesses, including Mr Roll, as to the care taken to ensure the integrity and accuracy of the data in the system.

E5. Mr Membery's Evidence

237. The relevant evidence:

237.1 Mr Membery's first witness statement dated 28 September 2018 {E2/2}.

238. Mr Membery was unable to attend to give oral evidence. Post Office relies on the evidence set out in his witness statement as hearsay evidence. Cs helpfully agreed to extend time for service of the relevant notice.

239. Mr Membery is a Fujitsu employee. He became the Quality Risk and Compliance Manager for the Post Office Account in 2011 and in that capacity oversaw many audits of the Horizon system.[373] He carried out a different job between 2014 – 2018, although retained a focus on Post Office, and on 1 October 2018 became Head of Quality and Compliance for the Fujitsu Post Office Account.[374]

240. His evidence sets out: a high level overview of the audits which Horizon has been subject to since 2000 (which are to internationally recognised standards and ensure that Horizon and Fujitsu are working within a robust system of control measures)[375]; Fujitsu's audit methodology and his role in such audits; and the processes around the development of changes to Horizon and how that ties into the audit process.

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[370] {Day7/44:21} to {Day7/45:1}.

[371] {Day7/36:13} to {Day7/37:23}.

[372] {Day7/37:8}.

[373] {E2/2/1} para 5.

[374] {E2/2/2} para 6.

[375] {E2/2/1} para 8.

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241. The audits are addressed in greater detail at paragraphs 828 to 834 below.

242. Mr Membery stated that Horizon had been subject to audits since Horizon's introduction in 2000.[376] When Horizon Online was introduced in 2010 Post Office and Fujitsu made the decision that Horizon should be audited "*against the International Standard on Assurance Engagements No. 3402 assurance standard (Horizon ISAE 3402 Audit), entitled "Assurance Reports on Controls at a Service Organization"*".[377] These are what have become known in these proceedings as the E&Y Post Office audits, as discussed at paragraphs 828 to 834 below.

243. Prior to the introduction of Horizon Online, Legacy Horizon was audited "*by reference to ISO (formerly ITIL) 20000, ISO 9001 and BSI 7799 that evolved to into ISO 27001*."[378]

244. Mr Membery described Post Office's and Fujitsu's approach to addressing critical or major non-conformances:

If an audit finds a "critical" or "major" non-conformance that does not require Post Office's input, Fujitsu aims to remediate it within 30 days. If an audit finds an observation that does not require Post Office's input, Fujitsu aims to remediate it within 90 days.[379]

245. Furthermore:

If an audit makes a finding which requires Post Office's input, Fujitsu discusses it with Post Office through the applicable operational change procedures before implementing any remediation plan.[380]

246. As is apparent from the audits themselves, Post Office and Fujitsu did respond to the points raised and set out what action they were taking.[381] Furthermore, Mr Membery's evidence is consistent with audits themselves. As is evident from the 2013 E&Y management letter, Post Office and Fujitsu took steps to implement recommendations

[376] {E2/2/2} para 7.1.

[377] {E2/2/2} para 9.

[378] {E2/2/3} para 13. A summary of the legislation, policies and standards specified in the contracts between Post Office and Fujitsu between 1999 and 2017 is referred to in Mr Membery's statement {F/1830/1}.

[379] {E2/2/4} para 19.

[380] {E2/2/4} para 20.

[381] See for example the 2011 E&Y letter in relation to change management and permission controls {F/869/29} to {F/869/38} and {F/869/47} to {F/869/49}.

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and their responsiveness was acknowledged.[382]

F. THE EXPERT EVIDENCE

F1. Introduction and outline structure of this section

247. Post Office's case was opened on the basis that, on a proper analysis, there was or at least should be far less in issue between the parties than might have appeared from an initial reading of the experts' reports. This became starkly apparent during Mr Coyne's cross-examination. Mr Coyne readily accepted many aspects of Post Office's essential case, including in relation to Horizon's robustness, the effectiveness and reliability of Fujitsu's support processes and the fact that the overwhelming majority of transactions are processed accurately, even in adverse conditions.

248. The apparent gulf between the experts before the trial was due in large part to the less than straightforward approach that Mr Coyne took to presenting his opinions, and the evidence in support of those opinions, in his two reports and the Joint Statements. Mr Coyne's written evidence was, in important respects, unclear and unhelpful. It gave a very different impression from what we now know to be his views. He did ultimately give clear and reliable evidence on many of the key issues in dispute, often in belated agreement with Dr Worden's evidence, but this had to be drawn out in cross-examination. He conceded that some of the points in his written evidence were or may have been misleading. There was no proper explanation as to why his written evidence was so dramatically different from what he was prepared to accept when asked at trial.

F2. Overall submissions on Dr Worden's evidence

249. Dr Worden provided careful and balanced evidence and made every effort to provide assistance to the Court and to provide full and helpful answers to the Horizon Issues. He gave in his reports a proper and fair overview of the Horizon system – he identified its

[382] {F/1138/4}.

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architecture, outlined its operations and characteristics, and he identified the good, the bad and the indifferent from the perspective of the Horizon Issues. He did not confine his efforts to looking only for problems or only for evidence of Horizon working well.

250. Dr Worden put things into their proper context and scale. He gave the sense of Horizon operating in satisfactory way in the vast majority of instances over a 20-year period (a point accepted by Mr Coyne at trial). He referred to and explained the relevance of countermeasures, which it is now common ground are of central importance in arriving at a proper view of Horizon's robustness, but which were almost completely ignored by Mr Coyne in his first report.

251. Although, like Mr Coyne, Dr Worden had necessarily had to rely on elements of Post Office and, more so, Fujitsu witness statements for explanations of certain processes and features of Horizon, he did not inappropriately prefer the evidence of the Post Office witnesses, but made it clear that some aspects of his views were based on aspects of evidence which the Court would have to determine. He was placed in the awkward position of not understanding parts of Mr Roll's evidence and so being unable to take it fully into account in his second report.

252. He was acutely conscious of his duties to the Court and to Mr Coyne as his fellow expert. This was seen in his insistence that both Mr Coyne and the Court should be updated with the new analysis that he had performed, the documents informing that analysis and the change to his opinions that had resulted.

253. Contrary to the impression that Cs seek to generate, Dr Worden looked for and found bugs. Of the 29 bugs that found their way into the list in JS2, three were the known bugs and nine were identified by Dr Worden.[383]

254. In his oral evidence, Dr Worden was candid and clear. He explained his views well and admitted the errors in his reports that were pointed out to him. In a few instances where he had expressed himself poorly, he corrected himself and apologised.

[383] Bugs 5, 6, 7, 23, 24, 25, 26, 27 & 28 were all dealt with in Worden 1.

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255. Dr Worden was criticised in cross-examination in relation to his approach to numbers – both as to the detail of some parts of his calculations and as to his approach to his calculations generally.

256. As to the detailed criticisms of the way in which Dr Worden had arrived at his scaling factor:

256.1 It was pointed out to Dr Worden that he had divided the number of transactions per day by 561 (the number of claimants) rather than 496 (the number of entries on the spreadsheet from which he had taken the data)[384]. Dr Worden explained that he had in fact corrected that error for the purposes of his supplemental report and that the change from a scaling factor of 0.37 to one of 0.45 was in part explained by that correction on his part.[385]

256.2 The fact that he had not included values for the gaps in the data shown in column E of the spreadsheet had a tiny effect. Dr Worden's evidence as to what he had done was readily comprehensible once the actual spreadsheet which he had had available to him when preparing his first report was seen[386] (which only has the gap values in column F).[387] The questions based on the later spreadsheet (which he had not used) had understandably put Dr Worden in a difficult position when asked to explain what he had done (with data that had not been before him at the time).

257. Perhaps the most important point on Dr Worden's figures was that he was rounding them up so strongly in Cs favour that this effect dwarfed all other changes in the inputs to the calculations. For example, Dr Worden's calculation of the scaling factor in his Supplementary Report was 0.45, but the figure he used as a conservative estimate in his Revised Financial Impact spreadsheet[388] was 0.5 – more than 10% higher. The same is

[384] {F/1837.1}.

[385] {Day19/5:12} to {Day19/6:11}.

[386] {F/1837.1}.

[387] {Day20/166:21} to {Day20/167:17}.

[388] {D3/8}.

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true for all of the assumptions which he makes in that calculation, as a comparison of the figures in the "Central Estimate" and "Conservative Estimate" columns demonstrates.

258. As to the wider criticism of Dr Worden's figures, namely that it was entirely inappropriate for him to carry out the sort of calculations which he did, this too is misconceived. A crucial part of the Horizon Issues which the experts were asked to consider ask questions of "extent". Mr Coyne avoids providing any direct answer to the questions of extent: Dr Worden does not. He has properly wrestled with this central issue and done so by reference to (i) the available evidence and (ii) common sense assumptions which have been adjusted massively in Cs' favour.

259. Dr Worden does not claim that the figures he puts forward are precise. They are plainly (sensible and conservative) approximations which are designed to give the Court a sense of the likely scale of the incidence and effect of bugs in Horizon. The fact that on Dr Worden's conservative approach he posits 672 bugs illustrates just how conservative he has been, since Mr Coyne's view is that the true number likely to be vastly lower than this.

260. Dr Worden's quantitative approach to assessing the likely number of bugs with lasting impacts over the life of Horizon has turned out to result in a vast overestimate of that number. It would imply a number of bugs in the system greatly higher than anything that Mr Coyne was prepared to defend at trial. That is hard to reconcile with any criticism of Dr Worden's independence and impartiality (unfortunate allegations having been made in Cs opening submissions).

F3. Overall submissions on Mr Coyne's evidence

261. The detail of Mr Coyne's evidence is considered below. However, certain themes that emerged during his cross-examination can properly inform the Court's general approach to his evidence.

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Mr Coyne's "deep focus" on problems and lack of balance

262. Mr Coyne was frank in JS1 that he intended principally to adopt a "*deep focus*" on bugs and the "*potential modification of transactional data*". He said that it was on the "*non-typical operation where focus will be placed*".[389] However, he also said that he would adopt a balanced approach.

263. There was an obvious risk that the depth of Mr Coyne's focus on problems might narrow the view so much that perspective and balance would be lost. That risk eventuated.

264. Mr Coyne signally failed to give a balanced view in his reports. This was corrected, at least in part, by the important concessions that Mr Coyne made (often only after some resistance) in his oral evidence. But the Court and the parties should not have been required to wait for the important points of balance to be drawn out of the expert through days of cross-examination. His reports should have been capable of being trusted and relied upon to paint a fair and balanced picture.

265. Mr Coyne's two reports presented walls of criticisms of Horizon, each wall consisting of hundreds of bricks and each brick consisting of one or more documents (often only one) that he chose to construe as evidencing some deficiency in the system. The supposed deficiency was often described in a way that would make it seem serious. In the course of cross-examination, it was only possible to look at a small selection of those documents – to pull the brick out of the wall and see whether it had substance. It is also impossible to deal with all his hundreds of documents in these submissions. The documents to which he was taken made it clear that the deficiencies he had purported to identify were not made out, either at all or to the extent portrayed. A small and rarely encountered problem was often presented as though it were both serious and widespread.

266. As an expert he should have ensured that his approach to the documentary evidence was reliable: the Court cannot be expected to unpick every detailed allegation made by an expert by going to each and every document that might be relevant to the point. There was good reason for appointing experts and giving them very considerable budgets to conduct a review of the huge volume of documentation and information at issue.

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[389] {D1/1/3}.

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267. Mr Coyne is an intelligent man and an experienced expert. He will have known both that his vastly long and complicated reports would be difficult to pull apart brick-by-brick and that the sheer volume of points taken against Horizon would generate a powerful impression. The approach taken in his reports was not conducive to clarity and balance but to overwhelming the reader with a litany of apparent defects. His essential endeavour was to throw mud at Horizon in the expectation that at least some of it would stick, and not to worry too much or at all about giving the other side of the picture or even presenting a fair view of the documents to which he referred.

268. Mr Coyne was given ample opportunity to comment on these criticisms of his approach. He could give no proper explanation as to why he had not given a more balanced view. In the most striking exchange, after Mr Coyne had agreed with a series of important propositions about the quality of Fujitsu's support operations, including fixing bugs and identifying the affected branches so that they could be made whole, he was asked why none of these points had been mentioned in his reports:

> *Q. What I don't understand, Mr Coyne, is why you didn't say any of that in your report. Would it not have been a balanced thing to do?*
>
> *A. Perhaps. Looking back at the report, possibly.*
>
> *Q. Would it not have been helpful to explain the good aspects that you had spotted in the system as well as the bad ones?*
>
> *A. Possibly.*
>
> *Q. Did you have a reason for wanting to keep it back?*
>
> *A. No, not at all.*[390]
>
> ....
>
> *Q. But isn't it a necessary part of the judgment you make as to whether Horizon is robust? How can you make a judgment about that without taking it into account?*
>
> *A. I think you can take it into account, but to spend pages of text talking about all the various good things, I don't see there's any value in that.*[391] (emphasis added)

[390] {Day14/95:5} to {Day14/95:14}.

[391] {Day14/96:5} to {Day14/96:10}.

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269. Mr Coyne devoted many hundreds of pages of evidence to identifying various bad things, but he considered it not worth the ink to address the good things. It is difficult to imagine a more basic failure to adopt a balanced approach. Mr Coyne's approach was to find some evidence (no matter how strong) that might support a criticism of Horizon, to include the criticism in his report and then to move onto the next one, very often without regard to chronology, scale, seriousness or impact of the actual or apparent problem. It was suggested to Mr Coyne that he had a "*world view…a desire to maximise the impression given of any error that [he identified].*"[392] Mr Coyne denied that that was the case. It is submitted that that was the overwhelming impression left by his evidence.

270. This general failing in Mr Coyne's reports was manifest in three more specific flaws.

271. First, Mr Coyne failed to give a fair summary of the content of documents on which he relied. This was particularly concerning given that Mr Coyne, as an experienced expert, was well aware of the trust that would necessarily be placed in him, especially in light of the vast number of documents that he had reviewed and the practical limits of the scope of cross-examination and judicial reading time. He confirmed this in oral evidence.[393]

272. There were many examples of Mr Coyne having given an unfair or misleading summary of the content of documents on which he relied. There were three particularly striking instances:

Example 1: Cash management document

272.1 In Coyne 1/5.195,[394] Mr Coyne made a strong claim that a cash management report dated 4 August 2017 showed a "real risk" of bugs "*adversely impacting branch accounts*":

> *The Post Office cash management proposals contained in a report dated 4 August 2017 suggests that they were actively considering ways to improve processes impacting on many of the issues raised above. It is my opinion that, whilst the Post Office was looking at ways to improve cash management, it is also indicative that the system was generally far from perfect and there existed a real risk of bugs/errors/defects adversely impacting on branch accounts despite the processes in place at the time to prevent this.* (emphasis added)

[392] {Day15/11:20} to {Day15/11:22}.

[393] {Day14/145:1} to {Day14/146:18}.

[394] {D2/1/107}.

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272.2 Mr Coyne was taken to the document referred to.[395] He slowly trawled through its pages in Court but eventually accepted that it did not support the point he was making:

> *Q. Yes. So can you tell me what it is you saw in this document which allowed you to express the opinion that it indicates that there existed a real risk of bugs adversely impacting on branch accounts?*
>
> *A. It is incorrect to find that from that document.*[396]

272.3 Mr Coyne initially suggested that this was simply a case of an incorrect reference having been given, although he then rightly accepted that this was unlikely here given that the specific document was referred to in terms in the paragraph itself.[397] But for the opportunity to cross-examine on this paragraph, a wholly misleading impression would have been created.

Example 2: Cost-benefit assessment of potential bug fixes

272.4 Mr Coyne contended in his reports that fixing bugs was considered on a cost/ benefit basis. He referred in this regard to the Post Office Risk & Compliance Committee minute dated 18 September 2013[398] as evidence that "*known issues/bugs were often deferred and dealt with on a cost benefit basis*".[399] Mr Coyne accepted in cross-examination that the document in fact had nothing at all to do with deferring fixing bugs: see further at paras. 397 *et seq* below.

Example 3: Call logs undermining "the credibility of Horizon itself"

272.5 In Coyne 1/5.198, Mr Coyne contended that there were recurring discrepancies in relation to which it was not apparent whether these were the result of a bug or the SPM's own actions.[400] He referred to two call logs[401] in support of this point, saying that it "*does undermine the credibility of Horizon itself*". That strong claim

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[395] {F/1673}.

[396] {Day15/7:10} to {Day15/7:14}.

[397] {Day15/8:2} to {Day15/8:6}.

[398] {F/1140/3}.

[399] Coyne 1/5.161 {D2/1/97}.

[400] {D2/1/107}.

[401] {F/333} and {F/1019}.

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turned out to find no support in the documents to which Mr Coyne referred. It was clear from each of the documents that Fujitsu (specifically, Anne Chambers) had investigated the problems raised by the SPM and, after that investigation, had concluded that there was no system fault and that the problems must be the result of user error, noting that the branch appeared to run chaotically: see the long entry at the bottom of {F/333/1} and the first entry at {F/1019/2}. Mr Coyne was taken to {F/333} in cross-examination and accepted that it did not in fact "*undermine the credibility of Horizon*".[402] The same is true of {F/1019}.

273. Mr Coyne's mis-reading of the documents may in some instances have been wilful or the result of a strong predisposition to see only bad things; in other instances, it may simply have been the result of carrying out searches and then relying on a document as an example of a given issue without properly considering the entirety of the document(s) returned by the searches. Either way, the upshot is that the Court cannot safely assume that, because Mr Coyne cites a document as evidence of an issue, it does in fact provide any support for the point that he makes.

274. Second, Mr Coyne drew broad and seemingly important conclusions (always adverse to Horizon) based on weak, thin or irrelevant evidence. A strong example of this is the flimsy basis on which he contended, in both his reports, that bug fixes were deferred or not carried out all based on a cost/benefit analysis: see further at paras. 397 *et seq* below.

275. Third, Mr Coyne presented evidence of problems or issues without putting them in the necessary technical context, drawing the reader into a misunderstanding of the nature or importance of the evidence set out. A strong example of this was Mr Coyne having referred in his second report to uses of the Transaction Repair Tool ("TRT") under the heading "*Evidence of Insertions/Deletions within Branch Accounts*" without explaining that the TRT can only be used to make corrections to data in the TPS, which does not form part of the branch accounts. Mr Coyne accepted this had been "*misleading*"[403]: see further at paras 920 *et seq* below.

[402] {Day15/14:17} to {Day15/19:17}.

[403] {Day16/66:13} to {Day16/68:22}.

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Mr Coyne's application of the wrong test when addressing the Horizon Issues

276. Mr Coyne explained that the approach he had taken was to ask himself if the risks inherent in Horizon had been reduced "*as far as possible*". That is not the standard set out in any of the Horizon Issues. It is a standard that any major commercial IT system would inevitably fail. This chimes with the doctrine of perfection identified in paras 140 and 150-155 of Post Office's opening submissions.[404]

277. Mr Coyne was clear about the approach he had adopted (responding to a point about applying a cost/benefit analysis):

> Q. You repeat this point in the third joint statement and you refer to it half a dozen times in your second *report, don't you?*
>
> A. I do, but it is important because the question that was *asked was: was it reduced as far as possible?*
>
> *Q. I'm sorry, where is that asked?*
>
> *A. It is one of the Horizon Issues.*
>
> *Q. I see.*
>
> A. So when you consider "as far as possible", cost benefit shouldn't really be involved in that consideration. It *should be whatever is possible.* [405] *(emphasis added)*

278. When the point was returned to the next day, Mr Coyne agreed that he had applied this exacting standard to the Horizon Issues more generally:

> *Q. In your evidence yesterday we discussed your approach, remember, to whether and to what extent Post Office and Fujitsu did things on a cost benefit basis?*
>
> *A. Yes.*
>
> *Q. In the course of that evidence I recall you indicating that you regarded it as important to ascertain whether the possibility of error was reduced as far as possible. Do you remember that exchange that we had?*
>
> *A. Yes.*

[404] {A/2/54-57}.

[405] {Day14/150:13} to {Day14/150:23}.

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Q. Was it your objective in your reports to address that question?

A. Was it my objective at the outset to address that question?

Q. To consider not whether the risk was reduced as far as reasonable or to consider
whether the risk was reduced as far as practicable, but to consider whether the risk was reduced as far as possible, which is a much more exacting standard?

A. I believe that was the word that was used in the Horizon Issues.

Q. So would the answer to my question be yes, that when you produced both your reports you did so with the objective of applying that test when determining whether something constituted a problem in the system or not, whether it satisfied the test of reducing a risk as far as possible?

A. Yes.

Q. And not just with -- and did that inform -- does that inform actually the approach, the criticisms you make of the use or non-use of ARQ data in your second report?

A. Yes.[406] (emphasis added)

279. This erroneous approach was also reflected in Mr Coyne's contribution to JS3, para. 6.3 where he stated that there was evidence that the risk of errors had not been reduced as far as "*possible*" (quotations in the original).[407]

280. Issues 1, 3 and 4 ask "[t]*o what extent*" various things were likely or possible. Issue 6 (the one referred to by Mr Coyne when questioned on his "*as far as possible*" standard) asks "[t]*o what extent did measures and/or controls that existed in Horizon prevent, detect, identify, report or reduce to an extremely low level*" various risks. That is not the same thing as asking whether risks were reduced to the lowest possible level. Mr Coyne's answer in relation to ARQ data shows that he applied his "*as far as possible*" standard across practically all issues.

281. This error of approach must be taken into account in assessing Mr Coyne's evidence – it necessarily affected the threshold that he applied for determining whether countermeasures were implemented and working sufficiently effectively to counter any

[406] {Day15/88:12} to {Day15/89:17}.

[407] {D1/4/9}.

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material risk of inaccuracy in branch accounts. It must also have infected his approach to the adequacy of controls and permissions (Horizon Issue 11).

Mr Coyne's inconsistent approach to questions of extent

282. Many of the most important Horizon Issues ask questions of extent: see Horizon Issues 1, 3, 4, 6 and 13 (using the word "*extent*") and Horizon Issue 12 (asking "*how often*" a facility was used). That is not an accident. It is common ground on the generic pleadings that Horizon is imperfect, has suffered from bugs and has had adverse impacts on branch accounts; it is also common ground that Horizon contains measures aimed at reducing the incidence of such impacts. The dispute between the parties revolves around questions of degree.

283. Mr Coyne refused in his reports to engage in any meaningful or objective consideration of extent. He typically refused, even in cross-examination, to be drawn on matters of degree, extent or probability, or rather he refused when the answers would tend to support a positive view of Horizon's robustness and reliability. For example, he refused to accept that it was "*quite unlikely*" that a change made to data in the TPS that was made for the purpose of ensuring the consistency of TPS data with the (separate) branch account data would instead create the opposite effect, introducing an inconsistency. He would say only that the chance was "*whatever the chances are of a human error*".[408]

284. Mr Coyne's position was inconsistent here. In his reports, Mr Coyne was happy to use words like "*many*" and "*often*" when referring to actual or alleged problems in Horizon – words that create a strong impression of the problem occurring with a moderate to high frequency.[409] It became clear in cross-examination, however, that by using words like "*many*" and "*often*", Mr Coyne was in some cases referring to a handful of occurrences across 20 years. A thing that happens every 5 or so years does not happen "*many*" times or "*often*" on any ordinary usage of those terms, and the reader would naturally have taken a very different impression from his reports. For example:

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[408] {Day16/54:6} to {Day16/55:9}.

[409] Coyne 1/5.199 {D2/1/108}, Coyne 2/5.108 {D2/4.1/156}, Coyne 2/3.13 {D2/4.1/14}, Coyne 1/3.18 {D2/1/28}

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284.1 Mr Coyne's accepted in cross-examination that it might have been unfair of him to suggest in his reports that "*known issues/bugs were often deferred and dealt with on a cost/benefit basis*" because there was no evidence that any such thing happened "*often*": see para. 400 below.

284.2 In justifying his statement that "*I have noted that hardware replacement often seemed to be a "fix" of last resort where no other explanation could be given*"[410], Mr Coyne explained in cross-examination that he considered somewhere in the region of five supporting examples to constitute this occurring "*often*".[411]

285. The same was true of Mr Coyne's written evidence that his analysis of Peaks had shown that "*often bugs lay undetected for weeks, months or years*",[412] causing apparent shortfalls for which SPMs were held liable. This was revealed (through correspondence) to be a reference to 4 bugs, one of which was the Dalmellington bug (which Mr Coyne accepted at trial did not cause any shortfalls for which any SPM was held responsible) and the others of which had always been known (before his Peak analysis) to have been bugs that had taken some time to detect.[413]

286. Mr Coyne was equally happy to speculate in para 3.105 of his second report that there were "*potentially thousands more PEAKs that illustrate financial discrepancy arising in branch accounts*".[414] That was wholly at odds with Mr Coyne's realistic acceptance at trial that the total number of bugs detected by Fujitsu and recorded in KELs was likely in the low tens.[415] He then shifted his ground to trying to defend a suggestion that there could possibly be <u>one</u> thousand Peaks showing a financial impact on a branch (rather than thousand<u>s</u>, plural),[416] and even then only if one adopted an assumption that each bug

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[410] Coyne 1/5.64 {D2/1/71}.

[411] {Day15/137:17} to {Day15/139:18}.

[412] Coyne 2/5.108 {D2/4.1/157}.

[413] See the letter from Freeths at {C5/36/5}, identifying the Peaks relied on by Mr Coyne as those in the section of the report on the three acknowledged bugs plus Dalmellington.

[414] {D2/4/43}.

[415] Mr Coyne agreed that the likely number of KELs with bugs was likely to be less than 40: {Day15/124:6} to {Day15/124:9}. The number of KELs relating to bugs with financial impacts is even lower than that.

[416] {Day15/135:5}.

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would affect very many branches (which is flatly untrue of most of the bugs with financial impacts). The idea that there could be even 1,000 further Peaks showing effects on branch accounts is fanciful given that (1) Mr Coyne's sophisticated searches across KELs and Peaks would have identified them and (2) there are very many fewer than 1,000 Peaks for the 29 bugs in the bug table (which, on Mr Coyne's oral evidence, account for the substantial majority of bugs in KELs), and even then a proportion of those Peaks relate to bugs with no financial impact.

Mr Coyne's failure to set out his true and full opinions in his reports

287. As discussed in detail at paras 342 *et seq* below, Mr Coyne formed a favourable impression of the quality of the SSC's work in identifying and addressing problems in the system. This favourable impression was sufficiently strong and important that it caused him to change his view on Horizon's robustness from adverse (in JS1) to positive (in Coyne 1). He failed to mention this in either of his extremely lengthy reports. The reason that he gave for this was troubling – he did not see "*any value*" in setting out the "*various good things*" about the system: see the full quotation at para. 267above.

288. There are other important points that Mr Coyne failed to mention in his reports, each of them strongly favourable to Post Office's case, as identified elsewhere in this section. These included, for example:

288.1 Mr Coyne's acceptance that it was likely that countermeasures worked effectively except in a "*fraction of a percentage*" of instances. Mr Coyne suggested that this had been captured by his written evidence that "*It is…reasonably likely that in the majority of cases the measures and controls were successful*". Those two opinions are starkly different both in content and emphasis.[417]

288.2 Mr Coyne's oral evidence that there was evidence of less than 30 instances of remote access with any effects on branch accounts, that Fujitsu was careful when using remote access facilities and that the chance of error being accidentally introduced into the relevant branch account was small: see further at paras. 744 *et seq* below. A wholly different impression would have been taken from his reports.

[417] {Day14/148:3} to {Day14/149:12}.

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289. The case was opened on the basis that there were fewer, and less serious, differences between the parties than their formal positions (including experts' reports) might suggest. This became ever more apparent during Mr Coyne's cross-examination. It should not have been necessary to prise out these points at trial.

Mr Coyne's evasive answers and reluctance to concede points

290. Mr Coyne did ultimately make important concessions. It is, however, a point against him that these concessions did not always come easily or immediately – in several instances, Mr Coyne first sought to avoid the question or to change the subject.

291. Consequently, Leading Counsel had first to close off all "escape routes" before Mr Coyne would make the concession that he could and should have made at the outset, had he wished to be fair and forthcoming.

Mr Coyne's confusing position on the 29 bugs in the bug table

292. On the final day of Mr Coyne's cross-examination, he confirmed that his view at the time of agreeing JS2 had been that there was strong evidence that each of the 29 bugs identified in the bug table had a lasting impact on branch accounts.[418] But he subsequently seemed to want to change his position, and the Managing Judge asked him immediately before lunch how many of the 29 bugs he contended had a lasting effect on branch accounts. He said 13.[419] After lunch, Mr Coyne said that he had been mistaken and there were 21.[420] This increased to 22 when Mr Coyne was taken through the bug table item-by-item.[421] Mr Coyne then refused to accept that, at the time of JS2, he had ever contended that all 29 bugs had lasting impacts on branch accounts, directly contradicting the answers he had given before lunch (and C's opening submissions).

293. It appears that Mr Coyne had not given any real consideration before the trial as to whether or not the bugs identified in the bug table had lasting impacts, but he had nonetheless been content to record in JS2 that, in his opinion, all 29 of them had such

[418] {Day17/104:20} to {Day17/104:25}.

[419] {Day17/106:11} to {Day17/106:16}.

[420] {Day17/107:24} to {Day17/107:6}.

[421] This was the final number settled upon: {Day17/135:8}.

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impacts.[422] Perhaps he did not feel able to be open about this because he had already accepted that the Horizon Issues required him to consider countermeasures (not least in response to Horizon Issue 6) and that the distinction between transient impacts and lasting impacts formed an important part of answering the Horizon Issues.

The changed factual basis of Mr Coyne's evidence

294. Mr Coyne relied unquestioningly on the witness evidence of many of Cs' witnesses including, in Coyne 1: Mr Roll (in relation to Horizon generally and Fujitsu practices[423]); Mrs Burke (in relation to an alleged recovery failure[424] and a TC failure[425]); Mr Latif (in relation to an alleged TC problem with scratch cards[426]); and Mr Patny Jnr (in relation to Moneygram transactions[427]). Much of that evidence changed substantially at trial, usually in Post Office's favour, and that must be weighed in the balance when considering Mr Coyne's views.

Judicial criticism of Mr Coyne's approach

295. It appears from CGI IT UK Ltd v Agilisys Ltd [2018] 12 WLUK 13, a recent Scottish decision of the Outer House, Court of Session, that Mr Coyne has been criticised in another case for adopting the same unbalanced approach that is summarised above. Some extracts of the case are set out below. The Court is invited to read the whole section on expert evidence in paras 109-154.

296. Lord Bannatyne said this at para 109:

> *"109. Turning to the expert evidence in the case, the expert for CGI was Mr Coyne. I have come to the view that his evidence was one-sided. His approach was I believe not balanced. In addition for various other reasons I believe his evidence was not acceptable. In arriving at this view I considered a number of specific matters in relation to his evidence.*

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[422] Dr Worden's position was that there were 12 such bugs (as is apparent from his comments in the bug table itself and JS2, para. 1.2{D1/2/27}). Mr Coyne agreed that Dr Worden's number was 12: {Day17/114:1} to {Day17/114:7}.

[423] Paras 5.78 – 5.81 {D2/1/75}; para 9.10 {D2/1/150}; para 9.22 {D2/1/152}; 9.44 {D2/1/157}.

[424] Para 5.40 {D2/1/65}.

[425] Para 6.65 {D2/1/127}.

[426] Para 6.69 {D2/1/128}.

[427] Para 5.185 {D2/1/104}.

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297. The Court of Session went on to criticise Mr Coyne's failure to give a clear answer to a simple question: see paras 112 to 115, where Lord Bannatyne also remarked that Mr Coyne had no explanation for failing to refer to certain matters that told in favour of the party other than the party instructing him.

298. See also paras 126 to 127, where Mr Coyne is criticised for having tried to "*reverse his position*" and for "*switching from one position to another*, which was "*highly unimpressive in the context of someone who is being offered as giving expert evidence*". It is submitted that the examples set out above show the same tendency to reverse and switch in response to difficult points.

299. At para 141, Lord Bannatyne recorded a strongly adverse view of Mr Coyne's evidence:

> *"141. Overall I did not form a favourable view of this witness and I am not prepared to accept his evidence on disputed issues in preference to that of Dr Hunt. It did not seem to me for the above reasons that I could place reliance on any of his views.*"

300. There are clear parallels between the approach taken by Mr Coyne in the Agilisys case and this one: a failure to deal properly and fairly both with the issues and the evidence; evasiveness; backtracking; and overall a lack of balance.

F4. The searches carried out by Mr Coyne and his team

301. Although, as set out above, there is much to criticise in Mr Coyne's approach to the Horizon Issues, it is clear that he worked extremely hard, and extremely efficiently, to identify problems with the Horizon system. He said in JS1 that this was what he was going to do, and he applied himself impressively to that task. This is the context in which Mr Coyne's evidence (both for and against Horizon) falls to be considered.

302. Mr Coyne is a director of IT Group which offers a "*powerful e-disclosure and digital investigation solution*".[428] He was, for a substantial proportion of his time working on this case, assisted by four members of his team. They spent a significant amount of their time on the case.[429] Mr Coyne set them the task of looking for problems:

[428] {Day14/108:13} to {Day14/108:21}.

[429] {Day14/102:5} to {Day 14/104:23}.

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Q. Would it be fair to say that you were generally asking them to find problems, to find evidence of problems in Horizon, things that had gone wrong?

A. Yes. Well, sorry, I had already identified the theme that I wanted them to look for but that was typically around a specific type of defect that might be occurring around a particular time and I was asking them to look at documents around that time or that contained a similar theme.[430]

303. The searches carried out were skilled, assiduous, extensive and effective:

Q. So it is fair to say, isn't it, that you know quite a lot about intelligent searching of documents?

A. Yes.

Q. And you have no difficulty, I'm not saying it is easy, in searching through, for example, 200,000 PEAKs in lots of very clever ways that I am sure I couldn't think of?

A. Yes.

Q. Would that also be true of your team of assistants?

A. Yes.

Q. And they would have used these intelligent search techniques to go away and find the sort of documents that you wanted them to find?

A. They would.

Q. At your daily meetings?

A. Yes.[431]

304. Mr Coyne's team was able to eliminate irrelevant documents and tag documents which Mr Coyne was likely to find of particular interest, for him to then review. The process was refined day by day.[432] Mr Coyne was unable to say how many documents had been reviewed in total, but he had personally reviewed all the documents referred to in his reports (including 5,114 KELs[433]), and many Peaks (1,262 at the time of Coyne 1). His team had reviewed considerably more.[434] By the time of Coyne 2, three and half months

[430] {Day14/104:24} to {Day14/105:7}.

[431] {Day14/109:6} to {Day14/109:20}.

[432] {Day14/111:10} to {Day14/111:21}.

[433] {Day14/112:24} to {Day14/113:1}.

[434] {Day14/113:8} to {Day14/113:20}.

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after Coyne 1, he and his team (of which only Siobhan Forster remained by this time[435]) had reviewed many more Peaks, as well as other documents including some OCRs and OCPs, design documents and process documents.[436] Since the service of Coyne 2, Mr Coyne has used intelligent search techniques to review (using intelligent search techniques) a further 1,200 Peaks, as well as the OCPs, OCRs and MSCs – thousands more documents.[437]

F5. The experts' approaches to late evidence

305. The experts' supplemental reports were served on 1 February 2019. While Dr Worden's report was genuinely supplemental to his first (running to 47 pages without appendices and raising few new points), Mr Coyne's report amounted to a fundamental re-statement and even replacement of much of Cs' case (running to 270 pages without appendices). Mr Coyne served an amended supplemental report on 6 March 2019.[438]

306. Since the date of the supplemental reports, the experts continued to meet and discuss their opinions on the Horizon Issues. They produced three Joint Statements between late February and early March 2019, as follows:

    306.1 JS2, comprising the bugs table and statements of agreement and disagreement on Issues 1, 2, 9 and 14.[439] This was dated 25 February 2019.

    306.2 JS3, identifying agreement and disagreement on Issues 3, 4, 5, 6, 7 and 8.[440] This was dated 1 March 2019.

    306.3 JS4, comprising a statement of agreement and disagreement on Issues 10, 11, 12 and 13 (i.e. the remote access issues other than Issue 7).[441] This was dated 4 March 2019.

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[435] {Day14/117:5} to {Day14/117:7}.

[436] {Day14/115:22} to {Day14/116:15}.

[437] {Day14/118:19} to {Day14/119:13}.

[438] This is the report at {D2/4.1}.

[439] {D1/2}.

[440] {D1/3}.

[441] {D1/4}.

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307. Mr Coyne served an amended supplemental report on 6 March 2019.[442]

308. Both experts also continued to review documents disclosed in the proceedings. However, they took very different approaches as to how and when to share the fruits of their work, and any changed opinions, with each other, the parties and the Court.

Dr Worden's further work and analysis

309. On 10 April 2019, WBD wrote to Freeths to inform them that they had recently become aware that Dr Worden had begun a further review of Peaks, OCPs and OCRs and that his view was that he should share his work with Mr Coyne before preparing a further report.[443]

310. On the next day, 11 April 2019, Leading Counsel for Post Office informed the Court of the position:

> *MR DE GARR ROBINSON: My Lord there is one more point to raise with your Lordship which is that Dr Worden has -- it has occurred to Dr Worden there is a new way of looking at the Peaks and the OCPs, OCRs and MSCs in this case which, in his view shed considerable light on certain of the Horizon issues. He feels it is his duty to inform your Lordship of that. He has already informed Mr Coyne of that fact and it is only right that I should bring it to your Lordship's attention.*
>
> *MR JUSTICE FRASER: Thank you. I think on the same subject, then, and given that the expert evidence isn't going to start until the 20th, I'm also minded, unless each of you seek to persuade me otherwise, to order another expert's meeting anyway.*[444]

311. Later on, Leading Counsel offered a more detailed explanation, consisting of the following elements:

311.1 An outline of the work that Dr Worden had carried out and his view as to the relevance of his discoveries to the remote access issues.[445]

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[442] This is the report at {D2/4.1}.

[443] {H/255.5}.

[444] {Day12/99:15}.

[445] {Day12/114:23} to {Day12/116:9} and {Day12/116:19} to {Day12/117:1}.

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311.2 Dr Worden's apology to the parties and the Court for not having done the work sooner.[446]

311.3 An explanation that Dr Worden considered he was required, by his duty under CPR, 35.3 to inform the Court of his change of opinion, such that the Court could then decide whether or not the new evidence should be considered.[447]

311.4 A confirmation that this was something that Dr Worden has himself instigated, and that there was no application from Post Office:

> *MR DE GARR ROBINSON:... I should emphasise this -- none of this comes at the request or instigation of my client. This has come from Dr Worden. This is his idea. My Lord, he wishes to discuss it with Mr Coyne in a further meeting between the experts, but of course it's -- it's only right that*
> *your Lordship should be aware of that. I'm not making any application for permission to put in supplemental expert reports –*
>
> *MR JUSTICE FRASER: I don't think you have any supplemental experts' reports to apply for permission for, are you?*
>
> *MR DE GARR ROBINSON: I'm not making any kind of application, I'm simply sharing with your Lordship the view that has been expressed to me by Dr Worden.*[448]

312. Leasing Counsel indicated that Post Office was mindful of the guidance in **ICI Ltd v Merit Merrell Technology Ltd (No 3)** [2018] 1577 (TCC) and that the Court may wish for the experts to engage in a collaborative process to see whether Dr Worden's new approach was beneficial and as to what it did or did not show.[449] The Court was referred (although not by paragraph number) to [158] in **ICI v Merit**, which states (as relevant):

> *158. Two other points relevant to the application should also be identified. Firstly, Mr Kitt embarked upon this exercise with no notice at all to his opposite number, Mr Linnett. This is not co-operative behaviour. Mr Linnett should have been told that this was being done, and the documents could have even been studied together by both experts so that an agreed position could be produced by them on what the*

[446] {Day12/116:10}.

[447] {Day12/117:2} to {Day12/117:12}.

[448] {Day12/117:13} to {Day12/117:25}.

[449] {Day12/118:7} to {Day12/118:23}.

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documents did or did not show, and the use to which they could or could not be put. I conclude that the only reason for keeping the fact that this exercise was underway, until after it was ready to be served after the trial had actually started, was to cause maximum disruption to MMT. This is a much discredited approach to civil litigation...

313. The Court directed that the experts meet again. The experts had telephone meetings and exchanged without prejudice emails. Before this, Dr Worden had already engaged with Mr Coyne to see whether some agreed position could be reached in relation to the review that Dr Worden had carried out. Amongst other things:

313.1 On 11 April 2019, Dr Worden provided his workings on the new analyses to Mr Coyne.[450] The experts briefly discussed the data on 16 April 2019.

313.2 On 25 April 2019, Dr Worden provided a draft further supplemental report to Mr Coyne. The draft appendices followed on 29 April 2019.[451]

314. There followed further correspondence between the parties and discussions between the experts: see paras. 9-13 of Parsons 13th. Dr Worden provided the search programme that he had used to Mr Coyne on 22 May 2019.[452]

315. On 22 May 2019, Dr Worden sent a document entitled "Third Expert Report" to the Court and Cs' solicitors. The Court raised this by email with the parties and Leading Counsel for Post Office therefore attended Court the next day, 23 May 2019.[453] It was explained that Dr Worden had considered it his duty to bring his new views to the attention of the Court.[454] The Court ordered that the background to this be set out in a witness statement, which it then was on 31 May 2019 (Parsons 17).[455]

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[450] Parsons 17, para.8 {C11/22/3}.

[451] Ibid.

[452] The correspondence from Freeths in this regard might have generated the impression that Dr Worden had not already, in the without prejudice conversations, offered that search programme to Mr Coyne: see {H/294} (final two paras). Any such impression would be unfortunate.

[453] {Day13/2:16}.

[454] {Day13/3:2} to {Day13/3:18}.

[455] {C11/22}.

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316. Dr Worden stated in cross-examination that he had been "*told*" to send his report direct to the Court, but that word could give the wrong impression. Dr Worden knew that Post Office did not wish to rely on his new report, would not make an application to rely on it and so did not propose to serve or file it as an expert report in the proceedings. He considered that he was nonetheless under an obligation to communicate his change of opinion to the Court.

317. In Post Office's submission, starting at the beginning, Dr Worden acted appropriately to share his further work with Mr Coyne and the parties at the earliest opportunity. He adopted a collaborative approach to the unfortunate situation created by his belated realisation that it would be possible to review Peaks, OCRs and OCPs in the way that he did in his "Third Report". He did not keep the fruits of his searches from Mr Coyne or seek to deploy them only in response to cross-examination.

318. As regards Dr Worden's direct approach to the Court, Post Office respectfully suggests that it may be useful for the Court to provide guidance as to the approach that an expert in Dr Worden's position should adopt (including with the assistance of his or her instructing party).[456] There does not appear to be any authority as to what an expert should do in circumstances like those of the present case, namely:

    318.1 The expert carries out further work / analysis (whether based on new documents or old) and forms further or different views on the expert issues.

    318.2 The expert considers that CPR, 35.13 requires that he inform the Court of a change in his views. The expert collaborates appropriately with the other expert(s) instructed in the case but does not reach any agreed position in relation to the new work / analysis and what it shows.

    318.3 The party instructing the expert does not wish to apply to rely on the new work / analysis and so does not propose to serve or file any new report that the expert may produce.

[456] If the Court's view is that the solicitors acting for Post Office should have assisted Dr Worden by providing his report to the Court themselves, they apologise for not having done so. That was not the view that they or counsel took at the time.

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319. Post Office contrasts Dr Worden's transparent approach with the approach adopted by Mr Coyne, considered below.

Mr Coyne's further work and analysis

320. It became apparent during his cross-examination that Mr Coyne too had carried out further analyses of various disclosed documents and had formed new opinions since the date of his reports. He, in contrast to Dr Worden, did not share any of this with the other expert instructed, let alone Post Office or the Court. He apparently preferred to keep the fruits of his work (including the documents that he had reviewed and collated) to himself, and to deploy them, and the new opinions based on them, in response to cross-examination.

321. There were several examples of this.

322. First, on 6 June 2019, the second day of his cross-examination, Mr Coyne mentioned for the first time that he had identified "*hundreds*" of OCPs and OCRs in relation to which consent for a change had been given retrospectively.[457] He accepted that he had not mentioned this in his reports. He suggested that this was because the OCPs and OCRs had not been disclosed until around the time of his Supplemental Report (1 February 2019). That is a fair point, given that the OCPs and OCRs were disclosed on 24 January 2019.[458]

323. Mr Coyne did not have any proper explanation, however, as to why he had not, since the date of his Supplemental Report, raised his new discovery with Dr Worden or Post Office. This was despite the substantial engagement between the experts between February and May 2019, in relation to the Joint Statements and in relation to Dr Worden's further analyses. There had been ample opportunity to mention the new documents and seek to agree with Dr Worden what they did and did not show.

324. Mr Coyne gave an unsatisfactory explanation for having kept the new material to himself, suggesting that Post Office must have known about the retrospective

[457] {Day16/8:6}.

[458] A further tranche of OCRs was disclosed on 18 April 2019: see the letter at {H/263}. The Court directed that a witness statement be prepared to explain the circumstances of this disclosure: see Parsons 18 at {C11/23}.

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permissions because they were contained in disclosed documents.[459] He gave the same explanation as to why he had not provided the new material to Dr Worden.[460] Quite apart from the fact there are hundreds of thousands of disclosed documents in this case, that is not a proper explanation. If an expert identifies a series of documents that he wishes to rely in support of a new opinion (neither the documents nor the opinion based on them being set out in the reports), he must inform the other expert(s) instructed in the case of the new opinion and identify the documents supporting it. That is what collaboration and transparency requires.

325. In this context, Post Office objected to Mr Coyne providing new evidence from the witness stand, i.e. identifying the number of retrospective permissions for the first time during his oral evidence, when there was no real opportunity for investigation and challenge.[461] The Court invited submissions from Cs on the point.[462] Mr Green QC spoke briefly but made no application to adduce further evidence from Mr Coyne.

326. Mr Green QC then extracted the further evidence from Mr Coyne in purported re-examination, without indicating that this was his intention.[463] That stratagem neatly circumvented both Post Office's objection and the requirement to seek permission from the Court for any new evidence. In the circumstances set out above, that was a regrettable thing to do.

327. Second, Mr Coyne stated that he had, since his reports, identified instances (plural) of the correspondence server being used to insert transactions with a counter number of less than 32.[464] He came back the next day and was only able to provide a single document, {F/377.1}.

328. Mr Coyne's general explanation for not having given advance notice of the new opinions and document references that he provided during his cross-examination was that all he

[459] {Day16/10:17}.

[460] {Day17/3:23}.

[461] {Day17/8:24} to {Day17/9:20}.

[462] {Day17/9:22}.

[463] {Day17/184}.

[464] {Day16/94:11} to {Day16/95:3}.

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was doing was responding to the questions put to him: see {Day16/9:6}[465] and {Day16/14:15}.The implicit suggestion was that he was responding on-the-hoof.

329. In fact, {F/377.1} had been added to the trial bundle at Cs' request on 3 June 2019, the day before Mr Coyne's cross-examination began. Mr Coyne introduced {F/377.1} at {Day16/134:13} and following. He had noted or attempted to memorise the trial bundle reference (which he got wrong), and he had a note of the Peak number.

330. It would seem that Mr Coyne identified the document in advance and anticipated referring to it in the course of his cross-examination, but preferred to wait for the questions to be put, rather than giving both parties notice of the document and the points he took from it. He also failed to inform Dr Worden that he had identified supposed evidence of message insertions via the correspondence server with a counter number lower than 32 so that Dr Worden could consider that evidence. Mr Coyne's explanation that he had found the document over lunch was unconvincing: "*My Lord set some homework for me and I started it at lunchtime…*".[466]

331. Third, Mr Coyne referred to further searches that he had conducted to identify transaction insertions under Legacy Horizon:

> *Q. Do you accept, though, that those search terms are likely to capture the sort of transactions that we are talking about now?*
>
> *A. They do. They don't include the word "Riposte import" or "message import", which is the one that I have since used, so whether that brings back additional messages, I'm not sure.*
>
> *Q. So you have done your own searches now, have you?*
>
> *A. After seeing these words here I have looked at those documents and found the command Riposte import in some of those documents, so I have gone back to search for that across the whole database.* [467]

332. When pressed for what these searches had revealed, Mr Coyne proposed to go away and re-run the searches and then provide the results,[468] generating new evidence during the

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[465] It is fair to observe that Mr Coyne did not make this point in relation to {F/377.1} specifically, but it was the general impression that he sought to create in relation to his new documents and opinions.

[466] {Day16/135:21}.

[467] {Day16/99:12} to {Day16/99:23}.

[468] {Day16/100:4} to {Day16/100:20}.

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course of his cross-examination. Even putting to one side that it is unclear why Mr Coyne would have to run the searches again (rather than having retained the results of them), there was no explanation as to why the fruits of the further review that he had conducted had not been shared with Dr Worden or provided to Post Office before the cross-examination.

333. Fourth, Mr Coyne referred to a few OCPs and OCRs in which the same person was identified as having both carried out and witnessed the change (which appeared to be presented as evidence of a breach of Fujitsu's "four eyes" control in relation to remote access).[469] Mr Coyne had no proper answer as to why this had not been mentioned in JS4, which deals in some detail with controls on remote access and refers to many OCPs and OCRs.[470] There is no reason for Mr Coyne not to have raised the point even after JS4, in a spirit of collaboration with Dr Worden.

334. Standing back from the detail, Mr Coyne conducted substantial further work on matters that he considered important to the Horizon Issues, identifying various documents that he considered material to his opinions, and he decided not to share the results of that work with Dr Worden and, instead, to keep it back for deployment in response to cross-examination. That approach is inconsistent with the principles identified in **ICI v Merit** and, more generally, the proper discharge of an expert's duties under the CPR.

F6. Fujitsu's support role and its importance to the Horizon Issues

335. Fujitsu built the Horizon system. The system was, from the outset, designed to ensure a very high degree of data integrity. It could hardly be otherwise given that it was always intended to handle vast amounts of important data. It was and remains a very expensive system to build and operate, and Dr Worden observed that Fujitsu had ample budget for its Post Office operations.[471]

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[469] {Day16/13:7} to {Day16/13:13}.

[470] {Day16/14:11} to {Day16/15:4}. See the references to OCPs and OCRs at {D1/5/5-7}.

[471] {Day18/106:23} to {Day18/107:5}.

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336. In addition to building the system, Fujitsu has supported, monitored and upgraded Horizon throughout its life. The Court will have noticed how many of the same names appear over and again in the Peaks to which the experts and witnesses were referred trial – Anne Chambers and Pat Carroll, for example. It is common ground between the experts that these are experienced and highly-skilled workers. They had the benefit of working on the same system for years, even in some cases from its inception.

Horizon as a "tightly run ship"

337. Dr Worden formed a strong favourable impression of both the design of Horizon and Fujitsu's working practices in supporting the system in operation. He reached the view that Horizon was a "*tightly-run ship*" based on, amongst other things, the high quality of its technical documentation, design, review and testing and the "*high quality and effectiveness of problem analysis and problem solving shown in KELs and Peaks*". He recorded this at para. 3.23 of JS3.[472]

338. By the time of JS3 (1 March 2019), both experts had conducted extensive reviews of KELs and Peaks, documents that provide ample evidence of how the SSC identified, investigated and resolved bugs and other issues. Each of the experts had by the time of JS3 produced a supplemental report, in Mr Coyne's case running to 273 pages.

339. Mr Coyne made in JS3 no positive comment on any of the aspects of Fujitsu's work that Dr Worden identified in the passage quoted above. He also made no substantial positive comment in his supplemental report. The Court may well have formed the view that Mr Coyne did not agree with Dr Worden's assessment of Fujitsu's documentation and the quality of the system support that it provided, including through the analysis and problem solving evidenced in the KELs and Peaks.

340. The true position was that Mr Coyne largely shared Dr Worden's assessment of Fujitsu. But this emerged only at trial. There were three important points on which Mr Coyne agreed with Dr Worden. These are set out below. In summary, Mr Coyne agreed that:

340.1 Fujitsu ran a good support operation.

[472] {D1/4/5}.

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340.2 If a bug was detected in the system, it was highly likely to be recorded in a KEL.

340.3 Peaks and KELs provide a good source of information in relation to bugs.

341. These important revelations should not have been revelations at all. They were points that Mr Coyne should have set out fairly in his reports, or at the very least agreed in the Joint Statements. Each of them merits separate consideration.

(1) Fujitsu ran a good support operation

342. In JS1, Mr Coyne expressed the view that Horizon was not a robust system.[473] That was on 4 September 2018. By the time of his first report, dated 16 October 2018, Mr Coyne's view had changed – Horizon was "*relatively robust*"[474] (a conclusion the significance of which was unpacked at trial: see para 374 *et seq* below)

343. Mr Coyne was asked what had caused him to change his mind (given that this was not set out in his first report). Mr Coyne was readily able to explain:

> *Q. What is it that was good about Horizon that caused you to change your mind and where do you describe that, where do you consider that in your first report?*
>
> *A. What was helpful was to understand the support process in more detail to understand how things such as fault determination is done, albeit it is only an understanding of how it is done within Fujitsu, to understand that process more. So that was an improving position for me.*
>
> *Q. I see. And your judgment on reviewing the PEAKs was that Fujitsu actually had quite a good support process, is that right?*
>
> *A. Yes, I mean the support process that Fujitsu operate, and again this changes over time so it is very difficult to pick a point in time and understand what obligations they had, what roles and responsibilities they fulfilled, but certainly by the time they become aware that somebody believed there was a problem, so it hit SSC, the support centre, third line support, the process they had of determining whether there was a fault appears to be a reasonably good process…*[475]

344. In short, Mr Coyne had assessed the evidence of Fujitsu's support operations, including in identifying and addressing problems, and he had been impressed. That was of

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[473] {D1/1/9}.

[474] Coyne 1/3.7 {D2/1/26}

[475] {Day14/90:17} to {Day14/91:12}.

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sufficient importance to cause Mr Coyne to change on his mind on robustness, notwithstanding all the negative points he had set out in JS1. It is regrettable that he did not think it appropriate to set this out in his written evidence. At trial, Mr Coyne gave clear and consistent answers to the effect that Fujitsu did its job well.

345. Mr Coyne accepted that the system of Peaks and KELs was thorough and well run:

Q. Thank you. Let's move on to a different subject. Perhaps I can deal with this quickly. I would like to talk about PEAKs and KELs. From what you said yesterday about your change of mind on robustness between the first joint statement and your first report, I imagine you would agree that the system of KELs and PEAKs that Fujitsu developed was quite a thorough system?

A. Yes.

Q. And that you formed the view that members of the SSC were very familiar with the Horizon system?

A. Yes.

Q. And they were very familiar with the PEAK and KEL system?

A. Yes.

Q. And with their training and experience and with using search facilities they were able to navigate that system quite well?

A. Yes.

Q. Notwithstanding the limitations that you have fairly identified. And that using search facilities they were often able to find PEAKs or KELs addressing similar problems to the ones that they were facing?

A. Yes.

Q. And would you agree that the PEAKs show, generally show, the thoroughness with which they generally worked?

A. Yes.

Q. And they tended to keep a written record of what they did step by step in PEAKs, didn't they?

A. Yes.

Q. It wasn't comprehensive, no one is suggesting it is comprehensive, but it's quite a process-driven process, one doesn't often see something significant happening that

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isn't somewhere recorded or alluded to in the PEAK during the different processing steps that are described as you go down the PEAK from the top.

A. Yes.

Q. So in the scheme of things, compared with other systems with which you are familiar, you would accept, wouldn't you, that this is actually quite a well organised, well run system?

A. Certainly the way of recording the information in the PEAKs and KELs is a reasonably good system, yes.[476]

346. A reader would have formed a contrary impression from Mr Coyne's criticism of KELs as a source of evidence in his second report,[477] along with the litany of "*limitations*" that he identified in the Peak system.[478] It would have been easy for Mr Coyne to make clear that the system was a good one, albeit with imperfections. He could and should have done so.

347. Mr Coyne accepted that Fujitsu was good at spotting when there was a problem in Horizon and in fixing it:

Q. So what you found when you read the PEAKs was that when a call got referred to the SSC, either because it is a subpostmaster call, or perhaps it might be automatic, it might be from the MSU because of a reconciliation issue, your view was that Fujitsu was quite good at spotting if there was a problem in Horizon, is that right?

A. Yes.

Q. And it was quite good at making sure that problem was fixed, yes?

A. Yes.[479]

348. He also accepted that Fujitsu was also quite good at identifying the branches affected:

Q. Just to go back to my question. Fujitsu are quite good at identifying the branches that have been affected by those kind of bugs?

A. In the main, yes.[480]

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[476] {Day15/91:7} to {Day15/92:24}.

[477] Coyne 2/paras 3.2-3.4 {D2/4.1/12}.

[478] Coyne 2/para. 3.12 et seq {D2/4.1/14}.

[479] {Day14/92:4} to {Day14/92:14}.

[480] {Day14/93:12} to {Day14/93:15}.

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349. Mr Coyne inferred from what he saw in the documents that the information Fujitsu obtained about effects on branches was passed on to Post Office. He had seen only one Peak which suggested otherwise (and even that was actually about a situation where there was no loss to correct):[481]

> *Q. And you don't assume -- you don't infer, do you, that having identified those branches Fujitsu then keep that information to themselves? You infer that that information is passed onto Post Office don't you?*
>
> *A. I think so. There is certainly one reference in a PEAK where it says I suggest we don't tell the branch about this, but I'm not sure whether that's we won't tell Post Office about it, it is more keeping it from the branch rather than Post Office –*
>
> *Q. And that's the only PEAK of any kind that you have ever found of that sort, isn't it?*
>
> *A. Yes, I believe so.*[482]

350. The Court will recall that the evidence of the factual witnesses was to the same effect.

(2) If a bug was detected in the system, it was likely to be recorded in a KEL

351. Mr Coyne accepted that once a bug is identified, a KEL will generally be produced and will address the first instance of that bug.[483] Further manifestations of that same bug might not be referred to in the KEL, unless the bug manifests in a slightly different way, in which case there will generally be an amendment to the KEL to explain the new issue. The KEL might also be updated with new information obtained about the bug.[484]

(3) Peaks and KELs both provide a good source of information in relation to bugs.

352. Mr Coyne accepted that a KEL will generally indicate whether a bug had branch impact:

> *Q. Generally speaking then, if there is a KEL that addresses a bug that has a branch impact, generally it will tell you?*
>
> *A. Generally speaking.*
>
> *Q. On the vast majority of occasions, yes?*

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[481] See paras 771 *et seq* below.

[482] {Day14/94:10} to {Day14/94:21}.

[483] {Day15/94:24} to {Day15/95:1}.

[484] {Day15/95:19} to {Day15/96:8}.

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A. I'd prefer to stick with generally speaking. I don't know if it is the vast majority.[485]

353. Dr Worden's evidence was to similar effect – the general position is that branch effects will be identified in the KEL because the "*KEL is clear as to what happened*" and is a "*kind of distillation*" of the relevant information, with the Peak being a "*long-running diary*".[486]

Conclusion on Fujitsu's support operation generally

354. It emerged only at trial that there was a good measure of common ground between the experts on the high quality of Fujitsu's support operation. That common ground provides important context to many of the Horizon Issues. It is inevitable that there will not be a perfect record of every step taken by the support team over the 19 years of Horizon's operation. It is therefore useful to know that the SSC could be relied upon to go about its work with skill and diligence. That is the thrust of the expert evidence as much as the factual evidence (see, in particular, the evidence of Messrs Parker and Roll).

F7. Robustness

355. There was, by the end of trial, a great deal of common ground between the experts as to (1) the importance of determining whether and to what extent Horizon is robust and (2) the answer to that important question. In short, it is possible and useful to measure robustness, and Horizon performs well against that measurement.

The central importance of robustness to the Horizon Issues

356. Horizon Issue 3 asks to what extent and in what respects Horizon is robust and extremely unlikely to be the cause of shortfalls in branches. It should not require argument to identify the central importance of that issue to the Horizon trial and these proceedings. The determination of Horizon Issue 3 is self-evidently central to the general likelihood of Horizon being responsible for any given shortfall in a branch account

[485] {Day14/71:15} to {Day14/71:21}.

[486] {Day20/11:17} to {Day20/11:20}.

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(although the facts of the individual case of course may tell one way or the other). Curiously, the point appears to be controversial between the parties, although not the experts.

357. In their Outline Allegations and opening submissions, Cs sought to undermine the importance of the question of robustness, placing the word robustness in "scare quotes" and calling into question whether the concept has any objective meaning outside of public relations exercises.

358. Horizon Issue 3 was agreed between the parties. It is in the Horizon Issues because it arises on the pleadings. Post Office pleaded that Horizon was robust, and that plea was denied.[487] It is in issue, even if Cs would perhaps now prefer that it was not.

359. Ultimately, the importance and utility of the concept of robustness was not at issue between the experts. The experts both say that robustness is (1) a mature area of IT practice and learning, (2) a key concept to be used in answering the Horizon Issues and (3) measured objectively, allowing benchmarking against an industry standard and suitable comparators. Cs attempt to side-line robustness finds no support from the experts.

(1) Robustness is a mature concept in IT and the subject of academic study

360. Cs' pleaded case is that robustness is "*more commonly used in public relations than as an objective performance standard*".[488] A similar point was made in Cs' written opening submissions at para.17.1, where it is said that "*robustness*" (in quotations) "*has been one of Post Office's 'narrative boxes' and a favoured term in its public relations pronouncements*".[489]

361. That case is not supported by the experts:

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[487] Generic Reply and Defence to Counterclaim, para. 37 {C3/4/21}. Cs evidently now regret that pleading, as they have sought to argue that robustness was admitted all along: see Cs' written opening at para. 17.1, which is flatly untrue on the pleadings {A/1/9}.

[488] Outline Allegations, para. 3.1 {C1/2/4}.

[489] {A/1/9}.

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361.1 In his first report, Dr Worden expressed the view that robustness "encompasses a large and mature area of modern IT practice", noting that there is a "large, mature and tested set of techniques for achieving robustness".[490]

361.2 Mr Coyne agreed in his oral evidence that the concept of robustness is well-established in the IT industry, and is the subject of academic study.[491]

(2) Robustness is a key concept for answering the Horizon Issues

362. Dr Worden identified Horizon Issue 3 (robustness) as the most important, including because Horizon Issues 4 and 6 could be understood as "*specific subsets*" of issue that would affect the system's degree of robustness.[492]

363. Mr Coyne accepted that the concept of robustness addresses not only the reliability of the system but also the effectiveness of its countermeasures in preventing and addressing system errors [493] – i.e. the subject matter of Horizon Issues 1, 3 and 6. He agreed that the issues addressing robustness were central to the present trial and to laying a foundation for later breach trials, by focusing on the general likelihood of bugs causing a lasting shortfall in any given account.[494]

(3) The robustness of Horizon can be benchmarked against other comparable systems

364. Each of the experts has sought to compare Horizon to other systems of similar scale and complexity. They agreed as follows in JS3: "*From our experience of other computer systems, Horizon is relatively robust*".[495]

365. Mr Coyne accepted that it is possible to benchmark a system by reference to other comparable systems.[496] His view that Horizon is "*relatively robust*" means that it is

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[490] Worden 1/48 {D3/1/11}

[491] {Day14/31:19} to {Day14/32:1}.

[492] Worden 1/48 {D3/1/1}.

[493] {Day14/25:2} to {Day14/27:1}.

[494] {Day14/18:20} to {Day14/21:9}.

[495] Para. 3.1 {D1/4/2}.

[496] {Day14/40:13} to {Day14/40:16}.

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robust "*benchmarked against industry standards*".[497] He added that "*Horizon compares well*" with the appropriate comparators in banking and manufacturing.[498] Mr Coyne's evidence on this is addressed further below.

The experts' overall conclusions on robustness

366. The experts are not far apart on this issue. They agree that Horizon is robust, as measured against systems of comparable scale and complexity (such as banking systems). Applying an appropriate industry benchmark, Horizon is a good system.

Outline of Dr Worden's evidence on robustness

367. Dr Worden's view is that Horizon is a "*very robust system compared to other major systems*" he has worked on in "*sectors such as banking, retail, telecoms, government and healthcare*".[499] Dr Worden was not challenged on this assessment, and the basis for it, in cross-examination. It is important to recall that, in addition to his quantitative analysis (which was given prominence in cross-examination), Dr Worden also carried out a qualitative assessment of the architecture, testing, countermeasures and support operations for the system. That is set out in great detail in his first report and underpins his conclusion as to robustness. A summary was provided in Post Office's written opening submissions at paras 181 to 204.[500]

368. Dr Worden was challenged on the issue of robustness, not by reference to anything he – or indeed Mr Coyne – had said, but by reference to a series of relatively recent internal Post Office reports which recorded varying views about Post Office's IT systems, including Horizon. None of these involved an assessment by an expert. None of them addressed the existence, detection or fixing of bugs. The general thrust of the documents is that Post Office's IT systems, including but not limited to Horizon, are now old and ready for replacement (including because lower cost solutions might now be available).

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[497] Coyne 1/5.91{D2/1/78}. This remained Mr Coyne's view by the time of his second report: {Day14/41:23} to {Day14/42:6}.

[498] Ibid.

[499] Worden 1/49 {D3/1/11}.

[500] {A/2/65}.

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369. The reliance on these documents in cross-examination was unlikely to advance the debate, for several reasons:

369.1 The Post Office documents were not drafted with the benefit of the vast amount of work that has been carried out by the experts for this trial. If the authors considered that Horizon was not a good system, they were wrong (although that is not even a fair summary of what the documents say).

369.2 The experts agree that Horizon is presently robust, although it was probably (somewhat) less robust in the periods following its initial introduction and the introduction of Horizon Online. Mr Coyne's clear written and oral evidence was to the effect that he was more confident of Horizon's robustness now than in some earlier periods. The case put by Cs in cross-examination is not supported by either expert.

369.3 Specifically, the experts agree that Horizon has become more, not less, robust over time: see JS3, para. 3.1.[501] Any suggestion that it is now unreliable because it is nearing the end of its service life is flatly contradicted by the results of the huge amount of work conducted by the two experts, including through their extensive access to internal Fujitsu documents that would not ordinarily be provided to Post Office.

369.4 The documents put to Dr Worden are not ones which Mr Coyne relies on or even refers to in his reports;

369.5 In any event, the documents over which Dr Worden's cross-examination flitted, in many cases did not on a proper reading support the interpretation apparently being put on them by Cs.

370. To illustrate the latter point, the documents to which Dr Worden was taken included the following:

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[501] {D1/4/2}.

[502] {F/1611}.

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370.1 A Post Office Board Agenda dated 31/1/17.[502] The wider context of the document is set out in the Executive Summary of the Technology Strategy Update[503] which explains (under the heading "*Context*") that it is the whole IT estate that is being addressed. There is a reference later to the Horizon Online platform being at the end of its life.[504] Cs want to give that statement an unjustifiably dramatic spin.

370.2 A minute of a Post Office Group Executive meeting dated 17 January 2017[505] which refers to Fujitsu seeing Post Office as a "*cash cow*".[506] This has no obvious relevance to the Horizon Issues. The fact that Fujitsu has ample resource to run the system is a good thing.

370.3 A "*Thin Client*" Discussion Document dated 28/11/16,[507] which makes various references to the history of Horizon and its features, including an observation that modernising the "*back-end*" is extremely difficult[508] and that it is "*operator unfriendly*". "Operators" of the back-end systems are not SPMs, but are Post Office or Fujitsu staff. To the extent these points are relevant to the Horizon Issues, they have been addressed by the experts.

370.4 A Post Office "*Back Office Transformation*" said to be dated 22/10/16.[509] Paragraph 3 refers to various back office struggles and a related "*prohibitive cost of change*". Horizon is not specifically mentioned. This appears to be of no (or only very marginal) relevance to any of the Horizon Issues. The weight put on it is unjustifiable.

370.5 A Post Office "*Back Office Strategy*" document said to be dated 29/8/16.[510] Paragraph 1 refers to the back office processes being "*complex, unreliable,*

[502] {F/1611}.

[503] {F/1161/87}.

[504] {F/1611/100}.

[505] {F/1603}.

[506] {F/1603/5}.

[507] {F/1586}.

[508] {F/1586/3}.

[509] {F/1557}.

[510] {F/1522}.

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expensive to maintain and not suitable for today's business". Horizon is not specifically mentioned. The same comments as above apply here.

370.6 The Horizon Online Induction Training document said to be dated 7/12/09[511] which refers to Horizon as having *"Evolved rather than designed – a consequence of which is a robust service but complicated to change"*.[512] If anything, this document would tend to support Post Office's case.

371. It is submitted that documents of this sort take matters nowhere. They say nothing of any real significance to the Horizon Issues. They are simply evidence of Post Office considering its IT systems in general and its back office systems specifically. Many of the documents focus on the risks, costs and inconvenience of change and do not say anything about the reliability of Horizon. This is a further example of Cs' approach of latching onto any material that appears, however superficially, to be making any kind of criticism of Horizon.

372. It is true that, in computing terms, Horizon is relatively old. It is possible that that means that some hardware may be nearing end-of-life and doubtless that could cause cost and inconvenience. However, the fact that software is old does not mean that it starts to suffer from more bugs. On the contrary, the experts consider that the system has become more robust over time, including because bugs have been detected and eradicated.

Mr Coyne's written evidence on robustness

373. Post Office set out in its written opening submissions that Mr Coyne's written evidence on robustness was confusing and, in some respects, seemingly inconsistent: see paras 98-99.[513] His oral evidence was much clearer.

Mr Coyne's oral evidence on robustness

374. In response to cross-examination, Mr Coyne readily went much further than anything he had been prepared to set out in his reports. There were three important respects in which

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[511] {F/555}.

[512] {F/555/13}.

[513] {A/2/38}.

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his oral evidence was strongly in favour of Horizon, departing substantially from the impression generated by his reports:

374.1 He unpacked the high degree of reliability that was inherent in his conclusion that Horizon was robust relative to comparable systems.

374.2 He clarified that his view was that Horizon had been robust at all times during its service life, contrary to the impression that might have been taken from his reports.

374.3 He explained that his conclusions in favour of Horizon's robustness were informed by the positive impression that he had formed of Fujitsu's working practices in supporting the system, having obtained more evidence of this through his extensive review of contemporaneous documents (principally, his analysis of Peaks). This again was contrary to the impression that might have been taken from his reports.

375. On the first of these points – the high degree of reliability inherent in a robust system – it is important to recall that Mr Coyne benchmarked Horizon against industry standards and comparable systems.

376. Mr Coyne initially did not wish to be drawn as to where he would place Horizon in terms of a quartile of comparable systems, but his use of the term "*relatively robust*" necessarily means that it is in the top half. Mr Coyne ultimately accepted the suggestion that "*it is towards the 10 end rather than the 0 end*" of the spectrum of comparable systems.[514] To much the same effect, he said that Horizon "*compares well*" to such systems,[515] and he agreed that the sense in which he used the adverb "*relatively*" was "in comparison to others", i.e. in the same way that a runner that is "*relatively fast*" is faster than most people with whom he runs.[516]"

377. Mr Coyne was careful to select appropriate comparators:

Q. And these are systems where there are large numbers of users?

A. Yes.

[514] {Day14/44:6} to {Day14/44:8}.

[515] {Day14/43:8} to {Day14/43:16}.

[516] {Day14/43:8} to {Day14/43:16}.

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Q. And a great complexity in the transactions being performed?

A. Yes.

Q. And these are systems which have measures and controls to achieve robustness?

A. That aim to achieve robustness, yes.

Q. Could you just define which sectors you are talking about as being comparable for the purposes of your judgment?

A. So point of sale systems, something where a transaction is taking place over the counter, is certainly comparable. Banking has elements of it, where automated payments are being transferred to different organisations, so that is certainly comparable as well. Stock control, things like that.

Q. And you are talking about large businesses with lots of users and lots of complexity, yes?

A. Yes, at a similar scale to what is seen in Horizon.[517]

378. Mr Coyne's comparators were retail and banking systems of comparable scale and complexity to Horizon. He agreed that businesses that operate these systems can only afford a tiny proportion of errors:

Q. Okay, across both. But the kind of businesses you are talking about, banking, retail, those are private sector?

A. Yes.

Q. Those sorts of systems have quite exacting requirements of robustness, don't they?

A. Yes.

Q. No system can be perfect, everyone agrees that, but the large and complex businesses that use these sorts of systems, they don't have much tolerance for widespread errors in data entry, processing or storage, do they?

A. No, that is right. They certainly strive to remove that wherever possible.

Q. Given the number of transactions and the importance of handling and accounting those transactions properly, those businesses require the overwhelming majority of their transactions to be handled and accounted for properly, don't they?

A. They do indeed, yes.

[517] {Day14/44:20} to {Day14/45:15}.

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Q. They can only afford for a tiny proportion to suffer from lasting errors, yes?

A. Yes.[518]

379. Mr Coyne clarified later that the risk tolerance would be *"a fraction of a percentage"*.[519]

380. He accepted that, in a system with this degree of robustness, the vast majority of transactions will work successfully, even in adverse conditions:

Q. So when you say the Horizon system is relatively robust, you are saying that in the overwhelming majority of cases where conditions are both normal and adverse it works reliably, yes?

A. Yes, the vast majority of all the transactions that flow through the Horizon system will work successfully.

Q. And although there are occasions when it doesn't, those represent only a tiny proportion of the work that it does, correct?

A. Yes, it will be a small fraction of the work that it does, yes.

Q. Even within that tiny proportion, a large majority of the problems thrown up are picked up and corrected by the various systems in place that are designed to do precisely that?

A. Certainly many of the ones that go wrong for one reason or another appear to be picked up. There are examples where they don't appear to have been picked up and examples which appear to have an impact.

Q. That is a very important opinion, isn't it, in the context of this case?

A. Yes.

Q. For the purposes of this trial?

A. Yes.[520]

381. It is unfortunate that none of these important points was set out in Mr Coyne's reports. He allowed himself to give the impression that his conclusion as to Horizon's robustness

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[518] {Day14/56:22} to {Day14/57:18}.

[519] {Day14/81:15} to {Day14/81:18}; {Day14/149:1} to {Day14/149:8}. As Dr Worden identified in his first report (relying on a "*Horizon Architecture Overview*" from 2006), Post Office and Fujitsu were acutely aware of the need for accuracy in the system, given the huge volume of transactions and small margins on those transactions: Worden 1/227-228 {D3/1/64}.

[520] {Day14/58:17} to {Day14/59:15}.

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was nothing like as significant as it in fact is. That is certainly what Cs took from his evidence, as was apparent from their opening submissions and the attempt to side-line the experts' agreed position on robustness.

382. On the second point set out above – that Horizon was relatively robust throughout its service life – Mr Coyne gave clear oral evidence.

383. Mr Coyne clarified that he did not think there was any period in which Horizon was not robust, simply that there were periods of time – following Horizon's original introduction and then the introduction of Horizon Online – when it was less robust than it was at other times. Mr Coyne's view on the overall robustness of Horizon over time was as follows:

> *Q. So both Horizon Online and Legacy Horizon have been robust for most of their lives but there were initial periods where they were less robust?*
>
> *A. Yes.*
>
> *Q. In relation to those initial periods -- and do correct me if I'm wrong -- you are not saying they definitely weren't robust during that period, you are simply saying they were materially less robust, is that right?*
>
> *A. Yes.* [521]

384. On the third point identified above – the impression formed by Mr Coyne of Fujitsu's working practices – the oral evidence here was striking as much for its clarity and for its absence from Mr Coyne's reports and contributions to the Joint Statements. This has been addressed in detail at paras 340 *et seq* above.

385. It is most unsatisfactory that these matters were not explained more clearly in Mr Coyne's reports, the more so since Mr Coyne provided detailed corrections and amendments to his second report, not only picking up typographical errors but also making some substantive changes. He also had the opportunity to clarify his position in the Joint Statements (by agreeing with more of Dr Worden's views).

[521] {Day14/127:8} to {Day14/127:23}.

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F8. The importance of countermeasures and the concept of a lasting financial impact

386. A reader of the expert reports might have gained the impression that there was a fundamental disagreement between Dr Worden and Mr Coyne as to the importance of countermeasures in addressing the Horizon Issues. The Court may recall a somewhat sterile question as to which of the acronyms used by Dr Worden to refer to various countermeasures were industry standard. There has been, at least in Cs' submissions, a concerted attempt to downplay the importance of countermeasures.

387. The real position, as appeared from Mr Coyne's oral evidence, was that each of the experts in fact considered countermeasures to be essential to any meaningful consideration of Horizon Issues 1, 3, 4 and 6 (the last two of which focus specifically on various risks of error and the measures and controls that address those risks and errors).

388. It is notable that Dr Worden was not challenged substantially on the importance of countermeasures to his analysis.

Common ground in the Joint Statements

389. There are several important agreed statements on countermeasures in JS3 (which post-dates the expert reports): see paras 3.11-3.13[522], 3.18, 3.20, 3.22[523] and 6.1.[524]

Common ground that emerged at trial - countermeasures are central to the analysis

390. Mr Coyne agreed that a consideration of countermeasures was essential to the issues:

> *Q. Very well, I understand. But you will then at least agree with me this far: that in asking you to give your opinion on the issues we have read, what you're being asked to do is to advise the court on the extent to which problems had happened -- or problems were likely to happen in relation to any given situation, the extent to which those problems were likely to have been caught by countermeasures in that situation, and the overall question of the extent to which Horizon is robust and*

[522] {D1/4/4}.

[523] {D1/4/5}.

[524] {D1/4/9}. Mr Coyne's entry at para. 6.2 is impossible to reconcile with his oral evidence as to the quality of the SSC's investigations.

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extremely likely to be the cause of a shortfall in that given situation. Would you agree with that?

A. I don't believe countermeasures were asked in the questions, but broadly with what you say, yes –

Q. When I say countermeasures, you can take me as saying controls and measures if you want –

A. Okay.

Q. Subject to that correction, you would agree that that was the essential question being raised in the four issues that I read to you?

A. I believe they were the questions that were asked and I believe that in providing my reports I seek to address those. I have answered those.[525]

…

Q. Mr Coyne, didn't one of the Horizon Issues specifically ask you to consider whether controls and measures in Horizon reduced certain problems to an extremely low level of risk?

A. It certainly -- yes, it did.

Q. And I think we have established, it has taken an hour to do this, I think we have already established that when making an overall judgment of robustness you both consider how the system operates and then consider how the countermeasures designed into the system also operate?

A. Yes.

Q. With a view to coming to an overall decision as to the robustness of the system?

A. Yes.

Q. Thank you. So in forming a judgment about robustness it is necessary to form a judgment also, isn't it, about how the countermeasures, what Dr Worden calls the robustness countermeasures, how those countermeasures were designed and operated in practice, yes?

A. Yes.[526] (emphasis added)

391. Mr Coyne agreed that assessing robustness must involve an assessment of the effectiveness of countermeasures:

[525] {Day14/16:24} to {Day14/17:20}.

[526] {Day14/48:8} to {Day14/49:3}.

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MR DE GARR ROBINSON: So during that period, 2012 to 2019, your judgment is, and you feel capable of making the judgment, that Horizon is and has been relatively robust, correct?

A. Yes.

Q. Now that judgment includes a judgment not only about the electronic systems and so on, it includes a judgment about everything including the countermeasure processes surrounding Horizon, correct?

A. Yes. There has to be a number of caveats about that and I explained before that I don't really know what happens within Post Office to correct defects if Fujitsu has spotted them. So I can't comment really on what that process would be.

Q. But in relation to the -- nonetheless you have sufficient information to allow you to form an overall judgment as to robustness and your judgment is that during that period the system itself and the countermeasures around it were relatively robust?

A. Yes.

Q. The reason why I ask you that -- and just to be clear, the same is true of the period Legacy Horizon, shall we say from 2001 to 2010, would that be a fair period?

A. Yes. Perhaps one year after that.

Q. Okay, 2002 to 2010. During that period your view is that Horizon was relatively robust?

A. Yes.

Q. And that included the countermeasures surrounding it and supporting it?

A. Yes.[527]

392. As an example of countermeasures in action, in relation to Dalmellington, Mr Coyne accepted that countermeasures had worked to prevent any lasting discrepancy for 108 instances out of 112.[528] He also accepted that in relation to the four remaining instances referred to in the documents, the two substantial ones were not in fact instances of the Dalmellington bug at all[529] and in relation to the other two (where the losses were respectively £1 and 1p) the chances that those losses were not made good were *"very*

[527] {Day14/134:18} to {Day14/135:22}.

[528] {Day17/149:18} to {Day14/150:5}.

[529] {Day17/160:15} to {Day17/160:21}.

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small".[530] A bug that escaped detection for a long period and struck many times was prevented, by effective countermeasures, from causing even a single lasting impact on branch accounts.

393. The Court will recall that countermeasures are hardly considered in Coyne 1 – despite the fact that, as Mr Coyne ultimately agreed, they are central to a proper understanding of robustness. Mr Coyne's explanation of why he had failed to do so was unconvincing and turned on his idea that he was being asked whether it was "*possible*" that countermeasures might sometimes fail:

> *A. I don't see that utilising many pages of text to talk about the various aspects of Horizon's countermeasures, which may well be similar to how Dr Worden set them out, they may well operate in much different ways, we don't really know, but we can observe that they are likely to operate in those ways. I do not see there is a great deal of value when it is a fact, and what I believe the court was asking in the Horizon Issues was to address if it is possible that they have failed. So it is the failure side of it.*[531] (emphasis added)

394. That reasoning is difficult to follow. It is and always has been common ground that countermeasures sometimes fail, but considering the nature, extent and efficacy of countermeasures was explicitly required by Horizon Issue 6. It was also, as Mr Coyne accepted at trial, essential to answering Horizon Issues 1 and 3. Mr Coyne again avoided answering the Horizon Issues and applied a standard of perfection (reflecting his mistaken idea that he was being asked to consider whether the risk of error had been "*reduced as far as possible*").

395. There are many other examples of Mr Coyne failing to have any appropriate regard to countermeasures, creating the false impression that a problem would have resulted in false shortfalls or other adverse effects, when in fact it was overwhelmingly likely (or even inevitable) that it would have been addressed by an automatic or manual countermeasure. For example, in his first report Mr Coyne referred to some 62 KELs which he said were of particular interest. In fact, as Dr Worden pointed out in Worden 1 nearly all of them either had no effects on branch accounts or were addressed by ordinary countermeasures and so caused no lasting financial impact. Very few of these KELs

[530] {Day17/161:13}.

[531] {Day14/137:6} to {Day14/137:15}.

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made their way onto the list of 29 bugs in JS2 – only a handful in addition to the known bugs and Dalmellington. The remainder were quietly dropped by Mr Coyne. He does not explain anywhere either that he has done that, or why, but it can only be because he could no longer defend his reliance on them. That is unsatisfactory.

Fujitsu's role in identifying and addressing bugs

396. This has been addressed in detail above. The experts agree that the quality of Fujitsu's support operation is high and has contributed to the robustness of the system.

The cost/ benefit allegation

397. Cs contend that harmful bugs may have been detected but not fixed. On the face of it, that would be a strange approach for Fujitsu to adopt, given that fixing bugs is in own interests (in avoiding having to deal with repeated occurrences) and the interests of its customer, Post Office. The experts agree that "*any competent IT support operation is grateful to its users, when they draw its attention to any problem which can be fixed, to reduce the future costs of support*": JS2, para. 9.1.[532]

398. To deal with this point, Cs have latched onto the idea that bugs might be left in the system because it would cost too much to remove them. That is contrary to the witness evidence in these proceedings – Mr Roll gave evidence of Fujitsu's dedication and professionalism in identifying and fixing bugs, and Mr Parker gave unchallenged evidence as to Fujitsu's practice in this regard. Post Office is not aware of any Fujitsu guidance document that states that SSC staff should (or even are permitted to) fail to address bugs in the system because it would be too expensive to do so.

399. Cs nonetheless took some support from Mr Coyne's reports in raising the cost/benefit argument. Mr Coyne stated repeatedly[533] that whether to remedy bugs was something which was decided on the basis of a cost/ benefit analysis. Mr Coyne sought to defend this contention in his oral evidence:

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[532] {D1/2/39}.

[533] See e.g. Coyne 1/ para 3.15 {D2/1/27}; Coyne 1/ para 5.161 {D2/1/97}; Coyne 1/ para 5.199 {D2/1/108}.

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Q. The point you are making you are applying to the fixing of bugs in Horizon. You are saying, correct me if I'm wrong, that the support process provided by the SSC allowed relevant bugs to remain in the system in order to save money?

A. Yes, and there is certainly a reference within a document to that view being taken.[534]

400. Mr Coyne accepted that it was unfair of him to have said that this happened "*often*":

Q. Let's see how you do support it in your first report, shall we? If we go to page {D2/1/97} at paragraph 5.161, you say: "Whilst both Horizon and Horizon Online contain a number of measures and controls designed to check system integrity, these mechanisms have been shown to have failed. This is a point agreed upon in the joint statement. It has been identified that known issues/bugs were often deferred and dealt with on a cost/benefit basis." Here you have actually increased the scope and, if I may say so, ambition of the claim. You are now saying it happened "often". Is that your considered view of the documents you have seen?

A. Could I just turn back, please, to the paragraph before?

Q. Of course. {D2/1/97} (Pause)

A. It might be unfair for me to say "often".[535]

401. He explained that by "*often*", he would mean 10 or 15 times (across 20 years), and he was not aware of that many instances:

Q. ...Because it is fair to say you are not saying it happened once or twice over 20 years, you are saying it said it happened "often", and over a 20-year period "often" would usually mean dozens if not, in the context of Horizon, hundreds of times. Would you agree with that?

A. No, I would take "often" to be ten or 15 times.[536]

402. In any event, even aside from this point about frequency, the documents relied on by Mr Coyne in support of this point in his reports could not sustain the weight he put on them. A key one was not even relevant at all (as he accepted).

403. As has been addressed briefly above, one of the main documents on which Mr Coyne relied in support of the allegation that bugs were dealt with on a cost/ benefit basis was the Post Office Risk & Compliance Committee minute dated 18 September 2013.[537] The

[534] {Day14/147:21} to {Day14/148:2}.

[535] {Day14/151:12} to {Day14/152:4}.

[536] {Day14/152:8} to {Day14/152:13}.

[537] {F/1140/3}.

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document considered a risk which was described in more detail in a paper for the committee.[538] The issue was whether the current system of monitoring risk which involved a report being manually produced and reviewed, should be replaced by an automatic system.

404. Mr Coyne quarrelled with whether the decision ultimately taken – which was to continue with the present manual system and increase monitoring on whether it was adequate – was the right one, but that was not the point he was making in his report. The statement in the report was that Fujitsu decided not to fix bugs (or at least deferred doing so) on cost/benefit grounds.[539] Ultimately, after much evasion, Mr Coyne accepted that the document had nothing to do with that:

> *Q. Mr Coyne, let me remind you of the sentence that you say this document supports that's contained in paragraph 5.161 of your expert report: "*It has been identified that known issues/bugs were often deferred and dealt with on a cost benefit basis*." This proposal here and the decision that was made from this proposal is not evidence of any known issue or bug being deferred and dealt with in a cost benefit basis, is it?*
>
> *A. No. This isn't to do with the deferment of a bug, no.*[540]

405. Having lost the support of that document, Mr Coyne insisted that it was appropriate to rely on the Reconciliation and Incident Management Joint Working Document dated 18 March 2013.[541] This document too, once read with care, does not support the claim made by Mr Coyne. He has latched onto a sentence in the document saying that not all "*system faults*" are corrected because this is "*generally done on a contractual and/or cost benefit basis*".[542] He failed to note that a "*system fault*", as defined in the document, encompasses a huge range of potential problems that might well not be capable of being addressed totally, either as a matter of contract or for cost reasons. It is important to note also that this reference appears in a document concerning reconciliation management, rather than the SSC's activities in fixing bugs. It is not a good place to look for evidence

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[538] {F/1127/1}.

[539] Coyne 1/5.161 {D2/1/97}.

[540] {Day14/163:2} to {Day14/163:11}.

[541] {F/1697/1}.

[542] {F/1697/10}.

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of the SSC's attitude to fixing bugs that it has detected. It is a very weak and indirect piece of evidence on which to rely.

406. Mr Coyne accepted that at the time he made the strong claims that he did in Coyne 1, these two documents were possibly the only ones he had:

> *Q. Is it likely that when you made this statement the only evidence you had to support it was the Risk and Compliance committee meeting minutes and the document we have just come to? I have had your commentary on whether you think either of those documents is good evidence. I'm simply asking you whether it is likely that those were the only two pieces of evidence you had at the time you made this report?*
>
> *A. It is certainly possible that is the case, but I would have to look at when the PEAKs arrived.*[543]

407. Mr Coyne was taken to Peak PC0120937[544] which is the only Peak of which Post Office was aware[545] that might have been read as suggesting a cost/benefit approach was adopted. There is an entry in the Peak where cost is mentioned (on 15 June 2005 at 11.28):

> *Weighing up the cost and risk of an attempted fix against the fact that this has only been reported once, I do not believe that we should make a code fix. If further incidents of this problem are reported we can review this decision. Gary has raised a KEL, so returning for closure as "Published Known Error".* (emphasis added)

408. This reference to cost was sufficient for Mr Coyne to consider that this was evidence for his cost/ benefit point. What the Peak, considered as a whole, indicates is the following:

408.1 Fujitsu was concerned primarily with risk and on that basis decided to rely on a KEL to address any further instances of a very rare problem, rather than attempting a code fix: see the entry at the bottom of p.3, recording that it had not been possible to recreate the bug on the test rig and that a code fix would be "*potentially risky because this code is used in a number of different circumstances and could prove difficult to code*". [546]

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[543] {Day14/179:23} to {Day14/180:7}.

[544] {F/271/1}.

[545] Mr Green QC asked that Mr Coyne also be shown {F/275.1} (a Peak relating to testing, not the live system). Mr Coyne did not seek to rely on it in relation to his cost/benefit point: {Day14/193:17} to {Day14/193:24}.

[546] {F/271/3}.

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408.2 When asked about this, Mr Coyne agreed that the debate in the Peak revolved largely around the risk of making a code fix.[547]

408.3 The experts agree that introducing code fixes itself generates a risk of error,[548] so a balancing of the risks either way is always required – a code fix could introduce more risk of error than it removes.

408.4 The problem appeared to occur extremely infrequently and would be apparent to the SPM when it occurred and thereafter (see the final entry on p. 4). The KEL would be updated so that appropriate advice would be given to resolve any further instances of the problem.

409. This Peak does not support the notion that even the particular decision to which relates was taken principally on the basis of cost (rather than risk), let alone that decisions were "*often*" made on a cost/ benefit basis. The related KEL[549] equally provides no such support: it too refers to *"the frequency of the problem and the risks involved in making the necessary changes"* (emphasis added).

410. It became clear that the evidence referred to by Mr Coyne in his reports could not support the strong claim that he had made in those reports. In the face of this, Mr Coyne changed tack and stated that he had seen further evidence – evidence not cited in his reports (including because he had discovered it since those reports). No explanation was given as to why this further evidence, if important, had not been shared with Dr Worden. There is also a point that Mr Coyne seemed to overlook, which is that evidence discovered only after the reports were drafted cannot justify his decision to make the strong claim that he did without that evidence.

411. Mr Coyne was invited to turn up relevant Peaks overnight. He identified seven Peaks. There was no time to cross-examine on this material. Post Office sets out its submissions on the Peaks in Appendix 1. In short, the Peaks generally demonstrate an appropriate reluctance to attempt difficult and/or risky code fixes in circumstances where

[547] {Day14/185:25} to {Day14/186:3}.

[548] See, e.g., Mr Coyne's evidence on this at {Day15/185:6} to {Day15/185:9}.

[549] {F/276}.

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the problem has already been resolved through an effective "work-around" (including in one case a less invasive code fix) or otherwise can confidently be expected not to re-occur. Mr Coyne's contention in his report, even with the benefit of evidence that he discovered only later, finds very weak support in the documents. The Peaks do not undermine the robustness of the system but show an appropriate degree of caution when it comes to making changes to code.

The role of TCs in robustness

412. It is common ground between the experts that Horizon is made more robust by the existence of a process for correcting errors in branches through TCs. Specifically:

412.1 Dr Worden expressed the view that TCs are an important part of the robustness countermeasures built into Horizon, particularly for correcting user errors. He noted, for example, that very many TCs (approximately 20,000 per year) were issued to correct for mistakes in remittances out from branches (e.g. miscounting the cash in a remittance pouch and/or mis-declaring the amount on the system).[550]

412.2 Mr Coyne accepted in cross-examination the obvious point that a TC is more likely to correct an error in the accounts than it is to introduce one.[551]

413. There are agreements in relation to TCs at JS2, paras 5.1, 5.3, 5.4 and 5.5[552] and JS2, paras 15.1, 15.2, 15.3 and 15.4.[553] It is common ground that the decision to issue a TC takes place outside Horizon and using other systems: see JS2, para. 14.6.[554]

414. It is also common ground between the experts that an individual TC might be incorrect and, if accepted, might introduce error into the branch accounts: see JS2, para. 15.2.[555] Dr Worden attempted to estimate an approximate scale of the impact of errors introduced in this way in section 9.6 of his first report.[556] He noted, for example, that the

[550] {Day20/8:23} to {Day20/10:1}. Dr Worden was referring to Table 9.3 at {D3/1/208}.

[551] {Day14/80:5} to {Day14/80:17}.

[552] {D1/4/8}.

[553] {D1/2/43}.

[554] {D1/2/42}.

[555] {D1/2/43}.

[556] {D3/1/205}.

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average branch received only about one TC per month.[557] Some of course receive more than that, and some fewer. But mistaken TCs, taken as a whole, are a very unlikely candidate for accounting for a substantial proportion of disputed shortfalls – TCs are a tiny minority of entries in branch accounts, and they are generally of modest value (although of course not always).

415. There are no known bugs that affected the generation, content or issue of TCs. (Item 21 on the bug table in JS2 includes Peaks relating to a problem where the system would freeze before a TC could be accepted in the branch, but that had no effect on the branch account – the branch was able to rollover without accepting the TC and could then resolve it later).

416. Cs often refer to dramatically large TCs and suggest that they might have been wrong. That is of course possible, although any huge and mistaken TC would likely generate a very substantial complaint from the SPM and, inevitably, an investigation. Cs drew attention in their submissions to two TCs for £810,000 issued to a particular branch, but those TCs were both correctly issued to address a mis-keying error: see Mr Smith's witness statement at paras 31-33.[558] It could hardly be imagined that the SPM would not have challenged an erroneous TC of that size.

417. Mr Coyne accepted in cross-examination that the reconciliation processes that lead to many TCs take place outside Horizon, relying on Post Office's back-office accounting systems and the accounting systems of client organisations.[559] Other TCs are initiated by SPMs themselves, often through reporting that they have made a mistake in the branch that requires correction (mis-keying errors, for example, as was confirmed by Cs' witnesses at this trial).

418. Mr Coyne made clear at trial that he had not intended to suggest that SPMs who were identified by Fujitsu as having suffered an impact on their branch accounts would not have been made whole. He had intended to say that it was likely that the discrepancies, once identified, had been addressed:

[557] Worden 1/930 {D3/1/206}.

[558] {E2/9/7}. Mr Smith was taken to this in cross-examination but not challenged on its accuracy: {Day6/189:1} to {Day6/191:25}.

[559] {Day14/73:19} to {Day14/74:19}.

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> Q. *Just to be absolutely clear, you are not suggesting that you think that when a bug was identified and discrepancies were spotted in accounts, you are not saying you think the accountancy discrepancies were not dealt with, you are not saying that, are you?*
>
> *A. No, I'm not saying that. What I'm saying is they were identified typically by Fujitsu, and I don't know what the process was, and Fujitsu will say that they don't know because it appears in all the documents, they don't know what Post Office does to correct that. That is a missing part of the evidence. So I'm not saying I think Post Office do nothing about it, I'm simply saying I don't know what that process was.*
>
> *Q. Right. You are not suggesting that you think, on the basis of documents you have seen, that it is likely that Post Office do nothing about it? You are not saying that, are you?*
>
> *A. No, I'm saying the opposite. It is likely that they do something about it…*[560]

419. Mr Coyne also agreed that, once Fujitsu identified a bug, it was relatively easy for them to identify the affected branches, by working out the "*profile of the issue*" and then looking across the "*historic files*", even where this meant going back years.[561]

420. Taking these two points together – it being relatively easy for Fujitsu to identify affected branches and it being likely Post Office acted to correct the errors caused by the bugs – Mr Coyne's evidence here was dramatically at odds with the impression given by his reports. The impression that those reports generated was that SPMs might well have been left with discrepancies caused by bugs that had been identified and addressed. That impression was misleading and would not fairly reflect what Mr Coyne in fact thought.

421. The detail of Post Office's reconciliation processes and how they feed into the generation of TCs is outside the scope of the Horizon Issues. It was excluded because expanding from expert issues in relation to the Horizon system itself into the vast reconciliation processes that take place between Post Office and its clients would have made a relatively short trial impossible: see Post Office's opening submissions at para. 114, referring to the content of the relevant Horizon Issues and the clear indications given by the Court at the outset in relation to the kind of issues that should be addressed in the

[560] {Day14/54:17} to {Day14/55:10}.

[561] {Day17/154:17} to {Day17/154:23}. The answer was given in relation to the Dalmellington bug, but the process described is generic.

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Horizon trial.[562] Cs proposed issues that would have extended the Horizon Issues to include reconciliation, but those were opposed and ultimately not agreed: see, e.g., Post Office's objection to Cs' proposed Issues 1 and 3 in the document at {C8/4/2/25}. It is clear from the expert reports that the automatic and manual reconciliation processes (which they have identified only in very broad terms) are enormous and complex.

422. Following from this trial, it should be relatively straightforward, in individual cases, to address the contention that any specific TC was erroneous and was responsible for a given shortfall. The issue is vast at a generic level (not least because there were, in many years, around one hundred thousand TCs)[563], whereas a dispute in an individual case will always be quite tightly confined, given that almost all branches receive fairly few TCs.

F9. The experts' approaches to assessing the extent of bugs and their financial impacts

423. The specific bugs identified by the experts are addressed in the section after this. The purpose of this section is to identify the importance of the questions of extent raised by the Horizon Issues and the differing approaches adopted by those experts to the issues.

The importance of the questions of extent to Horizon Issues 1, 3, 4 and 6

424. The Horizon Issues that address the reliability of the Horizon system, the effectiveness of countermeasures and the impacts of bugs all ask questions of "*extent*": see Horizon Issues 1, 3, 4 and 6.[564]. That is not an accident. It is common ground on the generic pleadings that Horizon is imperfect, has suffered from bugs and has had adverse impacts on branch accounts; it is also common ground that it contains measures aimed at reducing the incidence of such impacts. The dispute between the parties revolves around questions of degree or extent.

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[562] {A/2/44}.

[563] JS2, para.15.1 {D1/2/43}.

[564] {C1/1/1}.

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425. It is common ground between the experts that identifying the likely number of bugs and, crucially, the likely financial impacts of those bugs on branch accounts is central to any consideration of robustness: see JS3, para. 3.15 – "*It is difficult to measure the extent of robustness of Horizon, apart from how it might limit the extent of impact on branch accounts as in Issue 1*".[565] Horizon Issues 1 and 3 are closely interrelated. And they, in turn, relate closely to Horizon Issues 4 and 6, which concern the risk of various forms of error and the measures in the system that work to prevent such errors arising and/or prevent them having effects on branch accounts.

426. In relation to all these issues, the focus of concern is financial impacts on branch accounts. That is at the core of the dispute on the generic pleadings: see, for example, paras 22-24 of the AGPOC, contending that various sources of errors in Horizon resulted in "*discrepancies or alleged shortfalls attributed*" to Cs by Post Office and that bugs in Horizon "*had the potential to produce apparent shortfalls*".[566] See also paras 40-41 of the Generic Reply,[567] contending that Cs suffered losses resulting from bugs in Horizon and putting Post Office to proof of the countermeasures that it pleaded and the effectiveness of those countermeasures. This is reflected in the drafting of the issues.

427. Mr Coyne confirmed that he had read the relevant paragraphs of the generic pleadings when deciding how to interpret the Horizon Issues[568], and that these Horizon Issues arose in a context where the contention was that bugs had caused "*false shortfalls*" in branch accounts.[569] Mr Coyne also agreed that Horizon Issues 1, 3 and 6 required a focus on the extent to which it was likely that bugs caused shortfalls in any given set of accounts.[570]

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[565] {D1/4/4}.

[566] {C3/1/8}.

[567] {C3/4/22}.

[568] {Day14/14:16} to {Day14/14:23}.

[569] {Day14/11:14} to {Day14/11:18}.

[570] {Day14/14:24} to {Day14/17:20}. See also {Day14/20:20} to {Day14/21:1}.

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The experts' differing approaches to questions of extent

428. Dr Worden sought to answer the questions of extent principally by taking samples of KELs and seeking to extrapolate from those samples into the total population of KELs, asking what total number of bugs with lasting impacts might exist in that total population. He then used that number to estimate an upper limit on the total likely financial impact of that total population of bugs, taking his estimate of financial impact from the bugs for which there were available figures.

429. There is one important point to note about that approach. It is premised on the total population of KELs being of largely unknown content, such that sampling must be used to estimate (with a large margin of error) how many bugs might be identified in the unreviewed KELs. That premise was correct at the time when Dr Worden carried out his calculations. But the premise no longer holds: Mr Coyne and his team had, by the time of trial, reviewed the substantial majority of the KELs (around 6,000 to 7,000 out of roughly 9,500).[571] That review disclosed, in Mr Coyne's opinion, only 29 bugs with lasting impacts (which figure he revised down at trial to 22), which is vastly less than anything suggested by Dr Worden's calculations.

430. It is also important to note that Dr Worden also formed strongly positive views of Horizon's robustness and reliability, and the effectiveness of its countermeasures, on a qualitative basis, as discussed above. His views are not limited to the numbers.

431. In his reports, Mr Coyne avoided any systematic and objective assessment of extent, simply giving examples of problems and effectively inviting the Court, without any basis, to extrapolate from a necessarily biased sample into the total population and speculate that there might be many more bugs. At trial, Mr Coyne conceded that his extensive review had identified very few bugs and that there were in fact unlikely to be many more such bugs in the KELs that he had not reviewed.

432. By avoiding the questions of extent, Mr Coyne often limited his conclusions to points that were in fact common ground from the outset of these proceedings – for example, he

[571] {Day15/122:25} to {Day15/123:8}.

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concluded that it was likely that bugs had caused shortfalls in branch accounts,[572] but that was accepted in pre-action correspondence and in the generic pleadings.

433. A failure to engage in an objective way with questions of extent is particularly problematic where the subject matter of the dispute is, on any sensible view, of an enormous scale: the Horizon Issues relate to a system that has processed 47 billion transactions and through which 3 million sets of monthly branch accounts have been prepared and submitted. It is actively unhelpful to fail to have regard to that scale in choosing how to present the importance and incidence of a particular issue or problem.

Dr Worden's numerical approach to assessing extent

434. From the outset, Dr Worden set out to give objective, number-based opinions on the "extent" issues, having regard to the scale point set out above. Given the impossibility of reviewing all KELs by the time of his first report, Dr Worden decided to work from samples and adopt standard statistical approaches to estimate what he could not measure directly.

435. Mr Coyne did not himself try to do this, and he criticised Dr Worden in his second report for doing so. Mr Coyne said, for example, that risk analysis should not be used retrospectively (as is implicit in trying to identify the total number of branch-affecting bugs that have existed in Horizon over its life).

436. At trial, however, Mr Coyne frankly accepted that assessing risk often involves taking information on past performance and forming views and estimates off the back of that information,[573] which is precisely what Dr Worden did when extrapolating from his samples to the total population. The criticism was meritless.

437. There is an even simpler point. If an expert is aware that he can only review a certain proportion of a total universe of documents of a given kind, the obvious thing to do is to take an unbiased sample and use that as a basis to estimate what the total population contains. It is strange not to have done that. This applies with particular force to Mr Coyne given that he and his team were in fact able to review a large proportion of the

[572] See, e.g., JS3, para. 3.25{D1/4/6}.

[573] {Day14/38:11} to {Day14/38:22}.

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total number of KELs, allowing them to form confident views about the population as a whole (which Mr Coyne proved well able to do "on his feet" when asked at trial). Dr Worden did the obvious thing, and there has been no convincing explanation as to why Mr Coyne did not.

The calculations in section 8.5 of Worden 1

438. In section 8.5 of Worden 1, Dr Worden carried out an analysis which demonstrated that with a scaling factor of 0.37, there would need to have been 50,000 bugs with a total impact similar to that of the Suspense Account in order for there to be a 1 in 10 chance of such a bug causing a shortfall of £1,000 in a claimant's branch in any given month. In Worden 2, Dr Worden changed the scaling factor to 0.45 and so this became 40,000 bugs.[574]

439. If no scaling factor for small claimant branches is applied at all (i.e. in the table in para 637 of Worden 1, Label D becomes 1), then: Label E becomes 3,091,680; Label H becomes 193,230 (3,091,680/16); and Label J becomes 19,323 (say 19,000).

440. In other words:

440.1 For a bug such as the Suspense Account bug which occurs 16 times with a mean financial impact of £1,000, in order for there to be a 1 in 10 chance that a shortfall of £1,000 would be caused in a claimant's branch in any given month, there would need to be 19,000 similar bugs (i.e. 304,000 incidents: 19,000 x 16));

440.2 If the mean financial impact of such a bug were £500, there would have to be 38,000 similar bugs (608,000 incidents);

440.3 If the mean financial impact of such a bug were £100, there would have to be 190,000 similar bugs (3,040,000 incidents).

441. Other than in relation to the assumption about likely impact on claimant branches, Mr Coyne accepted that Dr Worden's reasoning was correct:

Q. So if you take a bug which has occurred 16 times over the lifetime of Horizon?

[574] {D3/6/30} para 117.

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A. Yes.

Q. With a mean financial impact of £1,000 and that's quite a significant bug compared with most of the bugs you found, would you agree?

A. It is certainly significant in its impact, yes.

Q. It is in the top five, yes?

A. Quite possibly.

Q. And then you select a claimant branch a month at random, the chance of that bug occurring in that branch in that month is 16 in 8 million, correct?

A. If bugs affect branches equally, yes.[575]

442. This point was explored with Mr Coyne and he retreated behind the possibility (for which no basis is set out in his reports) that the branches operated by the claimants might have been peculiarly exposed to bugs. He eventually accepted that it was likely that bugs would not have targeted those branches especially:

Q. Mr Coyne, the overwhelming likelihood is that there aren't more than 40 bugs of the sort that you have identified in Horizon, correct?

A. Yes, but what you have got to remember is each of those bugs can have an impact on multiple branch accounts. It is not just one bug, one impact.

Q. So are you suggesting that some of those bugs have massive impact? Remember, we are not talking about bugs that affect only the claimant branches. We are talking about bugs that are in operation over the entire Post Office network.

A. Yes.

Q. So on any view those bug impacts -- the total bug impacts is going to be very, very much greater than the specific impact that might affect the claimants, yes?

A. Yes.

Q. So the total impact of the kind of bug you are suggesting, to justify the £19 million claim just made by the claimants alone, the total impact of the kind of bug you are hypothesising would have to be vast, wouldn't it, in the tens and tens of millions?

A. If we are using the law of averages to show that it has impacted everybody equally rather than just impacting the claimants' branches, yes.

[575] {Day15/179:16} to {Day15/180:3}.

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Q. I see. You are now suggesting that there might be bugs which have only affected the claimants and haven't affected the wider Post Office network, is that what you are claiming?

A. I'm saying it is entirely possible because we know from the bugs that have actually happened that they have only impacted a small number of branches.

Q. Is it really entirely possible though, Mr Coyne? You are hypothesising a bug which has had many, many, many effects in order to justify the suggestion that it has generated a large number of losses. That's what we are talking about?

A. Yes.

Q. Those bugs occur at branches because of factors that you are not prepared yet to identify, yes?

A. I haven't been given the information to enable me to identify.

Q. You don't have a specific bug in mind which has a particular feature which means that it only affects certain kinds of branches. You are not telling me that. You are saying that it is possible there might be such a bug?

A. Yes.

Q. With this theoretical bug you are suggesting it is quite possible that it could affect just the claimants' branches and not affect the branches in the wider Post Office network. Is that really your view? Do you really think that is a likely outcome?

A. It may well have affected other branches in the branch network.

Q. That's my point, Mr Coyne. It is all very well to say "I don't know, it is a really difficult judgment to make", but there are certain features which are just matters of commonsense. What I'm suggesting to you is that, bearing in mind the claimants represent such a small fraction of the total Post Office network over a period of 20 years, it stands to reason as night follows day that if there are bugs which justify their claims those bugs would also have incurred losses in the wider Post Office network. Would you accept that?

A. Yes.

Q. Would you accept, therefore, that the wider losses that would have been caused in the Post Office network would be substantially greater than the £19 million –

A. That's likely, yes.[576]

[576] {Day15/185:13} to {Day15/188:6}.

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443. It needs to be borne in mind here that when Dr Worden talks about the need for 40,000 bugs, he is talking about 40,000 bugs each of which has multiple instances/impacts on branches. His calculations therefore capture the point that bugs typically have more than one impact (although it is notable that many of the bugs in the bug table affected very few branches).

444. Mr Coyne agreed with many of the building blocks to Dr Worden's views on the question of scale:

444.1 Mr Coyne agreed that there are some 3 million branch accounts to be considered.[577]

444.2 He agreed that branches that perform more transactions are likely to be hit by a bug on more occasions than a branch doing fewer transactions[578] and accordingly with Dr Worden's approach to calculating what he terms a "*scaling factor*" to account for differences in the number of transactions performed in branches.[579]

444.3 He agreed that he had seen a *"substantial number of Peaks where SPMs…phoned in with problems about relatively small sums of money"*.[580] This supports the inferences drawn by Dr Worden to the effect that even fairly small discrepancies, if unexplained, would be questioned in a non-negligible proportion of cases.

444.4 He agreed that the helpline operators would pass calls on to the SSC when they reach a point when they do not think they can help further, irrespective of whether they considered there was a software error or not.[581]

444.5 Mr Coyne also did not argue with the mathematics of Dr Worden's calculation.[582] The mathematics is simple arithmetic.

445. It follows that Mr Coyne does not argue with the majority of the building blocks set out

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[577] {Day15/168:5} to {Day15/168:7} and JS2, para. 1.2 {D1/2/27}.

[578] {Day15/172:13} to {Day15/172:20}.

[579] {Day15/174:13} to {Day15/174:18}.

[580] {Day17/18:4} to {Day17/18:13}.

[581] {Day17/46:7} to {Day17/46:24}.

[582] {Day15/177:18} to {Day15/177:21}.

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by Dr Worden in the calculations he sets out in sections 8.5 and 8.7 of Worden 1.

446. Dr Worden had necessarily to make various assumptions about the likelihood of individual SPMs phoning in to raise a concern about a perceived discrepancy, namely that if a discrepancy is £1000 or more, the likelihood of it being reported to the helpline is 80%; if £300, 30% of SPMs would report it; if £100, 10% would report; and if £10 or less, fewer than 1%.[583] It is common ground between the experts that many bugs are in fact identified without the need for any report from an SPM, as the SSC is notified of potential problems through automatic reporting.

447. The suggestion that appeared to be made to Dr Worden in cross-examination was that since he is not a behavioural economist, he is not competent to make assumptions as to SPMs reporting problems to the helpline.[584] Any such criticism is misconceived:

447.1 The assumptions made by Dr Worden are primarily a matter of common sense, allowing for a large margin of error by erring on the side of assuming a low reporting rate.

447.2 They are based on the available evidence – albeit that such evidence is limited – and Dr Worden makes it clear in the report that he is only able to draw "*weak inferences*".[585]

447.3 There is a strong basis on which to conclude that SPMs at least sometimes phone in to question or challenge even fairly small discrepancies or other problems– Mr Coyne accepted that (see above), and there was evidence from the claimant-specific witnesses was also to the same effect.

447.4 The key point is that if there were multiple instances of bugs, with varying amounts of impact, the overwhelming likelihood is that the bug would eventually be reported by at least someone. Dr Worden's numerical assumptions in this regard are consistent with a great many SPMs simply choosing not to report unexplained discrepancies, which is not supported by the evidence (but which

[583] Worden 1 para 415.1 {D3/1/107}.

[584] {Day18/19:23} to {Day18/20:9}.

[585] Worden 1 para 415 {D3/1/107}.

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tends to favour Cs' case). As noted above, the evidence shows that once bugs come to the attention of Fujitsu, their system of recording via KELs and Peaks was good.

448. It is to be noted that the evidence of Cs' witnesses at the trial would tend to support the inferences which Dr Worden has made about SPMs reporting problems:

448.1 Mr Tank accepted that if he had a discrepancy for more than a few pounds which he felt called for some further explanation, he would report it by contacting the Helpline:

Q. All right, let me put it in a different way then. If you felt it called for some further explanation then you would contact the Helpline?

A. Yes.

Q. And certainly if it was more than a few pounds you would do that?

A. Yes.[586]

448.2 Similarly, Mr Patny Snr agreed that if he discovered a small (but non-negligible) and unexplained discrepancy, he would investigate it and report it to Post Office:

Q. And when you do the balancing, presumably it's not uncommon that there's some sort of discrepancy between the cash that Horizon expects you to have, for example, and the cash you have actually got?

A. Well, it happens sometimes.

Q. Sure. And I'm just interested in how you reacted if you found that there was a discrepancy. If it was just a few pence or a few pounds would you just make up that difference from your own pocket?

A. Well, under normal circumstances, yes, so if it is a few pounds or few pence, yes.

Q. And if it was more than that, say £40, £50, £60 or above, would you investigate it?
A. Yes.

Q. And raise it with Post Office?

A. Yes.[587]

[586] {Day2/127:25} to {Day2/128:6}.

[587] {Day2/166:13} to {Day2/167:3}.

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449. Mr Coyne did quarrel with the assumption that the claimant branches would have been no more susceptible than other branches to experiencing shortfalls as a result of bugs. He accepted that he was not in fact aware of any characteristic which marked out the claimant branches in this way, so as to make them more vulnerable to bugs.[588]

450. If there were some special factor about the claimant branches that made them susceptible to bugs (for example, the types of transactions performed or the level of experience of the SPMs), that could and should have been identified long before now. It is a point that Cs would have been quick to plead in support of their case. Post Office too would have been eager to investigate any such suggestion, given that it might help to explain why a generally good system could have let the Cs down as badly as they contend.

451. Mr Coyne was candid enough to accept that, while he had reservations about the approach taken by Dr Worden, it was the kind of approach that he himself would have taken if he had to in order to make a business decision:

> *Q. Let's move on. If you are genuinely saying it is impossible to arrive at any judgment on these matters, if you had to make a business decision about risk and this was the only information available to you, you wouldn't just sit there and say you couldn't make a decision, would you? You would perform a judgment on the best information you have, yes?*
>
> *A. Yes, I agree with that, if a decision had to be made and there was no other information available, then I would use the best information that was available to me.*
>
> *Q. And you would build in a margin of error, wouldn't you, to account for the possibility that there may be unknowns out there that could throw your figures out?*
>
> *A. Yes.*
>
> *Q. In the way that Dr Worden has done, correct?*
>
> *A. Yes.*[589]

452. Mr Coyne did not explain why he had not carried out such an exercise to help answer the Horizon Issues, even if he would have wished to caveat it as being only approximate (which Dr Worden himself quite properly did).

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[588] {Day15/169:2} to {Day15/169:8}.

[589] {Day15/177:22} to {Day15/178:12}.

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The Penny Black objection to Dr Worden's numerical approach

453. The Court will recall the Penny Black example which was raised with Dr Worden during cross-examination. The suggestion was that whereas the chances of a single person in a given room of 50 guests being called Penny Black were low, and the chances of there being two people with that name in the same room commensurately lower, if invitations had only been sent out to people called Penny Black, the chances of not just one but all the people in the room being called Penny Black would be 100%.

454. It was pointed that Cs are a self-selecting group because each of them contends that he or she or it (for a corporate claimant) has suffered a loss by reason of a bug in Horizon. It was suggested that it is therefore inappropriate to identify them as a group with an average exposure to bugs.[590]

455. Cs are of course a self-selected group. And it is of course not irrelevant to the issues in these proceedings more generally than Cs contend that their branches suffered shortfalls caused by bugs. But the attack on Dr Worden's numbers was nonetheless misconceived.

456. First, the argument assumes the very thing which this litigation is designed to establish one way or another i.e. whether, and if so how, Cs were affected by bugs in Horizon. Just as Post Office cannot (and does not) assume that the explanation for every shortfall must be user error or dishonesty, so neither Cs (nor the experts) can properly assume that Horizon must be the cause of the shortfalls. It is the same thing to engage in estimating the increased likelihood of bugs having affected the Claimant group (i.e. a retrospective view, taking into account the claim of a bug), unless that likelihood depends on some objective characteristic of the Claimant branches that made them more exposed to bugs at the time (i.e. a prospective assessment of the risk faced by the branch).

457. This is clear from the terms of the analogy itself. The women called Penny Black were identified and invited based on an objective and easily verifiable fact (their name). The Court has not sent out any invitations based on its assessment of the validity of the

[590] {Day18/170:18} to {Day18/170:25}.

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claims. It has not identified whether or not people are called Penny Black. The analogy begs the main issue in the case.

458. Secondly, the fact that Dr Worden has taken the Cs as a group is largely irrelevant to his analysis. He could have taken any group of SPMs of a similar size whose branches were of a comparable size, carried out the same exercise and obtained the same result. He did not take into account that Cs contend that they suffered shortfalls caused by bugs, any more than he took into account that Post Office contends the opposite. He did not try to answer the ultimate question for breach trials. He did not assess the specific claims made and how credible they were; he did not purport to consider questions of reliability of witness testimony; he did not seek to usurp the Court's role.

459. What Dr Worden's analysis in fact sheds light on is the risk of bugs affecting any group (of the size and objective characteristics of the claimant group) being affected by bugs in Horizon. The numbers show that risk was small relative to the amounts now claimed in these proceedings. The analysis applies equally to the entirety of Post Office's branches: the analysis can be used to show an estimate of the maximum amount of total losses to all branches for the entire life of Horizon.

460. Indeed, this total figure is shown on Dr Worden's financial impact spreadsheet.[591] If the correction of 6,000 to 13,800 is made in Label M (D14) (to reflect Dr Worden's updated figure for the mean financial impact of KEL: see para 1.31 of JR2[592] and the Annex to JR2),[593] the figure in D23 becomes £9,277,311. This is the maximum financial impact of bugs on all Post Office branches, corrected for KEL sampling, creation and retention.

461. That figure has nothing to do with the claimant group and the fact that it is self-selecting. Cs ignored this point entirely in cross-examination. It provides an important guide as to the maximum impact of bugs in Horizon.

462. On the same basis, the figure in D24 becomes £78,019. This is described by Dr Worden in his report as the maximum financial impact on all claimant branches, corrected for

[591] {D3/8}.

[592] {D1/2/32}.

[593] {D1/3}.

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KEL sampling etc, but it could perhaps more accurately be described as the figure for any group of 561 branches of similar size to the claimant-branches (over the duration of the relevant period). It is a simple scaling process and not any attempt to hone in on the claimants and the specific circumstances and problems of their cases.

463. It is important for Post Office to make clear that this does not mean that the claimants' claims between them cannot exceed c. £78,019. Post Office does not invite the Court to make any such finding. What it demonstrates is simply that it is unlikely (although not impossible) that bugs in Horizon caused lasting financial impacts of the scale alleged in these proceedings. It is open to the Cs, individually or collectively, to demonstrate that in fact bugs did cause the losses they complain of, but that will need to be a matter for evidence and argument in specific cases. It is far from capable of being inferred from the generic evidence.

464. The purpose of this trial is to assess the general reliability of Horizon and not to identify whether it went wrong in relation to particular Cs. This trial has never been about proving whether Cs' specific claims are necessarily good or bad. The Horizon Issues are, as Mr Coyne accepted, about assessing how generally likely it is that Horizon has been the cause of any given shortfall (in the absence of other evidence about shortfall) – it is about the starting point, not the end point. That is the issue on which Dr Worden's numerical analysis sheds light.

465. Another way of making the same point is to say that Dr Worden's analysis treats Cs as a population of operators of branches that had certain objective characteristics at the relevant time (e.g. volumes of transactions), and not as individuals that now, in 2019, assert claims about what happened in those branches.[594]

466. Dr Worden's analysis therefore does assume that each Post Office branch with a given volume of transactions would be equally exposed to the risk of a bug affecting any given branch account. As to this:

[594] {Day19/85:10} to {Day19/85:18}.

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466.1 There is no evidence to undermine that assumption. Dr Worden himself gave careful consideration to whether there might have been objective factors increasing the risk for some branches, but he could not identify any of any substantial impact.

466.2 Cs know their branches and their cases. The burden is Cs to demonstrate that there really is some factor or feature which means that they were more exposed to a higher risk than average. (Cs can also of course simply seek to prove that they are the unlucky ones that were affected by unlikely events. None of that is ruled out by the fact that the overall impact of bugs on the network was likely very low.)

467. The Court cannot properly be invited to reach conclusions as to the evidential significance, from a statistical perspective, of Cs asserting that there were branch-affecting shortfalls in their branches (which were not resolved by countermeasures at the time). That would be to assume matters that fall to be determined at later trials. If Cs had wished to argue that there was some statistical approach that would, without begging the questions for later trials, take into account that Cs are a self-selected group, they could have led expert evidence to that effect. It is inappropriate to now raise the spectre of an analysis that Cs have refused to carry out.

Adjusting the figures

468. As Dr Worden made clear, if the Court disagrees with any of the assumptions which he has used in his calculations, the figures can be adjusted appropriately.[595] The Court is invited to make any appropriate amendments to Dr Worden's Financial Impact spreadsheet.[596] It will quickly be seen that there is an immense amount of tolerance in the figures, i.e. that substantial adjustments can be made without materially altering the sense of scale given by the bottom line figure.

469. In the Financial Impact Spreadsheet:

469.1 In every case a factor, which is given a Label (see column B), is also given a value. Some are facts; some are assumptions; and some are calculations (which

[595] {Day18/161:24} to {Day18/162:7}.

[596] {D3/8}.

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apply simple formulae). The main room for error or disagreement is in the assumptions.

469.2 In every case Column C "Central Estimate" sets out Dr Worden's actual view based on his sampling; and Column D "Conservative Estimate" sets out the approach he has taken, in nearly every case by adjusting his actual view so that it favours Cs' case.

469.3 Labels A, B, C are factual matters which are not controversial. (It was pointed out to Dr Worden in cross-examination that in arriving at the figure for Label A of 13,560 he had used the average for the years 1999 to 2018.[597] That is correct and is what is stated in Column A of Dr Worden's Revised Financial Impact.[598] The statement in Worden 1, para 619,[599] which states that the period 2000 to 2018 has been taken, is therefore incorrect).

469.4 Label D is a claimant branch size divided by a typical branch size. Dr Worden was criticised for some aspects of this calculation. He volunteered a further explanation of the approach he had taken at the beginning of the second day of his cross-examination[600] and in particular that the admitted error of using 561 as the denominator in his calculation in Worden 1 had been corrected for Worden 2. But even if some aspects of his calculation can or should be amended, the effect on the overall conclusion is not very significant – see below.

469.5 Label E: this is what Dr Worden calls the scaling factor – it is just a calculation.

469.6 Labels F-G: again these are factual matters and should not be controversial.

469.7 Label H: another calculation.

469.8 Label L: This is an assumption. Dr Worden calculated that there might be a maximum of 100 KELs with an impact on branch accounts, but he assumes 200.

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[597] {Day20/58:2} to {Day20/58:10}.

[598] {D3/8}.

[599] {D3/1/148}.

[600] Beginning at {Day19/3:11}.

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(The Court will recall Mr Coyne's evidence that, based on his much more extensive review of KELs, he does not think there are more than 40.)

469.9 Label M: as noted above Dr Worden has calculated this figure to be £13,800 – which is still very considerably higher than any evidence suggests when the likelihood of TCs having been issued is taken into account.

469.10 Label N: another calculation.

469.11 Labels T-U: these are a series of assumptions about whether a bug is reported (T); and a KEL is created given a bug is reported (U). Dr Worden has changed the assumptions so that it significantly favours Cs' case.

469.12 Label V: another calculation.

469.13 Label W: an assumption about whether a KEL is not archived. Again the assumption has been changed by Dr Worden so that it significantly favours Cs.

469.14 Label X-Z (and E1-E2): further calculations. (Note that the formula for E2 should read "E2-L/X").

470. The Court is invited to carry out the following changes to the "Conservative Estimate" column, simply by way of example:

470.1 Change Label D to "1": this means that Cs' branches are treated as the same size as the average Post Office branch. Doing this removes any concern over the scaling factor (which was 0.5).

470.2 Change Label M to "25,000": this is a far higher value than the evidence can credibly support. It assumes that the mean financial impact of a bug in a KEL is £25,000 when it is highly unlikely that a bug of such seriousness would not have been detected (let alone many such bugs).

470.3 Change Label T to "0.5": this assumes that only half of the bugs with financial impact are ever reported to SSC, contrary to the evidence and common sense.

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470.4 Change Label U to "0.3": this assumes that only 30% of the bugs actually reported lead to a KEL being created, again contrary to the evidence (including from Mr Coyne).

470.5 Change Label W to "0.5": this assumes that only 50% of such KELs were archived, again contrary to the evidence and common sense.

471. Making these changes, which are implausibly generous to the case against Horizon, it can be seen that:

471.1 The changes to T and U mean that V becomes 0.15, i.e. the calculation proceeds on the assumption that there is only a 15% chance of a KEL being created for a give bug.

471.2 The maximum summed financial impact of all bugs on all Post Office branches (Label Y) is £66,666,667.

471.3 The maximum summed financial impact on claimant branches (or indeed on any group of 561 average branches since the scaling factor due to size of claimant branches has been removed) is £1,121,289 (Label Y), a little less than 6% of the sums claimed in these proceedings as false shortfalls (Label 26).

471.4 In order to generate these figures it has been assumed that there are 2,667 bugs (Label 28). The evidence at trial is not remotely consistent with such a high number.

472. This exercise is, on one view, wholly artificial since it presents a gross exaggeration of the true position by assuming a set of facts for which there is no support at all. But what it does emphasise is: (1) the degree of tolerance in Dr Worden's figures and (2) the sheer scale of error that would be required in the system (and the laxity of Fujitsu's practices) that would be required for Horizon to be as unreliable as Cs wish to argue.

473. It was suggested to Dr Worden that if his "conservative estimate" of 672 bugs was taken and it was assumed that each bug affected 48 branches, then the total number of incidents (i.e. the number of separate effects on branch accounts) would be 32,256 – which amounts to an average of about one such incident per claimant.[601]

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474. It is submitted that this does not assist in answering the questions of extent:

474.1 First and foremost, the figures put forward by Dr Worden – in both his central and conservative estimate – have been overtaken by events. It is clear that both experts have been looking for bugs and that Mr Coyne's searches in particular have been extensive and likely to have identified the great majority of bugs. Mr Coyne's own view, based on all his work, was that the total population of KELs might contain as many as 40 bugs with lasting impacts, and even that must now be an overestimate given that Mr Coyne moved away from 29 and down to 22 such bugs in the bug table.

474.2 On Mr Coyne's estimate of 40 bugs, assuming for present purposes each bug to have 48 incidents, there would be a total of 1,920 incidents across all Post Office branches. Assuming Cs branches not to have some special characteristic, one would expect about 32 incidents for a group the size of Cs (1,920 x 52,000/3,091,680).

474.3 Secondly, the average number of incidents suggested to Dr Worden in cross-examination (i.e. 48) includes the incidents for the Dalmellington bug, all of which were inevitably picked up by countermeasures. A more accurate estimate would be to take Receipts and Payments (say, 62); Callendar Square (30); and Suspense Account (14),[602] the average of which is 35.

475. Dr Worden set out to provide a numerical basis on which to answer the questions of extent. His calculations are of material assistance in getting to grips with the scale of error that would be implied by Cs' case and how it compares to the scale of error identified by the experts. The calculations do not purport to answer the claims that Cs make, but they provide a useful indication of relative scale.

Mr Coyne's approach in his reports – avoiding "extent" questions

476. Mr Coyne agreed with the formulation of the ultimate purpose of the issues he was asked to consider:

[601] {Day20/61:12} to {Day20/64:16}.

[602] {Day20/60:8} to {Day20/60:14}.

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Q. I'm not suggesting that you don't have to look at whether bugs have arisen during the life of Horizon. What I'm suggesting to you is the practical purpose of these issues, the question you are being asked, is to what extent is it likely that those bugs are going to cause shortfalls in any given case?

A. Yes, I agree with that.[603]

477. Mr Coyne agreed that, to answer the Horizon Issues in a meaningful way, it is necessary to determine the extent to which it is likely or unlikely (in general) for bugs to cause shortfalls for which SPMs have been held liable.[604] In order to do that, some sort of metric, or yardstick, is required. Mr Coyne claimed to have used a metric:

A. The metric I have adopted is to find whether there was an actual bug, error or defect and see whether it had an impact. I don't believe there is any other metric.[605]

478. That is no metric at all. It involves nothing more than a series of factual observations about individual bugs and their impacts, divorced from any sense of scale or the likelihood of other similar or different bugs arising and having an impact. Mr Coyne's approach in his reports provided no meaningful assistance on questions of extent.

479. It is obviously impossible for any individual to examine, still less assimilate, every document in the case which relates to the operation of Horizon over the last 20 years.[606] Mr Coyne accepted the principle of looking at a limited portion of the evidence i.e. a sample of it, in order to arrive at overall conclusions:

Q. To what extent is this likely or unlikely to happen in branch accounts in Horizon? To what extent was the risk faced by a user in Horizon high or low? Do you accept that those are the sort of issues that are raised in this trial?

A. Yes.

Q. And to address extent, you can look at a limited portion of the evidence that you can sensibly review. You can assess its nature and scale and on the basis of those assessments you can arrive at overall conclusions that are generally useful, can't you?

A. Yes.[607]

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[603] {Day14/20:20} to {Day14/21:1}.

[604] {Day15/98:15} to {Day15/98:20}.

[605] {Day15/98:24} to {Day15/99:1}.

[606] {Day15/100:4} to {Day15/100:9}.

[607] {Day15/100:22} to {Day15/101:8}.

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480. An analogy which was suggested during Mr Coyne's cross-examination was an exit poll at an election. From a small amount of definite information (i.e. the votes cast by a small percentage of the electorate) judgments can be made about the overall outcome. There will be a margin of error in that overall judgment and that needs to be accounted for.

481. Despite Mr Coyne's disavowal, this is precisely what he has done in his reports:

> *Q. Well, isn't it actually what you are trying to do in your evidence as well, Mr Coyne? Aren't you saying: I found a number of bugs, and aren't you suggesting that an inference should be drawn that there could be a great number of other bugs that you haven't found yet?*
>
> *A. Yes, but it is from the basis of actually finding bugs and trying to identify how many branches may be impacted by those bugs, errors and defects.*
>
> *Q. What I'm suggesting to you is that when you find certain hits in your sample, because any sample is necessarily limited, your ability to be able to say that the court should scale up and should infer that there are likely to be a certain number of other hits, or an uncertain -- a certain scale of other hits, that is dependent upon the quality of the sample that you have chosen in a particular -- whether it is an unbiased sample, yes?*
>
> *A. Yes, but in my report I haven't suggested any scaling up from particular bugs, errors and defects. I have talked about specific bugs, errors and defects and how many branches they are recorded to have impacted. There's no scaling applied to that.*[608]

482. This answer misses the key point: inviting the Court to infer from the existence of some bugs in the Peaks and KELs reviewed by Mr Coyne that there are many more bugs in the Peaks and KELs that had not been reviewed does involve asking the Court to scale (or adjust) upwards from the observed bugs. The fact that the process is impressionistic, rather than being based on any valid statistical approach, does not change this. It simply makes the process less likely to be reliable and accurate.

483. On the basis of any hand-picked example, like those repeatedly cited by Mr Coyne, one can only infer that some event may have been "likely" to have occurred once during the lifetime of Horizon – i.e. the one instance represented by the document itself. This implies that the likelihood of that event impacting the accounts of a randomly selected branch account would be around one in three million. Using hand-picked examples,

[608] {Day15/104:7} to {Day15/105:2}.

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rather than a representative sample, does not allow broader inferences to be drawn about extent and risk.

484. Mr Coyne's attempts to defend his approach were often incoherent. In paragraph 3.3 of Coyne 1[609] he said:

> *The sheer volume of Known Error Logs and reconciliation reports confirm the wide-ranging extent of the impact of such bugs/errors/defects. This evidence demonstrates that such bugs/errors/defects would undermine the reliability of the Horizon system to accurately process and record transactions.*

485. If that statement is looked at closely, it is plainly inaccurate. It can only have been made to create an impression of Horizon which was unfair and misleading. Mr Coyne's confusing attempt to justify the statement is unconvincing:

> *Q. Then you say this in 3.3: "The sheer volume of known error logs and reconciliation reports confirm the wide-ranging extent of the impact of such bugs ... This evidence demonstrates that such bugs ... would undermine the reliability of the Horizon system to accurately process and record transactions." That seems quite an ominous statement to make given the propositions that you have just agreed with me a minute and a half ago, Mr Coyne. Do you not see a tension?*
>
> *A. Yes, I think I do actually. At that point in time we had a document set that consisted primarily of known error logs. I think the PEAKs had only just been disclosed a few days –*
>
> *Q. Weeks?*
>
> *A. Sorry?*
>
> *Q. Would it not be weeks?*
>
> *A. I don't know exactly how many.*
>
> *Q. I'm sorry, I interrupted you. Please carry on.*
>
> *A. Perhaps if we establish what the date was. I think we do mention it in the reports.*
>
> *Q. Yes. Please carry on. I interrupted you and I shouldn't have.*
>
> *A. So what we are saying there is the full picture was yet to be revealed and that it may well undermine the reliability of Horizon.*
>
> *Q. So are you suggesting, Mr Coyne, that when you produced your first statement you were doubtful about whether it was robust?*

[609] {D2/1/25}.

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A. Mm.

Q. And it is when you produced your second statement, when you had more opportunity to look at the PEAKs and so on, that you formed the impression that it was robust after all?

A. I had a different concern when it came to create my supplemental report because there was the discovery of far more defects than it was originally said existed. When putting together my first report I thought the analysis had already been done to establish that there were only three defects. I discovered a fourth defect but then shortly afterwards discovered many more. It was also the case that I had seen a number of reports about improvement of the processes that was in place. But then it transpires that when we saw some of the witness statements that those processes, those improvements in processes, hadn't been adopted. So there was a number of other factors that were brought in place that confirmed that there was large elements of unreliability. That doesn't take away my overriding statement that the Horizon system is relatively robust.[610]

486. None of that has anything to do with justifying the suggestion that the "*sheer number*" of KELs (or even less coherently, reconciliation reports) undermines the robustness of Horizon. As Mr Coyne knows and knew when he drafted his first report, the vast majority of KELs do not disclose bugs with impacts on branch accounts, let alone bugs with any lasting impacts. It is the number of KELs disclosing such impacts that is important, irrespective of how many other KELs there may be (which is likely to reflect Fujitsu's degree of assiduousness in documenting even minor issues).

487. The approach in Mr Coyne's reports was aimed at generating the impression that the bugs that had been identified were the tip of the iceberg and that the Court should infer that Horizon is riddled with branch account affecting bugs. In fact, Mr Coyne had, after extensive and sophisticated searches, identified every single bug he possibly could: he did not satisfy himself with looking at the surface of the ocean; he looked also into the depths. This exchange, arising out of the original drafting of paragraph 3.105 of Coyne 2,[611] demonstrates the attempted sleight of hand on Mr Coyne's part:

Q. You say: "The PEAKs analysed below are a small portion of the PEAKs I have identified as causing financial discrepancy in branch accounts outside of those bugs acknowledged by Post Office. It should be noted there are potentially thousands more PEAKs that illustrate financial discrepancy arising in branch accounts, this is only a small selected sample from keyword searched PEAKs."

[610] {Day14/60:19} to {Day14/62:20}.

[611] {D2/4/43}.

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A. Yes.

Q. Now let's take this in stages. You have changed the wording of the first sentence and I will go to that change but I want to ask you about what the original version means first. What you are claiming there is that you have identified a large number of PEAKs recording bugs which cause branch shortfalls but you have only mentioned a small portion of them in your report.

A. Yes.

Q. That wasn't true, was it?

A. No. By the conclusion of this report there was a substantial amount that was looked at.

Q. In fact what you had done is you had identified every single bug that you could and included it in this report, hadn't you?

A. Within the time available. I mean it is probably quite possible that there could well be more but we have certainly had a good search.

Q. So what you say in the first sentence wasn't true, was it?

A. No, my concern with the way that it read is that -- I was saying that I had only analysed a small portion of the ones that had caused financial discrepancy.

Q. What you are saying there -- what the words literally mean, Mr Coyne, is that you've analysed below a small portion of a larger group of PEAKs that you have identified as causing financial discrepancy?

A. Yes.

Q. And in fact that wasn't the case. What you did in your report was you included every PEAK you could, every PEAK that you were aware of as causing financial discrepancy, didn't you?

A. Yes.[612]

488. Following a query raised by Post Office's solicitors (asking about the further Peaks), Mr Coyne amended paragraph 3.105 to the following:

> *~~The PEAKs~~I have analysed ~~below are~~ a small ~~portion~~proportion of the ~~PEAKs~~PEAKS, from that analysis, I have identified the following as causing financial ~~discrepancy~~discrepancies in branch accounts outside of those bugs acknowledged by Post Office~~.~~. It should be noted there are potentially thousands more PEAKs that illustrate financial discrepancy arising in branch accounts, this is only a small selected sample from keyword searched PEAKs.*

[612] {Day15/106:1} to {Day15/107:17}.

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489. The difference of a few words radically changes the sense of the paragraph. In the original report, the contention was that the bugs listed in the report were a small proportion of the bugs that Mr Coyne had identified; in the revised version of the report, Mr Coyne confirms that these are the only bugs that he had identified, but he adds that there may be many more instances of such bugs having occurred. The important change was made only after WBD wrote to ask about the further Peaks that had been found.

490. Mr Coyne accepted that the sample he is referring to in paragraph 3.105 is a biased sample from which it is not possible to scale up.[613] As noted above, Mr Coyne's actual view was that there might be "*dozens more*"[614] bugs (in addition to the list of 29) and that it seemed reasonable to supposed that the total number of bugs with effects on branch to be found in KELs is likely to be less than 40.[615]

491. After all the intelligent searching (which improves iteratively as time goes on),[616] the chances of there being a great number of bugs identified in KELs and Peaks but which have slipped through the search net is very small.

492. Further, Mr Coyne accepted that, even if the link from KEL to Peak was not as good as that from Peak to KEL, intelligent searching could make that link:

> *A. Yes. There is a better quality of link from PEAKs to KELs. There's not always that link KEL back to PEAK.*
>
> *Q. But this is where the beauty of intelligent searching comes in, isn't it? Because you can intelligently search through the body of PEAKs, having identified all the relevant KELs, and there may be a number of them, there may be one KEL and perhaps two or three others that are also relevant, you search for all the PEAKs which refer to those KELs, don't you?*
>
> *A. Yes.*
>
> *Q. And by that means you are going to get actually quite a good sense of -- you are going to get a good hit rate. You are going to find most, probably more than most, of the PEAKs considering problems which those KELs address, yes?*
>
> *A. It is entirely possible to do that, yes.*

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[613] {Day15/112:15} to {Day15/113:4}.

[614] {Day15/114:6}.

[615] {Day15/123:25} to {Day15/124:9}.

[616] {Day15/116:5} to {Day15/116:18}.

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Q. I'm not asking you whether it is possible, I'm suggesting that it is likely that if you undertake that search you will actually find all the PEAKs that are relevant -- that exist that are relevant to the problem addressed in the KEL?

A. Yes.

Q. So you have identified 29 bugs, you do your searches for all the PEAKs, and by that means you can identify all the PEAKs which record manifestations of the bug. It's likely, I'm going to use the word "likely". I'm not suggesting it can be entirely comprehensive, Mr Coyne. So can we take it as read that obviously there are going to be gaps at the margin, aren't there?

A. Yes. A PEAK is typically created when the bug, error or defect gets to SSC within Fujitsu. So there may be others that don't get there, but once they get to third line support the PEAK is created, so yes.

Q. So by this means you were in a good position both to identify bugs that have been detected in the system –

A. Yes.

Q. -- quite reliably, so with a fair degree of confidence that there won't be that many more bugs in the system?

A. As long as they hit the search terms that I have used, yes.

Q. Remember we are talking about the KELs now. The starting point for the process that I have described is the KELs.

A. Yes.

Q. And you've physically reviewed those KELs, haven't you?

A. Yes.

Q. So it is not as if you need intelligent search terms to find the right ones, you have actually looked at them, haven't you?

A. Yes.[617]

493. Mr Coyne would appear at times to obscure the difference between the possibility of bugs, and the likely extent of them. He was taken to the relevant paragraphs of the pleadings which made it clear that Post Office has always accepted that Horizon contained bugs:[618]

[617] {Day15/125:17} to {Day15/127:16}.

[618] GDCC paras 53-55 {C3/3/22}.

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Q. They made it clear, didn't they, that the critical issue was not whether it is possible or likely for bugs to have the potential to cause false shortfalls in branch accounts over the life of Horizon, that was in fact admitted. The critical issues were the extent to which it was and is likely that bugs cause false shortfalls in any given set of accounts. Do you accept that?

A. I don't really see the difference between the two statements that were made there. The question was whether it was possible or likely and the extent to which it was possible or likely.[619]

494. Mr Coyne accepted the basic principle about the probability of an individual branch being affected by a bug:

Q. Yes. My suggestion to you, Mr Coyne, is that in circumstances where you have got a bug that affects 60 branches?

A. Yes.

Q. And let's say it affects 60 branches on one occasion each, sometimes it will be more, but let's assume it is on one occasion each. If you look at the entire corpus of monthly branch accounts, which is 3 million over 20 years, then of the 3 million branches that will have been affected -- or that could have been affected, I should say, 60 will have been affected.

A. Yes.

Q. Which means it has a 1 in 5 million chance of hitting any given branch that you are looking at at any –

A. On any given month. That may well be right, yes.

Q. Okay. Thank you.[620]

Mr Coyne's approach in his reports – inviting inferences of many or major problems with no proper basis in the evidence to which he referred

495. Mr Coyne's invitations to the Court to make wide-ranging inference were not spelt out clearly in his reports. Instead, he peppered his report with words like "*often*" which give the impression that what is being presented was simply one example of something that he had seen repeatedly. On closer scrutiny, it frequently became clear that (1) the evidence cited in support of the proposition being made was no such evidence at all or was highly suspect evidence and (2) the use of terms such as *"often*" had no basis at all.

[619] {Day14/14:24} to {Day14/15:9}.

[620] {Day15/131:20} to {Day15/132:10}.

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496. For example, in para 5.64 of Coyne 1,[621] Mr Coyne stated:

> *I have noted that hardware replacement often seemed to be a "fix" of last resort where no other explanation could be given, and therefore there is certainly a possibility that hardware was at fault.* (emphasis added).

497. The KEL cited in support of that proposition[622] simply states that the problem that had been identified was due either to the SPM "*typing ahead of themselves*" or a hardware fault. When challenged on this, Mr Coyne chose not to answer the question put about the specific document and instead referred to other documents and suggested that five instances (over 20 years) would be enough to justify a claim that something happened "*often*" (rather than sometimes):

> *Q. How can that justify the claim that you make here that hardware replacements are often a fix of last resort?*
>
> *A. Well, there's a number of other examples. There is the phantom transactions example where hardware was changed because it was -- they were trying to work out whether it was environmental issues or not that were causing erroneous transactions. There are a number of examples. There is only one cited here but there are a number of examples throughout the report.*
>
> *Q. Are we talking about five examples or are we talking about 100 examples?*
>
> *A. There will certainly be five examples that –*
>
> *Q. I see. So there "often" means something in the region of five, does it?*
>
> *A. Yes.*[623]

498. In para 3.13 of Coyne 2,[624] Mr Coyne stated:

> *I have seen PEAK records that are closed despite support not being able to diagnose*
> *a root cause whilst acknowledging that there clearly is some form of error occurring within the Horizon system.*

499. No evidence was cited in support of this sweeping allegation. Post Office's solicitors sought further information in relation to it and the answer came in Freeths' letter dated

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[621] {D2/1/71}.

[622] {F/178}.

[623] {Day15/139:4} to {Day15/139:18}.

[624] {D2/4.1/14}.

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22 February 2019[625] at para 1. Nine Peaks were cited of which seven were dated between 1999 and 2001. Mr Coyne accepted that he should have explained more:

Q. Of the nine, seven of them occurred between 1999 and 2001.

A. Right.

Q. One is from 2012 and one is from 2017.

A. Right.

Q. So the truth is that over the past 17 years this has happened, or there are PEAKs showing this as having happened twice, yes?

A. Yes, okay.

Q. Bearing in mind you are making a claim about these things often happening, could I suggest to you it might have been helpful and balanced for you to have indicated that that was the position?

A. Yes.

Q. That most of these occasions occurred during the very early years of the original Horizon. Do you accept that?

A. Yes, it would have been helpful to include that.[626] (emphasis added)

500. In para 5.108 of Coyne 2,[627] Mr Coyne states:

> *At paragraphs 251 to 257 of his report, Dr Worden refers to the concept of "User Error Correction" enabling the facility of correcting many software errors. It should be noted that this would not apply to any bugs /errors and defects unbeknownst to Fujitsu or the Subposmaster. It is evident from the PEAK analysis that often bugs lay undetected for weeks, months or years.*

501. Again, particulars were requested of this allegation. The response[628] referred to Coyne 2 generally but in particular paras 3.26 to 3.54, i.e. the section headed "Acknowledged Bugs". The only bugs referred to in this section are the three bugs identified by Post Office, plus Dalmellington. Mr Coyne was unable to give any further examples.[629] He

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[625] {C5/36}.

[626] {Day15/143:5} to {Day15/143:22}.

[627] {D2/4.1/156}.

[628] {C5/36/5}.

[629] {Day15/145:8} to {Day15/145:18}.

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accepted that the evidence showed that once a bug was identified, Fujitsu took steps to identify all affected branches:

> *Q… Let me ask one last question before the break. In relation to bugs that are detected after a period of time there's evidence showing, I am sure you all agree, that investigations are undertaken by Fujitsu to ensure that all the branches that are affected in the meantime are identified, are you aware of that evidence?*
>
> *A. Yes.*
>
> *Q. It is said that this is a standard process undertaken by Fujitsu when they identify a bug that could affect branches, yes?*
>
> *A. Yes.*
>
> *Q. Do you have reason for thinking that that has not happened in any number of cases?*
>
> *A. I am aware of one where the data was no longer available to investigate it.*
>
> *Q. Which bug was that?*
>
> *A. I would have to find the example. It is in the report.*
>
> *Q. I see.*
>
> *A. I would have to find the example. I know that on Dalmellington there was I think at least two occurrences where Fujitsu weren't able to identify what the impact actually was. They were able to identify the number of branches –*
>
> *Q. We will come to Dalmellington. So it is Dalmellington and one other, those are two examples you are aware of, is that right?*
>
> *A. I've certainly got an example of another, yes.*
>
> *Q. Are you aware of any other examples of this not happening?*
>
> *A. No.*[630]

502. As has been noted above, Mr Coyne in fact accepted that the vast majority of instances of the Dalmellington bug were addressed at the time by the SPM or a TC and that the other four were either not instances of the bug or were in all likelihood resolved: see para. 392 above.

[630] {Day15/145:19} to {Day15/146:23}.

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Mr Coyne's evidence at trial – important concessions on extent

503. Many of Mr Coyne's important concessions in this regard have been identified in addressing Dr Worden's evidence.

504. Mr Coyne accepted that a possible yardstick for answering Horizon Issue 1 was the likelihood of bugs in Horizon causing shortfalls to Cs:

> *Q. Horizon Issue 1 requires the experts to consider the extent of the -- and I'm using shorthand now –*
>
> *A. Yes, that's good.*
>
> *Q. I hope it is not controversial. The extent of the likelihood of bugs in Horizon causing shortfalls in branch accounts.*
>
> *A. Yes.*
>
> *Q. And I'm suggesting to you that one useful yardstick for measuring extent is whether the likelihood in this case is of any sort which could begin to justify the claims that these proceedings are designed to decide.*
>
> *A. Yes.*
>
> *Q. And do you accept that that could be a useful yardstick for measuring extent in the context of this case?*
>
> *A. I can see how it might be one of the contenders for that, yes.*[631]

505. Mr Coyne accepted that when it came to considering the question of extent, it was legitimate in principle to consider and draw inferences from the information available, in particular in Peaks, as to the financial impact of the identified bugs:

> *Q. I'm not suggesting that you could arrive at a certain conclusion of an absolute cast iron number, but I repeat my question. Can't you form an estimate having regard to the totality of the PEAKs that you have seen?*
>
> *A. Yes, but your estimate would have to be based on the three people where it has been recorded to have occurred, so you would say £20, £30 and £50, and the best you could possibly do is come up with an average of that, and you would say that the value of that defect is whatever that is.*
>
> *Q. There is another way that you could do it, isn't there, which is that you could look at the three bugs, the receipts and payments mismatch, the suspense account*

[631] {Day15/155:2} to {Day15/155:17}.

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bug and Callendar Square, the ones that have been thoroughly investigated, and you could form inferences from the scale of those bugs, yes? Would that be reasonable?

A. For those types of bugs, potentially yes.

Q. Those are quite large bugs, aren't they? They are not small bugs in the scheme of things. That's why they were identified in the letter, because these were major bugs of which even Post Office was aware?

A. Yes…[632]

506. Mr Coyne also accepted that he had no basis to challenge Dr Worden's analysis on the three known bugs. Nevertheless he maintained that the losses could be greater than Dr Worden believes to be the case:

Q. Are you aware of any evidence to suggest that Dr Worden's analysis is wrong? Is there any evidence to challenge his calculations in relation to those three bugs?

A. No. I understand the process that Dr Worden has gone through, he has looked at the numerical values that are recorded in the PEAKs for the branches that are available that are recorded in there and he has added those up, so I do not think his maths is going to be wrong.

Q. So if we were to take those these bugs as some kind of indication of fairly sizeable bugs that might appear in the system, it is fair to say, isn't it, that £100,000 is quite small compared to the £19 million that's claimed by the claimants in this case. It is less than 1%, correct?

A. Just on the pure numbers, yes.

Q. So these three bugs, which are the ones we know most about, do not by themselves even begin to support the claimants' case, do they?

A. But the numbers that are given are only the numbers that are in the PEAKs, and the PEAKs only reflect where Fujitsu have become involved and have started to investigate the impact of those bugs from the branches that they are aware of.

Q. So assuming that £100,000 represents a fair assessment of the impact of those bugs, what would you say? You would say, well, they are the tip of the iceberg. There are many more bugs that are capable of producing the kind of financial loss that would justify the claimants' claim, would you say that?

A. Well, it is my position that there's many more than the three and I have set out these here.

Q. In paragraph 3.105 of your report you said potentially thousands, but I think you have moved from that now. Now you are saying perhaps up to 40, yes?

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[632] {Day15/157:20} to {Day15/158:16}.

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A. On the logic that we went through before, yes.

Q. Well, you accepted that logic, didn't you?

A. My position as stated in the report is that there is the potential for more.

Q. Well, I won't go back over the answers you have already given in cross-examination, Mr Coyne. Do you accept that 40 bugs are plainly nowhere near enough to have caused the claimants the shortfalls that they are seeking to recover?

A. I don't accept that position. Because the bug impacts the transaction that would be in effect at the time, if it was a large transaction at the time then the impact of that bug would be a lot larger. In the alternative, they may have experienced the bug a number of times but on smaller transactions.[633]

507. Mr Coyne's ultimate fall-back position was therefore to speculate that there might be many bugs with huge financial impacts that had somehow escaped detection. That fails a common sense test – a bug that had a huge mean financial impact would be very easy to detect, not least because the SPM would find it easy to trace any problem to the relevant (unusually large) transaction[634] and, even if he could not do this, he would hardly be likely not to report a huge and sudden change in his branch's position. Further, there are relatively few transaction types that often involve very large sums of money - remittances are one and large banking transactions are another – and there are strong countermeasures in place to resolve any problems arising in respect of those transactions.

508. Mr Coyne's other suggestion, that there might be bugs with small impacts but which occurred a great many times finds no support in the evidence. But it was nonetheless considered as a theoretical possibility in Dr Worden's first report. He concluded that "micro bugs" were not a good candidate for having caused large losses. He was not challenged on this.

[633] {Day15/164:22} to {Day15/166:22}.

[634] A sudden shortfall of £25,000 (or anything like that sum) would be easy to connect to a transaction of that value done since the last mandatory cash declaration – i.e. in the last trading day.

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F10. Data entry errors (mis-keying)

509. Data entry errors are referred to specifically in Horizon Issues 4 and 6 (as point (a) in each case). It is common ground that Horizon, in order to be robust, should have in place appropriate countermeasures to address data entry errors. This includes both measures to avoid data entry errors occurring and measures to address such data entry errors as do occur.

510. As to the second type of measure:

510.1 Dr Worden's view is that the error correction processes within Horizon, most notably those that result in TCs, correct for mis-keyed transactions.[635] (It is also of course common ground that such processes will not, and could never, catch each instance.) Mr Coyne confirmed that the correction of user errors forms part of the experts' assessment of robustness.[636]

510.2 The factual evidence shows that many data entry errors by SPMs are addressed in the ordinary course. The Court will recall the evidence given by the claimant-specific witnesses to the effect that mistakes that they made in performing transactions were typically corrected by a TC. The call logs and TC records for those witnesses show that these corrective processes were common-place.

511. As to the first type of measure – measures to reduce the incidence of data entry errors in the first place:

511.1 Dr Worden identified a series of measures that are used in Horizon to prevent data entry errors, including (1) the use of menus and buttons in preference to free text input, (2) limiting the number and type of user inputs that can be accepted, (3) requiring confirmation of various inputs before they are accepted, (4) a requirement that the price recorded as being received matches for the items in the

[635] {Day19/96:4} to {Day19/96:10.

[636] {Day14/25:17} to {Day14/26:15}.

[637] {D3/1/63}.

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basket: Worden 1/223-224.[637] Dr Worden describes these as "*standard techniques*" that were "*well designed*" in this case.[638]

511.2 Mr Coyne agrees that "*a large number of measures were implemented within Horizon to prevent user error*".[639] He points out that there is evidence that these measures did not always prevent errors in data entry (which is certainly true).

511.3 Mr Coyne goes on to criticise Post Office for not having implemented a proposal made in a 2008 document[640] that all transaction values entered at the counter for financial products require double entry and cross-validation (i.e. entering the figure twice).[641] But that criticism is difficult to credit given the following:

(a) Mr Coyne in fact agrees with Dr Worden's view that it "*may not be a good choice*" to require double entry of all transaction values. Mr Coyne therefore does not think that Post Office should have implemented the 2008 recommendation after all.

(b) Mr Coyne suggests that the better course would instead be to require that only entries above a certain value – he puts forward £1,000 as a suggestion – be entered twice. He makes the same suggestion in respect of values that have the same numeral twice in a row. Mr Coyne has thought of these proposals himself,[642] tweaking a proposal that was made and considered and that he recognises might have greater downsides than upsides. The mis-keying documents in the trial bundle show that Post Office devoted substantial resource, including workshopping and consultation in devising, testing and considering measures to reduce mis-keying: see, most notably, {F/932}, considered further below.

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[638] Worden 1/470 and 475 {D3/1/118}.

[637] {D3/1/63}.

[639] Coyne 2/5.77 {D2/4.1/148}.

[640] {F/476}

[641] Coyne 2/5.78-5.80 {D2/4.1/149}.

[642] Mr Coyne does not appear to have taken into account that many transactions that would be affected by the recommendation in the 2008 document do now involve the checking and validation of the transaction value: the customer is invited to check and confirm the amount shown on the chip and pin keypad.

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(c) Dr Worden's evidence (which he developed further in response to cross-examination) is that his experience has shown that the design of user interfaces is a "*deceptively complex topic*" where improvements that might appear to be obvious turn out, after careful examination and user trials, not to be a good idea: Worden 1/474.[643] He was slow to second-guess carefully considered design decisions without the benefit of user trials:

> *Q. And you haven't actually had any regard to the specific layout of the individual screens, have you?*
>
> *A. I haven't tried to redesign screens myself or to consider how they might have been better. I think that is a very dangerous exercise for an IT engineer to do actually.*
>
> *Q. Because it is not your field of expertise?*
>
> *A. Well, I have run a field of – a team of user interface experts and we did user interface design for things like air traffic control, and the one thing that I learnt is the designer's prejudices about what is a good user interface or not are not to be trusted, and one thing you have to do is user trials to find out what works.*
>
> *Q. Yes. And that is a very important part of having a robust system?*
>
> *A. Yes, user interfaces should be tried out and evaluated.*[644] (emphasis added)

511.4 Dr Worden also referred in his oral evidence to the kind of trade-offs that are involved in considering changes to user interfaces, including that there is a benefit to keeping the user interface stable.[645]

512. It is important to recall that Mr Coyne's opinions on these Horizon Issues are tainted by his misconception of the task that he was required to carry out – he considered that his role was to identify whether the risk of error had been "*reduced as far as possible*": see,

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[643] {D3/1/118}.

[644] {Day19/93:2} to {Day19/93:18}

[645] {Day19/98:11} to {Day19/99:7}.

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e.g., JS3, para. 6.4.[646] It is easy to see how, applying that mistaken approach, it would be easy to think that more could be done to reduce mis-keying errors (as it always could, if one were to ignore the trade-offs). Mr Coyne does not say that Horizon's measures to reduce mis-keying errors are below any relevant industry standard or otherwise less than good. His view is that they could be better, but that is not a Horizon Issue.

513. Dr Worden also explained that certain characteristics of Post Office's business made it particularly concerned to reduce user errors – in short, the costs of such errors would fall primarily on Post Office because of the volume of transactions and the low margins on those transactions: Worden 1/225-230.[647]

514. Dr Worden was cross-examined in this regard on the basis that he had misread a document as showing a concern over the costs to Post Office of mis-keying when it was in fact about losses caused to SPMs.[648] The document in question is at {F/932}. The Court is invited to read that document in full and then to consider the cross-examination on it at {Day19/94:7} to {Day19/98:10}. Dr Worden was measured and fair in his answers, and the case put to him was entirely without merit:

514.1 {F/932} is clearly a document that addresses the costs to Post Office of having to address mis-keying errors. The "Introduction" states, amongst other things, that the costs of mis-keying were becoming "*prohibitively expensive*", and it refers to the "*the problem POL is currently experiencing*". The document presents many and various proposals all aimed at reducing the cost and the problem.

514.2 The "Background" section, which is the section to which Dr Worden specifically referred in his report, begins with reference to the "*detriment to P&BA*" (a Post Office department – Product and Branch Accounting). It is true that it also mentions the impacts on branches. But the clear focus of this section is on costs to Post Office: see the final para., which sets out various such costs.

[646] {D1/4/10}.

[647] {D3/1/64}.

[648] {Day19/94:7} to {Day19/98:10}.

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514.3 The focus of the document is the reduction of costs to Post Office. In that context, it refers, unsurprisingly, to the fact that mis-keying errors are also a bad thing for SPMs. It would be surprising and show a lack of appropriate concern if it did not do so. The two things are of course not entirely separate: each mis-keyed transaction is both a problem for the SPM and a problem for Post Office (which, as this document makes clear, spend a lot of time and money correcting mis-keyed transactions).

F11. Reliability of transaction data in Horizon and in Post Office's Management Information Systems

515. This topic is relevant, in varying degrees, to Horizon Issues 1, 3, 4 and 6. Post Office's Management Information Systems ("MIS") are also relevant to Horizon Issues 5, 8 and 15.

516. Cs mounted at trial an attack on the integrity of data in the Horizon audit store and the accuracy of data in Post Office's MIS. Neither attack was based on any substantial evidence, but each is addressed in detail below. There are some important preliminary points to note:

516.1 The experts agree that the system architecture is sound. Neither has identified any major flaw in the design, including the design of the audit store.

516.2 Post Office's MIS are back-office systems. They do not form part of Horizon. The data in Post Office's MIS is not the branch transaction data that is used to generate branch accounts.

516.3 The MIS and the audit store are fed copies of branch transaction data from the BRDB (which is where the accounts are in fact generated).

516.4 There is no evidence of data extracted from the audit store having been different from the data in the BRDB. Mr Coyne does not suggest that this has happened. (There are indications that duplicates were sometimes detected in extractions from

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the audit store under Legacy Horizon, but there is no evidence to suggest that these were not addressed.)

516.5 There is also no evidence that the process of moving data from the BRDB to Post Office's MIS is prone to introducing error into that data (let alone that such error is then brought back into the branch accounts).

517. In this context, while there is a lot of material to address on this topic, its importance to the Horizon Issues is relatively modest.

Post Office's reliance on MIS

518. In his second report, Mr Coyne placed a great deal of importance on the suggestion that Credence, an MIS used by Post Office, was somehow unreliable and should not have been used to investigate discrepancies and decide on TCs. This was one of the recurrent themes of Coyne 2:

518.1 At para 1.2(c), Horizon is said to be less robust than Mr Coyne had thought when he drafted his first report because "*Post Office does not consult the full audit trail before ruling on a discrepancy, instead using third party client reconciliation data or subsections of the audit data from within Credence or HORice*".[649]

518.2 At para 4.60, it is said that Credence "*is used by Post Office to attempt to validate branch accounts but contains insufficient audit data for that purpose*".[650]

518.3 At para 5.40, it is suggested that there are "*limitations of utilising Credence as an error proof source of determining financial integrity*".[651] Mr Coyne refers back to this at para 5.126.[652]

518.4 Para 5.54 states that "*previous evidence has illustrated*" that Credence "*did not provide the full picture of the Horizon situation*".[653]

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[649] {D2/4.1/7}.

[650] {D2/4.1/112}.

[651] {D2/4.1/134}, referring back to Coyne 1/5.174-182 {D2/1/101}.

[652] {D2/4.1/161}.

[653] {D2/4.1/137}.

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518.5 Para 5.119 refers to "*errors potentially introduced from consulting only a subset of the available data when dealing with branch discrepancies*" and the "*limitations of the Credence Management Information System*".[654]

518.6 At para 5.131, it is stated that the information available via Credence is "*only a subset of the complete data set and may indicate a different outcome to that when viewing the more complete audit data only available to Fujitsu*".[655]

518.7 It is suggested at para 5.414 that using Credence may result in an incorrect decision on a TC because "*the underlying data set was not comprehensive enough in the first instance*".[656]

519. In each and every one of these paras, Mr Coyne relied on his interpretation of a draft document produced in June 2013 by Helen Rose, a fraud analyst at Post Office –which has come to be referred to as the "Helen Rose Report". The document is at {F/1082}. Coyne 2/5.40 also relied on the End to End Reconciliation Report dated 27 February 2012, which is at {F/896}. These documents are addressed in turn below.

520. Post Office submits that none of the points made by Mr Coyne finds any real support in these documents. This is another example of Mr Coyne's tendency to make and repeat a seemingly important point based on reference to one or two documents that, if read carefully, cannot sustain anything like the weight that he chose to place on them.

Helen Rose Report

521. The Helen Rose Report can be taken first. It arose from the investigation of a recovery situation in the Lepton branch in October 2012. On 4 October 2012, the SPM at the Lepton branch, Mr Armstrong had already taken payment for a BT bill payment when the system went down, and the system reversed the bill payment as part of the recovery process. The customer had already left the branch and so could not be refunded. A TC was issued to Mr Armstrong to re-instate the bill payment and was accepted at the branch. Mr Armstrong was concerned by a suggestion that he had himself initiated the

[654] {D2/4.1/159}.

[655] {D2/4.1/162}.

[656] {D2/4.1/241}.

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reversal, rather than it forming part of the recovery process. He complained to Second Sight.

522. Ms Rose investigated the complaint and produced a draft report dated 12 June 2013 in which she reviewed the transaction data available through Credence, emails sent to her by Gareth Jenkins and ARQ data provided by Fujitsu. Ms Rose was concerned that the Credence data had appeared to suggest that the reversal had been initiated by the SPM, and she recommended a change to make clear where a reversal is carried out as a part of the recovery process: see {F/1082/3}.

523. In cross-examination, Mr Coyne retreated from three of the main points that he had made in reliance on Ms Rose's report. Specifically:

523.1 Contrary to his written evidence and the answer initially given in cross-examination, he ultimately accepted that the TC issued to Mr Armstrong had been correct.

523.2 He ultimately accepted that it was "*possible*" (Post Office submits it is clear) that the Credence data considered by Ms Rose was not "*wrong*", which was a suggestion he made both in his reports and in his initial answer in cross-examination.

523.3 Contrary to his written evidence and the answer initially given in cross-examination, he accepted that the Helen Rose Report suggested that a disconnected session receipt had been printed.

524. These three points are considered separately below before addressing the one point on which Mr Coyne sought to defend the statements made in his reports.

525. First, Mr Coyne ultimately accepted in cross-examination that the TC issued to Mr Armstrong was correctly issued.[657] The TC reinstated the bill payment that had been reversed as part of the recovery process but for which Mr Armstrong had already taken payment before the session failed. The TC thereby (correctly) removed the cash surplus

[657] {Day15/54:8} to {Day15/54:22}.

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resulting from the payment, put the branch accounts back into balance and corrected the position for the customer.

526. Mr Coyne's acceptance of this point was directly contrary to Coyne 1/5.50,[658] which stated without qualification that the TC had been "*issued in error*". Mr Coyne had confirmed that this remained his view earlier in the cross-examination.[659]

527. It is unclear on what basis Mr Coyne felt able to state that the TC had been issued in error. There is no such suggestion in Ms Rose's report. Mr Coyne was overly eager to make a criticism of Post Office and somehow persuaded himself (with no evidence for this in the documents) that the TC must have been issued in error.

528. Second, the Credence data referred to Ms Rose had not been "*wrong*". Mr Coyne was not prepared to accept this point in its entirety. He accepted it was "*possible*" that Ms Rose had misunderstood the Credence data and what it suggested in relation to the reversal.[660] His reading of the document was, however, that the Credence data had stated that the reversal was initiated by Mr Armstrong. He reached this view on the basis that the document included the words "*looking at the credence data, it clearly indicates that the reversal was completed by JAR001 (postmaster)*".[661]

529. The document did not say what Mr Coyne took from it. On any fair reading of the Helen Rose Report, it is clear that Ms Rose had reached a conclusion on the basis of inference from the data on Credence. She referred to the grounds for that inference in the third para., and her "Recommendations" at the end of the document made clear that her concern arose from the absence of any clear indication in the data that the reversal was initiated by the system as part of the recovery process: "*my concerns are that we cannot see clearly what has happened on the data available to us and this in itself may be misinterpreted... My recommendation is that a change request is submitted so that all system created reversals are clearly identifiable on both fujitsu and credence"*

[658] {D2/1/67}.

[659] {Day15/37:9} to {Day15/37:17}.

[660] {Day15/40:21}.

[661] {Day15/39:13} to {Day15/39:16}.

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(emphasis added).[662] She did not state anywhere that any information on Credence was wrong. Ms Rose made an understandable error of interpretation, and she was concerned that others might do so too. That is the whole thrust of the draft report.

530. Mr Coyne may have felt unable to concede this point entirely because he had, in Coyne 2, made the clear and strong claim that Ms Rose's report demonstrated that Credence data "*is either wrong or does not provide sufficient information to complete the full picture*" (emphasis added).[663] It would be fair to say that Ms Rose reached the view that the Credence data was not, on the facts of that case, sufficient to give the "*full picture*" (although, unknown to Mr Coyne, the position was entirely clear from the receipts held by Mr Armstrong). But the suggestion that the Credence data was "*wrong*" finds no support in Ms Rose's report. Mr Coyne went beyond what the document could support in making that suggestion. He should have resiled from it, but he felt unable to do so.

531. Ms Rose's report is the only piece of evidence to which Mr Coyne refers that might suggest that the data in Credence has ever been different from that in the audit store. Mr Coyne quite properly acknowledged in his second report that it "*may be correct*" that Mr Godeseth is not aware of any instance where the data retrieved from the audit store has differed from data from other sources (including Credence).[664] He does not refer to any Peak or other document indicating that data from Credence had been shown to be different from the data in the audit store. Nor does he refer to any evidence to suggest that Credence has ever suffered from a bug that might cause it to present wrong data.[665]

532. It is difficult to avoid the impression that Mr Coyne felt that he had to cling to Ms Rose's report as his sole piece of evidence to suggest that Credence data has been "*wrong*". Given the importance that Mr Coyne attached to Credence's supposed unreliability, this was a point on which he should have been particularly careful to give a fair and balanced view, but he did not do so.

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[662] {F/1082/3}.

[663] Coyne 2/4.63(a) {D2/4.1/113}.

[664] Coyne 2/5.131 {D2/4.1/162}. See Godeseth 1/32 {E2/1/10}.

[665] Ms Mather gave unchallenged evidence that she has never heard of a bug in Credence: see para. 14 of her WS {E2/8/3}.

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533. Third, the report in fact suggested that at least one automatic receipt had been printed. Mr Coyne ultimately accepted that, on a fair reading of the document as a whole, Ms Rose's report "*suggests that the receipt was printed*"[666] (referring to a disconnected session receipt).

534. This was directly contrary to Coyne 2/4.78, where it is was stated that the report "*indicates that there was no evidence of the creation of a disconnected session receipt*".[667] In that para Coyne quoted from one of the emails from Gareth Jenkins that was set out by Ms Rose (the email quoted on page 1), failing to make any reference to the other email extract that Ms Rose quoted (on page 2). The second extract makes clear that Mr Jenkins believed that a receipt had been printed.[668]

535. In fairness to Mr Coyne, the report was somewhat difficult to follow on this point. It is, however, clear from a document that Mr Coyne had not seen when he prepared his reports (an email chain between Mr Armstrong, Second Sight and Post Office)[669] that the true position is that there was a total of 4 receipts printed, as follows:

    535.1 3 disconnected session receipts printed in session 537803.[670] It is normal procedure for 3 receipts to be printed: one is to be kept at the counter to aid in the recovery process; one is for the customer; one is for the branch's records.[671]

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[666] {Day15/45:24}.

[667] {D2/4.1/117}.

[668] See the second para. in blue text at {F/1082/3}. Mr Jenkins may in fact have been referring to a recovery receipt.

[669] {F/1095.1}. Mr Green QC correctly pointed out during the hearing that this document had been disclosed on 7 March 2019. If some implicit criticism was intended, there is no merit in it. The emails were not included in the Second Sight disclosure ordered by the Court. There is a good reason for that. Second Sight did not return these emails to Post Office, as it was required to do under its agreement with Post Office, so the emails did not fall within the body of documents located and disclosed by Post Office in accordance with the Order. Post Office only later discovered the emails in its preparation for trial, and it disclosed them once their relevance became clear. Post Office complied with the order for disclosure and cannot fairly be criticised. The emails had been copied to Mr Bates at the time (and were not disclosed by him).

[670] {F/1095.1/4}.

[671] Mr Coyne was aware that the system should print 3 disconnected session receipts: see Coyne 1/4.59 {D2/1/44}. The uses of the 3 receipts are described in "Recovery - Horizon Online Quick Reference Guide": see {F/1246/1}.

[672] {F/1095.1/5}.

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535.2 A recovery receipt printed in session 537805.[672] (The Managing Judge noted the difference in session numbers during the hearing).[673]

The system therefore worked as designed in printing receipts to guide the recovery process and inform the SPM.

536. Given that Mr Coyne had not seen the emails when he drafted his reports, he could quite fairly have said that it was not clear from the Helen Rose Report what automatic receipts had been printed. But that is not what he said. He instead made a clear statement to the effect that Ms Rose's report suggested that no disconnected session receipt had been printed, i.e. that Horizon had not performed as it should have in this regard. He based this on one email extracted in the report, choosing to ignore the other, later email.

537. This provides another example of Mr Coyne's worrying tendency to rely on one part of a document (invariably a part that might support criticism of Horizon or Post Office) to the exclusion of the rest of the document and any contrary indications that it provides. This was put to Mr Coyne in cross-examination. His only answer was to change the subject (referring to a different point that he had made about Ms Rose's report):

> *Q. So would it be fair to say that in your anxiety to write a bad thing, to be able to write down a bad thing in your report about Horizon, you recorded what was said on*
> *the first page of the report, but you didn't look at the second page of the report which would have shown that bad thing wasn't in fact correct?*
>
> *A. No, but my point was about this report is to show that there is a difference between the view that you get of the data from viewing the Credence data from the ARQ data, and that's correct.*
>
> *Q. Mr Coyne, if you just made that claim we would have been in and out of this issue within about five minutes. The reason why we have spent about 20 minutes so far is because you made several claims, and I set them out orally and you agreed that you were making each of those claims on the basis of this Helen Rose report…*[674]

538. If Mr Coyne had a good explanation for the selective approach that he adopted, he would have given it. If it was simply a mistake, he would have said so (as he did, fairly, in relation to other points). Mr Coyne avoided the question because he had no answer to it.

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[673] {Day15/48:5} and following.

[674] {Day15/45:4} and following.

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539. As stated above, there was one point that Mr Coyne made about Ms Rose's report, on which he was challenged and that he was not willing to concede was wrong. It related to the different times stated in the Helen Rose Report for the BT bill payment transaction. Mr Coyne's oral evidence on this point showed an unwillingness to concede what was obvious from the documents. He even resorted to contradicting a fact that he had himself identified in his first report.

The time at which the BT bill payment took place

540. At paras 5.176 to 5.177 of his first report, Mr Coyne identified what he called "*further issues with the data provided by Fujitsu*", referring to the fact that the "*initial report*" (which was a reference to Ms Rose's report) records the BT bill payment transaction as having taken place at 10:42, whereas the Credence data file shows it as having taken place at 10:32.[675] The implicit suggestion was that the SPM might have been confused by the times shown on various documents and/or that Post Office's investigation may have gone awry as a result of the inconsistency between the stated times.

541. There are two glaring problems with that suggestion. Mr Coyne went some way to accepting this in cross-examination before digging in and resorting to speculation contrary to the facts. He perhaps felt that he could not cede any more ground lest his reliance on the Helen Rose Report be undermined entirely.

542. First, the overwhelming likelihood is that Ms Rose's reference to the transaction having taken place at "10:42" was a typographical error, her intention having been to type "10:32":

542.1 That is in fact the time at which the transaction took place.[676]

542.2 Ms Rose records in the same paragraph that the transaction was reversed at 10:37. She cannot have thought that the transaction took place after it was reversed.

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[675] {D2/1/102}.

[676] The Credence data file records the transaction as having taken place at 10:32: Coyne 1/5.177 {D2/1/102}. See also Mr Armstrong's confirmation of the time at {F/1095.4} (final para.).

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542.3 In giving these times, Ms Rose was reporting on what she could see from the Credence data.[677]

542.4 If Ms Rose had at any time concluded that one of the times shown in the Credence data was wrong, she would obviously have mentioned this in the report. She was concerned that the Credence data did not provide enough information to make clear that the reversal had been initiated as part of the recovery process. She would have been doubly concerned by any indication that Credence was somehow recording transactions and reversals out of order and/or was attaching wrong time stamps to transactions.

543. Mr Coyne sensibly accepted that Ms Rose's reference to 10:42 in the first para of the document "*could well be a mis-key*".[678] But it is difficult to see how he can ever have thought otherwise, unless he simply latched on to something that might be used to criticise Credence without giving it much thought. He again appears to have been overly ready to jump to adverse conclusions.

544. Mr Coyne nonetheless insisted that it was also possible that, rather than Ms Rose having made a typographical error, the time shown in the Credence data was in fact wrong. It is important to record precisely what Mr Coyne said here:

> *Q. Are you really seriously suggesting that Credence was indicating that the transaction was done at 10.42 and that that's a reason for suggesting, for thinking, that Credence is unreliable? Is that really your contention?*
>
> *A. Times on computers can be out. They do drift. It is possible that it's got the time wrong. I agree with your position that it could well be a mis-key on behalf of Helen Rose.*[679] (emphasis added)

545. The underlined answer reflects poorly on Mr Coyne's reliability as an expert:

545.1 Mr Coyne was asked carefully to confirm what he was saying, and he embraced the possibility that the Credence data might have shown (wrongly) that the

[677] It is made explicit that the time stated for the reversal was taken from the Credence data: see the third para. on internal page 1 {F/1082/2}.

[678] {Day15/50:17}.

[679] {Day15/50:12} and following.

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transaction took place at 10:42. If true, that would indeed suggest an error in Credence, rather than a typographical error made by Ms Rose.

545.2 Mr Coyne took refuge in this suggestion despite the fact that he knew (at least when he drafted his first report) that the Credence data showed the transaction to have taken place at 10:32 (i.e. the correct time): see Coyne 1/5.177 – "*…the credence data file shows 10:32*".[680] Mr Coyne had either forgotten this (in which case, he should not have speculated in the way he did), or was simply willing to say whatever he had to say in order to defend the criticism that he had.

545.3 It is, in any event, troubling that Mr Coyne was prepared to speculate as to Credence having possibly "drifted" in time. There is no suggestion in either of his reports (or any documents to which he has referred) that Credence has ever "drifted" so as to record transactions 10 minutes later than when they actually occurred. In any event, the suggestion was non-sensical: if Credence had "drifted" in time (i.e. got out of step with the correct time), it would also have recorded the reversal at a later time, whereas it is clear that it recorded the time of the reversal correctly.[681] A moment's fair consideration would have revealed that.

546. It is difficult to avoid the impression that Mr Coyne was fishing around for something new to say in defence of a criticism that he had made on a very tenuous basis.

547. Second, Ms Rose's report was drafted after the event and as part of the investigation into the SPM's complaint. It was not seen by Mr Armstrong at the time of the recovery process or even at the time of his complaint to Second Sight. It cannot possibly have confused him in relation to the time at which the transaction took place.[682] As for Post Office, it of course had the benefit of what Credence actually showed, and it could (and did) seek further information from Fujitsu.

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[680] {D2/1/102}.

[681] The time of the reversal is recorded in the third para. on p. 1 of the document: {F/1082/2}. The time of the reversal was also shown on the recovery receipt referred to in the first para. at {F/1095.1/5}.

[682] This leaves to one side that Mr Armstrong was in fact aware of the time of the transaction: see his email at {F/1095.1/4}. Again, it is important to note that Mr Coyne had not seen that email.

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548. Mr Coyne also suggested in his first report that the fact that the ARQ data showed timings one hour different from the Credence data (because the ARQ data is always in GMT, whereas it was BST at the date of the reversal – 4 October 2012) might have generated difficulty for the SPM:

> *Whilst this hour difference between the data sets might be easily traceable for Fujitsu, it is not clear how easily it would have been to investigate issues where the Subpostmaster was not sure of what time things went erroneously in the system, or that it was a reversal specifically.* (Coyne 1/5.178) [683]

549. Mr Coyne again allowed himself to speculate as to potential problems of which Ms Rose's document provides no evidence. Further, there is no suggestion in either of Mr Coyne's reports that any SPM's investigation into a discrepancy has ever been hindered by the fact that ARQ data is recorded in GMT. Mr Coyne was challenged on whether it was really plausible to think that an SPM might obtain ARQ data from Post Office but not be told that the data was in GMT:

> *Q. As for the second point made at 5.177, that the ARQ data always works in accordance with Greenwich Mean Time, whereas everybody else at the time was working on British Summer Time, that's not a serious problem, is it? It's not something that is going to cause great difficulties to anybody, is it?*
>
> *A. As soon as you know that you are an hour adrift then it becomes very easy to deal with, but if you don't know that it is problematic.*
>
> *Q. So are you imagining a world in which Mr Armstrong is provided with ARQ data but nobody tells him that ARQ data is based upon Greenwich Mean Time, is that your assumption? And that's a problem, because nobody tells him that ARQ data is based on Greenwich Mean Time?*
>
> *A. No, my answer is if you are told then it becomes very clear very quickly, but if you are not told it is confusing.*
>
> *Q. But in 5.178, Mr Coyne, you seem to be assuming {D2/1/102}, remarkably, that no one would have told him. You say:*
> *"... it is not clear how easily it would have been to investigate issues where the Subpostmaster was not sure of what time things went on erroneously in the system ..." Why are you assuming that, having reached a point where the subpostmaster actually has the ARQ data, no one is going to help him understand that there is an hour discrepancy between the ARQ data and British Summer Time?*
>
> *A. The point that I'm making is that unless somebody tells him it wouldn't be clear. I do not think a user would typically know that the computer would be an hour out.*

[683] {D2/1/102}.

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> *I think the assumption would be that if it is an audit system of some description, that the clock difference would actually be dealt with correctly.*[684]

550. Mr Coyne did not appear to have considered whether this theoretical source of confusion was, in the real world, likely to cause any problem. It would be fanciful to suggest that an SPM who was engaging with Post Office to get to the bottom of a discrepancy, and who was provided with ARQ data as part of that process, would be kept entirely in the dark as to the fact that audit records are kept in GMT. There would be no reason at all for Post Office not to provide that information and every reason for it to do so. There is no evidence in the documents of any SPM having been confused by the fact that ARQ data is kept in GMT and Post Office having allowed that confusion to go uncorrected.[685].

551. Mr Coyne even speculated that the SPM might not be aware that "*it was a reversal specifically*" that had given rise to a discrepancy, supposedly compounding the (theoretical) confusion created by the fact that audit data is kept in GMT. But that suggestion is very hard to follow: the SPM discussed in Ms Rose's report, Mr Armstrong, of course knew that he was disputing the circumstances of a reversal – that was the whole thrust of his complaint. He knew that there had been a reversal; he knew when the reversal had occurred (and he even, although he only looked for these later, had the automatically generated receipts in relation to it); his only complaint was that it had been suggested that he had himself initiated the reversal, rather than it having been initiated as part of the recovery process.

552. Standing back, the Helen Rose Report provides no real support for any of the seemingly important points that Mr Coyne chose to build on the back of it. He gave unsatisfactory evidence in relation to the document, conceding points only where he felt he had absolutely no choice and resorting to speculation and evasion where he felt there remained some room for manoeuvre.

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[684] {Day15/51:2} to {Day15/51:18}.

[685] The Court may recall that, in cross-examination, Mrs Burke asked about the times shown in the ARQ spreadsheets and was given an explanation (with the assistance of the Managing Judge): {Day3/100:24} to {Day3/101:23}. Even if Post Office for some reason failed to inform the SPM of the time difference when providing ARQ data, the point would soon be drawn out.

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The End to End Reconciliation Report

553. At para 5.40 of his second report,[686] Mr Coyne relied on the End to End Reconciliation Report dated 27 February 2012, by reference back to Coyne 1/5.174.[687] The document is at {F/896}. Mr Coyne relies on it in relation to supposed "*limitations of utilising Credence as an error proof source of determining financial integrity*".

554. Mr Coyne confirmed in cross-examination that he relied on {F/896} as a basis on which to suggest that Credence should not be used in order to make decisions on TCs.[688] On any careful reading of the document, it provides no support for that contention whatsoever. Mr Coyne went some way to accepting this in cross-examination.

555. First, the document concerns the reconciliation process carried out between Post Office's back end systems (specifically, POLSAP) and third-party client systems. It does not address the business processes through which Post Office decides on TCs. It states this in clear terms at {F/896/8}:

> *This document does not attempt to define the business processes undertaken within Fujitsu Services and Post Office Ltd with respect to the resolution of any exceptions which may arise, nor does it scope the requirement for any systems that may be required to assist in this process. This information can be found in the associated documents.*

556. Mr Coyne accepted that the document was not about the business processes that lead to decisions to issue TCs.[689]

557. Second, the document refers to the use of POLSAP to "*verify financial integrity*" through that reconciliation process. It says this (the passage quoted by Mr Coyne):[690]

> *There is no formal reconciliation produced between the POLSAP System and the Credence transaction stream. The Credence stream should therefore not be used to verify financial integrity and Post Office should ensure the POLSAP System Transaction information is used for this purpose.*

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[686] {D2/4.1/134}.

[687] {D2/1/101}.

[688] {Day15/55:10} to {Day15/55:13}.

[689] {Day15/61:14} to {Day15/62:3}.

[690] The quotation below is in fact taken from a later version of the same document.{F/896/65} refers to POLMIS, rather than Credence. The later document is at {F/1686}. The quotation is from {F/1686/62}.

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558. The author would of course know that Post Office used Credence as its principal MIS for deciding on TCs. That is essential context to asking whether this passage can really mean, as Mr Coyne would have it mean, that Credence should not be used for that purpose. This was put to Mr Coyne, and he gave a realistic answer:

> *Q. And you are suggesting, are you, here in this paragraph, that the writer of this report in 2012, February 2012 and thereafter, is suggesting that what Post Office has been doing for the previous 12 or 13 years is completely wrong? Do you honestly think that that's what the writer of this sentence was intending to convey?*
>
> *A. No, I don't think they are saying that what you have been doing for the last 12 years is completely wrong. They are providing a warning that you should use one set of systems rather than another set of systems because the two do not reconcile.*[691]

559. That is, in one sense, correct: POLSAP is the system that should be used for the reconciliation processes described in this document. It would be a bad idea to use two different data streams interchangeably for that reconciliation process, especially where those two systems are not themselves formally reconciled one to the other. That is what the document is saying. What the document is plainly not saying is that there is anything wrong with using Credence to conduct investigations into discrepancies or to decide on TCs. POLSAP and Credence have different but complementary functions and purposes: see, for instance, Ms Mather's witness statement at para 9 {E2/8/2}. The use of multiple and complementary MIS is a strength, not a weakness, and reminding the reader of the MIS different purposes does not imply any weakness or unreliability in either of them.

560. Mr Coyne accepted that the reference to "*financial integrity*" relates to the integrity of data compared between Post Office and the client, rather than to the integrity of the data used in making decisions on TCs (given that the document does not address that business process).[692] It is true, as Mr Coyne stated, that an error in reconciliation might feed back into the business processes through which Post Office decides on TCs. But that is a different point and does not support the contention that this document, and its reference to "*financial integrity*", provides evidence that Credence should not be used for deciding on TCs.

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[691] {Day15/69:6} to {Day15/69:16}.

[692] {Day15/69:17} to {Day15/70:2}.

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561. Mr Coyne's reliance on this document as somehow undermining the reliability of Credence was unfortunate. He was too eager to latch onto a few words that might, taken out of context, generate a negative impression. At the very least, he should have acknowledged in his reports that the document was not really addressing (and, in fact, had nothing to do with) the point that he wanted to take from it, as he ultimately accepted.

Dr Worden's evidence in relation to the Credence system

562. Dr Worden referred in his first report to Post Office's use of Credence and other MIS. He noted that, when investigating anomalies reported by SPMs, Post Office uses Credence and other MIS in the first instance, but that it can also obtain data from the audit (by requesting such data from Fujitsu): Worden 1/1086.[693] He considers that Post Office's access to transaction data through Horizon reports, but also through MIS, serves to improve the robustness of the system: Worden 1/1085.[694]

563. Dr Worden was asked relatively few questions about Credence. He was not asked to comment on Mr Coyne's criticisms of Post Office's reliance on its MIS. It was not put to him that Post Office was wrong to rely, in the first instance, on Credence when investigating disputes and deciding on TCs. He answered the questions that were put to him fairly.

The 2010 Royal Mail audit

564. It was suggested to Dr Worden that Credence was excluded from the scope of the Royal Mail audits from before 2010.[695] That bizarre suggestion was based on the following words in the audit for the year ended 28 March 2010 {F/646.1/2}:

> *PO has made significant changes to its IT environment in 2010, resulting in the inclusion in scope of the Credence application for the first time, replacing POL-MI and the Reference data system.*

[693] {D3/1/239}.

[694] {D3/1/239}.

[695] {Day20/70:4} to {Day20/70:17}.

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565. As is implicit in those words, the Credence system was not audited in earlier years because it did not exist. Credence was introduced in April/May 2009.[696] It replaced the earlier systems to which the auditors refer. Credence had, in effect, replaced POLMIS.[697]

566. Cs leapt on the reference to Credence not having been audited in earlier years, assuming (wrongly) that this meant that it had been somehow excluded from the audit process. Dr Worden understandably did not recall the date on which Credence had been introduced, so was unable immediately to correct the mistaken impression that Cs sought to create.

Keystroke monitoring

567. Dr Worden was asked whether he agreed with the statement (in Ms Mather's witness statement)[698] that Credence records all keystroke activity at the counter. This question was asked without reference to Ms Mather's oral evidence to the effect that what she had intended to say was that the Credence records the "*transactional data*" (i.e. the user inputs comprised of screen presses and keystrokes).[699]

568. Dr Worden stated that, before seeing Ms Mather's statement, he had not understood Credence to provide a record of all keystroke activity.[700] He would not expect that level of detail to be made available through a MIS.[701] It was later suggested to him that he had been "*guessing*" what functions Credence had, and he disagreed, explaining that he had relied on his experience of MIS but also what he was able to infer from the documents that he had reviewed.[702]

569. It was then put to Dr Worden that he had given evidence to the effect that he had himself formed the view, based on his review of documents, that Credence provided a record of keystroke activity. That was not correct. Dr Worden rejected the mischaracterisation of his evidence:

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[696] Mather, para. 10 {E2/8/2}.

[697] Dr Worden noted this during his oral evidence on another day {Day18/34:14}.

[698] Mather, para. 12 {E2/8/3}.

[699] {Day6/149:7} to {Day6/149:20}.

[700] {Day18/35:12} to {Day18/36:7}.

[701] {Day18/36:9} to {Day18/37:13}.

[702] {Day18/46:16} to {Day18/47:6}.

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> *Q. And when I started asking about this it did sound as if you were saying you had separately formed the view from other documents that that was possible?*
>
> *A. No, I had said I had separately formed a view from other documents that Credence was used to investigate what happened in the branch.*[703]

570. Dr Worden was asked to agree that because he had referred to Ms Mather's witness statement in his first report and said that it was "*consistent with his understanding*",[704] the reader would have thought that he was confirming the content of para 12 of that witness statement, including the statement that Credence recorded keystroke activity.[705] Dr Worden was then drawn into a semantic discussion as to the meaning of the word "*consistent*" in his reports and in ordinary usage.

571. A more useful exercise is to focus on what Dr Worden in fact said in his report and the context in which he referred to Ms Mather's witness statement. The part of Worden 1/1086 that refers to the witness statement reads as follows: "*When Post Office is investigating anomalies reported by Subpostmasters, they use Credence and their other management information systems in the first instance…".* The footnoted reference to Ms Mather's statement then appears. It is clear, on any fair reading, that Dr Worden was referring to Ms Mather's evidence to the effect that Post Office uses Credence and other MIS in the first instance when investigating anomalies (paras 9-13).[706] He was confirming that the overview provided by Ms Mather was consistent with his opinion. It requires a forced reading of the sentence and the footnote to conclude that Dr Worden intended to provide confirmation of each and every sentence in Ms Mather's witness statement.

572. Nonetheless, Dr Worden fairly accepted that he could easily have made clear in his report that he was not confirming what Ms Mather said about keystroke activity.[707]

573. Dr Worden was also taken to the Peak at {F/1848.8.2} (August 2018). In an entry that begins on page 2 of the Peak, Joe Harrison said as follows: "*Here are the keystrokes and*

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[703] {Day18/39:9} to {Day18/39:14}.

[704] See fn 41 at {D3/1/239}.

[705] {Day18/40:15}.

[706] {E2/8/2}.

[707] {Day18/49:3} to {Day18/49:11}.

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messages from the counter, which might help Atos". It is clear from what follows that the log records not only "*keystrokes"* (in fact, buttons pressed on the counter screen) but also messages displayed on the counter screen. Dr Worden stated that he understood this information to be taken from "*an operation called TED*" and that the keystrokes were recorded in event logs that were used by Fujitsu in its investigations into bugs.[708]

574. Page 1 of the Peak shows that Henk Bakker of Post Office passed on the issue to Fujitsu because Post Office could not itself get to the bottom of it, based on the information that it had. Fujitsu identified that the problem had arisen as a result of the bug described in KEL cardc235Q and that the script would have to be addressed by Atos. The "*keystrokes and messages*" were provided on the basis that they might help Atos to understand what had gone wrong and what changes to the script may be necessary.

575. Post Office has sought to identify the "*TED*" operation to which Dr Worden referred in his oral evidence, and it appears likely to be a mistaken recollection of "*CET*", which is short for "Counter Eventing Team" (one of the teams that monitors system events at Fujitsu, specifically counter events).[709] Dr Worden was largely correct in what he said about keystroke activity monitoring:

575.1 Credence does not provide a record of keystroke activity. Post Office does not, therefore, have direct access to a record of keystroke activity.

575.2 Fujitsu, by contrast, does have access to a record of keystroke activity. As is implied by the entry on page 3 of the Peak {F/1848.8.2/3}, the record must be downloaded "*from the counter*", rather than being contained in the events logs at the BRDB. The counter log is called "*POC log*". There are references to it in various documents in the trial bundle, including {F/813} (2011 KEL), {F/792} (2011 Peak) and {F/1318.1} (2015 KEL). It is not unusual for the log to be downloaded and considered as part of Fujitsu's investigation into a suspected bug or some other unexplained phenomenon in the branch.

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[708] {Day20/51:12} to {Day20/52:2}. See also {Day20/121:24} to {Day20/122:25}.

[709] See, e.g., {F/823} (definition on p.6 and explanation of CET's role at p.17). The CET is referred to in the KEL at {F/680} as checking whether the "*counter has actually rebooted*" (from which Dr Worden quoted at {D3/7/33}).

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576. Interpreting the information in the log self-evidently requires skill and experience. There is no suggestion from either expert that information of this kind would typically be required for the day-to-day business activities that are supported by Credence and the other MIS, although it can be obtained on request (in common with other logs that are available from Fujitsu).

Mr Coyne's evidence in relation ARQ requests and the audit store

577. There are two important aspects to Mr Coyne's evidence on ARQ requests and the audit store:

577.1 Mr Coyne suggested that he had not, at the time of his first report, appreciated that Post Office used MIS (at least initially) to decide on TCs, rather than consulting the data in the audit store.

577.2 Ultimately, Mr Coyne could not maintain any serious criticism of Post Office's practice of consulting first its MIS and, only where necessary, obtaining further information through an ARQ request. Much less could he identify how that practice might undermine the robustness of Horizon.

578. These two points are addressed in turn below.

The supposed change of understanding between Coyne 1 and Coyne 2

579. At para 1.2 of his second report, Mr Coyne listed various reasons for which he contended that Horizon is "*less robust*" than he had considered in his first report. One of those reasons, listed at (c), was as follows: "*Post Office do not consult the full audit data before ruling on a discrepancy, instead using third party client reconciliation data or subsections of the audit data from within Credence or HORice*".[710]

580. Mr Coyne confirmed in cross-examination that his contention was that, at the time of drafting his first report, he had understood that Post Office consulted the data in the audit store every time that it considered any discrepancy that might lead to a TC.[711]

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[710] {D2/4.1/7}.

[711] {Day15/74:17} to {Day15/75:9}.

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581. That is demonstrably not the case. It is clear from the content of his first report that Mr Coyne knew that the data in the audit store was not consulted as the first port of call for all questions in relation to discrepancies. Specifically, Mr Coyne knew the following at the time of his first report:

581.1 The audit store was a "*separate audit record of transactions and events*" that was "*archived*": Coyne 1/4.51.[712] Data was copied to this archive daily[713] (rather than on a rolling basis as would be required for business operational purposes).

581.2 The files in the audit store were "*sealed digitally and held for seven years during which time they may be retrieved and filtered to produce the relevant audit for a particular branch*": Coyne 1/4.53.[714]

581.3 Each time data was "*retrieved for audit enquiries*", it was subject to various checks: Coyne 1/4.34[715] (referring to Legacy Horizon, but there is no suggestion that the process was materially different).

582. In forming this understanding of the role played by the audit store, Mr Coyne had the benefit of Mr Godeseth's first witness statement, which states (amongst other things) as follows in relation to the audit store (with added emphasis):

> *24.3…The Audit Store is not involved in the live operation of a branch or Post Office's business; it is the long term repository of audit data…*[716]
>
> …
>
> *27. …Each day the previous day's Message Log is passed to the Audit Store which then "seals" each file and stores them until they are retrieved (if they ever are) or deleted in line with the applicable retention period….*[717]
>
> *28. The Audit Store could be seen as the "master record" of the transaction data input in branch. It is designed to provide long-term, highly secure, storage of data in the event that any challenge to the data is raised. Save for it being a repository of data, the Audit Store is not used in live daily operations by Subpostmasters or Post*

[712] {D2/1/43}.

[713] {D2/1/43}.

[714] {D2/1/43}. See also Coyne 1/4.27 {D2/1/38} (making the same point in relation to Legacy Horizon).

[715] {D2/1/39}.

[716] See para. 24.3 {E2/1/7}.

[717] See para. 27 {E2/1/9}.

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Office. A copy of the transaction data in the BRDB or in another system is used for day to day operations.

29. Post Office (its staff or its systems) does not have direct access to the Audit Store. Post Office may request data from the Audit Store via a process known as the "ARQ process" which requires manual intervention by Fujitsu staff to extract Audit Store data. The components that are used to provide audit data retrieval facilities are described in the Audit Data Retrieval High Level Design document {POL-0440079}.[718]

...

30.3 The extracted data is then provided to Post Office, usually in the form of an excel spreadsheet as this is the most user-friendly format.[719]

583. This evidence made abundantly clear that data in the audit store was kept separate from the day-to-day operations and could only be accessed by Post Office through a request to Fujitsu, which would then require a manual process of extraction and data validation. Mr Coyne had read and considered Mr Godeseth's statement when he drafted Coyne 1: he refers to it in the section where he considers transaction data and the audit store[720] and again elsewhere in his report.[721] It was of course a key document that Mr Coyne would have considered carefully.

584. Mr Coyne also referred in his first report to other documents that identify the design and role of the audit store: see, for example, {F/997} (referred to repeatedly in Coyne 1).[722] Mr Coyne also set out in his first report a structure diagram that shows clearly that the BRDB provides a copy of data into "*other systems*" and, quite separately, writes data to the audit store (from which data can be retrieved via "*Audit Retrieval*" and as an "*Audit Extract*"): see Coyne 1 at internal p.181 {D2/1/194}.

585. Mr Coyne knew that these "*other systems*" were (or included) the "*Post Office back end systems*" and that it was using these systems that Post Office determined whether or not

[718] {E2/1/9}.

[719] {E2/1/10}.

[720] See Fn.18 at {D2/1/37}.

[721] See Coyne 1/5.104 {D2/1/81}.

[722] See para. 1.7 {D2/1/14}, para. 4.10, fn 15 {D2/1/35}, para. 4.23 {D2/1/38} para. 4.44, fn 24 {D2/1/41}, para. 4.53, fn 26 {D2/1/43} and the table at {D2/1/194}.

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to issue TCs: see Coyne 1/6.46.[723] He implicitly criticised Post Office for relying on those systems – a criticism that he could not have made had he truly thought that Post Office always referred to audit data when taking decisions on TCs.

586. Mr Coyne had also consulted the technical documents showing the Horizon system architecture and the clear separation between, on the one hand, the data feed through the TPS into Post Office's back-office systems (including Credence and POLSAP) and, on the other hand, the copying and archiving of data from the BRDB into the audit store. Mr Coyne had considered, and referred to in Coyne 1, key documents that made clear that the audit store was entirely separate from the data streams provided to Post Office: see "*Horizon Next Generation – Plan X*" (September 2005)[724] and "*Horizon Online Data Integrity Plan for Post Office Ltd*" (March 2012).[725]

587. Mr Coyne also had the technical documents that explain the manual process for obtaining data from the audit store: see, for example, {F/542} (2009), {F/662} (2010) and {F/1526} (2016).

588. Despite all this, Mr Coyne maintained in cross-examination that he had believed when he drafted his first report that data from the audit store was available to and used by Post Office for all reconciliation activities and all decisions in relation to TCs. He said that he thought that Post Office could view data from the audit store "*on screen or by pulling a report*".[726] He even went so far as to say that he had thought that the audit database formed part of Post Office's MIS:

> *Q. Could I suggest to you, Mr Coyne, that you knew very well that the system that Post Office used for the purposes of having what you describe as a quick look were its management information systems. The hint is in the name, MIS, management information systems. And you would expect, in the absence of being told to the contrary, that a business such as Post Office would use its management information systems for making business decisions of that sort?*
>
> *A. And the audit database would be part of that management information system.*[727]

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[723] {D2/1/119}.

[724] {F/299}. See, in particular, pp. 25 and 28. Referred to at Coyne 1/fn 23 {D2/1/41} and fn 25 {D2/1/42}

[725] {F/1424}. See, in particular, pp.13-14. Referred to at Coyne 1/ fn 29 {D2/1/45}.

[726] {Day15/82:23} to {Day15/83:15}.

[727] {Day15/84:15} to {Day15/84:25}.

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589. Mr Coyne was pressed on this remarkable suggestion. He insisted that he had believed that the audit data was available to Post Office directly through an unidentified MIS:

> *Q. And what I'm suggesting to you is that there is no basis upon which you could ever have thought that the information in that audit store could be regarded as a Post Office management information system?*
>
> *A. I believed that it was a system that Post Office would look at whenever there was a dispute about what happened at a branch counter. I believed that they would have access to that.*[728]

590. It is implausible that Mr Coyne in fact believed any of this when he drafted his first report, for three reasons.

591. First, as set out above, Mr Coyne knew at the time of his first report how the audit store worked and, in particular, that it was separate from the day-to-day operations and Post Office's management information systems.

592. Secondly, if Mr Coyne had in fact believed that Post Office accessed the audit data through some system operating within or alongside its MIS, he would not have felt able to criticise Post Office for relying on (only) those systems to decide on TCs, which is exactly what he did at Coyne 1/6.46.[729] Mr Coyne confirmed at trial that his first report raised this as a criticism.[730]

593. Thirdly, Mr Coyne accepted that, across the hundreds of technical documents and thousands of Peaks and other documents that he had reviewed, there was no mention of any "*route by which information from the sealed audit store was made available on a read only basis to Post Office*": see {Day15/86:12} to {Day15/86:25}. Mr Coyne accepted that he had seen nothing to support the idea that there was some technical means by which Post Office had direct access to the information in the audit store:

> *Q. But just to be absolutely clear, you had not and indeed you have not seen any documents suggesting that Post Office had the ability to gain access to the audit store on its own systems, had you? There was no design facility, there was no -- there were no lines of communication between the audit store and Post Office in any document you had ever seen, correct?*

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[728] {Day15/86:4} to {Day15/86:11}.

[729] {D2/1/119}.

[730] {Day15/77:22} to {Day15/78:13}.

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A. No, it looks as if the majority of the references to audit database access was from Fujitsu personnel.[731]

594. Mr Coyne cannot have believed that Post Office had read-only access to the audit store. Under the pressure of live evidence, however, he resorted to saying whatever he had to say to defend the point that he had made in Coyne 2/1.2(c).[732] Mr Coyne embroidered a justification for what he had said in that short paragraph, rather than simply accepting that it was wrong and that he had in fact known when he wrote Coyne 1 that Post Office relied first on its MIS, obtaining the audit store data where appropriate through an ARQ request.

The roles of MIS and ARQ requests

595. Mr Coyne accepted that it would not be "*possible*" to use the audit data to decide on each and every potential TC.[733] Given how the audit system is designed, and the labour-intensive process of data validation involved in extracting data from the audit store, it would be practically impossible (and prohibitively expensive) to use the ARQ process tens or hundreds of thousands of times per year.[734]

596. Despite this, and to retain his criticism of Horizon, Mr Coyne suggested that the audit system could and should have been designed differently to allow "read only" access from Post Office systems.[735] He said that this would have been "*quite simple*". As to that suggestion:

596.1 This is not something that Mr Coyne said in either of his extremely long reports, despite raising almost every possible criticism of the Horizon system. If he had genuinely reached the view that the system suffered from some fundamental design flaw that would have been "*quite simple*" to remedy, he would have identified this in his reports. Instead, in his second report, Mr Coyne accepted that the design principles of the audit system were "*theoretically sound*".[736]

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[731] {Day15/87:15} to {Day15/87:23}.

[732] {D2/4.1/7}.

[733] {Day15/80:13} to {Day15/80:21}.

[734] {Day15/81:15} to {Day15/81:22} and {Day15/87:24} to {Day15/88:11}.

[735] {Day15/81:23} to {Day15/82:14}.

[736] Coyne 2/5.59 {D2/4.1/139}.

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596.2 The Court has good reason to be careful when it comes to Mr Coyne's evidence on this topic given what he felt able to say about his knowledge at the time of Coyne 1.

596.3 The purpose of the design of the audit system, and all the controls that it contains, is to provide not only a pristine copy of the data received from counters but also to be able to validate that data through various checks at the time of its extraction.[737] The audit store has a discrete and important purpose, and that purpose is not to provide a stream of data into MIS. But those systems, like the audit store, take a copy of data from the BRDB.

596.4 It is self-evident that, given the basic design and purpose of the audit system, it would be far from "*quite simple*" to establish read-only access to it from Post Office's systems. The audit store is housed in Fujitsu, with no physical connection to other systems, and data can only be extracted from it through the manual process described in Mr Dunks' statement.[738] This involves attending at specific locations and executing commands on specific work stations. The audit store is, for very good reason, kept separate from the ordinary data flows that inform day-to-day operations. It is not a database – the audit data is stored in "flat" files and has to be specially extracted (as is clear from the technical documentation).

597. It is easy to imagine the criticisms that Mr Coyne would have levelled at Horizon if it did not have very strict technical and physical controls over the audit store, in order to make sure that the data could be validated to a very high degree of confidence. There is no evidence that the degree of data security and validation attained through the audit system deployed by Fujitsu could also be achieved through a system that permitted read-only access through a live link.

598. Mr Coyne's criticism therefore boils down to the suggestion that Post Office's MIS were somehow unreliable (such that using the MIS, instead of the audit data, created a risk of error). That criticism cannot be sustained on the evidence:

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[737] These are detailed in Godeseth 1/30 {E2/1/9} and Dunks 1/6 {E2/10/2}.

[738] {E2/10/2} at para.6.

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598.1 The management information systems are fed a copy of the transaction data from the BRDB. That is the same source as feeds into the audit system. The experts have not identified even a single instance in which the process of feeding data from the BRDB into the MIS has introduced error into the data.

598.2 There is no evidence of data in the MIS ever having been wrong or different from the data in the audit store, over the course of 20 years and billions of transactions: see above at para 274. Adopting a realistic approach, rather than imposing a standard of perfection, there is really basis for the attack on the use of MIS.

598.3 Ms Rose's report indicates that it may sometimes be necessary to have regard to ARQ data to identify the detail of some types of transaction (in that case, how the reversal of the bill payment was initiated). The depth of investigation required will of course determine the sources of information to which recourse must be had, and cooperation is inevitably required in that process. Post Office should, in accordance with its duties owed to SPMs, make use of ARQ requests where this is appropriate.

598.4 With the exception of the point made in Ms Rose's report, Mr Coyne has not identified in his reports any information that would be important to Post Office's decision-making on TCs and that is not available on Post Office's MIS. If he had sought to identify any such information, he would have had to address the point that Post Office used Credence alongside its other MIS [739]and in addition to read-only access to branch information on the BRDB.[740] He has made no attack on those complementary systems or the assistance that they may provide.

599. Ultimately, Mr Coyne did not maintain his suggestion that it was inappropriate to use Credence, at least in the first instance. In his first report, Mr Coyne stated that it was "*relevant to question why Post Office were using Credence data to initially investigate disputed transactions*",[741] implying that even this initial use was inappropriate or at least

[739] See Godeseth 1/48 {E2/1/13} and Mather/9-11 {E2/8/2}.

[740] See para. 344 below.

[741] Coyne 1/5.176 {D2/1/102} and 9.9 {D2/1/150}.

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questionable in some way. At trial, when confronted with his written evidence on this, Mr Coyne retreated immediately to a more nuanced position:

> *Q:…Your contention is that they should not use Credence to initially investigate, is that right?*
>
> *A. It would seem that you can use Credence to conduct a cursory investigation but you have to go back to the full logs to get the full picture. Because if there's a different picture being given by Credence to that of the logs, then ultimately both can't be correct.*
>
> *Q. It is just your use of the word "initially". Is there any significance attached to that? That's not what you should look at even first, you should look at something else first, should you?*
>
> *A. No, I mean, it depends what depth of investigation you are going to look. If it is just a cursory investigation then Credence might be okay for that.*[742]

600. The distance between that position and Post Office's case is not huge. Post Office's position is that the use of the Credence system is generally appropriate (and is always the starting point) for investigating discrepancies, but that recourse should be had to the data in the audit store where there is reason to believe that the transaction information that it contains would shed light on the particular factual circumstances at issue (e.g. in Mr Armstrong's case), at least when interpreted by someone with the relevant expertise. Mr Coyne did not go quite so far as to accept this, but he got close, saying that his point was that "*Credence data alone shouldn't be used. The ARQ will give the full picture of what went on at the counter*".[743]

601. Mr Coyne also had no regard to the fact that, under Horizon Online, Post Office also has direct read-only access to the transaction data in the BRDB, and it can use that access for its business purposes: see Worden 1/1078[744] and Parker 1, para 14.[745] This read-only access complements the information available through the MIS and allows straightforward cross-checking.

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[742] {Day15/34:11}.

[743] {Day15/67:18}.

[744] {D3/1/238}.

[745] {E2/11/3}.

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Dr Worden's evidence in relation ARQ requests and the audit store

The cost of an ARQ request

602. Dr Worden was cross-examined on the premise that Post Office might be dissuaded from making ARQ requests by cost. It was put to him that each ARQ request costs around £450. This was based on the document at {F/1092}.

603. As Dr Worden pointed out, there is in fact no incremental cost to each ARQ request within the 720 available to Post Office under the relevant contract. Dr Worden explained the position as follows:

> *Q. Well, let's take it in stages. What was put to Mr Coyne without any document or any particular basis was the figure was over £200?*
>
> *A. Well, I think -- I would imagine there are two different figures. In other words, there is a bulk price for your first 720 and that works out. You have paid that already and you can get 720 for that, and so the average of those is that much. Then if you go beyond that, for each one you pay a different figure.*[746]

604. Dr Worden's answer was correct. This is clear from the documents to which Dr Worden was referred.

605. First, {F/1092} states as follows, with added emphasis:

> *ARQ (Audit retrieval process) costs at least £384k recurring annually. This is subsumed without breakdown in the Fujitsu Security Management costs. 720 requests @ £450 unit cost*

606. It is clear from this that the "*unit cost*" is a derived estimate, based on a calculation from an undifferentiated total cost that covers not only ARQ requests but also other security management functions.[747] It is not an incremental cost charged to Post Office for each ARQ request that it makes.

607. Second, the email chain at {F/994.1} confirms these points:

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[746] {Day 19/19:6} to {Day19/19:14}

[747] This is why dividing £384,000 by 720 does not give £450 – the total figure includes other services (to which some notional value has also been attributed). The question put at {Day19/20:23} was misconceived.

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607.1 At the top of page 3, Mark Hotson asked Mr Laycock (the author of the document at {F/1092}) to explain the cost figure provided in that document.

607.2 At the top of page 2 (in an email copied into the response to Mr Hotson), Mr Laycock explains that "*The ARQ service…is also seemingly impossible to isolate being subsumed into the "Security Management Service"…*". He goes on to explain how he arrived at the estimate of £450 per ARQ request.

607.3 On the same page, Mr Laycock explains that he has been told that the contract permits Post Office to increase its number of ARQ requests at a price of £207 per request.

608. In this light, it was unfair to accuse Dr Worden of "*making it up as [he] goes along*" for identifying the important difference between an incurred bulk cost and incremental unit cost, in terms of any incentives acting on the person deciding whether to issue an ARQ request.[748] The documents show that he was right about the distinction.

609. Dr Worden was then taken to an email chain at {F/728} (dating from 2010, before the documents above). The later emails in the chain concern whether to commence an investigation into whether any criminal offences might have been committed in the Barkham branch (Mrs Stubbs' branch): see the second and final paras in the email from Mark Dinsdale on page 2 and the email from Nigel Allen at the bottom of that page.[749]

610. At page 9, Mr Dinsdale confirmed that he would raise an ARQ request to obtain data in relation to the branch. He then asked whether the request was for Post Office's benefit and noted that the cost was usually passed on to "*the defence lawyers*". He also noted that Post Office obtained a supply of ARQ requests "*free of charge*" but that these were usually not enough.

[748] {Day19/21:14} to {Day19/21:24}.

[749] Cs argued (wrongly) at the Common Issues Trial that this email showed that no investigation of any kind had taken place, rather than an investigation (by the Investigations Division) into a potential criminal offence. The emails relate, in large part, to a decision as to whether to commence an investigation into potential criminal offences.

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611. The Managing Judge helpfully indicated that the question of any disincentive created by the cost of an ARQ request boiled down to a matter for submissions.[750] Post Office makes four submissions:

611.1 The documents identify that there was no incremental cost for an individual ARQ request in the event that Post Office exceeded the 720 provided under the contract.[751] However, the contract provides that if Post Office chooses to exercise its option to increase the maximum number of ARQs, the charges will increase by a cost of £222.68 per ARQ request by which such maximum is increased.[752]

611.2 There is no evidence of Post Office ever having failed to make an ARQ request because of the cost where it would otherwise have done so. The contention that this might happen is essentially speculative. The experts and the legal teams have examined and searched across many thousands of contemporaneous documents – if there were such evidence, it would be before the Court.

611.3 The email chain at {F/728} shows Post Office obtaining audit data via an ARQ request. It does not show (or event begin to suggest) that Post Office would not have obtained the audit data in the absence of any of the special factors mentioned in the email chain (e.g. interest from MPs). The fact that additional reasons existed does not show that those additional reasons were necessary for the request to be made in that case (or any case).

611.4 The evidence is that Post Office has made very different numbers of ARQ requests across the years, reflecting that it makes such requests where it considers this appropriate: the lowest figure is 103 (2016),[753] and the highest is 765 (2014).[754] Unsurprisingly, the number has often been in the range 550-750,[755]

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[750] {Day19/31:19} to {Day19/32:13}.

[751] The relevant part of the contract is at {F/1659.2/689}: see clause 5.5. The Court will recall that Dr Worden did not think that he had seen this document. He may have seen the reference to the lower figure of £207 in the email chain at {F/994.1}.

[752] {F/1659.2/689}.

[753] See Godeseth 1, para. 31.2 {E2/1/10}. Note that the figure given for 2018 in para. 31.4 (364) was corrected in correspondence to 366: see {H/301} (two entries in the spreadsheet had been miscounted).

[754] {F/1848.20}.

[755] The number of requests was in this range for the years ended 2005 (555) {F/1848.10}, 2007 (688)

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showing only that Post Office was roughly correct in estimating its likely requirements.

612. It is important to recall the context in which this issue arises. Mr Coyne has not identified a single instance in which Credence contained wrong data. There is no credible basis for any suggestion that it was inappropriate to rely, for the most part, on the MIS, rather than obtaining the data from the audit store.

The possibility of error in the audit store data

613. Neither Mr Coyne nor Dr Worden has identified any instance in which an ARQ extraction went wrong in a way that undermined the reliability of the extracted data. It is clear from Mr Dunks' evidence that the process is carefully controlled.[756]

614. It was nonetheless implied in Dr Worden's cross-examination that the audit store and/or data extraction process were somehow unreliable. The basis for this suggestion was that the Audit Extraction Client User Manual {F/1716} shows, at page 43, that the extraction form will identify any gaps or duplicates in the extracted data. It was suggested that one can infer from the fact that gaps and duplicates would be identified that they do occur. Dr Worden dealt with this fairly:

> *Q. And the fair inference from the document is that gaps and duplicates do occur?*
>
> *A. No. I think the fair inference from the document I that if gaps and duplicates occur you should be concerned.*
>
> *Q. So you are not prepared to accept that the fair inference from this document is that gaps and duplicates do occur in the audit database?*
>
> *A. I do not think that's a fair inference. I think the fair inference is that they are not supposed to and if they do you should seek assistance.*
>
> *Q. So in fact even if you had seen this, it wouldn't have changed your view about gold standard, would it?*
>
> *A. No, it doesn't. I'm saying that gaps and duplicates are something to worry about, therefore raise the alarm.*[757]

{F/1848.12}, 2008 (720) {F/1848.13}, 2009 (719) {F/1848.14} and 2010 (577) {F/1848.15}.

[756] {E2/10}.

[757] {Day19/44:10} to {Day19/44:24}.

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615. A fair inference from the document would be that it is possible for gaps and duplicates to occur. Cs again focus on the possibility of error, rather than whether errors occurred, went unresolved and caused problems for branch accounts. It is common ground that duplicates have sometimes been identified (and addressed). But this was sufficiently rare that Mr Dunks had no specific recollection of having himself identified any duplicates during the extraction process,[758] although he was clear that, when this did happen, the data would be passed on for investigation by the audit team, rather than being provided to Post Office.[759]

616. Dr Worden went on to give evidence as to the possibility (under Legacy Horizon) for duplicates to result from the use of two correspondence servers, but that such duplicates should be resolved before the data is written to the audit store.[760] Cs again pressed the point that there was a possibility of error. There is no evidence of duplicate entries in the audit store ever having caused a problem in branch accounts.

F12. The 29 Bugs listed in JS2

The 29 Bugs

The Bug Appendix

617. As Post Office understands it, the 29 so-called bugs listed in the 'Table of Bugs/Errors/Defects with acknowledged or disagreed evidence of financial impact' in JS2[761] (the "Bug Table") sets out Cs' case as to the number of branch-affecting bugs[762] that have arisen during the life of Horizon. These alleged bugs are addressed in Appendix 2. This Section should be read alongside that Appendix.

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[758] {Day7/51:21} to {Day7/52:4}.

[759] {Day7/52:22} to {Day7/53:9}.

[760] {Day19/47:20}. As regards Horizon Online, the 2010 KEL at {F/1512} evidences the operation of one of the safeguards against duplicate entries being written to the BRDB.

[761] The table starts at {D1/2/3}.

[762] The term "branch-affecting bugs" is used as a shorthand reference to bugs which have created one or more false shortfalls in branch accounts.

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618. Far too many documents are referred to in JS2 for it to be possible to address them all, but the main documents are considered in the Appendix. This section addresses some wider issues regarding the 29 alleged bugs and a short summary of Post Office's contention on each of them.

Finding and Analysing Bugs

619. Both experts rightly looked for bugs.[763] However, as discussed elsewhere in these Closing Submissions,[764] Mr Coyne's approach was simply to look for bugs without giving a proper sense of scale, context or even balance.

620. This was the wrong approach. For example, it meant that Mr Coyne hardly considered the role and effect of Horizon's countermeasures and that he did not really consider the question whether bugs had lasting or merely transient effects, or at least not until he was cross examined. It also meant that in many cases Mr Coyne's interpretation of KELs and Peaks could not be described as reliable or complete.

621. Countermeasures are addressed in greater detail elsewhere in these Closing Submissions.[765] Their significance lies not only in relation to the general question of robustness but also in relation to the question whether bugs would be caught by the system and their consequences remedied in the ordinary course, often without any need for an SPM to report an issue.

622. On the question of remedying consequences, Mr Parker's unchallenged evidence in Parker 3 should be borne in mind. He said:

> *It is part of the SSC's standard diagnostic process that, when we have identified a bug, we also seek to identify all areas of the system affected by that bug. Where the bug has caused discrepancies in branch accounts so as to create an incorrect shortfall or surplus, we take steps to identify all branches that have been impacted. This is our standard practice and to the best of my knowledge it has always been done since Horizon was first introduced.*[766]

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[763] See for example where Dr Worden states that he was looking for bugs {Day19/128:20} to {Day19/128:25}.

[764] See section A2 of these submissions.

[765] See section F8 of these submissions.

[766] {E2/13/1}, para 3.

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623. Consistently with this, in oral evidence Mr Coyne agreed that Fujitsu were good at identifying issues and making Post Office aware.[767]

The Bug Table

624. In oral evidence, Mr Coyne confirmed that the Bug Table is a definitive list of bugs for which he says there is evidence of financial impact and that he is not relying on any other bugs.[768]

625. Of the 29 bugs, Post Office contends that:

625.1 eight were not bugs at all;[769]

625.2 three had no branch impact;[770]

625.3 nine had only transient impact;[771] and

625.4 nine had the potential to cause lasting impact, but were in fact detected and resolved.[772]

626. Post Office notes that the experts agreed at JS2, para 1.2 that the bugs "*in rows 1, 2, 3, 10, 13, 14, 18, 23, 24, 25, 27 and 28 may have had financial impact on branch accounts*."[773] The experts further agreed at para 1.15 that there were between 12 and 29 bugs with evidence of lasting financial impact.[774] Those 12 bugs are not specified, although it is to be inferred that para 1.2 identified the 12 bugs which were agreed to have lasting financial impact.

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[767] {Day14/92:4} to {Day14/93:11}.

[768] {Day17/15:11} to {Day17/15:17}.

[769] Bug 8: Recovery Issues; Bug 13: Withdrawn Stock Discrepancies; Bug 15: Phantom Transactions; Bug 16: Reconciliation Issues; Bug 17: Branch Customer Discrepancies; Bug 20: Recovery Failures; Bug 23: Bureau de Change and Bug 29: Network Banking.

[770] Bug 11: Girobank; Bug 21: Transaction Corrections and Bug 22: Bugs/Errors Defects introduced by previously applied Peak Fixes.

[771] Bug 2: Callendar Square; Bug 4: Dalmellington; Bug 5: Remming In; Bug 6: Remming Out; Bug 7: Local Suspense; Bug 9: Reversals; Bug 12: Counter Replacement; Bug 19: Post & Go/TA Discrepancies and Bug 25: Lyca top up.

[772] Bug 1: Receipts and Payments Mismatch; Bug 3: Suspense Account; Bug 10: Data Tree Build; Bug 14: Bureau Discrepancies; Bug 18: Concurrent Logins; Bug 24: Wrong branch customer; Bug 26: TPSC250; Bug 27: TPS and Bug 28: Drop and Go.

[773] {D1/2/27}.

[774] {D1/2/19}.

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627. In relation to three of these bugs (Bugs 2, 13 and 23 – Callender Square, Withdrawn Stock Discrepancies and Bureau de Change), Post Office does not accept that, on the balance of probabilities, these were bugs which had lasting financial impact:

627.1 Regarding Bug 2: Callendar Square, the underlying documents show that instances of the relevant Riposte issue were picked up automatically and resolved.[775] Any branch impact was transient and not lasting.

627.2 Bug 13: Withdrawn Stock Discrepancies is not a bug. The relevant documents show that withdrawn stock discrepancies arose as a result of human error. In row 13 of the Bug Table Dr Worden pointed out that "*[s]ince the discrepancies in branch accounts appear to be both temporary, and caused by human error, these are not a case of a bug in Horizon causing lasting effects on branch accounts.*"[776] The Peaks confirm this.

627.3 Bug 23: Bureau de Change is also not a bug. Three distinct issues are raised under the heading of Bug 23 and the documents show that each one of them is an example of user error. PC0129767[777] (the first issue) shows an SPM carrying out a reversal incorrectly; PC0137437[778] (the second issue) is even described by Mr Coyne as user error in row 23 of the Bug Table; and PC0151787[779] (the third issue) shows an SPM making incorrect cash declarations.

Who identified the 29 bugs?

628. Mr Coyne stated during cross-examination that "*Dr Worden only identified the three bugs that had already been identified.*"[780] This claim is incorrect.

629. In its Letter of Response dated 28 July 2017,[781] Post Office identified the three known bugs: (i) Receipts and Payments Mismatch; (ii) Callendar Square; and (iii) Suspense

[775] Dr Worden agreed during re-examination that there were lots of ways in which the Riposte bug would be identified through automatic reporting. See for example {Day20/178} to {Day20/179}.

[776] {D1/2/12}.

[777] {F/318.1}.

[778] {F/346.1}.

[779] {F/430.1}.

[780] {Day14/68:3} to {Day14/68:4}.

[781] {H/2}.

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Account. During this trial, Cs have repeatedly sought to criticise Post Office for not revealing that there were other bugs, too. This criticism is unfair, since the Letter of Response made it clear that Post Office was not claiming that these were the only bugs that had arisen.[782] In any event, of the further 26 bugs listed in the Bug Table, nine of them were identified in Worden 1, namely:

629.1 Bug 5 Remming In.[783]

629.2 Bug 6 Remming Out.[784]

629.3 Bug 7 Local Suspense Issue.[785]

629.4 Bug 23 Bureau de Change.[786]

629.5 Bug 24 Wrong branch customer change.[787]

629.6 Bug 25 Lyca top up.[788]

629.7 Bug 26 TPSC250 report.[789]

629.8 Bug 27 TPS.[790]

629.9 Bug 28 Drop & Go.[791]

F13. Mr Coyne's Views on Branch Impact

630. Mr Coyne stated during cross examination that he had assessed the number of branches affected by the alleged 29 bugs and had set this out in the Bug Table.[792]

631. The column in the Bug Table entitled "Coyne's opinion as to branch account impact" sets out his view on that question.[793] Post Office notes that when one examines the Peaks and

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[782] See {H/2/95}.

[783] {D3/2/170}.

[784] {D3/2/165}. Mr Coyne also mentioned this bug his first report {D2/1/216}, but he did not suggest that it had financial impact.

[785] {D3/2/173}.

[786] {D3/2/176} and {D3/2/180}.

[787] {D3/2/177}.

[788] {D3/2/186}.

[789] {D3/2/175}.

[790] {D3/2/187}.

[791] {D3/2/191}.

[792] {Day15/105:7} to {Day15/105:15}.

[793] {Day15/130:9} to {Day15/130:18}.

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incident figures identified in that column, there are 546 entries.[794] Post Office further notes that this does not come close to the thousands of impacts suggested by Mr Coyne[795] or the hundreds of thousands of impacts which would be required even to have a chance of generating the losses alleged by Cs.[796]

Lasting Versus Transient Impact

632. The distinction between bugs with lasting or transient impact is important. Issues that Fujitsu are flagging and investigating automatically do not last. It is apparent from Mr Coyne's answers during cross-examination that he had given little, if any, considered thought to the question of lasting impact when preparing his reports.

633. However, when the point was raised with him, Mr Coyne agreed that bugs can cause two kinds of discrepancies – transient and lasting. The difference is that transient discrepancies are handled by countermeasures. There may be a period of time where there is a shortfall, but in the long run the countermeasures will ensure that the discrepancy is resolved.[797]

634. Mr Coyne said himself that "*you would want a system to fail safely. So it is acknowledged that there could be failures and it is what you do when that system fails*."[798] Horizon is robust not only by reference to the limited number of bugs that the experts have identified but also by reference to what it did to *"fail safely"*. One of the things it does is operate systems of automatic reporting.

Automatic reporting

635. Horizon's countermeasures are discussed elsewhere in these Closing Submissions[799] and its automatic reporting systems are discussed at Appendix 3. These systems mean that

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[794] Calculation: 60 for Bug 1, 30 for Bug 2, 14 for Bug 3, 112 for Bug 4, 14 for Bug 5, 58 for Bug 6, 58 for Bug 7, 4 for Bug 8 [the 2,473 Peaks which Mr Coyne stated may or may not be examples have not been included in this calculation], 2 for Bug 9, 3 for Bug 10, 8 for Bug 11, 4 for Bug 12, 60 for Bug 13, 1 for Bug 14, 2 for Bug 15, 6 for Bug 16, 1 for Bug 17, 2 for Bug 18, 1 for Bug 19, 2 for Bug 20, 10 for Bug 21, 5 for Bug 22, 2 for Bug 23, 3 for Bug 24, 3 for Bug 25, 24 for Bug 26, 40 for Bug 27, 1 for Bug 28 and 1 for Bug 29.

[795] See para. 438 et seq.

[796] See para. 460 et seq.

[797] {Day17/104:3} to {Day17/104:19} and {Day17/108:1} to {Day17/108:11}.

[798] {Day14/26:16} to (Day14/27:2}.

[799] See section F8 of these submissions.

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bugs and other issues will often be picked up and sorted out without the need for an SPM to report them.

636. There are a variety of different automatic reports. For example, the NB102 report[800] and the TPS report set (which includes the TPSC250 Host Detected Transaction errors report,[801] the TPSC254 Harvester Exceptions[802] and the TPSC257 POLFS Incomplete Summaries Report).[803] These reports identify not only manifestations of bugs in Horizon but also discrepancies caused as a result of user error.

637. Mr Coyne agreed that sometimes an SPM may report an issue, and therefore a Peak may be raised, in circumstances where a Peak would automatically have been raised shortly thereafter:

> *Q. But sometimes -- and perhaps we can agree on this. I have thought about that as well and my surmise is that sometimes the SPM gets the report in first and other times the MSU does, it is just a timing issue.*
>
> *A. Yes.*
>
> *Q. And if the SPM has phoned in first then that is the PEAK and there doesn't need to be a separate PEAK because the MSU puts in a call as well, would you say that's fair?*
>
> *A. Sounds reasonable.*[804]

638. Thus, where a Peak is recorded as being commenced by an SPM call, it should not be assumed that the SPM's call was necessary. For example, all instances of the Callendar Square and Dalmellington issues would have been automatically picked up and then resolved regardless of whether or not the SPM reported the issue.

F14. Mr Coyne's View on Bugs with Lasting Impact – A Changing Landscape

639. In JS2, para 1.15 the parties' experts agreed that:

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[800] See para. 42 of Appendix 3.

[801] See para. 49 of Appendix 3.

[802] See para. 55 of Appendix 3.

[803] See para. 60 of Appendix 3.

[804] {Day17/78:14} to {Day17/78:22}.

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> "*The number of distinct bugs, for which the experts have seen strong evidence of the bug causing a lasting discrepancy in branch accounts, is between 12 and 29.*"[805]

640. Post Office understood this to mean that Mr Coyne was of the view that there were 29 bugs causing lasting discrepancies. It appears that Cs were also of the same view: their opening submissions stated that:

> "*between 12 (Dr Worden) and 29 (Mr Coyne) bugs with "strong evidence of the bug causing a lasting discrepancy in branch accounts*".[806]

641. During his cross examination, Mr Coyne was asked a simple question: how many bugs have lasting impact? His answer to that question changed four times.

Mr Coyne's First View: 29 Bugs with Lasting Impact

642. On his first day of cross examination (Day 14), Mr Coyne confirmed that, in his opinion, there was strong evidence of lasting impact in the case of 29 bugs:

> *Q. So what you are saying is for each of the 29 bugs there is strong evidence that the bugs concerned not only caused discrepancies but they caused discrepancies which were lasting, which weren't handled by countermeasures. You see? That's your expert opinion, isn't it?*
>
> *A. Yes.*[807]

643. This response seemed clear. But on Day 17, confusion set in.

Mr Coyne's Second View: 13 Bugs with Lasting Impact

644. In response to a question from the Judge just before the short adjournment on Day 17, Mr Coyne stated that there were only 13 bugs with lasting branch impact.[808] This came as a great surprise to Post Office.

Mr Coyne's Third View: 21 Bugs with Lasting Impact

645. To Post Office's even greater surprise, after the short adjournment Mr Coyne changed his opinion again. He stated that in fact he was of the view that there were 21 bugs with lasting branch impact.

[805] {D1/2/29}.

[806] {A1/7}.

[807] {Day17/104:20} to {Day17/104:25}.

[808] {Day17/106:6} to {Day17/106:16}.

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A. Good afternoon. Sorry, Mr de Garr Robinson, before we start could I please correct the number I provided just before lunch. In tallying up the numbers in the column in my report I missed that the last one is actually a heading that includes a number of bugs, errors and defects, so the actual number is 21. They are in the report, they are just grouped together for the purposes of the table.[809]

646. As Mr Coyne confirmed, this meant that he took the view that eight of the 29 bugs did not have lasting branch impact.[810]

Mr Coyne's Reasons for Changing his Opinion from 13 to 21 Bugs

647. Mr Coyne tried to explain this change by stating that, in Coyne 2, Bug 22 included a subset of bugs, bugs 23 to 29, which he had forgotten to include in his calculation before the short adjournment. In response to a series of questions, he said that Bug 22 was *"actually a group heading, and in the report there's seven bugs, errors and defects included in that heading."*[811] Later, he confirmed again that Bug 22 covered a host of different issues.[812]

648. When pressed on this point Mr Coyne responded:

Q. You are saying that is an aspect of bugs, errors and defects introduced by previously applied PEAK fixes, are you? Because it is plainly not right, Mr Coyne. What are you saying?

A. Sorry, I'm drawing a blank now what the cross reference is for these ... Sorry, I would need to search for that PEAK reference under the Coyne impact column against 23, bureau de change, just to see where that features.[813]

649. Mr Coyne therefore accounted for this further change, from 13 to 21 bugs which have lasting financial impact, on the basis that the bugs discussed in Coyne 2 under the heading "*bugs, errors and defects introduced by previously applied PEAK fixes*" encompassed eight distinct bugs, and that these bugs had become Bugs 22 to 29 in the Bug Table.

650. This reasoning cannot be right:

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[809] {Day17/106:24} to {Day17/107:6}.

[810] {Day17/110:2} to {Day17/110:12}.

[811] {Day17/107:7} to {Day17/107:25}.

[812] {Day17/118:7} to {Day17/118:13}.

[813] {Day17/119:6} to {Day17/119:13}.

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650.1 The Peaks referred to in Bugs 23 to 29 are different from the Peaks referred to under the heading "*bugs, errors and defects introduced by previously applied PEAK fixes*".

650.2 Bugs 23 to 29 are not all bugs/errors/defects introduced by previously applied Peak fixes.

650.3 On Mr Coyne's account, Bugs 23 to 29 do not all have lasting branch impact. In his view, Bug 29 (Network Banking) has a transient effect.

Mr Coyne's Final View: 22 Bugs with Lasting Branch Impact

651. Ultimately, Mr Coyne expressed the opinion that there were 22 bugs with lasting branch impact.[814] These are:

651.1 Bug 1: Receipts and Payments Mismatch.

651.2 Bug 2: Callendar Square.

651.3 Bug 3: Suspense Account.

651.4 Bug 4: Dalmellington.

651.5 Bug 5: Remming In.

651.6 Bug 6: Remming Out.

651.7 Bug 7: Local Suspense.

651.8 Bug 8: Recovery Issues.

651.9 Bug 9: Reversals.

651.10 Bug 10: Data Tree Build.

651.11 Bug 11: Girobank.

651.12 Bug 12: Counter Replacement.

651.13 Bug 13: Withdrawn Stock Discrepancies.

651.14 Bug 14: Bureau Discrepancies.

651.15 Bug 18: Concurrent Logins.

651.16 Bug 22: Bugs/Errors/Defects introduced by previously applied Peak Fixes.

651.17 Bug 23: Bureau de Change. Agreed financial impact on branch accounts.

651.18 Bug 24: Wrong Branch Customer. Experts agree that this bug may have had financial impact on branch accounts.

651.19 Bug 25: Lyca Top Up.

[814] {Day17/135:2} to {Day17/135:8}.

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651.20 Bug 26: TPSC250.

651.21 Bug 27: TPS.

651.22 Bug 28: Drop and Go.

It follows that the other 7 bugs in the Bug Table had only transient impact.

652. It took over an hour to extract this opinion.[815] This extraordinary exercise meant that Post Office lost valuable cross examination time which it would otherwise have devoted to significant bugs.

653. In the course of this exercise, Mr Coyne relied on a distinction drawn in Coyne 2 between Horizon Issue 4 and Horizon Issue 1.[816] However, he maintained that Bug 18 is a bug with lasting financial impact, which is inconsistent with the treatment he gave it in Coyne 2. There, he stated not only that it was relevant to Horizon Issue 4 but also stated that there was no financial impact at all, lasting or otherwise.[817]

654. Mr Coyne's account of his change in opinion from 13 to 21 to 22 bugs with lasting branch impact is astonishing. It lacks any coherence or cogent explanation. Putting it at its lowest, it suggests that, until he was asked about the matter in cross examination, Mr Coyne had given very little, if any, attention to the question whether bugs were or were not likely to have a lasting effect.

F15. Alleged Bugs which are not bugs at all

655. It is Post Office's case that the following alleged bugs are not bugs at all:

655.1 Bug 8: Recovery Issues.

655.2 Bug 13: Withdrawn Stock Discrepancies.

655.3 Bug 15: Phantom Transactions.

655.4 Bug 16: Reconciliation Issues.

655.5 Bug 17: Branch Customer Discrepancies.

655.6 Bug 20: Recovery Failures.

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[815] Mr Coyne was asked to clarify his position first at 12:55 {Day17/101:20} and it took until 15:00 for Mr Coyne to ultimately explain his change in figures {Day17/140:10}.

[816] See for example {Day17/123:4} to {Day17/123:18}.

[817] {D2/4.1/18}.

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655.7 Bug 29: Network Banking.

655.8 Bug 23: Bureau de Change.

Bug 8: Recovery Issues

656. This bug is addressed in detail beginning on page 436.

657. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that it is not a bug at all. Further, it notes that this heading in fact covers two distinct issues.

658. There is no way to avoid the risk of a basket of transactions being interrupted during the course of dealing with a customer. For example, there may be a communications failure or a power cut. Horizon was designed to deal with these situations, via its recovery processes. Inevitably, some of these processes have a manual element and involve Fujitsu. The system ensures that all potential recovery issues are flagged in automatic reports.

Bug 13: Withdrawn Stock Discrepancies

659. This bug is addressed in detail beginning on page 465.

660. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that it is not a bug at all. In the Bug Table, Dr Worden makes clear that this issue arose as a result of human error and not as a result of a bug in Horizon.[818]

Bug 15: Phantom Transactions

661. This bug is addressed in detail beginning on page 471

662. Mr Coyne asserts that it is a bug with non-lasting financial impact. Post Office contends that this is not a bug at all. It further notes that this heading covers three distinct issues. Manifestations of this alleged bug are either design features of Horizon or user error.

Bug 16: Reconciliation Issues

663. This bug is addressed in detail beginning on page 480.

[818] {D1/2/12}.

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664. Mr Coyne asserts that it is a bug with non-lasting financial impact. Post Office contends that this is not a bug at all. Again, six distinct issues fall under this heading. One was a Peak that arose in testing, and not the live environment.

Bug 17: Branch Customer Discrepancies

665. This bug is addressed in detail beginning on page 484.

666. Mr Coyne asserts that it is a bug with non-lasting financial impact. Post Office contends that this is not a bug at all. There is no evidence of a bug in Horizon and in any event instances of any issue were caught by automatic reporting.

Bug 20: Recovery Failures

667. This bug is addressed in detail beginning on page 494.

668. Mr Coyne asserts that it is a bug with non-lasting financial impact. Post Office contends that this is not a bug at all. This is once again three distinct issues under one heading. There is no evidence of a bug in Horizon and in any event instances of any issue were caught by automatic reporting.

Bug 23: Bureau de Change

669. This bug is addressed in detail beginning on page 509.

670. Mr Coyne asserts that it is a bug with lasting financial impact. As explained above, although Dr Worden agreed that this may have financial impact on branch accounts, the evidence suggests that there was in fact no bug in Horizon. Three distinct issues are raised under this heading and each involves user error as opposed to a bug in Horizon.

Bug 29: Network banking

671. This bug is addressed in detail beginning on page 536.

672. Mr Coyne asserts that it is a bug with transient financial impact. Post Office submits that there is no evidence of a bug in Horizon. The heading encompasses two issues. Neither of them can properly be described as instances of a "*Network Banking Bug*"; both stem from intermittent communications failures emanating from outside Horizon (most likely from systems operated by BT).

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F16. Bugs with no impact on branch accounts

673. It is Post Office's case that the following bugs had no branch impact:

673.1 Bug 11: Girobank.

673.2 Bug 21: Transaction Corrections.

673.3 Bug 22: Bugs/Errors Defects introduced by previously applied Peak Fixes.

Bug 11: Girobank

674. This bug is addressed in detail beginning on page 448.

675. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that there is no financial impact, let alone a lasting impact. Six issues come under this heading. None of the Peaks referred to by Mr Coyne demonstrate a direct financial impact on branches; in most cases this is because the issue affects the print out reports available whilst the underlying data remains unaffected. The first issue reflects Horizon working as intended (and is therefore not a bug) and the sixth issue is pure user error.

Bug 21: Transaction Corrections

676. This bug is addressed in detail beginning on page 500.

677. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office contends that there is no evidence of any financial impact. This heading encompasses three issues. The first issue was caught in testing and so did not arise in the live environment. The second issue resulted in the screen freezing when an SPM wished to accept a TC, which resulted in no discrepancy in branch accounts. The third issue related to TC reporting and resulted in no discrepancy in branch accounts.

Bug 22: Bugs/Errors Defects introduced by previously applied Peak Fixes

678. These bugs are addressed in detail beginning on page 505.

679. Mr Coyne asserts that they had lasting financial impact. Post Office contends that there is no evidence of any financial impact. Three distinct issues are raised. A number of the Peaks relied on arose only in testing. The Peaks that arose in the live environment do not contain evidence of branch impact.

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F17. Bugs with transient impact

680. It is Post Office's case that the following bugs had transient impact:

680.1 Bug 2: Callendar Square.

680.2 Bug 4: Dalmellington.

680.3 Bug 5: Remming In.

680.4 Bug 6: Remming Out.

680.5 Bug 7: Local Suspense.

680.6 Bug 9: Reversals.

680.7 Bug 12: Counter Replacement.

680.8 Bug 19: Post & Go/TA Discrepancies.

680.9 Bug 25: Lyca Top Up.

Bug 2: Callendar Square

681. This bug is addressed in detail beginning at paragraph X of Appendix X.

682. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that this bug resulted in transient impact only. Fujitsu's automatic reports identified instances of the Callendar Square bug without the need for each SPM to call in with a report. The evidence shows that as and when issues arose these were flagged automatically in Fujitsu's reports and addressed.

Bug 4: Dalmellington

683. This bug is addressed in detail beginning on page 404.

684. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office contends that any discrepancies were transient. Instances of this bug were automatically picked up by Fujitsu. Fujitsu identified 112 potential occurrences of the Dalmellington bug. Of these 112 potential occurrences, 108 items were corrected at the time, either by Post Office issuing a Transaction Correction or the SPM reversing the duplicate Rem In.[819] Mr Coyne agreed that these 108 instances were picked up and there was no lasting

[819] {F/1415/3}.

[820] {Day15/159:23} to {Day15/160:12}.

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impact.[820] He stated that "*...I think once everything was detected everything was made good.*"[821]

685. With regard to the other four instances, two involve *de-minimis* discrepancies, namely £1.00 and £0.01.[822] Mr Coyne accepted the chances of these discrepancies being unresolved – i.e. not made good by Post Office – were "*very small*".[823] The two larger sums were investigated and found not to be instances of the Dalmellington bug and not to have caused any loss.[824]

Bug 5: Remming In

686. This bug is addressed in detail beginning on page 422.

687. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office contends that any discrepancy would be transient. Remming issues are monitored and automatically picked up.

Bug 6: Remming Out

688. This bug is addressed in detail beginning on page 427.

689. Mr Coyne asserts that it is a bug with lasting financial impact. But it raises two separate issues. Post Office submits that any discrepancy would be transient. Remming issues are monitored and are automatically picked up.

Bug 7: Local Suspense

690. This bug is addressed in detail beginning on page 432.

691. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that any discrepancy would be transient. The bug prevented affected branches from rolling over and was bound to come to Fujitsu's attention very quickly, as indeed it did.

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[821] {Day15/163}.

[820] {Day15/159:23} to {Day15/160:12}.

[822] {F/1415/7} to {F/1415/8}.

[823] {Day17/161:14}.

[824] {F/1427.1/2}.

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Bug 9: Reversals

692. This bug is addressed in detail beginning on page 440.

693. This bug arose very early in the life of Horizon Online, during the pilot scheme in which it was rolled out to a limited number of branches. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that any discrepancy would not be lasting. A discrepancy would appear as a remming issue and would be captured by automatic reporting.

Bug 12: Counter Replacement

694. This bug is addressed in detail beginning on page 459.

695. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that any discrepancy would not be lasting. All instances of the bug would have been flagged with Fujitsu as a receipts and payments mismatch and with the SPM when rolling over.

Bug 19: Post & Go/TA Discrepancies

696. This bug is addressed in detail beginning on page 491.

697. Mr Coyne asserts that it is a bug with lasting financial impact. Post Office submits that any discrepancy would be transient. Any issues were picked up automatically by Fujitsu's automatic reporting.

Bug 25: Lyca top up

698. This bug is addressed in detail beginning on page 516.

699. Mr Coyne asserts that this bug – a reference data bug – had the potential for lasting financial impact. Post Office contends that any impact was transient. This issue was identified through Fujitsu's automatic reporting – the NB102 report.[825] It was also visible to the SPM in branch as they would have been logged out of the counter and gone through the recovery process. It would have also been possible to identify whether or not a transaction had been reversed from the reports available in branch.[826] It was quickly

[825] PC0203215 {F/697.1} and PC0203284 {F/691.2}.

[826] PC0203108 {F/694} and PC0202925 {F/692}.

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resolved, with the reference data fix being issued in 7 days of the issue being reported to Fujitsu.

F18. Bugs with lasting impact

Summary

700. Post Office accepts that the following are bugs with potential lasting impact (although they were in fact resolved):

700.1 Bug 1: Receipts and Payments Mismatch.
700.2 Bug 3: Suspense Account.
700.3 Bug 10: Data Tree Build.
700.4 Bug 14: Bureau Discrepancies.
700.5 Bug 18: Concurrent Logins.
700.6 Bug 24: Wrong branch customer.
700.7 Bug 26: TPSC250.
700.8 Bug 27: TPS.
700.9 Bug 28: Drop and Go.

Lasting does not mean unresolved

701. At the outset it should be noted that "lasting" does not mean that SPMs were not made good or that a fix was not implemented. As set out above, "lasting" means that manifestations of a bug would not inevitably be caught by countermeasures. Post Office would of course prefer all bugs to be picked up automatically. However, it is inevitable that there will be occasions where this does not happen as it is not possible to build a system that foresees and automatically prevents every anomalous action; this would require an unachievably perfect system.

702. These bugs and their impacts were resolved. They were identified, fixes were implemented and manual reconciliation took place.

Bug 1: Receipts and Payments Mismatch

703. This bug is addressed in detail beginning on page 400.

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704. Fujitsu monitors for receipts and payments mismatches and investigates such occurrences. Fujitsu ultimately identified all instances of this bug, which were collected through their own reports without the need for an SPM to report an issue.

Bug 3: Suspense Account

705. This bug is addressed in detail beginning on page 412.

706. Fujitsu were able to identify all affected branches by reference to historical data. A fix was implemented which meant that the issue would not reoccur.

Bug 10: Data Tree Build

707. This bug is addressed in detail beginning on page 433.

708. This bug arose early in the life of Legacy Horizon. It occurred rarely and although it had the potential to cause a lasting branch impact this would have required a specific sequence of events to have occurred in addition to the bug occurring. The issue was detected and fixed. Only three affected branches have been identified.

Bug 14: Bureau Discrepancies

709. This bug is addressed in detail beginning on page 467.

710. There are two distinct issues under this heading. With regards to the first issue, the branch was made good and a fix was implemented. The second issue was not a bug in Horizon nor an issue which could have impacted branch accounts; it created what was essentially a cash flow problem for the branch.

Bug 18: Concurrent Logins

711. This bug is addressed in detail beginning on page 487.

712. There are two distinct issues under this heading. No discrepancies are set out in the Peaks referred to by the experts. However, if a discrepancy had occurred, that discrepancy would manifest itself as a receipts/payments mismatch.

Bug 24: Wrong Branch Customer Change

713. This bug is addressed in detail beginning on page 513.

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714. It is a reference data bug. The experts have agreed that, once discovered, reference data bugs could be quickly fixed (by a change to the reference data).[827] This was the case with Bug 24. The issue would have been visible to the SPM as the incorrect quantity would have displayed on the screen. Fujitsu identified the root cause and developed a fix within two weeks of the issue being reported by the SPM.

Bug 26: TPSC250

715. This bug is addressed in detail beginning on page 519.

716. The experts have drawn together five distinct issues under the heading of "*TPSC250 report*". It is a backend reporting problem and so, if there were any chances of branch impact at all, those chances would have been very small and indirect (e.g. if they caused existing branch discrepancies to be missed by Fujitsu or they caused erroneous TCs to be issued and accepted).[828] Of the five issues: the first resulted in incorrectly flagged exceptions (but no reconciliation was required); the second was limited to the process of copying/ harvesting transactions to Post Office's back-end systems; the third did not result in a mismatch between the files sent to Post Office and the branch data; the fourth was flagged by automatic reporting and the fifth could result in a receipts and payments mismatch being missed by Fujitsu.

Bug 27: TPS

717. This bug is addressed in detail beginning on page 525.

718. It is a backend reporting problem and so, if there were any chances of branch impact at all, those chances would have been very small and indirect.[829] Fujitsu fully investigated each of these instances and checked to see whether there had been any impact on the affected branches. The guidance in KEL ballantj2547K[830] enables Fujitsu to identify any further instances of the issue and ensure there is no impact on branch accounts.

Bug 28: Drop and Go

719. This bug is addressed in detail beginning on page 528.

[827] {D1/4/7} para 4.4.

[828] {D1/2/24}.

[829] {D1/2/24}.

[830] {F/633}.

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720. It is a reference data bug. As set out above, the experts have agreed that, once discovered, such bugs should be quickly fixed (by a change to the reference data) once the bug is correctly identified.[831] This was the case with Bug 28.

F19. Pre-Announcements Interface Defect

721. During Dr Worden's cross-examination, his attention was drawn to this issue which was a defect which came to light following service of both of the experts' reports. This is a defect which was automatically detected and had no lasting impact on branch accounts.

722. On 4 March 2019 an incident was raised regarding manual entry of the value of pouches of cash that were to be remmed into a branch.[832] There were failures in the pre-announcement interface to Horizon.[833] This meant that instead of being able to scan the barcode, branches had to manually key the value in on receipt.[834] As a result, information was not automatically inputted into Horizon. When keying the value in, some SPMs made manual keying errors and so keyed the wrong value into Horizon.[835]

723. It will thus be seen that this bug did not create false discrepancies in any branch accounts. It created a need for manual keying by branches which would otherwise have been avoided. What created false discrepancies was some instances of human error in the manual keying. In passing, it is noted that the process for scanning barcodes is a good example of how Horizon has been designed to minimise the risk of data entry errors by removing the need for the manual input of figures.

724. The issue was resolved quickly, with the first incident being raised on 4 March 2019 and closed on 7 March 2019.[836]

725. This bug was picked up automatically. The incident report notes "*[m]inimal impact as incidents were routed directly to the Early Life Support Team.*"[837]

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[831] {D1/4/7} para 4.4.

[832] {F/1848.8.1/1}.

[833] {F/1848.8.1/2}.

[834] {F/1848.8.1/2}.

[835] {F/1848.8.1/2}.

[836] {F/1848.8.1/1}.

[837] {F/1848.8.1/2}.

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726. TCs were required to reconcile branch accounts. However, as noted in the incident report this exercise was being undertaken.[838] On 6 March 2019 a report showing failed pre-announcements was requested.[839] This report was to be checked against branch rem-ins.[840] The report notes that all affected branches will be identified and that TCs will be issued to affected branches:

- *A list of branches that had called to report the issue was passed to the FSC who advised on standard process and will manage the Transaction Corrections.*
- *The Horizon team are currently working on a report to identify all missing pre-announcements which will be used to check against Horizon rem-ins in CFS to confirm where mistakes were made in manual keying; these will then be passed to the FSC to manage the necessary Transaction Corrections.*
- *Any revaluation losses caused by this incident are picked up by POL and not by the individual branches.*[841]

727. A fixed was identified, tested and implemented on 5 March 2019.[842] In addition to the fix being implemented, active monitoring was put in place:

- *The number range issue on Horizon has already been fixed. A follow up action will be taken to put in place a process and controls to ensure that this is proactively managed in the future.*
- *An additional error handling step has also been added in the interface middleware (PI) so that if a similar issue occurs in the future it will be identified immediately.*[843]

F20. Conclusion on the 29 Alleged Bugs

728. On the basis of the 29 bugs listed in the Bug Table, Mr Coyne has formed the view that during the lifetime of Horizon there are likely to have been no more than 40 detected bugs with branch impact.[844] However, it should be noted that:

728.1 Of those 29 bugs, Mr Coyne only asserts that 22 have lasting impact.

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[838] {F/1848.8.1/2}.

[839] {F/1848.8.1/5}.

[840] {F/1848.8.1/5}.

[841] {F/1848.8.1/3}.

[842] {F/1848.8.1/5}.

[843] {F/1848.8.1/3}.

[844] {Day15/124:21} to {Day15/124:25}.

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728.2 For its part, Post Office contends that:

(a) only 21 are bugs at all;

(b) only 18 have actual or potential branch impact; and

(c) only nine have actual or potential lasting branch impact.

728.3 If one scales up from these figures, the number of bugs with lasting branch impacts which have arisen during the 20 year life of Horizon is likely to be significantly lower than 40.

F21. Expert evidence on Remote access

F22. Scope and focus of the remote access issues

729. The Horizon Issues that address remote access are numbered 7, 10, 12 and 13. The key concept in each of them is the potential for transaction data in branch accounts to be affected in some way by the use of facilities at Post Office or Fujitsu.

730. Issue 7 appears on its face to be concerned with read-only access to transaction data. It uses the verb "*access*", rather than any of the words that the parties have chosen to describe the alteration or addition or subtraction of transaction data. The experts treated Issue 7 on this basis in JS3: see {D1/4/10}.

731. Horizon Issue 10 concerns facilities/abilities to insert, inject, edit or delete transaction data or data in branch accounts, to implement fixes that had the potential to affect such data and the rebuilding of branch transaction data.

732. Horizon Issue 11 relates to the permission controls and records (logs) in relation to such facilities/abilities and their use.

733. Horizon Issues 12 and 13 focus on (a) how often the facilities/abilities referred to in issue 10 were used and (b) to what extent the use of such facilities/abilities had the potential to affect the reliability of branches' accounting positions.

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734. It is apparent from the Horizon Issues themselves, therefore, that the main focus of the enquiry is on the extent to which the abilities of Post Office and/or Fujitsu to remotely inject, edit or delete transaction data / data in branch accounts (a) were used and (b) potentially affected branch accounts. That focus is unsurprising given that the parties' pleaded cases revolve around Cs' contention that the remote alteration of transaction data affected branch accounts: see GPOC, para 21.3,[845] 23[846] and 25.[847] The same focus is seen in the duty pleaded at GPOC, para 64.10[848] and the allegedly guilty knowledge pleaded at GPOC, para 115.8.[849]

Questions of terminology – "transaction data" and "remote access"

735. Given the clear focus on effects on transaction data and branch accounts, it is important to establish at the outset what is covered by the term "transaction data". Mr Coyne fairly accepted that a practical and useful definition of that term would be as follows: "*records of transactions: price, date, quantity, money paid*",[850] i.e. the basic and defining details of the transaction. This can be contrasted to the system / operational data associated with the transaction, such as the various time stamps and other markers that become associated with the transaction as it passes through the system.

736. The transaction data for a bill payment, for example, would include: (a) product (i.e. the bill), (b) payer/customer, (c) payee/client, (d) amount of payment, (e) time of payment and (f) method of payment. Other transactions would involve fewer items of transaction data, such as the purchase of a packet of stamps. The transaction data is the data that, if different, would alter the branches' accounting position.

737. If the transaction data is correct, this will ensure that the branch accounting position is correct, irrespective of any changes to other elements of the accounting process. Mr Coyne fairly accepted the following: [851]

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[845] {C3/1/8}.

[846] {C3/1/8}.

[847] {C3/1/9}

[848] {C3/1/36}.

[849] {C3/1/56}.

[850] {Day16/2:5} to {Day16/2:14}.

[851] {Day16/2:18} to {Day16/3:21}.

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737.1 A branch account is formed of an aggregation of transactions from a given starting point. (A fuller definition would include that the account results from the comparison between (a) the aggregated figures for cash and stock and (b) the actual figures for the cash and stock in the branch).

737.2 A branch's opening position is an aggregation of the transactions up to that point. As long as the opening position is a genuine aggregation of those transactions, the account will be correct at that time.

737.3 A change to the accounting period should not affect whether or not there is a shortfall.

738. It is also important to clarify that the "remote access" addressed by the Horizon Issues concerns injecting, editing or deleting transaction data in branch accounts (rather than other copies of that data that exist in other systems). The pleadings and the Horizon Issues focus on effects on branch accounts, rather than the processing of data within other systems and other business operations. It follows that:

738.1 Transaction data recorded in Post Office's back-end MIS (or anywhere else other than Horizon) is not the subject of these Horizon Issues.

738.2 Any changes made by the Transaction Repair Tool to data in the TPS is not remote access within the meaning of these Horizon Issues. It is not a change made to transaction data in branch accounts.

Information available to the experts

739. Mr Coyne fairly accepted that the experts had available to them very substantial amounts of contemporaneous documentation in relation to remote access. Specifically, Mr Coyne accepted the following:

739.1 He had seen many tens of thousands of OCPs, OCRs and MSCs[852] (i.e. records that would reveal changes made by Fujitsu).

[852] {Day16/17:12}.

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739.2 These documents were a "*good source of information that would indicate what steps were taken*".[853]

740. This is of course in addition to the evidence in relation to remote access that can be taken from Peaks, KELs, technical documents and the witness statements. In this regard, Mr Coyne fairly accepted that, if there is some remote access, that will often be recorded in the relevant Peak(s).[854] He accepted that Fujitsu's process was to record in the body of the relevant Peak the detail of any remote access used in resolving the issue addressed by the Peak.[855]

741. It is difficult to reconcile this frank evidence with some of Mr Coyne's remarks in his reports and the Joint Statements: see, for example, the suggestion at JS4, para 11.13, giving the insertion of messages in Legacy Horizon as an example of a corrective fix that left "*no evidence trail*".[856] Mr Coyne had a tendency in his written evidence to overstate the problems with the evidence available to him, but he made appropriate concessions when asked about these points in cross-examination.

742. The Court will also recall Mr Coyne's evidence as to the sophisticated search and review processes that he was able to use. He sometimes wished to downplay the extent to which he was able to deploy those processes in relation to remote access, but there is no reason to think that there was some special impediment here. The only candidate for such an impediment is the fact that the MSC logs were disclosed in the form of three spreadsheets, which Mr Coyne noted.[857]

743. Mr Coyne also fairly accepted that one could take a sample of FAD codes and use intelligent search techniques to identify the extent of remote access in relation to that sample of branches. He accepted that to do so would be a suitable and helpful process.[858] It was a fair point for Mr Coyne to observe that Post Office had, during relatively early

[853] {Day16/17:18}.

[854] {Day16/17:18} to {Day16/18:21}.

[855] {Day16/28:15} to {Day16/28:20}.

[856] {D1/5/13}.

[857] Mr Green QC invited Mr Coyne in re-examination to complain about the MSC logs having been disclosed in three spreadsheets, rather than one, which he duly did.

[858] {Day16/20:24} to {Day16/22:17}.

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exchanges in relation to RFIs, stated that it was inappropriate to seek to identify information "*tied to individual cases*" [859] (which is not quite the same thing). But that is largely beside the point given that all Mr Coyne had to do was identify a sample of FAD codes to use. He could have used Claimant FAD codes,[860] but he could also, as he accepted, have taken a random sample of any other FAD codes.[861]

744. The experts had at their disposal a substantial body of contemporaneous evidence from which to assess the nature and extent of remote alteration of branch data. Cs cannot speculate as to what they have been in a position to determine.

F23. Overall scale and importance of remote access

745. The remote access issues have always had great prominence in these proceedings, for entirely understandable reasons. There has now been a deep and thorough investigation of Fujitsu's abilities to alter branch transaction data and, perhaps more importantly, how and to what extent Fujitsu in fact exercised those abilities. As set out in detail below, the outcome of the experts' combined efforts has been to show that Fujitsu displayed an appropriate reluctance to do anything that would interfere with branch accounts; that, when it had to make some change, it did so with great care; and that its practice was to make sure that the SPM knew what was being done and could confirm that the change took effect as intended.

746. Mr Coyne fairly accepted that he had identified relatively few instances of remote access being used to affect branch accounts, especially compared to the vast number of branch accounts over the life of Horizon:

> *MR DE GARR ROBINSON…I would be right in thinking, wouldn't I, that of the PEAKs you have seen you found relatively few examples of remote access having been exercised? Would the answer to my question be right?*
>
> *A. I don't know exactly what the number will be, but it is tens, twenties –*
>
> *Q. Looking at your report it would be low tens, wouldn't it? You haven't found hundreds?*

[859] {C5/21/5}. Mr Coyne was unfairly criticised for this, and Post Office apologises for that.

[860] Cs themselves of course had their FAD codes, and a full list was provided with Ms Van Den Bogerd's second witness statement: see {E2/5/41} (para. 179), referring to the document at {F/1837}.

[861] {Day16/24:24}.

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A. No, I haven't found evidence of hundreds, no.

Q. So you have found, as I say, a relatively small number; relative to the fact that we are talking about 3 million branch accounts over the last 20 years, all you have actually found is a very small number which is less than 20 or 30, let's call it less than 30, would you agree with that?

A. Yes.[862]

747. Mr Coyne agreed that the evidence he had seen showed that where Fujitsu performed remote access affecting branch accounts it did so carefully.[863] This is consistent with all the witness evidence, including Mr Roll's oral evidence in relation to the "four eyes" requirement that every change be witnessed or monitored by another SSC employee.[864]

748. Mr Coyne also accepted that, given that remote access to alter branch accounts was relatively rare and was done carefully, there was only a small chance of it adversely affecting branch accounts: "*It would be fair to say that* [the chance] *would be reasonably small. I don't know about saying it was vanishingly small*".[865] To similar effect, Mr Coyne accepted that the chance of a false figure being introduced into an SPM's account through remote access was "*small*".[866]

749. In fact, Mr Coyne was able to refer to only a single instance in which he contended a change made through remote access had introduced error into an SPM's account.[867] Putting to one side that the instance to which he refers in fact shows no such thing,[868] a single instance across 3 million branch accounts and 20 years would not indicate a material risk of remote access introducing a false shortfall into any given branch account.

750. Mr Coyne fairly pointed out that, under Legacy Horizon, there were other processes through which Fujitsu might have affected the content of branch accounts (what he refers

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[862] {Day16/28:25} to {Day16/29:15}.

[863] {Day16/31:7} to {Day16/31:13}.

[864] {Day4/127:15} to {Day4/128:19} and {Day4/156:10} to {Day4/158:9}. This requirement is found in Fujitsu's "Access Control Policy" at para. 4.5.5.4 {F/121/40}. See also later versions of the same policy at {F/970.1/41}, {F/1333.1.1/42} and {F/508.01/41}.

[865] {Day16/29:16} to {Day16/30:6}.

[866] {Day16/31:14} to {Day16/31:18}.

[867] {Day16/30:18}.

[868] See further at paras 780 *et seq* below.

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to as "rebuilding" branch data in counters). But the picture there is not materially different – there is no evidence of erroneous transaction data being introduced through the "rebuilding" process; the purpose of the process was to improve the accuracy of the branch accounts; and it was done carefully (as the Court will recall Mr Roll readily accepted in his oral evidence).

751. Ultimately, the evidence has borne out Dr Worden's view that remote access is, as a second order issue, unlikely to materially affect the robustness of the Horizon system and the accuracy of branch accounts.

F24. Specific forms of remote access

Legacy Horizon

752. Mr Coyne identified the following abilities / facilities to insert, edit or delete transaction data or data in branch accounts under Legacy Horizon:

752.1 Rebuilding branch transaction data (in a counter).

752.2 Injection of an additional message in the branch messagestore.

752.3 Deletion of messagestore data.

753. These are identified in para 10.4 of JS4.[869] Mr Coyne confirmed in cross-examination that he was not aware of any other forms of remote access under Legacy Horizon.[870] JS4, para 10 also refers to the use of the Transaction Repair Tool, but this is addressed separately below (as it is common to both Legacy Horizon and Horizon Online).

(1) "Rebuilding" a counter's data

754. Mr Coyne agreed that, in the ordinary case, the process of "rebuilding" a counter's messagestore in fact involved the deletion of that messagestore and its automatic replication from a "mirror" messagestore, using Riposte.[871] That process does not involve any discretionary change to individual messages or transactions in the

[869] {D1/5/4}.

[870] {Day16/91:24}.

[871] {Day16/32:21} to {Day16/33:11}.

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messagestore. Mr Coyne accepted that such automatic "rebuilding" was a back-up process that contributed to robustness and should result in the counter containing the right data.[872] The process is described in Mr Parker's first and second statements.[873]

755. There is no evidence of the automatic process ever having generated errors in branch accounts.

756. Mr Coyne stated that he had identified "*ten or so*" instances where some manual process was required.[874] It is common ground that manual intervention was occasionally required (where the automatic replication process could not be used for some reason). Mr Parker identified the two forms of manual intervention in paras 38.2 and 38.3 of his second witness statement.[875]

757. In relation to those manual processes, Mr Coyne fairly accepted that, where Fujitsu had to retrieve the hard disk from a faulty counter, it would require a physical card to be provided by the SPM, who would therefore be aware of what was happening.[876] He also agreed with Mr Parker's evidence that, if Fujitsu were to change anything in that manual process, it would be to remove the "envelope" surrounding the transaction data: "*Yes. They go through a process of stripping the CRC off and then recreating it afterwards*".[877]

758. Mr Coyne said that he had seen a Peak that showed Fujitsu manually renumbering transactions using a "*Text Pad*" and then reinserting transactions using "*Message Factory*".[878] Mr Coyne undertook to locate the Peak overnight,[879] but he did not return to this point the next day (or at all). It seems likely that the Peak that Mr Coyne had in mind was {F/377.1} (to which he did refer, albeit on a different point, on day 17). That Peak

[872] {Day16/33:25} to {Day16/34:10}.

[873] Parker 1, paras 55.3-55.4 {E2/11/15} and Parker 2, para. 37 {E2/12/12}.

[874] {Day16/33:23}.

[875] {E2/12/12}.

[876] {Day16/79:13} to {Day16/80:5}.

[877] {Day16/80:11}.

[878] {Day16/80:20} to {Day16/81:10}.

[879] At one point, Mr Coyne referred to a "handful" of similar documents and agreed to bring these to Court, but he did not do so: see {Day16/85:3} to {Day16/85:8}.

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contains reference to both "*textpad*" and "*MessageFactory*". The Peak is PC0142763. It dates from January 2007 and in fact shows the following:

758.1 An SPM reported that he had missing transactions following the replacement of the two base units in his branch: {F/377.1/1}.

758.2 There appeared to have been a failure in replication, due to a fault event in Riposte: see at {F/377.1/2} timed at 09:13.

758.3 Fujitsu recovered the old counters from which messages had not replicated: see the fourth entry at {F/377.1/3} timed at 11:02.

758.4 The missing messages were downloaded from the old counters: see the first entry at {F/377.1/4} and the second to fifth entries at {F/377.1/5}.

758.5 The missing transactions would be imported into the accounts and would be marked as having been performed on counters 11 and 12 (rather than 1 and 2) that they would they could be seen as such: see the fifth entry at {F/377.1/4}.

758.6 The SPM had mistakenly re-performed some of the missing transactions in the meantime, resulting in duplicates, but this was resolved: see the first entry at {F/377.1/5}.

758.7 The SPM had a loss on rollover but grudgingly accepted that this was a genuine loss, rather than being caused by the re-insertion of the missing transactions: see the sixth entry at {F/377.1/5}.

759. The references to "*textpad*" and "*MessageFactory*" come in the final entry on the Peak, where David Seddon set out the "*audit of actions taken to recovered messages*". The Peak provides a good example of the care taken by Fujitsu to record the changes that it made and to make sure that they could be identified (in this case, by giving the inserted transactions different and much higher counter numbers)[880]. It also shows the extent to which the SPM was kept informed and involved in the process of correction.

[880] The branch at issue did not have 11 or more counters. No agency branch does have that many counters.

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760. Mr Coyne fairly accepted that the chance of introducing error through this (rare) manual process would be "*low*".[881] There would of course be some risk, but the process described by Mr Parker and shown in Peak PC0142763 is a careful and precise one. It would carry a very low risk of introducing error into branch accounts, not least given that the inserted transactions were identified as such and the process involved cooperation with the SPM.

761. Mr Coyne also referred to having seen a Peak describing a situation where the SPM manually re-performed transactions before they were recovered by Fujitsu and re-inserted, resulting in duplicates.[882] Mr Coyne said that he would find the Peak and provide it the next day. He did not specifically draw attention to it, but this again appears to be Peak PC0142763 {F377.1} (see para 758 above). The duplicates were immediately discovered and removed.

762. In short, the single example of manual rebuilding that Mr Coyne was able to identify shows a careful process, done in collaboration with the SPM and carrying a very small risk of introducing any error into the branch accounts.

(2) Injection of messages into the branch messagestore

Insertion at the correspondence server (counter number 32)

763. Mr Parker's unchallenged evidence is that the standard process for inserting a message in Legacy Horizon involved the injection of the message at the correspondence server, resulting in a transaction with a notional counter number of 32.[883] Mr Coyne did not feel able to positively agree that this was the standard process, but he fairly accepted that he was not in a position to disagree with Mr Parker in this respect.[884]

764. One advantage of that standard process was that the counter number associated with the inserted message (32) would distinguish it clearly from messages created at a branch counter, given that no branch counter would have a number that high.

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[881] {Day16/85:21}.

[882] {Day16/87:19} to {Day16/88:21}.

[883] Parker 2, paras 27-28 {E2/12/9}. No branch would have 32 counters.

[884] {Day16/93:9}.

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765. For the first time in his oral evidence, Mr Coyne suggested that he had seen "*occurrences where the counter number of 32 has not been used*" for an injection at the correspondence server.[885] He undertook to provide documents evidencing this the next day. On the next day, Mr Coyne proffered one document, namely Peak PC0142763 {F/377.1}. That document has been considered extensively above. It appears to be the only example of a counter number less than 32 having been used, and even in that case the transactions were clearly identified through the use of unrealistically high counter numbers (11 and 12, replacing the original counter numbers of 1 and 2), and the SPM was kept informed and involved throughout the process.

Insertion at the counter itself

766. Mr Coyne also accepted that Mr Parker gave a fair account of PC0175821,[886] which exemplifies what Mr Parker describes as the non-standard process of injecting a transaction at the counter. That Peak dates from February 2009 and is at {F/485}. It shows the SPM (or his staff) was kept informed of the process and that the account balanced following the insertions. The change was required to correct for corrupted bureau transactions.

767. Mr Parker identified 14 instances of this non-standard process, (only one of which involved the insertion of a transaction).[887] He identified the relevant Peaks. Mr Coyne had reviewed the Peaks to which Mr Parker referred.[888] He did not dispute Mr Parker's characterisation of the 14 insertions. (The extra Peaks later identified by a technician at Fujitsu are addressed in the consideration of Mr Parker's evidence.)

768. Mr Coyne confirmed that the search carried out by Fujitsu to identify the instances of insertions into counter was likely to have been effective.[889] He added that he had himself carried out further searches: see the quotation from the transcript at para 72 above. He accepted that his own searches had identified only a "*relatively low*" number of

[885] {Day16/94:11} to {Day16/95:3}.

[886] {Day16/93:15} to {Day16/94:4}.

[887] {Day16/97:11} to {Day16/98:24}.

[888] {Day16/97:10}.

[889] {Day16/99:15}.

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insertions, a number that was "*in the tens*".[890] It appears from Mr Coyne's re-examination that he first carried out these further searches at some point after receiving the letter dated 20 March 2019 at {H/253}.[891]

769. The next day, Mr Coyne proposed to inform the Court how many such instances he had identified, but without providing any reference to the relevant Peaks,[892] making it impossible to challenge any number that he might offer. Post Office objected to that course and maintains that objection. Mr Coyne has frequently referred to there being many instances of a given phenomenon but, when the documents relied on are interrogated, they prove not to support the point that he makes. It would be unfair for Mr Coyne to be able to present evidence based on further work that he carried out but kept to himself, in preference to engaging with Dr Worden and/or notifying Post Office of his new opinion and the evidential basis for it. The approach that Mr Coyne tried to adopt would prevent any interrogation of the basis for his evidence in the documents.

770. Mr Coyne also referred to a Peak that he contended showed an erroneous shortfall generated by a mistake that Fujitsu made in inserting a transaction. The Peak is PC0152014.[893] It dates from December 2007 and is at {F/432}. It can conveniently be referred to as "the $1,000 Peak". Mr Godeseth was taken to it in his cross-examination.

771. Post Office acknowledges that this Peak appears to show Fujitsu, in breach of its usual practices, not informing the SPM of a change made by remote access. Mr Coyne fairly confirmed that this is the sole instance of which he is aware of this having happened.[894] The rationale for not informing the SPM appears to have been that he was unaware of the problem and that, if it could be resolved before roll-over, he need not be troubled by it. Post Office considers the decision taken there to have been wrong – the SPM should have been informed, in accordance with standard process.

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[890] {Day16/99:24} to {Day16/100:15}.

[891] {Day17/181:14} to {Day17/181:25}.

[892] {Day17/8:24} to {Day17/9:20}.

[893] It was referred to at Coyne 2/3.234 {D2/4.1/75}.

[894] {Day17/103:20} to {Day17/104:3}.

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772. Mr Coyne was cross-examined at some length on this Peak and its associated OCP and OCRs.[895] It is possible, through an admittedly pain-staking process, to establish from these contemporaneous documents what happened in relation to the $1,000 Peak. On a careful analysis, it is clear that the changes made by Fujitsu did not cause any shortfall in the branch's accounts.

773. The underlying problem was that a foreign exchange transaction for $1,000 had become corrupted and lacked a settlement line (i.e. the record of payment, in sterling, connected to the transaction): see the entry at the bottom of page 1 of the Peak {F432/1}.

774. The chronology was as follows.

775. The Peak was raised on Friday, 7 December 2007 and as a result of the MSU's review of automatically generated reports.[896]

776. On the same day, OCR 17493 was raised and approved: see the entries timed at 10:35 and 10:41 on the Peak at {F/432/1}. The change was planned for the same day but in fact took place on 10 December 2007. An unmatched counter message for $1,000 was removed from the POLFS feed (i.e. the Transaction Repair Tool was used to adjust the summaries table in the TPS): see the OCR at {F/323.1} under "Comments" and the first full entry on page 2 of the Peak {F/432/2}.

777. On Monday, 10 December 2007, OCP 17510 was raised: see the second entry on page 2 of the Peak {F/432/2}. The change made under this OCP was to the counter messagestore (i.e. a transaction insertion) and was the inverse of the original transaction, cancelling it out: see under "Extra detail" on the OCP {F/432.2/1}. The inserted message was to include a comment to show that it had been inserted by Fujitsu to correct the problem.

778. The OCP records that the change would first be tested on a copy of the messagestore within the SSC environment, including rolling over the stock unit to confirm that there were no unexpected consequences: see the third para under "Extra detail". The change was delayed for a short time by a problem with the test rig and was not effected until

[895] {Day16/104:4} to {Day16/132:6}.

[896] Mr Coyne accepted this: {Day16/104:4} to {Day16/105:12}.

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Tuesday, 11 December 2007: see the entry above "Other details" on page 2 of the OCP {F/432.2/2}.

779. On Wednesday, 12 December 2007, a further OCR was raised – OCR 17532: see the entry timed at 12:03 on page 2 of the Peak {F/432/2}. This further OCR was also to correct the POLFS feed and also involved the use of the Transaction Repair Tool (rather than making any change to the branch accounts): see {F/434.1}. By the time of this correction:

779.1 The $1,000 transaction had already been deleted from the POLFS feed under OCR 17493 (addressed above).

779.2 The effects of the $1,000 transaction at the counter level had been removed by inserting an inverse transaction under OCP 17510 (addressed above).

780. This second OCR did not relate to the $1,000. That had been effectively removed from both the branch accounts and from the POLFS feed. It related to a different but related problem: the absence of USD bureau transaction totals for the branch in the POLFS feed. Post Office had to provide this explanation at trial on instructions, but all the relevant facts can be taken from the OCR itself:

780.1 The product code indicated on the OCR (under "Comments" at {F434.1/1}) is 5129. That is the same product ID as for the corrupted transaction and the message inserted to the counter. It is the product ID for USD: see the product ID list at {F/1292.2/3}.

780.2 The "SaleValue" stated for the product is 1014.73. That is the sterling value of the insertion being made into the POLFS feed. (Note that the SaleValue for the corrupted transaction in OCP 17510 was 484, the sterling equivalent of $1,000 {F/432.2/1}).

780.3 The "PQty" stated for the product is 2080. That is the dollar value of the insertion being made into the POLFS feed. (Note that the PQty for the corrupted transaction in OCP 17510 was 1000, reflecting that it was a $1,000 transaction {F/432.2/1}).

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780.4 These two values must be the sterling and dollar amounts for something other than the $1,000 transaction. And the insertion of those values was into the POLFS feed, rather than into the branch accounts (which had already been corrected by the insertion under OCP 17510).

781. On the same day, the branch rolled over into the next trading period. The final entry on page 2 of the Peak says this: "*Worth noting that the branch did not have any issues with the mismatched transactions because this was fixed before they did the roll.*" {F/432/2}.

782. On Friday, 14 December 2007, Anne Chambers provided a comprehensive explanation of the action that had been taken:

> *As detailed above, the two POLFS incomplete summaries issues have been resolved.*
>
> *The counter problem which caused the first issue has been corrected by inserting a message into the messagestore, for equal but opposite values/quantities, as agreed with POL (OCP 17510).*
>
> *As a result of this corrective action, the net effect on POLFS is zero, and POLFS figures are in line with the branch. POLMIS received both the original message and the corrective message.*
>
> *Once the problem was corrected, there should have been no impact on the branch.* {F/432/3}

783. Ms Chambers went on to explain that the branch nonetheless did have a loss: "*However it has been noted that the stock unit BDC had a loss of $1,000, which was generated after the correction was made*". Post Office had been informed. She noted that "*This appears to be a genuine loss at the branch, not a consequence of the problem or correction*": see {F/432/3}. It appears from that entry, which refers to "*reconciliation*" and from the fact that the Peak shows a BIMS was issued that the loss may well have been addressed by Post Office.

[897] {F/432/3}.

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784. That is consistent with the entry from Anne Chambers at the bottom of page 3 of the Peak,[897] where she identifies that there had been a problem with the two pouch remittance operations either side of the $1,000 transaction that had been corrupted.

785. It is impossible, at this remove in time and without more evidence, to identify what precisely happened to cause the $1,000 loss in the branch. But the documentary record does not suggest that it was caused by any of the corrective steps taken by Fujitsu.

786. More specifically, the case advanced by Cs in the cross-examination of Mr Godeseth was clearly wrong: the loss in the branch was not caused by some error in the amount of the correction to the branch accounts. Mr Godeseth was referred to the values in OCR 17532 in this regard,[898] and that OCR did not relate to a change to the message store (i.e. data forming the branch accounts) but only to the POLFS feed (i.e. data being supplied into Post Office back-end system). Mr Coyne accepted this point on the OCR.[899] Mr Coyne also accepted that the figures shown in OCR 17352 bear no relation to either £484 or $1,000 so would be difficult to understand unless they related to something other than the corrupted transaction and its correction.[900]

787. Another way of making the same point is to observe that the only correction that could have resulted in a loss in the branch was the OCP. That was the only change that affected the branch account, rather than the data feed from the TPS. And review of the OCP shows no basis on which to conclude that the change involved any error, and every reason to think that it was made properly and carefully, after testing.

(3) Deletion of messagestore data

788. It became apparent in Mr Coyne's cross-examination that he was not in fact aware of any examples of the deletion or editing of transaction data other than as part of one of other of the "rebuilding" processes addressed above. He confirmed the following:

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[897] {F/432/3}.

[898] {F/434.1}.

[899] {Day16/122:2}.

[900] {Day16/127:2}.

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788.1 He had not seen examples of the discretionary manual deletion of transactions in the message store. He commented that it was "*typically wholesale*"[901] deletion of the message store– i.e. the first step in the automatic "rebuild" process described above.

788.2 He had not seen any evidence of Fujitsu changing the value of any transaction in the message store, as opposed to "*data around*" the transaction.[902] This appeared to be a reference to the removal of the "*envelope*" around the transaction data, as discussed above.

788.3 He was not aware of any instance where someone from Fujitsu had remotely accessed a branch messagestore and change a transaction in that messagestore.[903] Again, he referred to a manual "rebuild" (involving the physical removal of the branch counter).

789. Mr Coyne then directed the Court to {F/377.1}.[904] That Peak has been addressed exhaustively above.

790. On analysis, Mr Coyne's third form of remote access was not additional to his second.

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791. In his second report, Mr Coyne expressed the view that Global Users were (or might be) able to remotely alter branch transaction data. He formed this view on the basis of a technical document. Mr Godeseth then responded to that point in his third witness statement.[905] At trial, Mr Coyne fairly accepted that Mr Godeseth's explanation had removed his concern about Global Users.[906] He observed that, now that he had seen the explanation, the position made "*complete sense*".

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[901] {Day16/132:21} to {Day16/133:8}.

[902] {Day16/134:13}.

[903] {Day16/137:4}.

[904] {Day16/135:10}.

[905] {E2/14/2} at paras 4 to 9.

[906] {Day16/70:13} to {Day16/71:15}.

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792. Putting that to one side, Mr Coyne identified the following abilities / facilities to insert, edit or delete transaction data or data in branch accounts under Horizon Online:

792.1 Injection of a transaction (or operational data) into the BRDB using an SQL Command Line Editor.

792.2 Use of the Transaction Correction Tool. (There appears to be a typographical error in the reference in JS4 to the "Balancing Transaction Tool").[907]

793. These abilities are identified in para 10.2 of JS4.[908] Mr Coyne confirmed in cross-examination that he was not aware of any other forms of remote access under Horizon Online.[909] JS4, para 10.2 also refers to the use of the Transaction Repair Tool, but this is addressed separately below (as it is common to both Legacy Horizon and Horizon Online).

794. Mr Coyne also, in a different para of JS4, addresses the possibility of changes being made using the APPSUPP role: see para 10.5 {D1/5/5}. He confirmed in cross-examination that such changes would be made using the SQL Command Line Editor, so fall within the first category of change identified in JS4, para 10.2.[910]

(1) The SQL Command Line Editor /APPSUP privileges

795. Mr Coyne frankly accepted that every big system like Horizon would require "*super user access*".[911] The experts agree that it is necessary for "*some technical users to have privileged access to databases, with wide-ranging capabilities, for system maintenance and problem-solving purposes*": JS4, para 11.2.[912]

796. Mr Coyne referred in his second report to uses of the SQL command to delete data: see Coyne 2/3.226-3.276.[913] On analysis, the Peaks on which he relies all relate to one of two

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[907] This is clear from the correct term being used in JS4, para. 10.3 {D1/5/5}.

[908] {D1/5/4}.

[909] {Day16/91:24}.

[910] {Day16/144:17} to {Day16/144:24}. This accords with JS4, para. 10.7 {D1/5/6}.

[911] {Day16/145:9}.

[912] {D1/5/10}.

[913] {D2/4.1/83}.

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scenarios, neither of which involves the deletion (or editing or insertion) of transactions in the BRDB. Mr Coyne suggested that he had seen other Peaks but accepted that the Peaks relied on his report were representative.[914]

Deletion of unresolved recovery sessions

797. Mr Coyne acknowledged in cross-examination that the bulk of the Peaks to which he referred provided examples of the deletion of sessions containing recovery flags, rather than the deletion of transaction data.[915] He readily accepted the following points about that process:

797.1 The purpose of the deletion is to address a problem where the existence of an unresolved recovery flag is preventing use of the counter and/or rollover.[916]

797.2 This does not involve the deletion of any data in the branch accounts.[917]

797.3 Nor does it involve any change being made to the data in the branch accounts.[918]

798. Mr Coyne's contention was that the deletion of the session containing the unresolved recovery flag could result in branch discrepancies, depending on what had in fact happened in relation to the transactions that were not yet committed to the BRDB (i.e. the transactions that would or might have been recovered and so completed, had the recovery been successful).[919]

799. It is fair to identify the possibility of error, but the likelihood of adverse effects in practice is very low. The starting point is that Fujitsu has in place detailed processes for resolving problems in the recovery process: see the various scenarios addressed in KEL acha959T {F/700.1}. Most instances of failed recoveries are processed in a straightforward way.

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[914] {Day16/156:9} to {Day16/156:18}.

[915] {Day16/147:23} to {Day16/148-8}.

[916] Ibid.

[917] {Day16/153:1} to {Day16/153:10}.

[918] Ibid.

[919] See, for example, {Day16/153:9}, referring to data that is "*in an unconfirmed state that needs dealing with*".

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800. In the relatively unusual case where there is a failed recovery process that requires the deletion of the recovery session data, the SPM will be aware of and involved in the resolution of the problem. The counter will have become unusable and/or the relevant stock unit will be unable to rollover.

801. It is apparent from the Peaks that Fujitsu was reluctant to delete session data, even if only to clear an unresolved recovery flag: see, for example, Peak PC0234786, in which Supid Sur comments to the effect that deleting the session data should only be pursued (and only then with express authorisation) if the problem cannot be resolved at the counter by an engineer.[920] This reflects Fujitsu's general reluctance to intervene in any way that might affect branch accounts: see further below at para. 810.

802. There are, however, unusual circumstances in which there is no alternative but to delete the session. One such circumstance is where a counter has been removed from the branch and the last user did not log out correctly before the counter was removed: see, for instance, PC0239436 (December 2014), in the fourth entry on page 5[921] and PC02363716 (October 2017), in the second entry on page 7.[922]

803. In those few Peaks where a deletion was required, there is evidence of Post Office's concern to make sure that authorising the deletion would not cause any discrepancy in the branch accounts. This can be seen, for example, in Peak PC0241528, which concerned a problem with a Health Lottery transaction (which could not be recovered or cleared) that formed part of the same session as an otherwise recoverable banking transaction. There was a clear concern to make sure that the deletion of the session did not result in any branch discrepancy in respect of either of the transactions:

803.1 As regards the Health Lottery transaction, an email from Patricia Bursi of Post Office in the middle of page 6 states as follows:

> *"…Pat has kindly rung the branch and confirmed the customer isn't impacted, nothing changed hands for the Health Lottery transaction, and there is no branch discrepancy.*

[920] {F/1120/2}.

[921] {F/1284.1/5}.

[922] {F/1703/6}.

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I'm therefore happy to authorise this session to be deleted so that the kit at the branch can return to BAU state...." [923]

803.2 As regards the banking transaction, the entry starting at the bottom of page 8 identifies the need for a TC to be issued: "*The cash withdrawal txn was authorised and PM should have paid the money out…. However this will leave this office £296.70 short… POL need to do appropriate reconciliation; transaction correction'*"[924]. The entry for 24 March 2015 at 14:10 shows that a BIMS was duly issued to trigger the TC process.

804. Mr Coyne fairly accepted that the Peaks show that the SPM was consulted in order to avoid any branch discrepancy arising:

Q. … There was deletion of data relating to recovery markers which were concerned
with sessions, would you agree with that?

A. Yes, but contained within there is session data that's in an unconfirmed state that needs dealing with.

Q. Yes. And in each of those cases it was dealt with in consultation with the subpostmaster to ensure that the accounts were right, to ensure that nothing was done which produced an inappropriate result for the accounts.
Would you agree with that?

A. I agree actually with the process, yes. [925]

Deletion of stock unit opening positions

805. Mr Coyne also referred to PC0197592 (April 2010)[926] which concerns the deletion of an erroneous branch opening position, rather than transaction data.[927] As Mr Coyne accepted in cross-examination:[928]

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[923] {F/1320/6}.

[924] {F/1320/8}.

[925] {Day16/153:6} to {Day16/153:16}.

[926] {F/611}.

[927] Coyne 2/3.275 {D2/4.1/84}.

[928] {Day16/156:24} to {Day16/161:5}.

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805.1 It concerned a branch involved in the Horizon Online pilot stage.

805.2 The branch was unable to rollover from trading period 11 ("TP 11") into TP 12 because, due to a problem during migration,[929] rogue figures (zeros) had been wrongly entered as stock unit opening positions for TP 12.

805.3 The SQL command was used to delete the rogue opening positions.

805.4 The result of this was to permit the branch to rollover, in the normal way, into TP 12. Upon rollover, the correct opening positions would be automatically generated, based on the transactions in the branch database.

806. Mr Coyne captured the point elegantly when he observed that the result of Fujitsu's intervention was that, following rollover, the opening position of the branch in TP 12 would have been "*Whatever it should be*".[930] The Peak provides a good example of Fujitsu being required, in unusual circumstances, to intervene remotely in the branch accounts, and doing so in a way that creates no adverse effect.

807. The Peak also shows that SPM was kept informed of the process by the SSC directly: see the penultimate entry on page 2 (Anne Chambers).[931] Authorisation was obtained from Post Office via an OCP (referred to in the header to the Peak).

The possibility of other changes made using SQL

808. It is important to apply a measure of reality here. The experts have conducted an exhaustive review of the vast contemporaneous documentation that would disclose any alteration of branch data. Mr Coyne in particular was concerned to root out any evidence to support Cs' case that remote access might account for disputed shortfalls in branch accounts. In that context, while the experts and the witnesses of fact quite properly avoid absolute statements to the effect that other changes have certainly never happened,[932] the Court cannot properly be invited to speculate.

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[929] See the fifth para. in the entry that begins at the bottom of page 2 {F/611/2}.

[930] {Day16/160:8}.

[931] {F/611/2}.

[932] See, for example, the final sentence of JS4, para. 10.12 {D1/5/8}.

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809. There is a further point of common sense and inference. Fujitsu created the Transaction Correction Tool ("TCT", discussed below) for good reason – to have the benefit of carefully drafted SQL templates that would allow transactions to be inserted with relative ease and with a low risk of error. The experts agree that the one use of the TCT took effect through "*about 500 lines of SQL, in a pre-defined template*"[933] (emphasis added). It is inherently unlikely that, having seen the need to build, test, improve and re-test the TCT, Fujitsu would then put the carefully crafted tool to one side and engage in free-hand SQL drafting. The documents and the witness evidence speak to a culture within the SSC that was process-driven and emphasised appropriate caution.

810. Fujitsu was and is reluctant to make changes that would have an effect on branch accounts. Mr Coyne accepted that the contemporaneous documents show this general reluctance.[934] Dr Worden expressed essentially the same view, saying that a privileged user would be particularly reluctant to make manual changes, rather than using pre-defined tools.[935] Mr Parker's evidence is that the SSC was "*hugely reluctant to change financial data as that was not their job and they recognised the seriousness of doing so*".[936] The Peaks support that unchallenged evidence.

811. It is therefore right to say that it cannot be entirely excluded that a free-hand SQL command might have been used in a way that affected a branch account, but that possibility should not be equated with probability (or even a material risk).

812. Mr Coyne appeared in his second report to rely on a remark by Anne Chambers in PC0208119[937] as suggesting that the APPSUP role was used to make changes to the BRDB that might affect branch accounts.[938] Ms Chambers said this: "*When we go off piste we use appsup*".[939] As Dr Worden observed, the question is what Ms Chambers

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[933] JS4, para. 12.2 {D1/5/14}.

[934] {Day16/162:9}.

[935] Worden 1/1108-1110 {D3/1/243}.

[936] Parker 2, para. 34 {E2/12/11}.

[937] {F/768}

[938] In fairness to Mr Coyne, this is implicit only in his report: see Coyne 2/3.277-3.282 {D2/4.1/86}. But it is a point that Cs have run with.

[939] {F/768/2} in the middle of the page.

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meant by those words, which is not really a matter for the experts.[940] If one looks at the context in which the words were used, it is highly unlikely that what she meant was that she and other SSC employees had been engaging in undocumented or otherwise inappropriate changes to transaction data in the BRDB:

812.1 The Peak involves a frank and considered exchange of views between senior Fujitsu personnel as to how to resolve a mis-match between the roles assigned to system tools (referred to as scripts in the Peak) designed by the development team and the roles in fact granted to SSC staff that were transferred across from Legacy Horizon.

812.2 The context of that discussion is that scripts had been assigned to the SSC role, whereas existing the actual SSC employees had been granted the old APPSUP role during migration to Horizon Online. The new scripts were for "*tidyup tasks (like clear failed recoveries)*": see the second entry on page 1 {F/768/1}. There is no mention in the Peak of any of the scripts being used to insert, edit or delete transaction data.

812.3 It is apparent from Peaks already discussed above that SSC employees, including Ms Chambers herself, were sometimes required to make changes using SQL commands (i.e. without the benefit of specific tools): see the free-hand SQL proposed by Gareth Jenkins to address the problem addressed in PC0197592 {F/611/3} (a Peak in which Ms Chambers was heavily involved). An *ad hoc* intervention to resolve a problem that had not been encountered before would quite naturally be referred to as going "*off piste*". It is notable that the two Peaks are relatively close in time – April 2010 and February 2011.

812.4 In the body of the Peak itself, it is made clear that any unaudited use of write access would involve a security breach: see the final entry on page 3 {F/768/3}. It is clear that nobody involved in the Peak understood Ms Chambers to have dropped the bombshell that she and others were merrily committing security breaches.

[940] {Day20/86:25} to {Day20/87:10}.

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813. Cs' reliance on Ms Chamber's casually-worded remark is perhaps understandable, but it cannot bear the weight placed on it. There remains no evidence of manual changes to transaction data being executed by privileged users. It is a different question whether Fujitsu addressed the user privileges problem addressed in PC0208119 with appropriate urgency – see further below at para 476 below.

(2) The Transaction Correction Tool

814. The experts agree, and Mr Coyne confirmed,[941] that the TCT writes to the journal table identified in JS4, para 12.3.[942]

815. The journal table has been disclosed. The experts agree that it contains only one entry that shows a transaction being inserted into the BRDB: see JS4, para 12.2.[943] That usage of the tool is documented in Peak PC0195561.[944] (Mr Coyne noted, correctly, that the journal also includes entries that relate not to changes to transactions but to changes to recovery flags.)[945]

816. In his second report, Mr Coyne stated that Peak PC0195962 "*suggests that the modification by Fujitsu support staff to the Horizon Branch Database (BRDB) is not unusual*": Coyne2/3.223.[946] That Peak is at {F/594}. As Mr Coyne fairly accepted:[947]

816.1 It was opened the day after the one and only use of the TCT to insert a transaction (12 March 2010).

816.2 It was opened by the SSC employee who had used the TCT, Cheryl Card.

816.3 Ms Card was, in essence, saying that now that the TCT had actually been used, she could think of some ways to improve it. (See the second entry at {F/594/1}).

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[941] {Day16/139:14}.

[942] {D1/5/14}.

[943] {D1/5/14}.

[944] {F/590}.

[945] {Day16/143:18}. The full explanation for this is that another tool (which affects recovery flags) writes to the same journal table – the "Outstanding Recovery Transaction Tool": see the detail provided in correspondence at {H/302}.

[946] {D2/4.1/72}.

[947] {Day16/140:14} to {Day16/141:22}.

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816.4 There followed a debate as to how the tool could be improved. The debate lasted quite a long time. (In fact, the changes were not finalised until January 2011 – see {F/594/4}.)

817. The improvements that were made to the TCT templates are summarised in the entry for 8 October 2010 at 16:18: see {F/594/3}. Notably, the Peak records that regression testing would be used to reduce the risk of any errors in the tool's templates resulting in adverse effects on branch accounts and that no such problems had in fact occurred: see the long entry starting at the bottom of {F/594/1}.

818. In this light, it is difficult to understand how PC0195962 could ever fairly be said to suggest that modifications to branch accounts in the BRDB were "*not unusual*". In fact, the document shows that Fujitsu took any modification to accounts very seriously – that is why, notwithstanding that the TCT had been used only once to insert a transaction, considerable time and effort was expended in improving the TCT to reduce the risk of any error arising from its use.

Transaction Repair Tool (not remote access)

819. Mr Coyne correctly identified the use of the Transaction Repair Tool ("TRT") as being relevant in the same way to both Legacy Horizon and Horizon Online. On the face of JS4, para 10.2, Mr Coyne appeared to suggest that the TRT was used to "*insert, inject, edit or delete transaction data or data in branch accounts*": see {D1/5/4}.

820. Mr Coyne accepted, however, that the TRT was not used to do any of those things.[948] It was used to correct data in the TPS. Mr Coyne accepted a change to data in the TPS was not a change to branch accounts.[949] He therefore accepted that his second report had been "*misleading*" in that evidence of the use of the TRT had been set out under a heading "*Evidence of Insertions/Deletions within Branch Accounts*".[950]

[948] {Day16/144:15}.

[949] {Day16/48:20} to {Day16/49:24}.

[950] {Day16/66:13} to {Day16/68:22}.

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821. Ultimately, Mr Coyne's contention was that a change to data in the TPS could, indirectly, result in a change to branch accounts by prompting an erroneous decision to issue a TC.

822. That is a theoretical possibility, but there is no evidence of it ever having happened. And Mr Coyne fairly accepted the following points, all of which suggest that the risk of it happening is very low indeed:

822.1 The purpose of the TRT is to ensure coherence between data in the TPS and the branch accounts and client data.[951] It was ordinarily used to make straightforward changes to operational data to allow harvesting to take place effectively.

822.2 The TRT could, therefore, only create an inconsistency with the branch accounts if it was used erroneously so as to alter transaction data.[952] Mr Coyne suggested that it was "*possible*" for human error to result in a mistaken change to the transaction data.[953] There is no evidence of this having happened.

822.3 Post Office would then have to prefer the erroneous view of the transaction to the correct position as shown in the branch accounts on the BRDB and/or in the client data, resulting in a mistaken TC being issued to the branch.[954] There is no evidence of this having happened.

822.4 For the branch accounts to be affected, the branch would have to fail to oppose the erroneous TC successfully.[955] This would be in circumstances where the SPM would have the benefit of the correct position being identified in the branch accounts. That is another unlikely step in the chain of causation.

823. Mr Coyne, with some understatement, accepted that the chance of error being introduced into branch accounts through the use of the TRT was "*low*"[956] and would affect only a

[951] {Day16/53:9} to {Day16/54:5}.

[952] {Day16/54:10}.

[953] {Day16/54:13}.

[954] {Day16/58:2} to {Day16/59:16}.

[955] {Day16/65:23}.

[956] {Day16/59:16}.

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"*fraction of a percent*" of transactions.[957] He accepted that it would require the combination of a serious of unfortunate events, none of which was particularly likely.[958]

824. It is important to recall that the use of the TRT is not remote access in the sense of the Horizon Issues (as set out at the start of this section). It could only be relevant to Horizon Issues 1 and 3, where its relevance is very small, for the reasons given above.

Malicious alteration of transaction data

825. The spectre of malicious changes to transaction data – the "master criminal" theory - has quietly receded into the shadows. There is no evidence whatsoever of anyone at Fujitsu or Post Office ever having made changes to transaction data as part of a fraudulent diversion of money or goods or services. Mr Coyne accepted that he had no reason for thinking that this had ever happened.[959]

826. Dr Worden's view has always been that such malicious activity would likely be detected, not least because it would leave traces for Fujitsu to follow.[960] In his cross-examination, Mr Coyne agreed that malicious use of privileged user rights would necessarily raise alarm bells and trigger an investigation and, accordingly, that it would be professional suicide for anyone to engage in it.[961]

Mr Coyne's reliance on E&Y audits

827. The audits are addressed in greater detail in paragraphs 241 *et seq* of these closing submissions.

828. Mr Coyne placed reliance on alleged deficiencies highlighted in the 2011 management letter. Mr Coyne stated that he mostly focused on "*[c]hange management and permissions*" in his reports.[962] The 2011 letter specifically states that, with respect to this area, "*[t]he recommendations we have made in this report should be seen as*

[957] {Day16/66:12}.

[958] {Day16/65:24} to {Day16/66:5}.

[959] {Day16/76:18}.

[960] See, e.g., JS4, para. 10.14 {D1/5/8}.

[961] {Day16/72:18} to {Day16/76:3}.

[962] {Day 16/164:5} to {Day16/164:5}.

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refinements rather than fundamental control deficiencies in comparison (emphasis added)."[963]

829. Although Mr Coyne asserted deficiencies in these areas, by reference solely to the 2011 audit, he failed to comment on the most obvious source for assessing whether changes were implemented on foot of that audit – subsequent audits. The 2013 management letter specifically states:

> *"Focused management action in the past few years has addressed many of the issues raised in the prior year management letters. Whilst there continue to be challenges in areas including POL's IT environment management have taken steps to ensure these challenges are and continue to be addressed."*[964]

830. As is apparent from the 2011 letter itself Post Office and Fujitsu responded and acted upon the points raised by E&Y.[965]

831. Mr Coyne agreed that no harmful events were noted in the 2011 management letter in relation to change management and permissions.[966] Not one instance of irregular or unauthorised remote access was recorded in the E&Y Post Office audits.

832. The purpose and focus of the E&Y service audits are addressed at paragraphs […] of these closing submissions. Reports are available for 2012,[967] 2013,[968] 2014,[969] 2015,[970] 2016[971] and 2017.[972] These service audits do consider matters relevant to remote access. Control Objectives 10, 11 and 13 are particularly relevant:

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[963] {F/869/3}.

[964] {F/1138/4}.

[965] {F/869/29} to {F/869/38} and {F/869/47} to {F/869/49}.

[966] {Day16/165:13} to {Day16/165:17}.

[967] {F/1041}.

[968] {F/1176.1}.

[969] {F/1305}.

[970] {F/1562}.

[971] {F/1626}.

[972] {F/1776.1}.

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832.1 "*Control Objective 10: Controls provide reasonable assurance that access to system resources, including computing platforms and operating systems, is restricted to properly authorised individuals*."[973]

832.2 "*Control Objective 11: Controls provide reasonable assurance that access to databases, data files, and programs is restricted to properly authorised individuals*."[974]

832.3 "*Control Objective 13: Controls exist to provide reasonable assurance that remote access is appropriately restricted to authorised personnel*."[975]

833. Across the six reports only one deviation was noted across control objectives 10, 11 and 13 – in the 2012 service audit under control objective 10.[976] Although certainly not determinative, these service audits provide a useful resource in evaluating how Horizon performed against these relevant control objectives at the time.

F25. Permission controls and logs (Horizon Issue 11)

834. There is a good measure of agreement between the experts on the nature and scope of the relevant permission controls. It is set out in JS4: see {D1/5/10}. There are several points that merit more detailed consideration.

Privileged user controls

835. It would be a fair criticism of Fujitsu to observe that, having been made aware of the problem of SSC users having a more powerful role than was (usually) necessary, it took a great deal of time for an appropriate resolution to be identified and implemented: see the long course of the discussion in PC0208119.[977]

836. It is apparent from that Peak that Fujitsu considered that the unnecessarily powerful role assigned to SSC users had not resulted in any adverse effects: see the third entry on page

[973] {F/1041/83} to {F/1041/84}.

[974] {F/1041/85} to {F/1041/86}.

[975] {F/1041/88}.

[976] {F/1041/83}.

[977] {F/768}

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4 – "*No actual impact/incidents of problems relating to this issue have been experienced yet (and not expected)*".[978] It should also be noted that the original fix, proposed in 2011 and implemented for new SSC users in 2012, proved to be inappropriate for existing users because some of the databases had not been updated to recognise the SSC role (making that role inadequate for the full spectrum of support activities): see the fourth and sixth entries on page 7.[979]

837. Those two points go some way to explaining the time taken to resolve the problem, but it nonetheless should have been addressed with a greater sense of urgency. It was inappropriate for the APPSUP role to be generally available to all SSC users, rather than having to be granted on request and for a specific purpose.

838. There is no evidence that the laxity in this regard in fact resulted in any inappropriate changes being made to the BRDB, let alone that such changes affected branch accounts and created false shortfalls. This is again an area in which the experts have delved deeply and not identified any material risk of adverse effects on any given branch account.

Obtaining permission for changes from Post Office

839. JS4, para 11.1 states as follows: "*Evidence from several Peaks indicates that usually when Fujitsu needed to make any change to data which impacted branch accounts, they were concerned to seek permission from PO to do so, and to ensure that PO took responsibility for the resulting change*". The underlined words were agreed by the experts during the trial and in replacement of the word "*whenever*".

840. This is an example of the experts' reluctance to commit to categorical statements. Post Office respectfully submits that the evidence would in fact support a firmer statement as to the extent of Fujitsu's adherence to the permission processes, and Mr Coyne largely accepted this in cross-examination.

841. Mr Coyne accepted that he had not seen even a single document providing clear evidence of Fujitsu adopting a careless attitude to obtaining the appropriate consent from

[978] {F/768/4}.

[979] {F/768/7}.

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Post Office.[980] The Peaks addressed above all show Fujitsu seeking and obtaining consent from Post Office. No reason has been advanced as to why SSC staff would not comply with the requirement to obtain consent (and the Fujitsu witnesses were not challenged on their evidence in this regard).

842. The Court has Post Office's submissions on Cs' attempt to adduce late evidence (during the trial and unsupported by documents) in relation to retrospective consent having been obtained in some small percentage of OCPs or OCRs. There is nothing to suggest that there was a sinister reason for Fujitsu to prefer to obtain consent retrospectively (given that this would generate the same paper trail as prospective consent but would be nothing like as valuable to Fujitsu in terms of managing its relationship with Post Office). If the Court were, despite Post Office's objection, to admit Mr Coyne's evidence on this point, it would also wish to have regard to Dr Worden's evidence at {Day20/147:4} to {Day20/147:19}.

843. There is a further short point on what Mr Coyne referred to as "*retrospective consent*". If, as appears to be the case, he simply searched for OCRs and OCPs that are described on their face as "*retrospective*", he will likely have identified many documents that do not in fact evidence the retrospective grant of consent but only the retrospective production of the OCP/OCR document to record that consent. OCP 11903, for example, is headed "*Retrospective OCP for information*" but records the grant of consent (apparently by telephone) in advance of the change being made.[981] The purpose of the OCP in that case appears to have been to formalise the consent that had already been provided informally.

Fujitsu internal supervision of changes – "four eyes"

844. The Court will recall Mr Roll's evidence that Fujitsu required that any change made by remote access be witnessed by another SCC employee and that, as far as he was aware, this requirement was always complied with.[982]

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[980] {Day16/161:18} to {Day16/162:23}.

[981] {F/296.2}.

[982] {Day4/127:22} to {Day4/128:13}.

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845. In his cross-examination, Mr Coyne raised for the first time the suggestion that some changes were witnessed by the same person who made the change. There was no proper explanation for why this was not mentioned in his reports or in the more recent Joint Statements and had not been raised with Dr Worden.[983] Four OCPs[984] were put to Dr Worden as examples of a person apparently witnessing his or her own activity.[985]

846. As was fairly acknowledged in the course of that cross-examination, there are "*lots*" of OCPs that show clearly that the change was properly monitored. In fact, there are many thousands. It is now too late for Post Office to be able to obtain evidence from Fujitsu to explain the apparent breaches of its "four eyes" policy. Taken at its highest, however, the inexplicably late evidence would only show that there was not perfect compliance with the policy.

847. Finally, this section of these submissions has addressed the principal issues which the experts considered. To the extent that the experts' views are relevant to other issues, including evidence given by witnesses, this is considered in the relevant sections of these submissions and in Post Office's Opening Submissions.

G. POST OFFICE'S OTHER WITNESSES

Mrs Van Den Bogerd

848. The relevant evidence:

848.1 Mrs Van Den Bogerd's second witness statement dated 16 November 2018: {E2/5}

848.2 Corrections made to Mrs Van Den Bogerd's second witness statement: {E2/16}

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[983] {Day16/13:7} and following.

[984] {F/292.4}, {F/485.2}, {F/540.01} and {F/616.1}.

[985] {Day20/147:25} to {Day20/151:5}.

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848.3 Transcript: {Day5/8:3} to {Day5/197:22} and {Day6/5:5} to {Day6/113:7}.

849. Mrs Van Den Bogerd's first witness statement, from the Common Issues trial, was also added to the trial bundle at Cs' request on the day Mrs Van Den Bogerd began to give evidence. It is not clear why. It is at {E4/1}. That evidence has not been tested in this trial and it would be wrong to make any findings in relation to it.

850. Mrs Van Den Bogerd is employed as the Business Improvement Director at Post Office. Her written evidence deals principally with the Claimant-specific witness evidence adduced by Cs, certain matters addressed in Mr Henderson's witness statement and several factual points arising from Mr Coyne's first expert report. She was, however, taken in cross examination to many documents which she had not seen before – a recurring theme of Cs' cross examination. It is submitted that such an exercise is of very limited utility.

Mrs Van Den Bogerd's evidence which is no longer required

851. As set out in Post Office's opening submissions:[986]

851.1 Mrs Van Den Bogerd responds to Mr Singh's evidence in paragraphs 31 to 58 of her second witness statement. Since Mr Singh was not called by Cs, Mrs Van Den Bogerd's response effectively falls away and was not considered at trial.

851.2 Similarly, in paragraphs 9 to 27 of her witness statement, Mrs Van Den Bogerd responds to certain points made by Mr Henderson. Given that the Court has indicated that it will not make findings regarding the opinions that Mr Henderson summarises or refers to in his evidence,[987] Mrs Van Den Bogerd's responsive evidence need not be considered.

851.3 Finally, in paragraphs 111 to 152 Mrs Van Den Bogerd set out responsive evidence to some issues raised by some of the Lead Claimants in their witness statements prepared for the Common Issues Trial. This was because Mr Coyne had made reference to the evidence of these Claimants in his first report,[988] and it

[986] {A/2/27} to {A/2/28}.

[987] Judgment at PTR on 14/2/19, para 10 {C7/41/4}.

[988] {E2/5/27}; {E2/5/28}; {E2/5/29}; {E2/5/30}; {E2/5/31}; {E2/5/31}; {E2/5/32}; {E2/5/33};

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was not known at that time whether Cs proposed to call any of the Lead Claimants to give evidence again in the Horizon Issues trial. Since these individuals were not called for the present trial, Mrs Van Den Bogerd's responsive evidence also does not need to be considered.

852. More generally, and perhaps inevitably, Mrs Van Den Bogerd's evidence on some points has been effectively overtaken by the more detailed consideration given to those points in the expert evidence. It was appropriate for her witness evidence to address, for example, the Helen Rose Report in order to provide early notice of Post Office's case on the issues raised by it, but that document has now been the subject of substantial consideration by the experts.

853. Mrs Van Den Bogerd devotes a substantial proportion of her witness statement to responding to the Claimant-specific evidence relied on by Cs (i.e. the witness statements of Mr Latif, the Patnys, Mr Tank and Mrs Burke): see paras 28-110. [989] That responsive evidence is addressed in the sections of these submissions that deal with those Claimant-specific witnesses, and that material is not repeated here. No discourtesy is intended in observing that Mrs Van Den Bogerd's responsive evidence, like the Claimant-specific evidence itself, is of secondary relevance and importance.

854. Unfortunately, many of the questions and contentions put to Mrs Van Den Bogerd in cross-examination were on matters outside her direct knowledge and experience. For example: she was shown Peak PC0065021 and questioned as to a Fujitsu customer call being closed without permission of the SPM who had raised the problem.[990] As Cs are aware, she is neither involved in the generation of Peaks nor aware of the detail of Fujitsu's practices and procedures. Mrs Van Den Bogerd was able to observe (presumably from her experience of working closely with Fujitsu) that the feedback that says "user error" would not have contributed to the closing of the call.[991] It would have

{E2/5/34}.

[989] {E2/5/10}.

[990] {Day5/30:24} to {Day5/32:10}.

[991] {Day5/33:9} to {Day5/33:14}.

[992] {Day5/33:9} to {Day5/33:14}.

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depended on whether other investigations had taken place.[992] But is very questionable what value this evidence can have – it was really a matter for Mr Parker.

855. An example of this approach was when Mrs Van Den Bogerd was taken to an audit of Mr Bates' branch[993] and to a passage which stated that "A correct assessment of cash holdings could not be made because the Horizon system intermittently adds the previous day's cash holdings to the daily declaration." Mrs Van Den Bogerd explained that this was not a problem she had seen at any of the branches for which she had responsibility.[994]

856. The insinuation being made was that this was a problem in Horizon – and Mrs Van Den Bogerd was understandably not in a position to respond substantively to that, since this was not a matter covered by her evidence. In fact the process described is a designed function in Horizon. See:

856.1 The Horizon System User Guide:[995]

> *A daily cash declaration must be produced each day at the close of business or by 19:00 (whichever is earlier) as this information supplies SAP ADS with information on the total amount of notes and coins held in each stock unit in an outlet. If a declaration has not been made for a stock unit (for example, if a stock unit is not used on a particular day) the values from the previous declaration will be carried forward.*

856.2 A Horizon manual entitled Balancing with Horizon:[996]

> *If a declaration has not been made for a stock unit on any day, e.g. the stock unit was not used on that day, the values from the previous declaration will be carried forward. This is also the case with portions of a shared stock where a declaration for a particular ID number has not been overwritten with new values or zero's.*

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[992] {Day5/33:9} to {Day5/33:14}.

[993] {F/99.1/4}.

[994] {Day 5/169:5} to {Day 5/169:21}.

[995] {F/46.03/8} to {F/46.03/9}.

[996] {F/59/29}.

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857. There are, however, several aspects of Mrs Van Den Bogerd's witness evidence that have remained important, as they feed into the expert evidence and/or have been given prominence in Cs' criticism of her and Post Office's case.

SPM's reporting problems and these being investigated.

858. Para 187 of the second witness statement of Ms Angela Van Den Bogerd states "*Generally when discrepancies are of a value of several hundreds of pounds, I would expect Subpostmasters to contact NBSC*".[997]

859. As set out in these closing submissions, this has been confirmed by several of Cs' witnesses.[998] It is also readily apparent from a review of Peaks (including some of the most prominent Peaks in the trial) that problems are often raised by SPMs, and passed to the SSC for investigation, even where the transaction or shortfall (or gain) at issue is relatively small – say, in the tens or low hundreds of pounds.

860. Mr Green QC referred in his cross-examination of Mrs Van Den Bogerd to "*UEB*" or "*user error bias*" as he defined it.[999] This is not a term referred to by either of the experts. No source was cited for the statement that "*[i]t is where people in IT constantly blame the user when actually it is not their fault*". Mrs Van Den Bogerd, like Dr Worden, had never heard of the term.

861. Mr Green QC suggested that blaming the user when the problem was not in fact caused by user error was a theme at Post Office.[1000] Mrs Van Den Bogerd was taken to problems with recovering transactions and other difficulties encountered by SPMs, and it was suggested (in essence) that the relevant Post Office employees had been too quick to blame the user. Mrs Van Den Bogerd answered the suggestion of bias fully and fairly:

861.1 The thrust of her evidence on the various examples given was that the SPMs in question should, and would ordinarily, have received a better response. She stated, for example, that it was wrong and atypical for an SPM with a recovery problem

[997] {E2/5/4}.

[998] {Day2/125:24} to {Day2/128:6}; {Day2/166:18} to {Day 2/167:3}; paragraphs 363 and 431.

[999] {Day6/51:17} to {Day6/52:3}.

[1000] {Day6/52:4} to {Day6/52:7}

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to have been told by the Helpline operator it was for the SPM to resolve the problem.[1001] (The idea that the SPM should resolve the problem him or herself does not accord with the systems and procedures that are in place for addressing failed recoveries, as exemplified in Mrs Burke's case.)

861.2 Mrs Van Den Bogerd nonetheless quite fairly accepted that there were "*some instances*" in which Post Office suffered from user error bias.[1002]

862. It was suggested to Mrs Van Den Bogerd that her witness evidence dealing with specific cases points to the likelihood of errors made by SPMs or their assistants (rather than system errors). Mrs Van Den Bogerd agreed.[1003] It was not suggested to Mrs Van Den Bogerd that she was wrong to have concluded that user error was involved in those cases. The Claimant-specific evidence is addressed elsewhere in these submissions.

863. The objective evidence that is now available, from the experts and from the Peaks, KELs and BIMS reports, shows that SPMs often report small discrepancies that, on their face, might well be explained by user error but which still find their way to the SSC and are investigated thoroughly and without any bias (as Mr Roll confirmed).

864. It is also important to recall in this context that many problems that might indicate the existence of a bug would be drawn to the SSC's attention through automatic reporting, rather than requiring that any SPM spot a problem and raise it through the NSBC.

Improvements to Horizon - Drop & Go

865. Mrs Van Den Bogerd gave outline evidence on various improvements to Horizon at paras 156 to 158 of her witness statement.[1004] This was in response to Mr Coyne having relied on a Post Office presentation that had observed that relatively small changes could avoid errors and mistakes in branches. The thrust of the responsive evidence was to point out that Post Office had in fact made such changes (although it could of course always do more).

[1001] {Day6/57:1} to {Day6/58:9}.

[1002] {Day6/77:18}.

[1003] {Day5/11:22} to {Day5/12:2 }.

[1004] {E2/5/35}.

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866. Mrs Van Den Bogerd was cross-examined regarding a small change to the system processes for Drop & Go transactions. She was referred to an Atos presentation at {F/1346}.[1005] It was suggested, by reference to that presentation that she had painted a "*slightly rosy picture*" of Drop & Go in her witness statement.[1006] There are two problems with the criticism mounted here:

866.1 First, Mrs Van Den Bogerd did not claim to have provided a summary of any and all difficulties encountered with Drop & Go transactions. She had merely stated that there had been two stages of improvements brought in to resolve specific problems with those transactions;

866.2 Even putting that to one side, and looking at the criticism on its merits, Mrs Van Den Bogerd's attention was unfortunately not drawn to those parts of the presentation that show that the problems to which she was referred were in fact were investigated and fixed quickly. For example, from "*25th Nov, after which point all issues were well understood and remedial actions invoked*"[1007] and in terms of the effort put in by the support teams "*they [the FSC] have been working later in the evenings to help clear the backlog of locked accounts*".[1008]

The spectre of big problems in Horizon

867. Mrs Van Den Bogerd was asked about the planned roll-out of some new reference data which was to take place in the run-up to a bank holiday. She was taken to an email chain at {F/1640} in this regard.

868. She was asked whether she had heard that there was a "*risk of a break to the bigger network*" if the roll-out had gone ahead.[1009] Mrs Van Den Bogerd was not aware of this, and it was suggested to her that problems in the background might not find their way to

[1005] {F/1346}.

[1006] {Day5/117:11} to {Day5/117:13}.

[1007] {F/1346/3}.

[1008] {F/1346/9}.

[1009] {Day5/124:7} to {Day5/124:10}.

[1010] {Day5/124:16} to {Day5/124:20}.

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her level of seniority.[1010] It appeared to be a criticism of Mrs Van Den Bogerd that she had not been aware of the event. Again, the criticism was wholly unwarranted:

868.1 Mrs Van Den Bogerd is not an expert on IT systems, bugs or testing. It is unsurprising that she did not come to Court having conducted an extensive review of all system problems experienced over the years, including those that never went beyond the test environment.

868.2 In any event, the point was overblown. As Mrs Van Den Bogerd pointed out, even from just looking at the email chain, it was clear that a decision was taken not to proceed to roll-out. The model office did its job of identifying potential problems for the network. That is one of the purposes of the model office – to test new reference data before it is rolled out. The model office did its job.[1011]

869. A similar issue was raised in relation to the Horizon Online pilot scheme,[1012] and the same points apply. There seemed to be some implied criticism of Mrs Van Den Bogerd for not having researched the "*documentary history*" of problems encountered in the pilot scheme in 2010 before writing her witness statement in 2018.[1013] Mrs Van Den Bogerd had not even mentioned the pilot scheme in her evidence, let alone purported to address any problems encountered in it. She was nonetheless taken through an 11-page Peak[1014] (which she had never seen before) and asked to comment on its various entries.[1015]

870. It is questionable how helpful that can be to the Court, given that Mrs Van Den Bogerd had neither the knowledge nor even the opportunity necessary to provide any meaningful response in relation to the Peak and the problem to which it related.

871. If Mrs Van Den Bogerd had been familiar with the Peak, she could fairly have observed that it indicated that the problems identified by the SPM were addressed urgently, that a

[1010] {Day5/124:16} to {Day5/124:20}.

[1011] {Day5/124:12} to {Day5/124:15}.

[1012] {Day5/172:15} to {Day5/176:6}.

[1013] {Day5/173:6} to {Day5/173:13}.

[1014] PC0195380 {F/588}.

[1015] {Day5/173:18} to {Day5/176:6}.

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bug was identified within days and that a code fix was tested and then issued to the network within 2 months. The individual SPM's experience was of course unpleasant and regrettable, but the Peak shows the pilot scheme operating well to remove bugs before the new system went live for the whole network.

Technical points raised in Mrs Van Den Bogerd's written and/or oral evidence

872. Mrs Van Den Bogerd does not have any technical expertise or experience in relation to the Horizon system, but she is a fairly sophisticated user of it and has long experience of addressing problems raised with Post Office. Her written evidence therefore touched on several matters that can be more appropriately be addressed by Fujitsu witnesses and the experts. It was fair for these matters to be raised with her, and she gave what answers she could:

872.1 Mrs Van Den Bogerd stated that although she was aware from Fujitsu that it was possible to insert a transaction but she had never herself actually seen this occur.[1016] She had only had known this for about a year (i.e. she had learned it during the course of these proceedings).

872.2 It was suggested to Mrs Van Den Bogerd that Peak PC0065021 does not show a great willingness to acknowledge what appear to be independently observed faults in Horizon.[1017] Mrs Van Den Bogerd replied quite fairly "*[n]ot from this, no*".[1018] Mrs Van Den Bogerd's attention was not drawn to the fact that the Peak indicates that Fujitsu had spent 200 hours had been spent investigating the problems identified by the SPM.[1019] It is questionable how much value can be derived from any of her answers based on reading isolated extracts from a document that she had not read and to which she did not contribute. Phantom transactions are dealt with elsewhere in these closing submissions.

872.3 It was suggested to Mrs Van Den Bogerd that there is a closure code for Peaks where a fault has been identified in the Horizon system but Post Office and Fujitsu

[1016] {Day5/50:15} to {Day5/51:24}.

[1017] {Day5/40:10} to {Day5/40:14}.

[1018] {Day5/40:10} to {Day5/40:14}.

[1019] {F/97/10}.

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agree for the fault to remain in the system[1020] (although no specific closure code or Peak was provided to her for comment). She replied that she was not aware of any such closure code.

872.4 Mrs Van Den Bogerd was cross-examined regarding para.98 of her second witness statement, concerning two TAs received by a branch on 18 January 2018.[1021] Mrs Van Den Bogerd's written evidence was that this was a data entry error rather than an issue with Horizon. Mrs Van Den Bogerd agreed with the suggestion that the process for TA was in fact completely automated.[1022] This is mostly correct, and it was a fair point to put to the witness, but it is not entirely accurate. The TA process is automated from an early stage, but it does rely on a manual input at the very start of the process - specific product information has to be supplied in reference data, for use in generating the TAs. This can be seen from the mistaken TAs issued to Mr Latif's branch, where incorrect reference data supplied by Post Office led to the TAs having the wrong sign. There was human error in the creation of the reference data used to initiate the automated processes.

872.5 Mrs Van Den Bogerd was asked questions regarding challenging a TA.[1023] She stated that an SPM could get in touch with the financial service centre (the "FSC").[1024]

872.6 Mr Green QC also raised mis-keying mistakes.[1025] There are of course always questions as to whether the system (and, in particular, the user interfaces) might have better prevented users from making errors. As Dr Worden explained in his evidence, user interface design is itself a specific (and difficult) area of expertise.[1026] Cs did not lead any expert evidence on the issue, but there are some contemporaneous documents that address the point: see, e.g., the Mis-Keyed

[1020] {Day5/83:14} to {Day5/84:21}.

[1021] {E2/5/24}.

[1022] {Day5/67:20} to {Day5/67:23}.

[1023] {Day5/69:12} to {Day5/70:17}.

[1024] {Day5/69:22} to {Day5/69:24}.

[1025] {Day5/107:5} to {Day5/11:23}.

[1026] {Day19/93:3} to {Day19/93:15}.

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Project Feasibility Study at {F/994}.[1027] Mrs Van Den Bogerd did her best to answer the questions put to her (although she was mostly asked to confirm the content of documents).

Cost reductions

873. A recurring theme in Cs' cross-examination has been cost reduction. It is well-known that Post Office has generally had to rely on support from government to remain commercially viable and to sustain a large agency branch network. Controlling costs is acutely important to the delivery of the services that Post Office makes available to the public and to Post Office's ability to offer adequate remuneration to SPMs.

874. Mrs Van Den Bogerd was taken to {F/555} in relation to the introduction of Horizon Online. She fairly accepted that there had been a focus on "*business equivalence*" and cost-saving.[1028] That is a fair summary of the general thrust of the document. However, Mrs Van Den Bogerd was not taken to those parts of the document that record that there was consultation with SPMs and that the opportunity was taken to make some improvements to the system: see, e.g., pp.8-9, 15 and 18.

875. Mrs Van Den Bogerd was cross-examined in relation to the Branch Support Programme.[1029] Mr Green QC suggested the key performance indicator identified in the document at {F/1125.1} was the reduction of operating costs.[1030] Mrs Van Den Bogerd stated that "*part of*" the KPIs was cost-saving.[1031] That much is apparent from the indicators identified at the top of p.2.

876. As Mrs Van Den Bogerd explained, the programme aimed to reduce errors "*at the front end*" (i.e. in branches), which would generate costs savings at the "*back end*" (i.e. in Post Office).[1032] That is to the benefit of both SPMs and Post Office. This project in fact shows Post Office responding to feedback from SPMs and implementing changes: see

[1027] An earlier version is {F/932}. This document is addressed further at para. 370.6 above.

[1028] {Day6/170:3} to {Day6/172:14}.

[1029] {Day6/5:25} to {Day6/7:18}.

[1030] {Day6/5:25} to {Day6/6:3}.

[1031] {Day6/6:10} to {Day6/6:12}.

[1032] {Day6/6:17} to {Day6/6:22}.

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the various changes identified at pp.2-4, including the reference to obtaining feedback from SPMs (final bullet point on p.2). The pursuit of these cost-savings is not to the detriment of SPMs; on the contrary, the measures that reduce costs often also confer real benefits on SPMs.

Call logs

877. Similarly, Mrs Van Den Bogerd was cross-examined in relation to the provision of Helpline call logs and whether or not they were routinely provided to SPMs.[1033] No justification was suggested to Mrs Van Den Bogerd as to why these logs should be offered "*routinely*".[1034] This is not relevant to any Horizon Issue and in any event there is no suggestion here of a fault in Horizon or even its supporting processes, but simply an argument as to a business practice and the alleged desirability of providing records more freely.

Helen Rose Report

878. Mrs Van Den Bogerd was also cross-examined regarding the Helen Rose report.[1035] She was asked about the reversal process. Mr Green QC suggested to Mrs Van Den Bogerd that it was not a reversal initiated by the SPM, but in fact was a system recovery that had reversed the session.[1036] The user initiated the recovery. The system then generated the reversal as part of the recovery process. Mrs Van Den Bogerd later clarified that:

"*What I meant was that the actual reversal was part of that recovery and it had actually taken place as it should have taken place, which is what I meant in that. So it wasn't a failed reversal because it actually had happened as it should have happened, but I accepted in there that the -- it wasn't obvious to the postmaster at the time that what had happened -- that he hadn't -- because it didn't show that he had actually -- it showed that he had done it and he knew he hadn't done what we referred to earlier was an explicit reversal. That's what I meant in that.*"[1037]

879. Mrs Van Den Bogerd was cross-examined regarding whether or not receipts were printed. She was asked whether or not receipts were issued for a reversal, and it was

[1033] {Day6/14:3} to {Day6/15:6}.

[1034] {Day6/14:10} to {Day6/14:12}.

[1035] {F/1082}.

[1036] {Day5/82:15} to {Day5/82:19}.

[1037] {Day6/102:11} to {Day6/103:13}.

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suggested that no receipts were issued.[1038] This was suggested on the basis of a statement in the Helen Rose report as follows:

"*The fact that there is no indication of such a receipt in the events table suggests the counter may have been rebooted and so perhaps may have crashed in which case the clerk may not have been told exactly what to do.*"[1039]

880. Page three, which Mrs Van Den Bogerd was not referred to makes reference to a receipt.[1040] In particular it states:

> "*The files ... are part of the standard ARQ returned. Rows 141 to 143 ... clearly show a reversal. Also row 70 ... shows that session 537803 ... has been recovered and this event has the same time stamp as the reversal session. Also row 71 of events ... shows that a receipt was generated from the session 537805 (not explicitly, but it was the only session at that time).*"

881. In re-examination her attention was drawn to page three of the document.[1041] She stated that page three indicated that a receipt was produced. The document on its own does not make entirely clear which receipt or receipts were printed. It certainly cannot support a suggestion that no receipts were printed.

882. In any event, Mrs Van Den Bogerd made clear that she had personally seen the printed receipts.[1042] She was taken to the relevant emails in re-examination.[1043] These showed clearly that all appropriate receipts had been printed.

Conclusion on Mrs Van Den Bogerd's evidence

883. Mrs Van Den Bogerd was an open witness and careful witness. She did her best to respond to questions on the many documents and matters that were not, or not wholly, within her knowledge or experience: Mrs Van Den Bogerd did her best to assist the Court on such matters but her commentary on random selected documents is unlikely to

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[1038] {Day5/95:19} to {Day5/98:24 }.

[1039] {F/1082/2}.

[1040] {F/1082/3}. As addressed elsewhere in these submissions, the Report is in fact difficult to follow on this point.

[1041] {Day6/92:14} to {Day6/93:15}.

[1042] {Day5/97:19} to {Day5/98:5}.

[1043] {Day6/96:3} to {Day6/103:13}.

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provide a great deal of assistance. She made appropriate concessions and gave fair answers.

Ms Phillips

884. The relevant evidence:

884.1 Ms Phillips' first witness statement dated 28 September 2018 {E2/3}.

884.2 Transcript: {Day6/113:10} to {Day6/147:11}.

885. Ms Phillips has been working at Post Office in various capacities since 1999. Since 2014 she has worked in the Agent Accounting Team, and since 2016 she has been the Team Leader for Agent Accounting and Santander Banking. She oversees the process of recovering the losses that SPMs declare in branches.[1044] She provided a short witness statement outlining the balancing process and how discrepancies are disputed.

Disputing discrepancies identified at the end of the Trading Period

886. Ms Phillips explained in her witness statement that where a discrepancy at the end of a Trading Period is over £150, the SPM has the option to "*settle centrally*". Her department writes to SPMs to make arrangements for such amounts to be paid back or deducted from remuneration.[1045]

887. Ms Phillips also explained that an SPM is not able to dispute discrepancies on Horizon or record that they have raised a dispute on Horizon. However, if an SPM calls the team and explains that they are raising a dispute, a block is placed on the account until the dispute is resolved.[1046]

888. Post Office is concerned at what appears to be a misapprehension on the part of the Court in relation to this matter. In the Judgment on the Recusal Application, the Court said this, at para. 299[1047]:

[1044] {E2/3/1}, paras 3-4.

[1045] {E2/3/1}, paras 7-8.

[1046] {E2/3/1}, paras 9-10.

[1047] {C7/49/76}.

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> *Miss Philips, in her evidence for the Post Office in the Horizon Issues trial, readily confirmed what had been in dispute for so long during the Common Issues trial, namely that SPMs had no option but to accept the figures provided to them, even though amounts may have been "settled centrally". This is notwithstanding that her original terminology in her witness statement said that SPMs "chose to accept" TCs. She accepted that SPMs did not have a choice. It had been necessary for me to make*
> *findings on this very point in the Common Issues trial, and all the Lead Claimants in that trial (but particularly Mr Abdulla) had been directly challenged on this very point*
> *in their cross-examination. Mr Godeseth also gave evidence in the Horizon Issues trial that the lack of any ability on the part of a SPM to dispute an item in Horizon was "by design". All a SPM could do was to telephone the Helpline. This shows that the Post Office had been advancing a case, at least for a substantial part of the Common Issues trial, which was directly contrary to the evidence of its own witnesses of fact in the Horizon Issues trial.*

889. In fact, Ms Phillips had stated in terms in para. 9 of her witness statement that a SPM cannot dispute discrepancies on Horizon. (She does not refer to accepting TCs.) She explained in cross-examination that when she referred in para 7 of her witness statement to an SPM choosing to settle centrally, this was intended to refer to the fact that the choice was between making good and settling centrally.[1048] This is obvious on any fair reading of paras 6 and 7 of her witness statement; it was not a concession made for the first time in cross-examination. Mr Johnson gives the same evidence in his first witness statement.[1049]

890. It is important to make clear that it has <u>never</u> been any part of Post Office's case that SPMs could raise a dispute through Horizon.

890.1 Para. 43(3) of the Generic Defence and Counterclaim[1050] (GDCC") states as follows (with added emphasis):

> *<u>Where the Subpostmaster disputes liability for the shortfall, he or she is required to raise a dispute by calling the Helpline and in the meantime (if the amount involved is less than £150) to provide it from his or her own funds pending resolution of the dispute or (if the amount is £150 or more) to settle it centrally, thereby bringing the branch accounts into balance</u>. Raising a dispute causes a block to be placed on the value of the shortfall that has been transferred to the Subpostmaster's personal account with Post Office. The blocked value is not (and is not treated as) a debt due to Post Office.*

[1048] {Day6/114:22} to {Day6/115:9}.

[1049] {E2/4/18} para. 51.

[1050] {C3/3/16}.

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890.2 Para 46(1) of the GDSS states as follows:

> *It is admitted that there is no "option within Horizon" to dispute a shortfall, in the sense that the process of raising and resolving a dispute does not take place through the Horizon system. The process for disputing a shortfall requires the dispute to be lodged by calling the Helpline.*

890.3 Para. 39(6) of the GDCC relates to TCs, which are not addressed in Ms Phillips evidence, and states as follows (with added emphasis):

> *If the Subpostmaster wishes to query or dispute the Transaction Correction, he or she should contact the person identified in the Transaction Correction notification. This process is identified at page 34 of the Branch Trading Manual. If, having discussed the matter and reviewed any further information provided by the person identified, the Subpostmaster wishes to dispute the proposed Transaction Correction, he or she should accept it or settle it centrally and then lodge a dispute with the Post Office by contacting the Helpline. Where it is settled centrally, the amount of the Transaction Correction is transferred to the Subpostmaster's personal account with Post Office and a block is placed of the amount transferred to the personal account whilst the dispute is resolved.*

891. Post Office's case has been clear and consistent on these points, right from the first pleading that it produced in this litigation in July 2017. Post Office is concerned that the Court appears to have taken an adverse view of Post Office based on a misapprehension.

Detail of the dispute process

892. Ms Phillips explained the process which Post Office follows and what letters are sent out and when. She also explained that her team routinely check the Helpline logs and that they check at least the larger amounts (generally over £5,000[1051]) which have been settled centrally, but due to the volume of such transactions, they are unable to check every one.[1052] The team is provided with a report setting out everything that had been settled centrally for that month, together with the Helpline logs, although they would call the branch if there was any issue.[1053] The process is audited by an external firm.[1054]

[1051] {Day6/123:24} to {Day6/124:7}.

[1052] {Day6/121:25} to {Day6/122:11}.

[1053] {Day6/125:20} to {Day6/126:7}.

[1054] {Day6/126:8} to {Day6/126:16}.

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893. The process described is thorough and fair. There are fairly short deadlines for providing dispute forms, but it is to be expected that SPMs will provide relevant details promptly (not least so that time does not allow memories to fade). If an SPM is not satisfied with a decision made at the end of the process followed by Ms Phillips' team, support services are called in and they carry out a further, extremely detailed, investigation.[1055]

894. It would be fair to observe that the processes in this regard have improved over time.

Mrs Mather

895. The relevant evidence:

895.1 Mrs Mather's first witness statement dated 16 November 2018: {E2/8}.

895.2 Transcript: {Day6/48:14} to {Day6/175:9}.

896. Mrs Mather is another very experienced Post Office employee, having worked at Post Office since 1987. She is a Finance Service Team Leader. She explains in her witness statement the use made of Credence and that it was used as an information tool, designed to work alongside and in conjunction with other applications and sources of information available to Post Office.[1056]

Credence

897. Mrs Mather clarified in oral evidence that when she said in her witness statement that Credence recorded every keystroke, she had intended to say that it recorded all transactional data in terms of sales and non-sales.[1057] It is thought to be common ground between the experts that Credence does not in fact contain a record of all keystrokes, although that information is available to Post Office from Fujitsu.

898. Mrs Mather was questioned at some length as to the lengths of time for which various sources of data are retained and the fact that there had been an increase in the retention period for Credence data. She was understandably not able to assist with all of these

[1055] {Day6/145:1} to {Day6/145:14}.

[1056] {E2/8/3} para 12-13.

[1057] {Day6/149:12} to {Day6/149:20}.

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questions, but she confirmed that in relation to cheques (her current area of responsibility) her team had the information required to investigate.[1058]

Investigations into SPM's questions and problems

899. Mrs Mather was clear that her team investigated queries thoroughly:

> *Q...Now, if you just go over the page at {F/1120/2}, you see at the top of the page: "We need sight of the actual transaction retrieving from the archives (this is required to disprove any future claim against Horizon integrity via the clerk)." Was it your experience at all that there was any defensiveness about the Horizon system when it was challenged by SPMs?*
>
> *A. If a postmaster challenged in the area that I worked in, we always took them seriously –*
>
> *Q. You did?*
>
> *A. -- and we always looked at what they were actually saying and then we would go back to our evidence of issuing the TC.*
>
> *Q. Okay. Can we look at your paragraph 13 please {E2/8/3}. You can see there, third line: "For example, a subpostmaster might telephone FSC and/or the helpline and allege to Post Office that he/she has done a reversal." Yes?*
>
> *A. Yes.*
>
> *Q. That's an SPM claiming to have done something. The way that is expressed suggests some doubt a little bit, doesn't it, about the truth of what they're saying?*
>
> *A. I think what I was trying to get across in this particular statement was if a postmaster had a query, he could always phone us and we would try and help, whatever his query was. That's what I was trying to explain in this.*[1059]

900. Mrs Mather also gave evidence, having spoken to Christopher Knight, Intel & Admin Team Leader, that there is no evidence of anyone being deterred from making ARQ requests because of fees that might have to be paid by Post Office.[1060] Mrs Mather fairly accepted that this was not within her direct knowledge.

The "till roll" suggestion

[1058] {Day6/159:16} to {Day6/159:23}.

[1059] {Day6/160:23} to {Day6/162:1}.

[1060] {E2/8/4}, para 19. There was some confusion in the cross-examination on this paragraph. Ms Mather had not spoken to Mr Godeseth; she had spoken to Mr Knight: {Day6/168:17}.

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901. Bizarrely, one of the questions put to Mrs Mather implied that, unlike Post Office, the SPM could only investigate problems in the branch by printing of the transaction log on the counter printer.[1061] That is entirely wrong and flatly contrary to the expert evidence, which is that the SPM can access over one hundred different reports in the branch, filtering and presenting transaction data in a variety of ways.[1062] The Court will recall Mr Latif's oral evidence as to the reports that he could and did use.

Mr Smith

902. The relevant evidence:

902.1 Mr Smith's first witness statement dated 16 November 2018: {E2/9}.

902.2 Mr Smith's second witness statement dated 8 March 2019: {E2/15}.

902.3 Transcript: {Day6/175:12} to {Day6/197:20}.

903. Mr Smith has worked for Post Office / Royal Mail since 1996. He has worked in a wide variety of roles and is currently the Operations Support Manager. His responsibilities include: reviewing data; producing reporting packs detailing current progress and backlogs against targets; and handling specific product-based problems.[1063]

904. In his second witness statement, Mr Smith corrected information from his first statement in relation to disputes involving Santander (which had given a figure that appeared to represent disputed TCs but in fact related to disputes between Post Office and Santander).

TCs

905. Mr Smith outlined the TC process in his first witness statement:

Subpostmasters are able to query or challenge any TC by contacting the person who issued the TC (whose details are provided with the TC). This can be done within the Horizon system (by selecting a "seek evidence" option where offered when processing a TC on a branch terminal) and by calling the person who sent the TC and by calling the NBSC. Disputes are decided on their merits, having regard to the available evidence. If the dispute is

[1061] {Day6/168:9} to {Day6/168:16}.

[1062] {D2/1/143} and {D3/1/220}.

[1063] {E2/9/2} para 10.

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successful, a compensating TC is issued.[1064]

906. In oral evidence, he explained the interaction between the various departments of Post Office where a problem may have affected several transactions and, therefore, products:

> *Q. And you say that: "Although each team have their own responsibilities, there is interaction between teams to reach a final resolution on any discrepancy."*
> *A. There is.*
> *Q. When would that typically occur?*
> *A. That would occur when there is evidence within the investigation that there could be a further activity that's needed. As an example, we have already heard about cheques. It could be that the impact of a cheque discrepancy could also impact on another product, so if you have a miskey it could be that that miskey transaction has been settled to cheque with higher than what it should be value, but then there's also going to be the bill payment or the actual transaction itself that's also been at a higher value. So working together you can put together all the pieces of the puzzle, get the right answer and also mitigate or minimise the impact on the branch by making sure that any corrections that are done are done at the same time to ensure that the financial impact is either mitigated or reduced.*[1065]

907. Mr Smith set out in his first witness statement information concerning the level of TCs in various departments, some of which he obtained from various Team Leaders.[1066] He explained why a particular incident described in Coyne 1 which Mr Coyne thought might have been an error, was in fact properly dealt with. Two TCs were required to remedy a branch mis-keying error since the method of payment was cheque: one TC was the debit TC to the branch and the other was a credit TC once funds overpaid to the BOI had been recovered.[1067]

908. Mr Smith also provided details of a new case management system that was being rolled out to record each challenge to a TC.[1068] He confirmed in cross-examination, and to questions from the Managing Judge, that the roll-out process was ongoing at the time of his oral evidence.

Mr Johnson

909. The relevant evidence:

[1064] {E2/9/3} para 15.

[1065] {Day6/178:5} to {Day6/178:25}.

[1066] {E2/9/3} paras 16-29.

[1067] {E2/9/6} paras 30-33.

[1068] {E2/9/3} para. 16.

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909.1 Mr Johnson's first witness statement dated 28 September 2018: {E2/4}.

909.2 Mr Johnson's second witness statement dated 16 November 2018: {E2/6}.

909.3 Transcript: {Day7/3:14} to {Day7/27:18}.

910. Mr Johnson has worked for Post Office since 1984. He is currently a Training & Audit Advisor and has been in that role since 2012. He started work as a counter clerk and worked his way up to Branch Manager at Barry Crown Office.[1069] He had worked in Crown Offices throughout his time in branch, although he confirmed that, in terms of operating the Horizon system, there was no difference between an agency branch and a Crown office.[1070]

911. In his first witness statement, Mr Johnson describes various features of the current version of Horizon Online and then briefly describes how the system has changed since it was first introduced. This evidence was not challenged in any significant way in cross-examination.

912. Mr Johnson's second witness statement addressed points raised by Professor McLachlan (who was in the event not called by Cs) and Mr Henderson (whose opinions are not relied on by Cs). It is doubtful that much of Mr Johnson's second statement will require consideration.

User interface design

913. During cross-examination, it was suggested to Mr Johnson that some of the buttons on the Horizon screen were too close together. He explained the practical realities during re-examination:

> *Q. Thank you. It was suggested to you that -- you were shown one of the screenshots in your witness statement and it was suggested to you that the buttons were close together. What you weren't asked about is whether you took the view that the buttons you saw, or the buttons on the screen -- that their closeness together is a cause of any difficulty in using the system. Would you like to comment on that question?*
> *A. The fact that buttons are close together can mean that one does occasionally press the wrong one. However, that is easily rectified.*
> *Q. And when you say it is easily reconciled, why is it easily reconciled?*
> *A. Rectified.*

[1069] {E2/4/1} paras 1-3.

[1070] {Day7/27:10} to {Day7/27:16}.

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Q. Rectified, I'm so sorry.

A. If one would notice that the wrong button had been pressed -- for example, you may go to sell a first class stamp and you know yourself that the cost of that stamp is 67p. If you were to hit the first class large stamp, which is next to it, in error, the amount on the stack would be a different amount, so it would be easily recognisable that you had then pressed the wrong button.[1071]

Information available to SPMs

914. Mr Johnson's second witness statement sets out some detail on the data available to SPMs in the transaction log:

> *21. The transaction log is a list of all transactions and transfers completed in the branch, in chronological order.*
>
> *22. The transaction log can be used as a general investigation of all transactions or it can be filtered by time, value and product. The transaction log records the transaction that has taken place and also shows how it was settled, for example by cash, card or cheque. It is therefore possible to see all the transactions where customers have paid by debit or credit card.*
>
> *23 Transaction data is only as reliable as what has been manually input into Horizon. Where an error in recording the transaction has been made by the user, this will be reflected in the transaction logs. The position was the same before Horizon was introduced in branches: if a member of staff made a mistake when processing a transaction that mistake would be reflected in the records of the transaction such as the paper receipts generated.*

915. In response to questions from the Managing Judge, Mr Johnson provided further detail on the information available to an SPM (even just using the transaction log):

> *MR JUSTICE FRASER: Why don't you just give me a walk-through of the steps that you say hypothetically someone in Mr Bates' position should take.*
>
> *A. So if a postmaster wants to check what transactions have gone through, they would go to the transaction log. If they wanted to look at a particular -- as I have suggested, it could be filtered in a number of ways: by date, by product, by value, by stock unit, by user, there are a number of ways it can be filtered, and obviously the more you can filter it, the shorter the report will be, and then it would be a question of, as you say, printing the transaction log out and manually checking each item.*[1072]
>
> *...*
>
> *MR JUSTICE FRASER: Can I just ask you a question. When you say the filtering that it can be done, that can be done in branch, can it?*
>
> *A. Yes.*
>
> *MR JUSTICE FRASER: Am I right that would only be of any -- that would only be of any assistance if you knew what you were looking for already, wouldn't it?*

[1071] {Day7/25:1} to {Day7/25:22}.

[1072] {Day7/20:18} to {Day7/20:21}.

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A. Not necessarily. A postmaster may have come to the conclusion that a discrepancy occurred on a particular day by virtue of looking at his cash declaration for the previous day and the current day, and the previous day had no discrepancy, the current day does, so he may want to filter then to that particular day when the discrepancy occurred on his cash declaration.[1073]

916. Armed with extensive practical experience of operating a branch, Mr Johnson was able to give useful and reliable evidence on points of this kind. His evidence, along with the experts' evidence,[1074] is entirely contrary to Cs' contention that SPMs are left without effective tools to investigate discrepancies in the branch. The experts both note that a vast number of reports were available to SPMs in the branch, and Dr Worden notes that transaction data could be filtered in various ways in the branch.[1075]

917. The Court will doubtless have noted how many of the problems identified in the documents were immediately identified by the SPM as relating to a particular transaction or branch operation (e.g. a problem with a transfer between stock units, a failed recovery, a duplicated remittance operation, etc). There is an obvious explanation for this. Many problems will be immediately apparent because the transaction or operation goes wrong in some visible way. Further, even where a problem is only identified from a discrepancy noticed at the end of the day (through the mandatory cash declaration), it can often be easily linked to a particular transaction because of the coincidence between the value of the discrepancy and the value of the transaction. Most obviously, very large discrepancies would often be referable to either a remittance, a stock unit transfer or a large banking transaction.

H. CS' OTHER WITNESSES

H1. Claimant-Specific Evidence

918. As noted in Post Office's Opening Submissions, the Court made it clear that there should be the "*barest*" evidence of fact at the Horizon Issues trial. This is why the

[1073] {Day7/22:3} to {Day7/22:16}.

[1074] {D1/2/39}.

[1075] {D3/1/222}.

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agreed list of Horizon issues attached to the Order for Directions dated 23 March 2018 said that there should be "*limited, if any, evidence of fact*",[1076] and why the Fourth CMC Order referred to below directed that any witness evidence should not be claimant-specific. Thus:

918.1 By para 10 of the Fourth CMC Order dated 5 June 2018,[1077] the parties were ordered to file and serve "*witness statements of any witness of fact whose generic evidence (in distinction to Claimant-specific evidence) they wish to rely upon for the purposes of determining the Horizon Issues*". By the Fifth CMC Order,[1078] the date for these witness statements was extended to 28 September 2018;

918.2 By para 11 of the Fourth CMC Order, the parties were given permission to file and serve supplemental witness statements "*in response to factual matters that are referred to and relied upon by either parties' IT expert in their expert reports*", such reports being due to be served a few weeks earlier. The idea was there would no supplemental evidence of a claimant-specific nature, and that this supplemental evidence would only need to deal with limited points emerged from the expert reports. By a Consent Order dated 12 November 2018,[1079] the date by which Post Office was to serve supplemental witness evidence was extended to 16 November 2018.

919. Cs completely disregarded these stipulations.[1080] They have not even attempted to explain why.

920. The evidence served by Cs on behalf of Mr Latif, Mr Tank, Messrs Patny and Mrs Burke is not generic evidence but is "*evidence of individual cases"* and (except for Mrs Burke) "*Claimant-specific evidence",* i.e. evidence relating to specific examples of

[1076] {C7/14/3}.

[1077] {C7/18/3}.

[1078] {C7/22/1}.

[1079] {C7/31/1}.

[1080] To protect its position, in the limited time available Post Office did its best to say something in response to Cs' claimant-specific evidence. It did this under protest. There could be no basis for drawing adverse inferences against Post Office because that evidence is neither full nor complete. It did not have time to prepare full evidence and it should not have had to prepare any such evidence in any event.

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individual experiences with Horizon of the type the parties were directed not to adduce. It is precisely the sort of evidence that the parties were directed not to give.

921. With the exception of Mrs Burke's evidence, much of it is vague as to dates, circumstances and as to the details of the specific complaints being made. It suffers the combined vices of being too vague to assist in the determination of the particular C's claim (even were that appropriate at this stage) and too specific to assist in the resolution of any of the Horizon Issues, which are supposed to be generic.

922. It remains incumbent on Cs to explain the relevance of this Claimant-specific evidence to the Horizon Issues. To date, no such explanation has been forthcoming. None of these witnesses give evidence relating to specific bugs (as opposed to an incident they believe to have been caused by a bug), and their evidence is not relied on by Mr Coyne to explain his reasoning or to demonstrate a chain of evidence linking a particular SPM's experience to an identified KEL or Peak.

923. Further, this evidence was given without warning and without its proper context being addressed. Cs appear to be asking the Court to make findings without anything close to the full story being available:

923.1 None of the claimant witnesses have produced individual Particulars of Claim. Each of them (i.e. Messrs Latif, Tank and Patny) has simply referred to a few of the incidents which they say they experienced. They have not set out the entirety of their claims or addressed their wider experiences as SPMs. For its part Post Office has responded, as far as it was able to in the time available, to the account given of those specific incidents. The wider context, which might show for example that a branch was otherwise well or poorly run, has not been and could not be explored. This would be important in understanding the relative likelihood that a particular incident was caused by a bug or user error or some other reason.

923.2 Cs gave no prior notice that they would be calling witnesses of this nature prior to the witness evidence being served. Essentially from a standing start, Post Office had only six weeks to assimilate that evidence, investigate the allegations – most of which were in the vaguest terms, making investigation more difficult – and

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produce responsive evidence. The difficulty and effort involved was considerable: as Mrs Van Den Bogerd explained, it took about three weeks to obtain the relevant information (ARQ data etc) so that that work could actually begin.[1081]

923.3 Further, the claimant witnesses have not given proper disclosure. In light of the Court's prohibition of claimant-specific evidence, Post Office had agreed an Order that Cs need only disclose the documents on which they relied.[1082] Had Post Office known that it would be facing individual complaints it would have insisted on proper disclosure from each person giving evidence in the usual way. It is therefore not known whether the claimant-witnesses have searched the documents in their possession or control for relevant material. Very little material has in fact been disclosed by the Cs for this trial (83 new documents) and Cs' solicitors have refused to give disclosure of documents that have come to light during the course of the trial. Such documents might be highly relevant but disclosure has been refused simply on the ground that they fall outside the narrow disclosure Order that Post Office had agreed without appreciating the evidence that Cs would subsequently call.[1083]

923.4 Post Office did not have an opportunity to properly search its own documents before giving its witness evidence. The disclosure given on those cases was what could be found in the limited time available. The use of ARQ data at trial was only possible because Post Office extracted and disclosed that data, all on a voluntary basis.

923.5 The experts have not analysed the individual cases of the claimant witnesses, which one would expect to happen before any Court findings in a case about a technical IT dispute between two parties.

924. It is to be assumed that Cs consider these witnesses to be their best examples of how individuals have been affected by Horizon bugs. However, as Ms Van Den Bogerd's evidence explains, there are alternative explanations for all of the situations cited by

[1081] {Day16/111:17} to {Day16/113:3}.

[1082] {C7/18/2}.

[1083] {H/242.6}; {H/255}; {H/280}; {H/284}; {H/297} and {H/303}.

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these witnesses. The Court is not in a position to make findings in relation to which version of events is to be preferred – and has made it clear that this is not the purpose of this trial. Post Office submits that the Court cannot properly and should not make findings as to whether any of these witnesses was in fact affected by a bug in Horizon.

925. In the circumstances set out above, Post Office also submits that there should also be no criticism of Post Office for how it has responded to Cs' claimant-specific evidence:

925.1 There should be no criticism of the nature and completeness of the evidence which it served in response to Cs' claimant-specific evidence, given the lack of prior notice, pleadings, disclosure and the severe time-constraints.

925.2 Post Office's only aim in cross-examining the claimant witnesses was to establish that there is a plausible alternative explanation for the matters alleged to have been experienced by the witness, for example misunderstanding or user error or a failure properly to follow the procedures required by Post Office.

925.3 Nevertheless, as Cs called the claimant-specific evidence, it was necessary for Post Office reluctantly to cross examine them and to call its own responsive evidence. In the following paragraphs, Post Office sets out its submissions on the issues raised by the claimant-specific witnesses. It does so without prejudice to its submissions above as to the findings that can properly be made in relation to their evidence. But one thing the evidence does demonstrate is how important it is to test vague and unspecific claims of the sort made by the claimant witnesses in this case.

926. Post Office accepts that irrespective of the result of this trial, it is possible that any individual C, including the claimant witnesses, might succeed in their claim in due course. Post Office submits, however, that it is not appropriate to make findings about the existence of bugs affecting the claimant witnesses in this trial. In any event, quite apart from the considerations discussed above, the sort of clear evidence that would be needed to justify such findings is not present. On the contrary, if (contrary to Post Office's submission) the Court were determined to make any findings as to the existence

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of such bugs, the only findings that it could make on the material available would be that Cs had not shown that they were affected by bugs.

Mr Latif

927. The relevant evidence is as follows:

927.1 Mr Latif's amended witness statement dated 1 March 2019 (originally dated 28 September 2018) {E1/1}.

927.2 Mrs Van Den Bogerd's second witness statement dated 16 November 2018 at paras 85-102 {E2/5/22} to {E2/5/24}.

927.3 Transcript of Mr Latif's oral evidence {Day2/2:9} to {Day2/98:9}.

927.4 Transcript of Mrs Van Den Bogerd's oral evidence in relation to Mr Latif's case: {Day6/15:7} to {Day6/48:2}.

928. Mr Latif was the SPM for the Caddington branch between October 2001 and September 2018. His witness statement wrongly stated that he was currently the SPM, and he explained that he had been told not to correct this because it did not matter.[1084]

929. Mr Latif's witness statement raises two matters:[1085] (1) an alleged failed transfer of £2,000 between stock units in or around July 2015 and (2) an alleged problem with transaction acknowledgments ("**TAs**") for Camelot scratch cards in January 2018.[1086]

930. There are four general points to note about Mr Latif's evidence.

931. First, his witness statement omits basic details. The two matters that he describes in any detail at all together account for only 9 short paras. The evidence given in the witness statement is seriously lacking in clarity. Mr Latif added many important details for the

[1084] See {Day2/93:15} to {Day2/94:6}.

[1085] Mr Latif refers in passing to "numerous occasions" of other problems, but he provides no detail in relation to them, and Post Office was unable to respond substantively to these other points.

[1086] Mr Latif's original witness statement gave a date of March 2018 for the TAs, but he corrected this by amendment in March 2019: see para 9 {E1/1/2}.

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first time in response to cross-examination. He had apparently not been shown Mrs Van Den Bogerd's witness statement,[1087] and he had only very recently asked his assistants to check the records from the branch (to confirm the date of the TAs in early 2018).[1088]

932. Second, although Mr Latif generally tried to answer the questions put to him in his oral evidence, he did at times stray away from the question, giving several long narrative answers that lacked focus. This may be explained in part by the difficulties of giving evidence by video link, and Post Office does not make serious criticism of this aspect of his evidence. Nonetheless, combined with the absence of detail in his written evidence, this made it difficult to identify with precision what factual case Mr Latif in fact wished to advance.

933. Third, Mr Latif's account was not supported by any contemporaneous documents, notwithstanding that these must on his account have existed and, on his own evidence, were available to him (at least until very recently). Post Office sought disclosure of further documents during the trial and was told in correspondence that Mr Latif had no access to documents relating to the branch,[1089] but that is flatly inconsistent with what Mr Latif himself said about access to documents in response to cross-examination:

> *A: I had a look at the – we hold records for the information in the office, so I had my assistants look at the records, transaction logs and that's when I confirmed that it was January rather than March…*
>
> *Q: When do you say you asked your assistants to check about the date?*
>
> *A: Yes.*
>
> *Q: Sorry, when do you say that happened?*
>
> *A: It was after I made the initial statement, I was checking.*
>
> *Q: Roughly when, Mr Latif?*

A: <u>It would have been a few weeks ago</u>, sir. (emphasis added)[1090]

[1087] See {Day2/11:8}.

[1088] See {Day2/67:15} to {Day2/68:13}.

[1089] {H/303}.

[1090] {Day2/67:15} to {Day2/68:5}.

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934. Fourth, as set out in detail below, the records available to Post Office contradict much of the evidence that Mr Latif has given. On the basis of those records, including most notably the transaction data, Mr Latif appears to be wrong about both of the two matters he sets out in his witness statement.

The first complaint: a £2,000 stock unit transfer that "disappeared" in July 2015

935. Mr Latif's evidence was that he personally carried out a transfer between stock units AA and SP1[1091] in or around July 2015. He agreed with Mrs Van Den Bogerd's evidence in paras 87 to 88 of her witness statement as to how transfers are carried out.[1092]

936. Mr Latif confirmed that, when a transfer is performed, a transfer out slip is printed, signed and retained by the branch, and that the same is true of the corresponding transfer in slip.[1093] He said that he had the transfer out slip with him when he went to perform the transfer in.[1094] Mr Latif does not refer to these slips in his witness statement, and none has been disclosed.

937. The account given by Mr Latif can conveniently be broken down into three sections: first, the transfer out from stock unit AA; second, the allegedly failed transfer in to stock unit SP1; and, third, the steps taken by Mr Latif to investigate and report the failed transfer that he alleges.

938. First, as regards the transfer out from stock unit AA:

938.1 Mr Latif's oral evidence was that the transfer out from stock unit AA had been completed without problem.[1095] This coincides with paras 6 and 7 of his witness statement {E1/1/2}.

938.2 He says that he confirmed this by counting and declaring the cash for stock unit AA, which showed that the Horizon cash figure and the actual cash figure had

[1091] Mr Latif accepted in cross-examination that the reference in his witness statement to "SJ1" was a mistake: {Day2/9:21}.

[1092] {Day2/11:9} to {Day2/12:23}.

[1093] {Day2/13:13} to {Day2/14:10}.

[1094] {Day2/17:6}.

[1095] {Day2/14:16}.

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both been reduced by £2,000 (reflecting the transfer and the physical removal of the cash, respectively).[1096] He said for the first time in oral evidence that he also checked the transaction log for stock unit AA to identify the transfer out.[1097]

939. As set out in detail below, there is no support for this in the ARQ transaction data. Most notably, there were no £2,000 transfers out from stock unit AA performed by Mr Latif in June, July or August 2015.

940. Second, as regards the allegedly failed transfer in to stock unit SP1:

940.1 Mr Latif's evidence was that he knew that the transfer in had failed because there was no transfer in showing on the system for stock unit SP1.[1098]

940.2 It follows that his evidence is that he did not carry out any transfer in on stock unit SP1 for the £2,000 that he says he transferred out of stock unit AA.

941. In his oral evidence, Mr Latif said for the first time that he had carried out a reversal of the transfer out from stock unit AA.[1099] He explained the failure to refer to this reversal in his witness statement as having been related to the passing of his father and his own wish to keep the statement "as simple as possible". He fairly accepted that he could have added the detail when he amended his witness statement in March 2019, shortly before the trial.

942. In relation to the alleged reversal, Mr Latif said as follows:

942.1 He had carried out a reversal of the transfer out from stock unit AA on Horizon and put the physical cash back in the cash store for that stock unit.[1100]

942.2 Following the reversal, stock unit AA did not balance (showing a £2,000 cash shortfall).[1101] There was no evidence in the witness statement about the process of

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[1096] {Day2/16:13} to {Day2/17:2}.

[1097] {Day2/17:12}.

[1098] {Day2/20:15} to {Day2/20:19}.

[1099] See {Day2/20:19} to {Day2/22:5} and {Day2/37:18} to {Day2/38:1}.

[1100] {Day2/39:7} to {Day2/39:15}.

[1101] {Day2/47:6} to {Day2/47:12}.

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identifying a cash shortfall on stock unit AA, and Mr Latif explained this as being because the steps he described in oral evidence were "*basic logic steps*".[1102] That explanation is unsatisfactory.

942.3 The Horizon (derived) cash figure for stock unit AA had inexplicably gone up by £2,000.[1103] (Presumably, there must have been an increase of £2,000 in addition to the £2,000 increase caused by reversing the transfer out).

942.4 He raised this issue with his area manager, Mr Navjot Jando in July 2015.[1104] Mr Latif said that this was not mentioned in his witness statement because he did not think it was relevant.[1105] That explanation is unsatisfactory.

943. Third, as regards the investigation carried out by Mr Latif:

943.1 Mr Latif explained that he checked the CCTV for two reasons: (1) to make sure that nothing untoward had happened, including that the £2,000 had been placed back in stock unit AA and not taken from the branch,[1106] and (2) to confirm that the steps in the process had all been carried out correctly, including pressing the right buttons on the screen.[1107]

943.2 Mr Latif fairly accepted that the footage would have helped to confirm important parts of his evidence and would have enabled him to dispute any shortfall.[1108] The solicitors for Cs have explained in correspondence that the CCTV footage to which Mr Latif refers was not retained.[1109] When asked about the footage, Mr Latif himself gave a long and tangential answer as to it had not been disclosed (the thrust of which is difficult to summarise fairly).[1110] Shortly after this, the Managing

[1102] {Day2/48:23} to {Day2/49:11}.

[1103] {Day2/51:18} to {Day2/51:23}.

[1104] {Day2/54:3} to {Day2/}54:12}.

[1105] {Day2/55:20} to {Day2/55:22}.

[1106] See {Day2/19:21} and {Day2/23:5-23:8}.

[1107] {Day2/22:19} to {Day2/22:25} and {Day2/25:7} to {Day2/25:10}.

[1108] {Day2/26:8}.

[1109] {H/303}.

[1110] {Day2/26:13} to {Day2/28:5}.

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Judge asked Mr Latif to try to confine his answers to the questions put to him.[1111]

It remains unclear why Mr Latif did not take any steps to preserve the footage.

943.3 Mr Latif fairly accepted that Horizon would have provided him with adequate information to identify a problem with a failed transfer:

> *Q: Horizon provided you with the information you needed to know that the transfer out had succeeded, didn't it?*
>
> *A: Yes.*
>
> *Q: And you say that you saw immediately on stock unit SP1 that the transfer in had not succeeded, so Horizon told you what you needed to know there as well, didn't it?*
>
> *A: Yes.*
>
> *Q: And we have already discussed how you could have printed off an unreconciled transfer report that would have identified any transfer out for which there was not a transfer in; that's right, isn't it?*
>
> *A: Yes.*
>
> *Q: And you could also carry out reports, or checks on all of the stock units to see any changes in their Horizon cash figures, couldn't you?*
>
> *A: Yes.*
>
> *Q: You could also physically check the cash in any relevant stock unit to see whether it was the same as what the Horizon figure showed, couldn't you?*
>
> *A: Yes, sir, you can.*
>
> *Q: So if your evidence were right that the transfer out succeeded but the transfer in failed, Horizon could tell you everything you needed to know to confirm that position, couldn't it?*
>
> *A: I think the issue – yes, sir, but the issue is what's happened in-between and I cant [sic] see what's happened in-between, sir. And that's - - I think you're not labouring that comment, that you are saying – you are skirting around that, but that's the crux of the issue.*[1112] (emphasis added)

943.4 Ultimately, Mr Latif's evidence on the information available to him through Horizon was that there were no limitations on what Horizon could tell him about the transfers as regards the "front end", but that it would not tell him about

[1111] {Day2/29:11}.

[1112] {Day2/30:1} to {Day2/31:4}.

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anything that had gone wrong in the system (a "glitch") between the transfer out and the alleged failed transfer in.[1113] It is unclear what further information it is Mr Latif wanted to see and, crucially, how such information would have assisted him: if the transfer failed, this would have been apparent from the reports available in the branch; if the transfer somehow duplicated (or did anything else with effects on the branch accounts), this would also have been apparent from those reports; all that would not be communicated was technical information about any bug that resulted in those effects, but the experts agree that "*the extent to which any IT system can alert its users to bugs within the system itself is necessarily limited*".[1114]

943.5 Mr Latif said that he phoned the Helpline, but that the Helpline was not very good.[1115] He was, however, taken to call logs showing two examples of his assistants calling the Helpline to ask how to identify transfers through Horizon, and he accepted that they had been told how to show transfers on reports that could be printed in the branch.[1116] On the basis of those call logs, it is clear that the Helpline had proven itself able to provide effective assistance in relation to problems with transfers. In any event, as identified below, there is no record of the call that Mr Latif alleges: see paragraph 944.1 below.

944. Post Office makes three main points about Mr Latif's evidence in relation to alleged failed transfer:

944.1 The transaction data and other contemporaneous records are inconsistent with Mr Latif's account. Not one of the key elements of his account is supported by the records produced at this trial.

[1113] {Day2/35:15} to {Day2/36:17}.

[1114] Joint Statement 2, para 21 {D1/2/38}.

[1115] See {Day2/32:12}. However, Mr Latif's evidence on whether or not he called the Helpline was not entirely clear. He said at {Day2/40:14} that he may in fact have called his area manager, rather than the Helpline, but that it was a long time ago (presumably meaning that his recollection on this point may be imperfect). He later appeared more confident that he had called the Helpline: {Day2/56:1}.

[1116] {Day2/32:24} to {Day2/35:4}.

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944.2 Mr Latif's evidence in relation to the alleged transfer is unsatisfactory. He failed in his witness statement to mention many of key elements of his account as it emerged at trial, and the account that he gave at trial is unlikely to be accurate.

944.3 Mrs Van Den Bogerd's evidence on the transfers is consistent with the transaction data and other records and was not materially undermined in cross-examination.

945. These three points are expanded upon below.

Point 1: The transaction data and other contemporaneous records are inconsistent with Mr Latif's account.

946. The transaction data for June 2015 show no transfers of £2,000 between stock units AA and SP1 performed by Mr Latif (or any of his staff).[1117]

947. The data for July 2015[1118] show the following two relevant transfers of £2,000:

Transfer 1

947.1 A transfer out of £2,000 from stock unit AA on 21 July 2015 and timed at 13:52:22, performed by Christine Barnett:[1119] see row 18352. Column J shows the product code 6277, which is the code for a transfer out.[1120]

947.2 A corresponding transfer in of £2,000 on stock unit SP1 on 21 July 2015 and timed at 13:55:01, performed by Christine Fensome:[1121] see row 18359. Column J shows the product code 6276, which is the product code for a transfer in.[1122]

[1117] {F/1353.1}.

[1118] {F/1365.2}.

[1119] User ID CBA001 is Christine Barnett: see the list of assistants at {F/1038.1}.

[1120] See the Product ID List {F/1292.2/1} (towards the bottom of the table).

[1121] User ID CFE002 is Christine Fensome: see the list of assistants at {F/1038.1}.

[1122] See the Product ID List {F/1292.2/1} (towards the bottom of the table).

[1123] User ID RDE001 is Robert Deacock: see the list of assistants at {F/1038.1}.

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Transfer 2

947.3 A transfer out of £2,000 from stock unit SP1 on 29 July 2015 and timed at 11:49:19, performed by Robert Deacock:[1123] see row 25988. Column J shows the product code 6277.

947.4 A corresponding transfer in of £2,000 on stock unit SP1 on 3 August 2015 and timed at 11:50:30, performed by Mohammed Latif:[1124] see row 25990. Column J shows the product code 6276.

948. The data for August 2015[1125] show four transfers from stock unit AA to stock unit SP1, each of them having both a transfer out and a corresponding transfer in. Mr Latif did not wish to see this data, accepting that it would show four such transfers.[1126] For completeness, the relevant transfers are as follows:

Transfer 1

948.1 A transfer out of £2,000 from stock unit AA on 1 August 2015 and timed at 11:56:51, performed by Mohammed Latif:[1127] see row 526. Column J shows the product code 6277.

948.2 A corresponding transfer in of £2,000 on stock unit SP1 on 1 August 2015 and timed at 11:57:22, performed by Robert Deacock:[1128] see row 528. Column J shows the product code 6276.

Transfer 2

948.3 A transfer out of £2,000 from stock unit AA on 3 August 2015 and timed at 16:38:25, performed by Christine Barnett:[1129] see row 2402. Column J shows the product code 6277.

[1124] User ID MLA001 is Mohammed Latif, Mr Latif's brother: see {Day2/64:6}. He is not recorded as an assistant in the log at {F/1038.1}.

[1125] {F/1371.1}.

[1126] {Day2/66:5}.

[1127] User ID MLA001 is Mohammed Latif, Mr Latif's brother: see {Day2/64:6}.

[1128] User ID RDE001 is Robert Deacock: see the list of assistants at {F/1038.1}.

[1129] User ID CBA001 is Christine Barnett: see the list of assistants at {F/1038.1}.

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948.4 A corresponding transfer in of £2,000 on stock unit AA on 29 July 2015 and timed at 19:40:11, performed by Muhammed Tabassum:[1130] see row 2488. Column J shows the product code 6276.

Transfer 3

948.5 A transfer out of £2,000 from stock unit AA on 5 August 2015 and timed at 16:25:40, performed by Christine Barnett:[1131] see row 4749. Column J shows the product code 6277.

948.6 A corresponding transfer in of £2,000 on stock unit SP1 on 5 August 2015 and timed at 16:26:21, performed by Michael Brumwell:[1132] see row 4751. Column J shows the product code 6276.

Transfer 4

948.7 A transfer out of £2,000 from stock unit AA on 26 August 2015 and timed at 14:46:05, performed by Christine Barnett:[1133] see row 23538. Column J shows the product code 6277.

948.8 A corresponding transfer in of £2,000 on stock unit SP1 on 26 August 2015 and timed at 19:36:15, performed by Michael Brumwell:[1134] see row 23833. Column J shows the product code 6276.

949. The August data also show a transfer from stock unit SP1 to stock unit AA (i.e. a transfer in the other direction), as follows:

949.1 A transfer out of £2,000 from stock unit SP1 on 3 August 2015 and timed at 09:12:32, performed by Robert Deacock:[1135] see row 1210. Column J shows the product code 6277.

[1130] User ID MTA001 is Muhammed Tabassum: see the lists of assistants at {F/1038.1}.

[1131] User ID CBA001 is Christine Barnett: see the list of assistants at {F/1038.1}.

[1132] User ID MBR001 is Michael Brumwell: see the list of assistants at {F/1038.1}.

[1133] User ID CBA001 is Christine Barnett: see the list of assistants at {F/1038.1}.

[1134] User ID MBR001 is Michael Brumwell: see the list of assistants at {F/1038.1}.

[1135] User ID RDE001 is Robert Deacock: see the list of assistants at {F/1038.1}.

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949.2 A corresponding transfer in of £2,000 on stock unit AA on 3 August 2015 and timed at 10:16:30, performed by Mohammed Latif:[1136] see row 1353. Column J shows the product code 6276.

950. Two key points emerge from the transaction data for June, July and August 2015:

950.1 There were no transfers of £2,000 out of stock unit AA or into stock unit SP1 performed by Mr Latif. The data contradicts Mr Latif's evidence that he personally carried out a transfer out from stock unit AA: see para 934 above.

950.2 For each £2,000 transfer out of stock unit AA, there is a corresponding transfer in on stock unit SP1. The data contradict Mr Latif's evidence that he carried out a transfer out from stock unit AA and was then unable to accept the corresponding transfer in on stock unit SP1: see para 940 above.

950.3 There were no reversals by Mr Latif in June 2015.

951. When asked about the two transfers in July 2015, Mr Latif said that there may have been corresponding transfers out and transfers in, but that the transfers may not have been "successful" in the sense of changing the Horizon (derived) cash positions of the relevant stock units. He said this could have happened because of a "glitch".[1137] There are two fatal problems with that suggestion.

952. First, it is not what Mr Latif in fact says happened. Mr Latif's evidence is not that he accepted the transfer in on stock unit SP1 but it did not take effect so as to increase the Horizon (derived) cash figure for that stock unit; his evidence is that the transfer in was not available to accept on stock unit SP1: see para 295 above.

953. Second, each of the transfers out and transfers in identified above is accompanied in the transaction data by the appropriate (inverse) accounting entry that adjusts the Horizon cash figure for the relevant stock unit. These are the entries on the spreadsheets that appear with the Product ID 1 (cash) in column J and that are in the same amount as the transfer but which carry the inverse sign of the transfer (adjusting the derived cash

[1136] User ID MLA001 is Mohammed Latif, Mr Latif's brother: see {Day2/64:6}.

[1137] {Day2/65:4} to {Day2/65:9}.

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position down for a transfer out or up for a transfer in).[1138]

954. This was addressed briefly in cross-examination:

954.1 The Managing Judge asked about these entries during Mr Latif's cross-examination and was told as follows (on instructions but in counsel's own words):

... They are not transfers. They correspond to the value of the transfer but they are not actually transfers. They perform a back office reconciliation function that wouldn't be visible to a Subpostmaster. If Mr Latif had called up records in his branch he would have seen the two transactions to which I have referred you, he wouldn't see the effective inverse transaction[s] *that are only visible in the back office systems.*[1139]

954.2 Mrs Van Den Bogerd was taken in cross-examination to two of the entries and explained that represented the cash value of the transfer for the relevant stock unit:

Q: ...When Mr Latif was being cross-examined about this....it was suggested to him that the transactions either side of these two entries were back office entries that he didn't need to worry about.[[1140]] *Actually, code 1 is cash, isn't it?*

A: That's right.

Q: So that's an important part of the transaction?

A: Yes.

955. There is nothing surprising about the fact that the double accounting cash entry is not shown on branch reports. The effect of the entry is of course visible (in that the Horizon derived cash figure goes up or goes down), but the entry itself is no more visible than the equivalent entry for any sale. The SPM would not expect to see the double entry figures for every sale of stamps (i.e. one entry increasing the derived cash figure and another separate entry decreasing the derived stock figure): he would expect to see a record of the sale of the stock, including its cash value where appropriate.[1141] He would see the same for a transfer: the detail of the transfer along with its cash value.

[1138] See {F/1371.1} rows 3384-3386 for an illustration of the position where there is a mixture of cash and stock.

[1139] {Day2/63:1} to {Day2/63:14}.

[1140] This is the passage quoted above. Mr Green QC's summary of the passage is inaccurate.

[1141] For "value stock items" (such as open postage and currency), you would see the cash value, but for "volume items" (such as stamps), you would see the volume (i.e. no value).

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956. The information provided to SPMs about a transfer can be seen on the sample transfers summary report shown at {F/856/520}.[1142] For each transfer, the report gives the following information:

956.1 The session number in which the transfer occurred.

956.2 The source stock unit ("**SRC**") for the transfer.

956.3 The destination stock unit ("**DEST**") for the transfer.

956.4 The date and time of the transfer.

956.5 The value of the transfer.[1143]

957. Mr Latif's evidence in relation to a call to the Helpline is also contradicted by the available records. Specifically:

957.1 When Mr Latif first mentioned this call, he was confident that there would be a record of it in Post Office's call logs.[1144]

957.2 Mr Latif was shown that there was no such record on the call logs for June to August 2015.[1145]

957.3 When asked why there was no record of such a call in those logs, Mr Latif first said that he may in fact have called his area sales manager, rather than the Helpline[1146] and then, after being taken to the call log, added that the operators sometimes failed to record calls.[1147] If (contrary to Post Office's submission) it were appropriate to make findings about this, the more likely explanation would be that the call, which was not mentioned at all in his witness statement, did not occur.

[1142] Branches can also produce and print out a transfer reconciliation report: see {F/856/586} (2011) and {F/1782/158} (2018).

[1143] See footnote 1143 above.

[1144] {Day2/32:3} to {Day2/32:15}.

[1145] See the call log at {F/1829.1} and the cross-examination on it at {Day2/40:15} to {Day2/44:16}.

[1146] {Day2/40:5} to {Day2/40:14}.

[1147] {Day2/44:13}.

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958. In re-examination, Mr Latif was taken back to the call log. The purpose of the re-examination appeared to be to create the impression that the questions in relation to the call log had been somehow unfair or misleading. Mr Green said that Mr Latif was told that the entry at row 89 on the spreadsheet at {F/1829.1} had a "*date of 29 June 2015 which is the first entry on this log for June*".[1148] Mr Latif was then taken on a filtered spreadsheet to row 95, which he was told was an entry for "*22 June*". This was a bad point, for three reasons.

958.1 If the spreadsheet at {F/1829.1} is filtered by "created date", the entry at row 95 is for 22 June 2016. The call that Mr Latif alleges he made was in or around July 2015. Mr Latif was taken in cross-examination to the call records for June to August 2015,[1149] given that this was the relevant period.

958.2 The calls were not shown on the spreadsheet in chronological order, and the suggestion from Post Office was that the call on 29 June 2015 was the first shown on the spreadsheet, rather than the first in time. If the spreadsheet is filtered by "created date", it shows for June to August 2015 precisely the same 9 entries as Mr Latif was shown in cross-examination (appearing at rows 45 to 53).

958.3 In any event, Mr Latif was not taken in re-examination to any entry on the log that was (or even could be) said to provide evidence of the call to which Mr Latif referred in cross-examination. There is no such call recorded in June, July or August 2015.

959. If the Court were minded to make findings about this, Post Office would submit that, on the present evidence, it is likely that the call did not happen and that Mr Latif's recollection on this point was mistaken. Mr Latif accepted that his recollection might not be reliable, given the passage of time:

Q: Which do you say you phoned, the area sales manager or the Helpline?

A: I believe it was the Helpline, but it's a long time ago.[1150]

[1148] The log had not been filtered to put the entries in date order. The call logs are of course not stored in spreadsheet format but are downloaded into Excel and have to be ordered through using the "sort and filter" function.

[1149] {Day2/33:1} to {Day2/33:4}.

[1150] {Day2/40:12}.

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960. The suggestion that Mr Latif had contacted his area manager (Navjot Jando) was made for the first time at trial, and Post Office had no evidence from Mr Jando.

961. Lastly as regards the contemporaneous records, there is the alleged reversal of the transfer out from stock unit AA. Mr Latif mentioned this for the first time in cross-examination. The transaction data and event data show no reversal of a transfer out on stock unit AA carried out by Mr Latif in June, July or August 2015. Mr Latif was unable to explain this.[1151]

Point 2: Mr Latif's evidence in relation to the alleged transfer is unsatisfactory.

962. There are many important elements of Mr Latif's evidence that emerged for the first time in response to cross-examination. Specifically, the following important matters were not mentioned in his witness statement:[1152]

962.1 The alleged call to the Helpline to report the failed transfer of £2,000. As noted a above, Mr Latif was at times more and less sure as to whether or not he in fact did call the Helpline (see the passage quoted at para 943.4 above).

962.2 The alleged call(s) made by Mr Latif to his area manager, Mr Jando.

962.3 The alleged reversal of the transfer out from stock unit AA.

962.4 The alleged cash declaration conducted on stock unit AA after the reversal which showed a £2,000 shortfall in that stock unit. There is no mention of this in the witness statement despite reference to another (earlier) cash declaration on that stock unit: see para 7 of the witness statement {E1/1/2}.

962.5 The allegation that Mr Latif checked the CCTV in the branch to confirm not only that the right buttons were pressed (which is what would ordinarily be taken from the third sentence of para 7 of the witness statement {E1/1/2}) but also that nobody had taken the £2,000 from the branch: see para 298 above.

[1151] {Day2/38:2} to [Day2/38:22}.

[1152] Post Office of course understands that some of the inadequacies of Mr Latif's evidence may be explained by the sad loss of his father. Some allowance must be made for this. It cannot fully explain Mr Latif's failure to provide a properly detailed account of his complains in his written evidence, and he gave several different reasons for not having mentioned key parts of his case.

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963. Post Office had to extract the detail of Mr Latif's account through cross-examination. That is unsatisfactory, and it was unfair to Post Office that it did not have proper advance notice of Mr Latif's evidence. Despite the vast resources expended by Cs on this litigation, little attention seems to have been devoted to identifying and explaining the basic elements of their own claims.

964. In addition, there are the following problems with the account that Mr Latif gave in his witness statement and on Day 2 of the trial.

965. First, as noted above, it is contradicted by the transaction data and other contemporaneous records.

966. Second, Mr Latif's evidence in relation to the CCTV was very unsatisfactory. His evidence that he checked the CCTV to confirm that nothing untoward had happened to the £2,000 is one thing,[1153] but his evidence that he checked the CCTV to make sure that nothing untoward (including theft) had happened is quite another. In circumstances where he had personally carried out the transfer out and the reversal and had personally retained custody of the physical cash throughout the process, this evidence makes little sense. This point was put in cross-examination, and Mr Latif could provide no real answer to it.[1154]

967. Third, the account that Mr Latif now gives is inconsistent, in important respects, with what is said (and confirmed with a statement of truth) in his Schedule of Information ("**SOI**"). The SOI includes the following complaint:

In approximately July 2015 somehow Horizon lost £2,000. According to the system this was transferred from one stock unit to another but this did not happen as the second stock unit was not £2,000 up. This could not be explained and our CCTV was checked to make sure the money had not physically been removed by staff. In the end I had to put the cash in myself.[1155]

968. The account in the SOI suggests that the shortfall arose on stock unit SP1 (the receiving stock unit), rather than stock unit AA. It also appears to rely on the transfer having

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[1153] It is also consistent with the content of Mr Latif's Schedule of Information at para 3.1 {F/1654.2/4} (see further below).

[1154] {Day2/19:5} to {Day2/20:19} and {Day2/22:6} to {Day2/25:10}.

[1155] {F/1654.2/4}at para 3.1.

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succeeded, but the physical cash having gone missing. It contains no mention of an unexplained movement in the Horizon cash figure for stock unit AA, which was at the core of the account given by Mr Latif in oral evidence (in the sense that, without that unexplained change, there cannot have been any shortfall).

969. Fourth, the account given by Mr Latif in oral evidence could only be correct if there were several different bugs within Horizon, all of which struck in unison to bring about the factual circumstances that he alleges. As is explained below, there is no evidence suggesting the existence of any of the bugs having the effects that his account implicitly requires, despite the experts having had the opportunity to consider his claims (including by searching for relevant Peaks and KELs and other contemporaneous documents).

970. The first hypothetical bug is required to have caused the transfer in for stock unit SP1 to be unavailable to accept. None of the bugs identified by the experts is relevant here (as to the Callendar Square and Dalmellington bugs, see para 982 below).

971. The second hypothetical bug is required to explain an otherwise unexplained increase in the derived cash figure for stock unit AA (without which there could be no shortfall relating to the allegedly failed transfer – see para 972 below). This can be shown by tracing the changes that would have occurred, on Mr Latif's account, to the Horizon derived cash figure ("**Horizon cash**") and the actual cash in the relevant cash store ("**actual cash**") for stock unit AA, assuming that both figures started at £10,000:

971.1 Mr Latif transfers £2, 000 out of stock unit AA and removes the £2,000 in physical cash. Horizon cash is now £8,000; actual cash is now £8,000. The stock unit balances. This was confirmed by Mr Latif to be what happened (using the same hypothetical figures).[1156]

971.2 The transfer into stock unit SP1 is not processed. Mr Latif returns the £2,000 in physical cash to stock unit AA. (Mr Latif confirmed that he physically returned the cash.[1157]) Horizon cash should still be £8,000; actual cash is back to £10,000. There should be a £2,000 surplus in the stock unit, and the branch would have

[1156] {Day2/16:13} to {Day2/17:2}.

[1157] {Day2/47:21} and {Day2/51:2}.

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been alerted to a receipts and payments mis-match when it tried to balance. Mr Latif appeared to confirm that stock unit AA showed a surplus at this point, although in fairness the suggestion put to him was that the stock unit "*would*" show a surplus.[1158]

971.3 Mr Latif carries out a reversal on stock unit AA to reverse the transfer out. Horizon cash should now return to £10,000; actual cash will be unchanged at £10,000. The stock unit balances.

972. Mr Latif accepted that, in order for there to result a shortfall in stock unit AA, the Horizon cash figure would have had to have increased by £2,000 for no valid reason.[1159] If that had happened – a change in stock unit AA's Horizon cash figure that was not caused by transactions on that stock unit – Mr Latif would have had ample evidence to demonstrate this. On his case, he would have had the following:

972.1 The transfer out slip for stock unit AA.

972.2 The record of a reversal of that transfer out.

972.3 The "transfer log" that Mr Latif produced at some point after the failed transfer.[1160]

972.4 The cash declaration performed on stock unit AA immediately after failed transfer: see witness statement at para 7 {E1/1/2}.[1161]

972.5 The transaction log for stock unit AA that he printed out at some point after the transfer out.[1162]

972.6 The balance snapshot printed after the transfer to SP1 failed.[1163]

[1158] {Day2/39:18}.

[1159] {Day2/52:22}.

[1160] {Day2/48:6}. Mr Latif could have been referring to either the transaction log (filtered to show only transfers) or a transfers report.

[1161] Mr Latif would have been able to view the cash declaration on screen and would have had the option to print a copy too.

[1162] {Day2/17:14}.

[1163] {Day2/48/5}.

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972.7 The cash declaration performed on stock unit AA that showed a £2,000 shortfall.[1164]

972.8 The transaction log for stock unit AA over the whole period covered by these actions, showing the transactions on that stock unit, allowing the implied movements in the Horizon cash figure to be tracked.

973. Relying on these records, Mr Latif would have been able to show the £2,000 change in the Horizon derived cash figure for stock unit AA and point to the absence on the transaction log of any transaction to explain that movement in the Horizon cash figure. Mr Latif was asked why, in light of this, he did not dispute the £2,000 shortfall that he alleges. At first, he suggested that he had not disputed the shortfall because he considered that he was liable for losses caused by glitches in the system:

Q: Do you say that you did this without disputing this shortfall, Mr Latif?

A: We are liable. The Post Office's contract clearly says that we are liable for any shortfalls.

Q: Is it your understanding that you are liable for a shortfall even if it is a computer glitch, if that is what you are saying?

A: Yes, sir, we're liable.[1165]

974. Mr Latif was pressed on this point, and he returned to his earlier evidence that he had reported the problem to Post Office. He said that he had failed in the past to persuade Post Office that there had been software errors in his branch (none of which are identified in his witness statement) and that Post Office had not accepted that there were such software errors, blaming user error instead:

Q: .. If you genuinely believed that the derived cash figure on stock unit AA had been increased by a glitch and that therefore you were in no way responsible for any of this, what do you say to the suggestion that it's very surprising that you wouldn't raise that with Post Office and complain about it?

A: Well, I have complained to the area manager, sir, so I don't know [why] *your saying I haven't complained. I have complained to the area manager, Mr Navjot Jando, a number of times, so I don't know why you're saying I haven't complained about it or raised it.*

[1164] {Day2/51:10}.

[1165] {Day2/53:11} to {Day2/53:18}.

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Q: So do you now say you disputed a £2,000 shortfall in July 2015 by contacting your area manager and complaining that there was a glitch; is that what you are now saying?

A: Well, yes, we would have obviously raised questions, but there is a glitch or something and we don't know what's happened. This is just one instance, sir, but there are a number of other instances which I haven't given in my statement. It happens all the time and generally we think it's the operator that's causing the problem and that's what the Post Office keep telling us, it's operator error, not necessarily it's a software error, and this is clearly a software error, sir…[1166]

975. But this is precisely the point – on his account, Mr Latif would have been able to show very clearly that there had been an unexplained jump in the Horizon cash figure for stock unit AA. He would be able to point to the absence of any entry on the transaction log to explain the change in the figure. He would have been able to show something must have gone wrong in the system.

976. It is important to note that this second hypothetical bug would be very different from any of the bugs identified by the experts. There is no known bug that somehow affects the Horizon cash figure other than through a transaction that would show in the transaction data for the affected branch. There is no trace of any unexplained and erroneous £2,000 transaction on stock unit AA.

977. Further, for Mr Latif's oral evidence to be correct, there would have to be yet more bugs in Horizon that came together to affect his branch, as follows:

977.1 A third bug that has somehow removed the record of the reversal that Mr Latif says he carried out on stock unit AA. The experts have not identified any bugs that would create this effect.

977.2 A fourth bug that has erased all record of Mr Latif personally having carried out £2,000 transfers out of stock unit AA and into stock unit SP1 in or around July 2015. The experts have not identified any bugs that would create this effect.

977.3 A fifth bug that erased all record of the £2,000 shortfall that Mr Latif alleges (e.g. in the balance snapshot and cash declarations that he says he carried out or in a

[1166] {Day2/53:21} to {Day2/54:20}.

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trial balance). The experts have not identified any bugs that would create this effect.

Point 3: Mrs Van Den Bogerd's evidence on the transfers is consistent with the transaction data and was not materially undermined in cross-examination.

978. Mrs Van Den Bogerd explains that she has, with the help of her team, considered the transaction and event data for Mr Latif's branch from June to August 2015. She does not purport to give a final and certain explanation of events. Her conclusion is suitably limited: "*the records that Post Office has reviewed do not support what Mr Latif has said and I believe that he may have mis-recollected events from 3 years ago*".[1167]

979. Mrs Van Den Bogerd faced criticism for the fact that she had to make corrections to her witness statement to MORE accurately reflect the transaction data on which she had relied.[1168] Some criticism was therefore justified, but in this regard the following points should be noted:

979.1 It is important not to lose sight of the context in which Mrs Van Den Bogerd found herself having to respond, in short order, to claimant-specific evidence covering many years and raising many discrete issues. It was not surprising that some small mistakes were made.

979.2 Mrs Van den Bogerd made clear that members of staff within Post Office had helped her examine the transaction data[1169] and that those members were more experienced in examining the back-office accounting data.[1170] She explained, for example, the slightly round-about way in which she personally had used the transaction data and event data together to identify the relevant transfers in and transfers out.[1171]

[1167] {E2/5/24} at para 95.

[1168] {Day6/25:22} to {Day6/27:23} (see {E2/16/3}for the corrections she made to paras 91.1 and 91.2 of her second witness statement {E2/5/23}). She also faced criticism for having referred to the wrong documents (using POL disclosure numbers). As she pointed out, however, she had not herself entered the POL document references: see {Day6/18:10}.

[1169] {Day6/30:22-31:6}, reflecting the witness statement at para 30 {E2/5/11}.

[1170] See, for example, {Day6/24:6} to {Day6/24:10} and {Day6/31:2} to {Day6/31:5}.

[1171] {Day6/23:18} to {Day6/24:3}.

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979.3 Ultimately, the question is what the transaction and event data show. The Court can review the documents on which she relies.

980. Mrs Van Den Bogerd was not taken to the transaction data for June, July or August. It was not even suggested to her that her witness evidence (as corrected) was wrong about what the data show. This was despite her referring to the transaction data in response to cross-examination and, in effect, inviting challenge on it.[1172] Cs refused that invitation.

981. Cs put two main points in cross-examination about Mr Latif's case. Neither of them withstands analysis or undermines Mrs Van Den Bogerd's evidence.

982. First, it was suggested that Mrs Van Den Bogerd should have considered the Callendar Square and Dalmellington bugs when addressing Mr Latif's allegations about the failed transfer of £2,000.[1173] That was a bizarre suggestion, for several reasons:

982.1 The Dalmellington bug related to remming in cash at outreach branches.[1174] Mr Latif's branch was not an outreach branch, and his alleged problem did not relate to remming in. Mrs Van Den Bogerd pointed out the (obvious) irrelevance of the Dalmellington bug several times when questioned on it.[1175]

982.2 The Callendar Square bug was resolved in 2006.[1176] It was self-evidently irrelevant to any problem with transfers in 2015.

982.3 The symptoms of the two bugs were different from the circumstances that Mr Latif alleges. The Callendar Square bug allowed SPMs to duplicate transfers in on different counters (due to a failure of the Riposte system used to communicate between counters in Legacy Horizon). Mr Latif's complaint is not that a transfer in was mistakenly duplicated (whether at one counter or more than one counter) but simply that the transfer failed, was reversed and somehow caused a loss in the originating stock unit. That is different from Callendar Square. And as for the

[1172] {Day2/35:15} to {Day2/35:21}.

[1173] {Day6/20:22} to {Day6/21:17} and {Day6/33:7} to {Day6/35:8}

[1174] See JS2, entry 4 {D1/2/4} and KEL acha621P {F/1426}.

[1175] See, for example, {Day2/35:5}.

[1176] See JS2, entry 2 {D1/2/3}.

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Dalmellington bug, this caused SPMs mistakenly to duplicate remming in operations. Again, Mr Latif's complaint does not involve the accidental duplication of a transfer in (let alone a rem in to an outreach branch).

982.4 In any event, there is no record in the transaction data for June, July or August of any duplicated transfers in for £2,000. The transfers are identified above. None of them is duplicated. If there had been a duplicate transfer in, the branch would have suffered a receipts and payments mis-match. and would not have been able to rollover into the next trading period. Mr Latif does not say that happened. Further, Mr Latif would have been able quickly to identify the existence of unreconciled transfers using the reporting tools that he accepted were available to him on Horizon.[1177]

983. Second, Mrs Van Den Bogerd was asked whether it had been drawn to her attention that (1) there were two receipts printed for one of the transfers in and (2) the existence of multiple receipts had been a feature of the Dalmellington bug.[1178] This was a misconceived line of questioning, for the following reasons:

983.1 The Dalmellington bug was very different from the problem alleged by Mr Latif: see para 962 above.

983.2 The fact that two receipts were printed is innocuous. Horizon automatically prints one receipt/ slip for a transfer out, and it does the same for a transfer in.[1179] But it is clear (and unsurprising) that the user can also press "print" to print an additional receipt,[1180] as Mr Latif confirmed this in oral evidence in respect of transfers out specifically.[1181]

983.3 If it is suggested that because two transfer in receipts were printed, there must have been two transfers in (as with the duplicated rem in operation in

[1177] {Day2/30:8}. See also para 298.3 above. Example transfer reconciliation reports can be seen at {F/856/587} (2011) and {F/1782/159} (2018).

[1178] {Day6/3:21-35:8}.

[1179] Mr Latif accepted this: {Day2/13:13} to {Day2/14:8}.

[1180] See {F/1594/16} at 3.7 "Duplicate Receipts".

[1181] {Day2/13:24}. The technical specifications for the two types of transfer slip are materially identical: see {F/1594/71} (transfer in slip) and {F/1594/73} (transfer out slip).

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Dalmellington), that can easily be tested by examining the relevant transaction data. The transaction data for the relevant transfer in show that it was not duplicated:

(a) The two transfer in slips for stock unit SP1 were printed on 21 July 2015 at 13:55:00 and 13:55:04 (by Christine Fensome): see rows 8534 and 8535 in the events data at {F/1354}.

(b) The transaction data for July is at {F/1365.2}. It shows that Christine Fensome carried out a transfer in of £2,000 on stock unit SP1 on 21 July 2015 and timed at 13:55:01: see row 18539 (as is mentioned above at para 318). This corresponds with the printing of the transfer in slips. There is no duplicated transfer in shown in the surrounding rows of data.

(c) The point boils down to this: the events data show that two receipts were printed, but the transaction data show that there was only one transfer in that corresponds to those two receipts. Cs' cross-examination is premised on the idea that one should look at the event data and draw a weak inference from it (i.e. that two receipts means two transactions), rather than carrying out a check against the transaction data that can confirm or refute the inference. The transaction data clearly refute the inference.

983.4 As noted above, Mr Latif does not say that any transfer in was duplicated.

984. In short, therefore, the challenge to Mrs Van Den Bogerd's evidence did not undermine the account she gives, and it did not provide any support for Mr Latif's case on the failed transfer.

Conclusion

985. On the evidence available at this trial, it is possible that Mr Latif's branch suffered a loss of £2,000 in or around July 2015 (although there is no record of any shortfall in that amount in the logs), but there is no convincing evidence to indicate that a bug in Horizon played a role in causing any such loss. There are various possible explanations for how

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such a loss may have arisen. Merely by way of illustration, the current evidence would be consistent with the following series of events:

985.1 In or around July 2015, Mr Latif identified that £2,000 was missing from the branch.

985.2 Mr Latif asked his staff about the loss and was told that it was related to problems with a cash transfer between stock units (these being a common occurrence in his branch). He had not himself personally carried out the transfer in question.[1182]

985.3 Mr Latif therefore investigated the loss through looking at CCTV. He could not identify anything untoward, and it is for this reason that he suspects a bug in Horizon.

986. This seems a likely explanation. But the evidence available at this trial is limited. It would, in Post Office's submission, be unfair to both Mr Latif and Post Office to seek to determine definitively what caused any £2,000 loss that he may have sustained in or around July 2015.

987. Post Office invites the Court to conclude only that it cannot be satisfied, on the present evidence, that any £2,000 loss in Mr Latif's branch in or around July 2015 was caused by a bug in Horizon as he alleges, although that issue has not been fully explored.

The problem with Camelot TAs in January 2018

988. This point can be taken more shortly. Mr Latif believes that some difficulties he encountered with TAs in January 2018 were the result of a bug in Horizon. On a fuller analysis, it can be seen that incorrect TAs were issued, but that was an accounting error (with subsequent correction) by Post Office, not a technical error with Horizon. Mr Latif accepted most of the explanation of the problem given by Mrs Van Den Bogerd at paras 98-102 of her second witness statement.[1183] The remaining issue seemed to revolve

[1182] The transaction data for June to August 2015 show relatively few transaction carried out by Mr Latif personally and quite a few days where Mr Latif did not perform any transactions at all. He confirmed in oral evidence that there were days when he did not work in the branch: {Day2/7:5} to {Day2/7:24 (although it is unclear how common he says this was – he refers to be it being "very common" but also says it happened only "occasionally").

[1183] {E2/5/24}.

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around a misunderstanding as to what Mrs Van Den Bogerd's evidence implied in terms of the branch's scratch card stock position and, relatedly, why the stock TC issued to Mr Latif's branch on 24 January 2018 was for 100 scratch cards (and so carried a value of £1,000) rather than for 50 scratch cards (with a value of £500).

989. Mr Latif agreed with almost all of Ms Van Den Bogerd's evidence as to (1) the role played by TAs in scratch card sales and (2) the specific problem encountered in his branch in January 2018. In particular, Mr Latif agreed the following elements of her evidence:

989.1 The explanation of how scratch cards are activated in branch and enter into the accounts through TAs (see paras 25 and 26.6-26.7 of Mrs Van Den Bogerd's second witness statement at {E2/5/8}).[1184]

989.2 The branch received and processed two TAs on 18 January 2018, and the two TAs were mistakenly negative in value, reducing the branch's scratch card stock level (see para 98 {E2/5/24}).[1185] Mr Latif specifically confirmed that the TAs were negative.[1186]

989.3 The effect of this was to cause the branch to have a negative level of scratch cards (see para 99 {E2/5/24}).[1187]

989.4 The branch attempted a balance, but this was prevented due to the negative stock of scratch cards. The branch carried out a sales reversal to bring the stock level to zero, which automatically decreased the Horizon cash figure, leading to a cash surplus (see para 99 {E2/5/24}).[1188] Mr Latif specifically confirmed the effect of the reversal.[1189]

[1184] {Day2/78:25} to {Day2/80:6}.

[1185] {Day2/80:7} to {Day2/80:24}.

[1186] {Day2/82:8}.

[1187] {Day2/81:15}.

[1188] {Day2/84:17}.

[1189] {Day2/87:23}.

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989.5 The branch received a TC on 24 January 2018 which cancelled out the incorrect TAs (recording a positive increase in scratch card stock). Due to the sales reversal that had been carried out in the meantime, this would have left a shortfall of scratch card stock. This is because the Horizon stock figure had been adjusted up twice – once by the reversal and then again by the transaction correction (see para 100 {E2/5/24}).[1190] It should be noted that, although Mr Latif agreed with para 100 when specifically asked about it, other replies that he gave suggested that he perhaps did not agree all of it.

989.6 Following the acceptance of the TCs, the branch would have been carrying a scratch card shortfall but also a corresponding cash surplus. A manual stock adjustment would have resolved this, effectively reversing the earlier sales reversal (see para 101 {E2/5/24}).[1191] Either way, there would have been no overall branch shortfall.

990. This account is supported by the transaction and event data, which show the following:

990.1 The two TAs received and processed on 18 January 2018 are at rows 12983 and 12984 of the transaction data {F/1761.1}. They each have product code 35341 (column J), which is the product code for £10 scratch cards.[1192] Each of the two TAs is for 25 scratch cards (column K). The effect of each on branch derived stock levels is negative.[1193]

990.2 The fact that the stock unit OOH then had a negative stock level is shown by the failed balance of that stock unit on 18 January 2018 and timed at 09:22: see row 6728 on the events log {F/1761.2}, stating "*Balance Check of SU OOH failed. Negative Stock exists*".

[1190] {Day2/86:10}.

[1191] {Day2/86:20}.

[1192] See {F/1292.2/4} (8th row down).

[1193] Positive entries in column K indicate a **decrease** in stock from the branch's perspective. Contrast the other TAs in January 2018, each of which carries a negative sign (indicating an increase in stock from the branch's perspective).

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990.3 The sales reversal for 50 £10 scratch cards is at row 13357 of the transaction data {F/1761.1}, timed at 13:52 on 18 January 2018.[1194]

990.4 The TC sent out on 24 January 2018 is shown at row 115 of {F/1833.1}, where the content reads as follows:

> *THE LAUNCH OF In Pounds10 SCRATCHCARD GAME 1100 In Pounds4M BLACK CREATED INCORRECT TA'S FOR DATES 12.01.2018 TO 16.01.2018 INCLUSIVE. PLEASE ACCEPT THIS 100 STOCK CREDIT TC INTO THE SCRATCHCARD STOCK UNIT TO INCREASE In Pounds10 STOCK. PLEASE ADJUST In Pounds10 STOCK TO THE CORRECT LEVEL AND REMOVE ANY RELATED CASH ENTRY FROM EMERGENCY SUSPENSE TO RESOLVE THIS ISSUE. ANY FURTHER ASSISTANCE PLEASE CALL NBSC ON 0845 6011022*

990.5 The effect of the TC is shown in the transaction data as increasing the stock level of £10 scratch cards by 100 (column K)[1195]: see {F/1761.1} at row 18370 (Christine Barnett accepting the TC at 09:01 on 25 January 2018).

991. Mr Green QC cross-examined Mrs Van Den Bogerd on the mistaken hypothesis that each TA should have both a negative and a positive entry. The relevant questions and answers are at {Day6/38:16} to {Day6/39:13}, ending with "*So you get a negative entry and then a corresponding positive one*". On this mistaken hypothesis, it was suggested that one of the entries for TAs on 18 January 2018 should have been negative:

> *Q: ...Let's look at row 12983. We've got two positive 25s there, do you see that?*
>
> *A: Yes.*
>
> *Q: And if one of the 25s should have been minus 25 he is going to be actually 50 short, isn't he? Because instead of recording the amount he actually should have and cancelling out, he is going to end up with a record which is 50 rather than zero and therefore he is going to be 50 short, do you agree?*[1196]

992. The basic factual premise of this line of cross-examination was wrong. The earlier entries in the January 2018 transaction data for £10 scratch cards in fact showed two separate things. First, there was a scratch card TA, the effect of which was to increase the stock of £10 scratch cards without making any change to the Horizon cash figure

[1194] It is also shown on the events log as "REVERSAL" on stock unit OOH at row 6875 {F/1761.2}.

[1195] As noted above, the entry on the spreadsheet has a negative sign, corresponding to an increase in stock from the branch's perspective.

[1196] {Day6/41:5} to {Day6/41:13}.

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(because a TA effectively rems in stock). Second, there is a sale of the same number of scratch cards later in the same day, which shows in the transaction data as a reduction in the Horizon stock level, accompanied by a corresponding increase in the Horizon cash position.[1197]

993. This can be seen from the transaction data {F/1761.1}, as follows:

The TA on 4 January 2018

993.1 On 4 January 2018, timed at 06:55, a TA for 20 scratch cards was processed, increasing the scratch card stock by 20: see row 2237. The TA does not carry a cash value: see column L.

993.2 On the same day, but timed at 08:54, the branch sold 20 scratch cards, reducing the stock of scratch cards by 20: see row 2309. As a sale, and unlike the TA, this had a cash value: see column L (£200). And it resulted in an increase in the Horizon cash figure: see row 2310 (where the scratch card sale's value is included in the cash figure[1198] of £810, along with three other transactions in the same basket – see rows 2306-2308).

The TA on 9 January 2018

993.3 On 9 January 2018, timed at 06:11, a TA for 25 scratch cards was processed, increasing the scratch card stock by 25: see row 6046.

993.4 On the same day, but timed at 09:15, the branch sold 25 scratch cards, reducing the stock of scratch cards by 25: see row 6213. As a sale, and unlike the TA, this had a cash value: see column L (£250). And it resulted in an increase in the Horizon cash figure: see row 6214 (where the scratch card sale's value is included in the cash figure of £430, along with another transaction performed in the same basket, namely that in row 6212).

The TA on 15 January 2018

[1197] Mrs Van Den Bogerd explains this at {Day6/44:12} to {Day6/44:20}.

[1198] Column J shows the product ID 1, which is cash {F/1292.2/1} (top entry).

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993.5 On 15 January 2018, timed at 06:12, a TA for 25 scratch cards was processed, increasing the scratch card stock by 25: see row 10202.

993.6 On the same day, but timed at 09:12, the branch sold 25 scratch cards, reducing the stock of scratch cards by 25: see row 10331. As a sale, and unlike the TA, this had a cash value: see column L (£250). And it resulted in an increase in the Horizon cash figure: see row 10332 (where the scratch card sale's value is included in the cash figure of £500, along with one other transaction performed in the same basket, namely that in row 10330).

994. In short, on three occasions in early January 2018, the branch accepted TAs early in the morning and then, somewhat later in the same day, performed a sale of the whole packet of scratch cards, making them all available for sale to the public without needing to enter individual sales on Horizon. Mrs Van Den Bogerd explained that branches often account for scratch cards in this way (effectively, a bulk sale to the branch's retail operation) and that this was the pattern seen in Mr Latif's branch:

> *A:…Mr Latif's practice was to – as soon as he activated the scratchcards in his post office he would then buy them – sell them on to his retail. So what he would do straight away is he would process a sale for £500. That's what he would do and that was his practice and that's quite – a lot of people do that because it is easier to keep the cash separate.*
>
> *That would show as a sale on the information…*[1199]

995. This point was not challenged. Cs nonetheless continued the cross-examination on the false hypothesis set out above, contending that the TC for 100 units of £10 scratch cards was wrong. Mrs Van Den Bogerd acknowledged that the situation was complex, but tried to explain it in stages in her oral evidence.[1200]

996. It is clear from a Helpline call from Mr Latif's branch on 25 January 2018 that he or his staff were concerned that the TC was for 100, rather than 50, scratch cards. The content of the call is recorded as follows: "*TC received for launch of £10 x 100 scratch card games…only received 50…if we accept TC, will cause a discrepancy?*": see {F/1834.1} at row 171.

[1199] {Day6/44:13} to {Day6/44:20}.

[1200] {Day6/46:11}to {Day6/47:18}.

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997. Nonetheless, Mr Latif confirmed that the TC was accepted and would, for the reason given by Mrs Van Den Bogerd, have corrected the position,[1201] but for the sales reversal that had been carried out in the meantime. That sales reversal could itself have been (in effect) reversed by carrying out a manual stock adjustment, leaving the branch in balance again: see para. 989.6 above.

998. Mr Latif's written evidence on the TC was difficult to follow: see para 11 {E1/1/2} (the natural reading of which is that the TC did not work because it did not increase the physical stock of scratch cards, which is nonsensical).[1202] In response to cross-examination, Mr Latif put forward a more intelligible case, insisting that the TC had not adjusted the Horizon stock position for scratch cards, suggesting that this remained negative at the time of the transfer audit in September 2018:

A: Can I just confirm, there was an audit done in September of this year, an audit by a Post Office trained auditor, and my stockholding was still showing negative. And a Jane Lawrence is the auditor and she has – still could not resolve this matter, so the problem hasn't gone away, the problem is still there. And there have been a number of calls to the Helpline to resolve that negative stock and it hasn't worked. They haven't come back with a response.[1203]

999. There are several problems with that evidence:

999.1 The Horizon stock figure for scratch cards did not remain negative: it was increased by 100 by the TC on 24 January 2018. Mr Latif appeared at one point to accept this (although his evidence was not very clear): see para 345.5 above. In any invent, the increase in the Horizon stock level is clear from the transaction data: see para 990.5 above.

999.2 The Horizon stock figure could not have remained negative – the branch would otherwise have been unable to balance[1204] and so unable to rollover at the end of the trading periods between January and September 2018.

[1201] The mathematics is simple. The mistaken TA had reduced the stock level by 50; it had been intended to increase the stock level by 50. The difference between a reduction of 50 and an increase of 50 is 100. The value of 100 units of £10 scratch cards is £1,000.

[1202] This point was explored unsuccessfully in cross-examination. Counsel and Mr Latif were perhaps at cross-purposes as to what each of them meant by "worked": see {Day2/76:20} to {Day2/78:10}.

[1203] {Day2/87:5} to {Day2/87:13}. See also {Day2/88:12} to {Day2/88:20}.

[1204] Mr Latif confirmed this (by agreeing Mrs Van Den Bogerd's evidence): see para 345.4 above.

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999.3 The actual stock figure could of course not be negative. That is nonsensical.

999.4 The transfer audit record is at {F/1829.2}. It does not show any stock discrepancies.

999.5 There is no record of any follow-up calls after 25 January 2018: see the call log at {F/1834.1}.

1000. As with the allegedly failed £2,000 transfer, there were various elements of Mr Latif's account that had been omitted from his witness statement:

1000.1 Mr Latif failed to mention that (he says) the transfer audit confirmed the existence of a negative stock level.[1205] He justified not mentioning this in his statement on the basis that Post Office should have known about it anyway. That is an unsatisfactory explanation.

1000.2 Mr Latif failed to refer expressly to receiving a notice through memo view (although he did refer to a "notice" in para 10 {E1/1/2}). The memo views for the relevant period were disclosed in response to Mr Latif's reference to them in cross-examination.[1206] They provide no support for Mr Latif's claim that he was sent a notice about duplicate TAs.

1001. Ultimately, Mr Latif's account was confused. Despite agreeing Mrs Van Den Bogerd's evidence on the problem with the TAs, he nonetheless suggested in oral evidence that the (real) problem was that there had been a duplicate TA.[1207] That is plainly wrong:

1001.1 As already noted, it is inconsistent with those parts of Mrs Van Den Bogerd's evidence that he accepted to be correct. Her evidence explains the problem

[1205] {Day2/89:2} to {Day2/89:13}.

[1206] {F/1727.1}, {F/1727.2}, {F/1749.1}, {F/1749.2}, {F/1749.3}, {F/1749.4}, {F/1749.5}, {F/1749.6}, {F/1749.7}, {F/1749.8}, {F/1749.9}, {F/1749.10}, {F/1749.11}, {F/1749.12}, {F/1750.1}, {F/1750.2}, {F/1750.3}, {F/1752.1}, {F/1752.2}, {F/1752.3}, {F/1752.4}, {F/1752.5}, {F/1752.6}, {F/1753.1}, {F/1753.2}, {F/1753.3}, {F/1753.4}, {F/1753.5}, {F/1753.6}, {F/1754.1}, {F/1754.2}, {F/1754.3}, {F/1758.1}, {F/1758.2}, {F/1759.1}, {F/1759.2}, {F/1759.3} and {F/1759.4}.

[1207] {Day2/89:24} to {Day2/90:7}. See also {Day2/69:16} to {Day2/70:10}. This reflects para 9 of the witness statement {E1/1/2}.

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(throughout its stages) and accounts for all the relevant movements in stock and cash. There is no room for duplication in that account: the numbers all line up.

1001.2 It is inconsistent with the call made to the Helpline on 25 January 2018. The complaint in that call was the branch had activated only 50 (rather than 100) scratch cards, not that it had activated only 25 and so been sent two TAs for 25 in error. The caller knew that 50 scratch cards had been activated in the branch and that the TAs were correct in that respect.

1001.3 If the TAs on 18 January 2018 had been wrongly duplicated, the inescapable inference is that this would have been raised with Post Office at the time. It would have been a simple point to raise and require to be investigated.

1001.4 The basis for the duplication argument that was advanced by Cs in cross-examination of Mrs Van Den Bogerd was demonstrably mistaken. It was based on a misunderstanding as to how TAs work and a misunderstanding of the transaction data for Mr Latif's branch.

Conclusion

1002. Mr Latif's complaint in relation to the TAs may ultimately prove to be a good example of a mistake that creates confusion and mis-trust of Horizon but which ultimately does not disclose (or even relate to) any bug in the system.

1003. Post Office invites the Court to conclude that, on the present evidence, it cannot be concluded that there was some bug or error in Horizon that caused a duplication of TAs in 2018 in his branch and resulted in a lasting discrepancy, but that issue has not been fully explored.

Mr Tank

1004. The relevant evidence is as follows:

1004.1 Mr Tank's first witness statement dated 28 September 2018 {E1/6}.

1004.2 Mr Tank's supplemental witness statement dated 27 February 2019 {E1/11}.

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1004.3 Mrs Van Den Bogerd's second witness statement dated 16 November 2018 paras 75-84 {E2/5/20} to {E2/5/22}.

1004.4 Transcript: Mr Tank {Day2/99:15} to {Day2/99:15}; {Day2/161:23} to {Day/61:23); Mrs Van Den Bogerd {Day6/48:19} to {Day6/65:5}.

1005. Like Mr Latif's evidence, Mr Tank's evidence is brief, vague and not properly detailed.

1006. Mr Tank raises three issues, each of which he says was caused by a bug in Horizon:

1006.1 A shortfall of £600 said to have been caused by an outage.

1006.2 A shortfall of £195.04 also said to have been caused by an outage.

1006.3 An issue with printing labels.

These will be dealt with in turn.

The shortfall of £600

1007. In Mr Tank's first witness statement, he says that a power failure "*definitely occurred in or around 2010-2011*"[1208] (emphasis added) and that this resulted in a loss to the branch of £600. Mrs Van Den Bogerd pointed out that she could find no record of Mr Tank contacting NBSC about any such shortfall around that time, but that there was a record of contact being made about a shortfall of £195.04.[1209]

1008. Having seen Mrs Van Den Bogerd's second statement, Mr Tank investigated a forum group that he had occasionally posted to[1210] and discovered various things, including that he had posted about a £600 loss in September 2014. Accordingly he concluded that the events recounted in his first witness statement concerning this loss happened in September 2014 and not 2010-2011 as he had originally said.[1211]

1009. Cs apparently invite the Court to accept that his recollection of events is correct and that the only explanation for the matters he describes is that there was a bug in Horizon.

[1208] {E1/6/2} para 6.

[1209] {E2/5/20] para 77; call log {F/1286.1] remedy tab, row 120}.

[1210] {F/1257.1}.

[1211] {E/11/13} para 11.

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However, his own evidence is vague and imprecise and was evidently not prepared with any great care.

1010. Mr Tank's evidence is that he had not initially looked at the forum posts because he did not think he would be able to access the forum group and "*it did not seem relevant*".[1212] Given that he looked at the forum every day and posted to it at least some of the time when he had a problem,[1213] that is a surprising approach to have adopted. When pressed as to why he had not looked for the forum posts earlier, he gave the impression that the evidence he had given had been casually prepared:

> *Q. So you were well aware that this was something which was relevant to the nature of issues being faced by postmasters?*
>
> *A. Yes.*
>
> *Q. And when you prepared your first witness statement you obviously knew this resource existed, didn't you?*
>
> *A. I did.*
>
> *Q. And it is plain that it is relevant to your evidence, isn't it?*
>
> *A. It is.*
>
> *Q. Why didn't you think to look for this material when you were preparing your first witness statement?*
>
> *A. Because my first witness statement was I think short, brief, and it was just my way of -- I didn't really fully research the whole background regarding it, I just put my statement in.*
>
> *Q. Can I just press you a little bit on that. You understand that what's being said in this case, by you amongst many others, is that you carried out certain very specific actions which you did correctly and that the Post Office is at fault, or the Horizon system is at fault?*
>
> *A. Yes.*
>
> *Q. So it is important, isn't it, to have been precise in the evidence that you give?*
>
> *A. Yes.*
>
> *Q. And I'm just wondering why you didn't make some effort to find what was plainly a relevant document in putting forward what you agree to be the need for precise evidence?*

[1212] {E1/11/2} para 6.

[1213] {Day2/103:21} to {Day2/104:6}.

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A. Because I didn't -- I didn't feel that my information in my initial witness statement was going to be taken any further, so I -- it wasn't as important as it now has become.[1214]

Q. How did you reach the conclusion that the forum posts would not be relevant?

A. I didn't reach that conclusion.

Q. Well, you say in paragraph 6, Mr Tank: "... I did not think I would be able to access the forum group and it did not seem relevant." I'm just wondering how you reached that conclusion?

A. Because when I made my first initial witness statement I wasn't aware of £195.04 loss, that information only came to light after reading Ms van den Bogerd's statement.

Q. But you were putting forward evidence, Mr Tank, about various matters including a number of matters that you now say you got the date wrong in relation to?

A. I wasn't aware that my first initial witness statement was evidence. I thought it was just a witness statement. I thought ... yes, that's what I thought. I didn't think it was -- Q. Is your evidence that you didn't take care over the preparation of your first witness statement?

A. I did.

Q. But not much?

A. It was very general. My original witness statement -- I was just trying to get the point across -- because I was referring back to my memory as well, I couldn't realise the importance of what was important as -- it is only subsequently after finding the information and having -- being able to go back into -- it was only a few weeks ago that I managed to get back into the forum. I left my post office in 2016, so I stopped visiting the forum.[1215]

1011. The fact that Mr Tank could mis-remember the date of an event by so many years itself calls into question the accuracy of his evidence.

1012. Mr Tank's inaccuracies do not end there. He was initially certain that other than the date of the £600 shortfall, his evidence relating to that loss as set out in his first witness statement was accurate[1216] but he later accepted that – while maintaining that there had

[1214] {Day2/104:7} to {Day2/105:15}.

[1215] {Day2/106:6} to {Day2/107:11}.

[1216] {Day2/108:20} to {Day2/109:19}.

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been two incidents of outage – it was possible that the evidence given in his first witness statement is relevant to the £195.04 shortfall rather than the £600 one.[1217]

1013. Mr Tank's evidence on this was confusing. If (contrary to Post Office's submission) any findings are to be made in this regard, it is submitted that on the information available the likelihood is that his evidence in his first witness statement does relate to the £195.04 shortfall and that the £600 shortfall had nothing to do with any outage:

1013.1 There is no documentary evidence that Mr Tank called the NSBC Helpline in September 2014 and referred to any power outage (although it is right to point out the Mr Tank's evidence is that he made a call to the Post Office Banking Team).[1218]

1013.2 In his forum post relating to the £600 shortfall,[1219] which was contemporaneous, no mention is made of any power outage: Mr Tank's suggestion that he "*just omitted it*"[1220] seems unlikely.

1013.3 In Mr Tank's Amended SOI[1221] he refers (on p.4) to a shortfall of £600 which he says was caused by a power failure and a separate incident (on p.5) "*in August 2014*" when there was a shortfall of £660. In his second witness statement these events appear to be elided since the letter he refers to in relation to the £600 loss[1222] is about a shortfall of £660[1223].

1013.4 There is no evidence surrounding the £600 transaction in September 2014 of the sort Post Office would expect to see which indicates there was an outage[1224] – whereas such evidence does exist in relation to the £195.04 shortfall (see below).

[1217] {Day2/118:24} to {Day2/119:9}.

[1218] {E1/6/2} para 10.

[1219] {F/1257.1/6}.

[1220] {Day2/112:22} to {Day2/112:22}.

[1221] {F/1717.1}.

[1222] {E1/11/3} para 14.

[1223] {F/1262.1}.

[1224] {F/1257.4} row 11676.

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1013.5 In short, Mr Tank's evidence of the outage makes sense if it is evidence in relation to £195.04 but makes little or no sense if it is evidence which relates to the £600 shortfall in September 2014.

1014. Turning to the £600 shortfall itself, the shortfall relates to a transaction concerning a Post Office Card Account ("**POCA**"). The POCA had a daily cash withdrawal limit of £600 and had limited services associated with it: for example, if a customer wants to transfer cash from their POCA to another bank, two transactions are required: the withdrawal of cash from the POCA and the deposit of that cash in the other bank.[1225]

1015. The evidence shows that on 16 September 2014 there was a withdrawal of £600 from a POCA and immediately thereafter there was a cash deposit of the same amount in a Lloyds Account.[1226]

1016. Mr Tank says that £600 was lost due to a power outage. As set out above, there is no evidence that he made any such claim at the time and there is no evidence of any such outage.

1017. There is a possibility that a user error was made and that cash was credited to the Lloyds account at the same time as it was handed over to the customer. Mr Tank accepted that that was possible but said that he had checked the CCTV evidence.[1227] This suggestion was made for the first time during cross examination. It was not mentioned in Mr Tank's witness evidence or even in his Amended Schedule of Information.

1018. Ultimately, even Mr Tank accepted that the situation was unsatisfactory:

> *Q. Well, I understand that it is a frustrating loss, but there's a perfectly simple explanation for it which is an understandable user error?*
> *A. I agree.*
> *Q. And you nevertheless come into court and say on oath that you are so confident that you did nothing wrong, that that didn't happen, because of evidence you have seen and we haven't.*
> *A. Okay. Fair point.*
> *Q. In a situation where you couldn't, until reminded by Post Office, recall the date of the transaction to the tune of four years?*

[1225] {Day2/120:14} to {Day2/121:18}.

[1226] {F/1257.4} rows 11676-11677.

[1227] {Day2/122:20} to {Day2/123:13}.

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A. But you have to bear in mind I paid that £600 back. I beared that loss. I never thought that I would actually get it back. My relationship with Post Office ended a couple of years ago, so that money was written off. I wrote that money off myself. I paid that back.
Q. I understand that. But if it was, as I'm suggesting to you, or if it's possible that it was a user error then you would have to pay it back, wouldn't you?
A. Yes.[1228]

1019. Part of Mr Tank's complaint was that in order to investigate this discrepancy, he had to print out a full transaction report which was around 15-18 ft long.[1229] He accepted that in fact he could have filtered the information in various ways and that he did not have to print it at all:

Q. ... But you didn't have to print that, did you, you could have looked at it on the screen?
A. Yes, but the length of the report and the screen would mean you would probably have to page down over 100 times.
Q. But you could have filtered it in various ways, couldn't you?
A. I could have filtered it, yes.
Q. The point is that the impression that your evidence gives is that you had to print out this comically long document and go through it, but you didn't have to do that, did you?
A. No.[1230]

The shortfall of £195.04

1020. As noted above, this issue was not mentioned by Mr Tank in his first witness statement but is dealt with in his supplemental witness statement, he having been reminded of the matter by Mrs Van Den Bogerd.

1021. Mr Tank could not recall the details of what had happened. He accepted that it was possible that what had happened was that the transaction (which was a POCA transaction) was in the stack, money had been taken from the POCA and before the stack was cleared there was an outage.[1231] Looking at the event log for 12 December 2011, there is a message "Session 531865 could not recover 4502497" at the relevant time[1232] and no activity for 20 minutes or so thereafter: this is the sort of evidence that Post Office

[1228] {Day2/124:10} to {Day2/125:5}.

[1229] {E1/6/2} para 9.

[1230] {Day2/111:7} to {Day2/111:20}.

[1231] {Day2/131:23} to {Day2/132:4}.

[1232] {F/897/1} Sheet 1 tab/ row 328.

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would expect to see when there is an outage.[1233]

1022. This ties in with the call which Mr Tank made to the NBSC on 13 December 2011.[1234]

1023. Mr Tank's evidence in his forum post was that three receipts were produced and that because they stated that cash was due to the customer, the branch paid out.[1235] There is confusion as to whether his evidence in his first witness statement about what happened to the receipts related to the £600 shortfall, the £195.04 shortfall or both, but Mr Tank accepted in cross examination that all of the receipts relating to the transaction causing the £195.04 shortfall had been handed over to the customer, and that this was not the proper procedure.[1236] He also accepted that the procedure to be followed is properly described in Mrs Van Den Bogerd's statement at paragraph 53.[1237]

1024. In passing, it is noted that Mr Tank said that he had not previously seen the description of the procedure to follow which he was taken to in cross examination.[1238] it does seem that that version post-dated the relevant events: however, the Court will recall that the version in place at the time of the incident in question was later handed up[1239] and this was is in substantially the same terms. Mr Tank accepted that he would have been taken through the relevant recovery screens on Horizon.[1240]

1025. Following Mr Tank's call to the NBSC a Peak was raised[1241] which records what had happened. Note the second entry in this Peak dated 13 December 2011: this states that the Peak concerned a *Failed Recoveries Report Client: CAPO produced on 12/12/2011*". The "Call Logger" entry in the top right hand corner of the Peak is "*Raj Fains – MSU – Indt Mgt*". This shows that the call originated from the MSU, the Fujitsu department which monitors failed recovery situations and reports them to the SSC so that

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[1233] {Day2/133:14} to {Day2/133:19}.

[1234] {F/1286.1} row 120.

[1235] {F/1257.1.1}.

[1236] {Day2/140:1} to {Day2/140:13}.

[1237] {Day2/133:24} to {Day2/134:17}; Mrs Van Den Bogerd's statement para 53 {E2/5/16}.

[1238] {F/1365}.

[1239] {Day5/2:1} to {Day5/2:23}.

[1240] {Day2/139:8} to {Day2/139:12}.

[1241] {F/870}.

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they can be investigated.[1242]

1026. This investigation resulted in a Transaction Correction being raised.[1243] Mr Tank accepted that he had been refunded the relevant sum. He also accepted that he had failed to mention this in his witness statement.[1244]

1027. Mr Tank was doubtless caused some inconvenience by this matter and perhaps also some disquiet. In an ideal world perhaps there would be no outages and perhaps a Helpdesk operative could have been a little more emollient. But problems do happen in the real world and the only questions for present purposes are whether the Horizon system was designed to deal with this failed recovery in the way that it did and whether Horizon handled this particular issue properly. The answer to both questions is yes. It is obvious that a recovery process is required, and the sequence of events does not suggest a bug in Horizon. The evidence shows that notwithstanding a failure to follow proper procedure, Mr Tank was properly compensated. There should be no complaint.

Issues with printing labels

1028. Mr Tank's final complaint is extremely vague. In his first witness statement he said that "*in or around 2007, [his branch] had recurring issue*" with labels[1245] whereby in certain circumstances Horizon jumped to the end of a transaction and could not print a label. Mrs Van Den Bogerd said that given the passage of time there was no record she could find of complaints being made by Mr Tank in 2007,[1246] although she had seen evidence of the issue being raised by Mr Tank in 2014 and 2015. Mr Tank in his supplemental witness statement said that he now recalled that the issue "*began in or around 2011*".[1247] His explanation for this further significant inaccuracy was that since preparing his first witness statement he had reviewed *"Horizon generated receipts, print-outs, with hand-*

[1242] Mr Coyne agreed with this during his cross-examination see {Day16/104:4} to {Day16/104:16}. Cf an example of a Peak which shows that the Peak originated with a Customer Call e.g. {F/1045}.

[1243] {F/871.1}.

[1244] {Day2/142:10} to [Day2/142:14}.

[1245] {E1/6/3} para 15.

[1246] {D2/5/21} para 79.

[1247] {E1/11/3} para 15.

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written dates and reference numbers on them".[1248] Such material has been requested by Post Office but none of it has been disclosed: this is considered in more detail below in the section on Cs' attitude to disclosure.

1029. Mrs Van Den Bogerd's evidence, on which she was not challenged, is that it is possible to process a completely separate transaction for spoiled labels and that this option is also available if the printer does not produce a label at all.[1249] Mr Tank pointed out that the guidance[1250] appears to require a label to be on hand[1251] although he accepted that he could follow the procedure described even if the printer had not produced a label at all – and said that he also thought that this would be contrary to other unspecified instructions.[1252]

1030. Overall, it is submitted that Mr Tank's evidence on the label issue is so vague that no proper findings could be made in relation to it.

Conclusion on Mr Tank's Evidence

1031. Mr Tank's evidence is unsatisfactory in many respects. Notwithstanding his supplementary witness statement purporting to provide further detail, his evidence remains vague and unclear. The fact that he makes extensive revisions to dates in his supplementary statement is itself reason to approach his evidence with caution.

1032. There is evidence of an outage in December 2011 but Horizon dealt with this satisfactorily and Mr Tank received an appropriate TC. There is no evidence of any other relevant outage and no evidence of any bug which led to the loss of £600 in September 2014. The evidence on labels is so vague as to attract no weight.

1033. There is a great deal more to explore with Mr Tank in due course if his case is one which comes to full trial. Mr Tank (like Cs' other witnesses) confined himself to a small sub-

[1248] {Day2/146:16} to {Day2/146:17}.

[1249] {E2/5/21} para 82.

[1250] {F/1848.6}.

[1251] {Day2/147:14} to {Day2/147:19}.

[1252] {Day2/147:22} to {Day2/148:2}.

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set of his complaints, presumably because it was felt that this threw light on the Horizon issues – and Post Office's evidence was similarly confined. There are many other aspects of his claim that will need to be explored in due course.

1033.1 Post Office invites the Court to conclude in relation to the alleged £600 shortfall that:

(a) It cannot be satisfied, on the present evidence, that there is convincing evidence that there was a £600 loss in Mr Tank's branch.

(b) Alternatively, if such a shortfall did exist, it cannot be satisfied, on the present evidence that it was caused by a bug in Horizon as Mr Tank alleges.

1033.2 Post Office invites the Court to conclude in relation to the alleged £195.04 shortfall that:

(a) The recovery process, and the supporting practices around the recovery process, meant that Mr Tank was not left with a lasting loss as a TC was issued to him.

(b) The Court cannot be satisfied, on the present evidence, that the shortfall of £195.04 was caused by a bug in Horizon as Mr Tank alleges.

Messrs Anup and Aakash Patny

1034. Both Messrs Patny give evidence relating to the same events and for convenience they will be dealt with together. Father (Mr Anup Patny) and son (Mr Aakash Patny) will be referred to respectively as "**Mr Patny Snr**" and "**Mr Patny Jnr**" and together as "**the Patnys**".

1035. The relevant evidence is as follows:

1035.1 Mr Patny Snr's witness statement dated 28 September 2018 {E1/3}.

1035.2 Mr Patny Jnr's amended witness statement dated 27 February 2019 {E1/2}.

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1035.3 Mrs Van Den Bogerd's second witness statement dated 16 November 2018 paras 59-74 {E2/5/17} to {E2/5/20}.

1035.4 Transcript: Mr Patny Snr: {Day2/162:22} to {Day2/181:13}; Mr Patny Jnr: {Day3/8:21} to {Day3/66.10}; Mrs Van Den Bogerd {Day6/65:6} to {Day6/77:18}.

1036. Between them, the Patnys raise the following issues:

1036.1 an issue relating to the monthly balance on 11 May 2016;

1036.2 a problem with the stamp declaration on or about 19 May 2016; and

1036.3 a MoneyGram issue on or about 23 February 2016

These will be dealt with in turn.

Monthly balance on 11 May 2016

1037. Mr Patny Snr's evidence is that a result of a power outage on 9 May 2016, his branch suffered a shortfall of over £17,000.[1253]

1038. There is no dispute that an outage occurred on 9 May 2016: it is clear from the events spreadsheet[1254] which records that there was *"No recovery required"*. Further, all that was happening at the branch when the outage took place was that some postage labels were being printed.[1255] Mr Patny Snr accepted that so far as this data was concerned, the worst case scenario was that labels might have been handed over and payment taken in cash (the PIN pad would not work if the Horizon terminal was not working) without the correct recovery process being followed, which would have resulted in a small surplus of cash.[1256] Mr Patny Jnr maintained that the £17,000 discrepancy might still have had something to do with the outage but was unable to suggest why.[1257]

[1253] {E1/3/2 para 9}; and {Day2/170:18} to {Day2/170:23}.

[1254] {F/1834.3} row 47.

[1255] See rows 42 – 45.

[1256] {Day2/169:12} to {Day2/169:20}.

[1257] {Day3/12:21} to {Day3/13:4}.

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1039. The events data[1258] shows that the cash declaration for 9 May 2016 was £48,021.94 with a discrepancy of -£1,138.21.[1259] It follows that the outage on 9 May 2016 did not cause a discrepancy of around £17,000.

1040. The discrepancy complained of first appears two days later, on 11 May 2016.[1260] Mr Patny Jnr (who actually carried out the declarations[1261]) called the Helpline and reported the issue.[1262] The description of the problem in the call log[1263] suggests that he reported that the branch had remmed in £16,000 of coins, although he denied that he would have said that. In any event, he was asked to make sure there was only once cash declaration and to ensure that the rem was scanned in correctly.[1264] Mr Patny Jnr's evidence was that the Helpline told him to make various adjustments[1265] and that this appeared to sort matters out. It is unclear what these steps might have been although it is clear that no further cash declaration was made that day – and Mr Patny Jnr could not recall if he had made any such cash declaration.[1266]

1041. The suggestion that Mr Patny Jnr was taken through steps which were not recorded on the Helpline log – and that the Helpline log was inaccurate as a result – is highly questionable. If (contrary to Post Office's submissions) findings are to be made on such matters, it is much more likely that Mr Patny Jnr did not recall these events accurately.

1042. Cash was remmed in at the branch on 11 May 2016 including £16,000 of £10 notes.[1267] Post Office's records indicate that no cash was remmed in on 12 May 2016.[1268] Mr Patny Snr accepted that that was the case – cash only came in on a Wednesday other than in

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[1258] {F/1507.1} row 13904 (remove filter).

[1259] {F/1507.1} row 13905.

[1260] {F/1507.1} row 14515 (remove filter).

[1261] {Day3/10:21} to {Day3/11:3}.

[1262] {F/1507.1} row 136.

[1263] {F/1507.1}Column N.

[1264] {F/1507.1}Column V.

[1265] {E1/2/2} para 10.

[1266] {Day3/17:13} to {Day3/17:15}.

[1267] {F/1834.2}.

[1268] {F/1438.1}.

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exceptional circumstances.[1269] It should be noted that the cash management report for the branch[1270] shows that the branch was reporting £16,070 worth of £10 notes on 10 May 2016, but only £22,130 worth of £10 notes on 11 May – notwithstanding the addition of £16,000 worth of £10 notes received in the 11 May remming. Then, on 12 May the figure goes up to £37,650 – an increase of over £15,000 even though no cash was remmed in on 12 May.

1043. The most natural explanation of this is that there had been an oversight in the counting of cash on 11 May and that this was sorted out by later cash declarations: it is to be noted that the cash declaration for 13 May 2016 shows a positive discrepancy of £17,964.41.[1271]

1044. Mr Patny Snr was unable to suggest any reason why this alternative analysis was wrong.[1272] Mr Patny Jnr accepted that this was a possibility,[1273] although he did not recall finding physical cash.[1274] He provided a good description of how keying errors could result in mistakes being made:

> *Q. When you say you re-enter them again, would that involve physically counting cash again –*
>
> *A. Sometimes.*
>
> *Q. -- or checking the piles of cash or whatever it is you're doing?*
>
> *A. Sometimes, but sometimes it could just genuinely be a case of, you know, as you're rushing through pressing tab keys -- you have to bear in mind we were serving customers whilst we were doing this as well. It was a fairly busy branch after closing times -- well, general post office closing times are half past five; because we were one of the very few in the city that were open after 5.30 so we would get customers coming from all around, other side of the city coming to us because they knew there was a post office open, so as you're rushing through sometimes you didn't tab correctly and you would end up instead of writing 20,000 £20 notes you could add the £10 notes of say 10,000 £10 notes into that as well so you could end up with 40,000 in £20 notes. Just a minor mistake can cause ...*[1275]

[1269] {Day2/174:8} to {Day2/175:4}.

[1270] {F/1514.1}.

[1271] {F/1507.1} row 15030.

[1272] {Day2/177:20} to {Day2/178:4}.

[1273] {Day3/22:23} to {Day3/23:3}.

[1274] {Day3/23:21} to {Day3/24:4}.

[1275] {Day3/27:1} to {Day3/27:20}.

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Stamps declaration on or about 19 May 2016

1045. The issue raised regarding the declaration of stamps is complicated. It is clear that there was a declaration for stamps on 18 May 2016 in the amount of £18,274.99[1276] and it is common ground that that figure is wrong. There are three possible explanations as to how that figure came to be declared:

1045.1 It was declared erroneously. Mr Patny Jnr accepted that this was entirely possible but considered that this did not explain how the issue returned.[1277]

1045.2 It was declared dishonestly, perhaps in an attempt to disguise a shortfall of cash. Mr Patny Jnr denied that this was the case and insisted that all the declarations he made were accurate to the best of his knowledge.[1278] Post Office put this to be Mr Patny Jnr after careful consideration. This point was to be raised in this closing as one of several possible explanations and so it was only fair that he had a chance to respond to such a serious allegation.

1045.3 There was a bug or bugs in Horizon.

1046. Either of the first two of these explanations is far more likely than the third (although Post Office does not believe that the Court, in this trial, needs to make any such finding for present purposes or a finding as to which of the first two may be correct). Post Office does not wholly reject the possibility of the third explanation but there is insufficient evidence before the Court at this stage that a bug existed and neither expert has given evidence of a bug which would explain the Patnys' alleged experience here.

1047. Moreover, there is a plausible explanation which makes sense both of Mr Patny Jnr's evidence and of the various declarations which were made.

1048. To navigate through this explanation, it is important to understand the difference between declared and derived stock positions:

[1276] {F/1507.1} row 16156.

[1277] {Day3/29:11} to {Day3/29:18}.

[1278] {Day3/46:24} to {Day3/47:6}.

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1048.1 The declared stock position is what the SPM has declared as cash or stock having physically counted i.e. – which if done correctly should match the real position in the branch;

1048.2 The derived stock position is what Horizon thinks should be in the branch.

1049. The second limb is where the Court has seen evidence of bugs, but that is not the Patnys' case in relation to stamps. The Patnys are alleging that there was a bug affecting the second limb – that Horizon generated an incorrect declaration of stamps.

1050. From 10 February 2016 to 11 May 2016, in the Patny's branch the stamps are declared once per week at around 6-7pm on a Wednesday evening in a range from £1,633.96 to £2,053.98.[1279] This happens like clockwork: there are no missing or extra declarations.

1051. On Wednesday 18 May 2016 at 18:42 the stamps are declared as £18,274.99:[1280] a substantial move up from the previous declaration on 11 May of £1,633.96.[1281] This results in the branch accounts showing at 18:55 a stamp surplus of £16,689.21.[1282]

1052. On 19 May 2016 Ms Debra Lambley of Post Office calls the branch about the high stamp declaration. What Mr Patny Jnr should have done was to re-declare the stamps at the proper value. Either through Ms Lambley giving the wrong advice or Mr Patny Jnr not understanding what he was supposed to do, at 13:10 that day the derived stamp figure is wrongly adjusted by £16,689.21, causing the derived cash figure automatically to go up by the same amount. [1283] It is noted that there is no other stock adjustment made to the derived stamp position in the previous two months according to the data, so this did not appear to be a regularly used mechanism in this branch, unlike making stamp declarations which were routine.

[1279] {F/1507.1} rows 161, 1080, 2051, 2980, 3951, 4987, 6064, 6885, 7943, 9065, 10254, 11376, 12702 and 14502.

[1280] {F/1507.1} cf. rows 14502 and 16156.

[1281] {F/1507.1} rows 14502 and 16156.

[1282] {F/1438.1} row 31271, note figures in the Session Data are inverted, so a minus sign means a surplus.

[1283] {F/1438.1} row 31466.

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1053. The stamps are then declared at 19:00 on 19 May, this time at £18,273.66, being slightly different to the declaration the previous day.[1284] The movement to the cash position due to the incorrect stamp adjustment above may be the cause of a cash shortfall of £16,715.45 declared at 19:03[1285], but it should be noted that stamp adjustment would have created a corresponding gain so, all other things being equal, the branch should still balance overall with offsetting stock gains and cash losses.

1054. The stamps are declared on 20 May at 07:07 for £18,273.66 at 12:44 for £18,273.66.[1286]

1055. A further adjustment to the derived stamp position happens on 23 May at 15:07 where the stamps stock is adjusted down by £16,692.92 and there is a corresponding increase in the derived cash position.[1287]

1056. The stamps are declared on 25 May at 18:56 for £18,243.10, being the third different figure to be declared during this period.[1288]

1057. Then, 19 minutes later, at 19:15 the stamps are declared at £1,551.25[1289] and the accounts record a minor surplus of stamps of £3.70.[1290]

1058. From that point to the end of July, the stamps are declared on 14 more occasions in a range from £1,479.07 to £1,904.07, save for one declaration of £0 which was corrected 27 minutes later to £1,536.29. [1291]

1059. Post Office's explanation of these events is that:

1059.1 Mr Patny Jnr knew how to make stamp declarations and had made them like clockwork every week without issue for 3 months before May 2016.

[1284] {F/1507.1} row 16407.

[1285] {F/1507.1} row 16414.

[1286] {F/1507.1} rows 16427 and 16498.

[1287] {F/1438.1} row 33311 and 33312.

[1288] {F/1507.1} row 18007.

[1289] {F/1507.1} row 18026.

[1290] {F/1438.1} row 34770.

[1291] {F/1507.1} rows 19634, 19642, 19947, 20235, 21450, 23161, 24807, 26349, 26865, 26878, 27936, 29476, 30833 and 32287.

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1059.2 On 18 May, he made either mistakenly or dishonestly made a stamp declaration of £18k that generated a surplus of stamps of nearly £17k that, whether by coincidence or design, broadly set off a cash loss in the branch at around the same time and of approximately the same amount.[1292]

1059.3 He was then contacted by Post Office and in ensuing attempts to correct the position the accounts got into a mess. Either through incorrect advice or his own mistake, he made stock adjustments to the derived stamp position rather than re-declaring the stamps at the correct level. In trying to resolve the problem or for some other purpose, he made four further stamp declarations at around £18k.

1059.4 The position was corrected by 25 May, when the stamps were declared at £1.5k being in the usual range for his branch.

1060. By comparison, the Patnys' explanation – that this is evidence of a bug in Horizon – is implausible.

1061. Mr Patny Jnr says that he did not make these declarations (which is to be distinguished from saying that he made declarations but the system recorded the wrong figures). On Mr Patny Jnr's case that means that the supposed bug or bugs would have to have:

1061.1 Not occurred before 18 May 2016;

1061.2 Then generated five stamp declarations at seemingly random times in a seven day period. There does not appear to have been any preceding trigger event in common across the declarations. The system has no reason to automatically generate a stamp declaration given that the necessary step before a declaration is a physical count of the stamps.

1061.3 Of the five declarations, three different numbers were declared. Computers do not just randomly generate numbers, they follow logical processes which would mean that for Mr Patny Jnr's explanation to be correct there were either different

[1292] The cash declarations and variances fluctuate significantly during this period but there are a number of cash discrepancies declared of just under £17k – see for example {F/1507.1} row 16411 (19 May), 17384 (23 May), and 18022 (25 May)

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bugs, or the same bug was triggered three times from the same input and twice by different inputs.

1061.4 Generated two stock adjustments on two different days for two different amounts. Again, there is no commonality of cause for this.

1061.5 Corrected themselves just in time for the next rollover on 1 June.[1293]; and

1061.6 Then never occurred again.

1062. Cs do not suggest that there was anyone else around this time suffering any similar issues (it would likely be in a Peak somewhere if the problem were widespread and doubtless they have looked for it).

1063. Accordingly, Post Office invites the Court to conclude that it cannot be satisfied, on the present evidence, that there was a bug in Mr Patny's branch causing incorrect stamp declarations.

MoneyGram issue on or about 23 February 2016

1064. The complaint here is that Mr Patny Jnr tried to take payment for a MoneyGram transaction (for £3,100) twice. but the customer's card was declined and this resulted in a shortfall of £6,200 *"exactly"*.[1294] Mr Patny Jnr confirmed that what he was alleging was that the transaction was put onto the stack on the Horizon screen, that the customer's card was declined by which time there was something on the screen which had to be dealt with in some way in order that the account is balanced.[1295]

1065. The relevant transaction is clear from the transaction data.[1296] There is no evidence of any second transaction in the same amount.

1066. Mr Patny Jnr accepted that in fact the situation he described the proper procedure to be followed – described in the online guide[1297] – was both cancellation and reversal and that

[1293] {F/1507.1} row 19650.

[1294] {E1/2/4} para 20.

[1295] {Day3/36:21} to {Day3/37:5}.

[1296] {F/1436.1} row 1067.

[1297] {F/1391.4}.

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he had only cancelled and not reversed the transaction.[1298] Mr Patny Jnr rang the Helpline and they told him that cancellation and reversal were both required.[1299]

1067. Mr Patny Jnr agreed that he had not reversed the transaction at the time but that he had reversed it later.[1300] The evidence does not support this: the relevant entries on the call log[1301] state that the transaction had not been reversed. In due course a TC was received for £3,100.[1302] (In fact if the transaction had been successfully reversed as well then the branch would have ended up with a gain of £3,100 – since the TC would have not been required at all).

1068. Mr Patny Jnr was clear that the discrepancy the branch experienced was exactly £3,100. This is not borne out by the data:

1068.1 The actual cash shortfall on 23 February 2016 was £6,825.95[1303], with a cash declaration of £25,803.87.[1304]

1068.2 The cash declaration for the previous day was £34,405.46[1305] i.e. there was a difference between 22 and 23 February of £8,601.59.

1068.3 The total decrease in cash between the two declarations was £1,806.71.[1306]

1068.4 So of the movement of £8,601.59, £4,906.71 can be accounted for (£3,100 + £1,806.71). This leaves £3,694.88 i.e. not exactly £3,100.

1069. Mr Patny Jnr was unable to explain why he still felt able to say that the discrepancy was exactly £3,100. He referred to various requests he had made to see the Credence data and to conversations he says he had with his area manager.[1307] None of these matters had

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[1298] {Day3/39:6} to {Day3/40:5}.

[1299] {F/1522.1} row 115.

[1300] {Day3/42:15} to {Day3/42:25}.

[1301] {F/1522.1} rows 116 and 117.

[1302] {E1/2/4} para 22.

[1303] {F/1507.1} row 1903.

[1304] {F/1507.1}row 1904.

[1305] Row 1717.

[1306] {F/1436.1.1}.

[1307] {Day3/56:14} to {Day3/57:22}.

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been canvassed in his witness statement, Post Office had not had any opportunity to address them in its evidence and so it was not possible to explore them in his oral evidence. It is not possible to place reliance on unexpected evidence which emerges in such a way.

1070. Mrs Van Den Bogerd was cross examined[1308] about a moneygram report dated 18 July 2016[1309] which reported that duplicate transactions had been created as a result of Post Office time outs. Mrs Van Den Bogerd had not previously seen the document.[1310] The issue it described does not assist in relation to the events alleged by Mr Patny: first, the document is describing a problem in the moneygram system not in Horizon; and secondly Mr Patny does not say there was any Post Office time out, but that the customer's card was declined.

1071. Accordingly, Post Office invites the Court to conclude that it cannot be satisfied, on the present evidence, that there was a bug in Mr Patny's branch that caused a duplicate moneygram transaction.

Conclusion on the Patnys' evidence

1072. The Court cannot arrive at concluded views on what was happening in the Patnys' branch. The picture that emerges is one of considerable disorder in the branch. The fact that cash declarations were made within minutes of each other[1311] is an indication of this, as is the fact that it seems there was considerable laxity about who was using which log on. Mr Patny Snr:

> *Q. Okay, thank you. Seven minutes apart for the same sign-on, APA001 -- is that you or is that your son?*
>
> *A. That's me, but it would be my son because that looks like it has been logged on since the afternoon.*
>
> *Q. So he was using your log on?*
>
> *A. He was, yes.*

[1308] {Day 5/149:1}.

[1309] {F/1502/29}.

[1310] {Day 5/150:11} to {Day5/150:12}.

[1311] {F/1834.3} sheet 1/row 2336 and 2337: 7 minutes apart.

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Q. Why would he do that?

A. Well, normally between three of us nobody else would go on apart from the three of us, so we didn't really mind, whosoever is logged on we just carried on and continued with it.[1312]

1073. Mr Patny Snr was an SPM for less than two years.[1313] As with every C, there is a great deal more to be investigated about this branch in due course. The Court has heard of only a small selection of events which the Patnys have chosen to give evidence about. It could prejudice future breach trials if the Court does any more than conclude that the events described could plausibly have been caused by user error. There has been no identification of any particular bug nor any expert support for any other finding.

Mrs Burke

1074. The relevant evidence is as follows:

1074.1 Mrs Burke's amended witness statement dated 27 February 2019 {E1/4}.[1314]

1074.2 Mrs Van Den Bogerd's second witness statement dated 16 November 2018 at paras 103-110 {E2/5/25} to {E2/5/27}.

1074.3 Transcript of Mrs Burke's evidence oral evidence at {Day2/66:17} to {Day2/104:22}.

1074.4 Transcript of Mrs Van Den Bogerd's oral evidence in relation to Mrs Burke's case at {Day5/16:11} to {Day5/19:20}.

1075. Mrs Burke's evidence relates to the failed recovery of a £150 withdrawal on 9 May 2016 in the Newport branch. Most, if not all of the material facts appear to be common ground:

1075.1 Mrs Burke was an experienced SPM and assistant: see her witness statement at para 5[1315] and her oral evidence that she had worked for around 5 years as an SPM

[1312] {Day2/178:13} to {Day2/178:23}.

[1313] {E1/3/1} para 1.

[1314] The original witness statement was amended to clarify two small points (paras 8 and 13). At trial, Mrs Burke made an update to her evidence in para 5 (relating to her current employment.

[1315] {E1/4/2}.

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and around 15 years as an assistant.[1316]

1075.2 The need to recover transactions on 9 May 2016 resulted from a nationwide system outage that affected Mrs Burke's branch.[1317]

1075.3 Mrs Burke identified that the £150 withdrawal had not been recovered successfully and that, if the branch did not receive transaction correction, there would result a £150 shortfall (because Mrs Burke had paid out the cash to the customer).[1318]

1075.4 Mrs Burke almost immediately telephoned the Helpline. In summary, she was told that there was a nationwide problem, that it was being addressed and that, although no guarantee could be given, this could resolve the loss in the branch. The transcript of the call is at {F/1466}. Post Office accepts that the Helpline operatives did not give Mrs Burke the comfort that she reasonably wanted.[1319]

1075.5 Mrs Burke then undertook her own investigation to identify the customer who made the £150 withdrawal, and she obtained records from him and his bank to show that the withdrawal had been effective.[1320] Mrs Burke (via her husband) informed Post Office of the outcome of her investigation on 13 May 2016.[1321]

1076. Mrs Burke was an honest and careful witness. Her witness statement was clear and relatively detailed. She was fair and frank in her responses to cross-examination. Post Office challenged only small parts of her written evidence, and she responded to those challenges with care, making appropriate concessions.

[1316] {Day3/68:7} to {Day3/68:19}.

[1317] Mrs Burke was told this when she called the Helpline para 20 {E1/4/4}.

[1318] See the oral evidence at {Day3/84:14} to {Day3/85:2}.

[1319] See the cross-examination on the call at {Day3/88:11} to {Day3/93:18} and, making this point clear, {Day3/95:2} to {Day3/95:9}.

[1320] Witness statement, paras 20-24 {E1/4/4}.

[1321] {Day3/94:20} to {Day3/95:2}.

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1077. It was suggested to Mrs Van Den Bogerd that Post Office had put to Mrs Burke in cross-examination that she had caused or contributed to the failed recovery of the £150 withdrawal by serving two customers from a single basket / stack on Horizon.[1322]

1078. That appears to be a misunderstanding – no such suggestion was put to Mrs Burke. Post Office in fact put the following points about the circumstances in which the failed recovery arose:

1078.1 Serving two customers from one basket is not the procedure that SPMs are supposed to follow, and Mrs Burke would not ordinarily do it. Mrs Burke very readily accepted this.[1323]

1078.2 On 9 May 2016, Mrs Burke (exceptionally) did serve two customers from one basket, and she did so in the circumstances created by the system problems that she was encountering. Mrs Burke accepted this too, and no criticism was made of her in relation to it.[1324]

1078.3 Following proper procedure would have reduced the opportunity for a system outage to occur while transactions were still in the stack (and so not committed to the accounts). Mrs Burke did not entirely follow the points put to her in relation to this, [1325] but no criticism was or is made of her in that regard.

1079. It is understandable that Cs wish to emphasise that Mrs Burke's acknowledged failure to follow correct procedure did not cause the failed recovery. But that is accepted. No contrary suggestion was made in cross-examination, and Ms Van Den Bogerd made a correction to her witness statement to spell this out clearly: see {E2/16/3} (an amendment to para 104 {E2/5/25}).

1080. Post Office challenged only three elements of Ms Burke's written evidence.

[1322] {Day5/16:22} to {Day5/19:20}.

[1323] {Day3/75:1} to {Day3/75:19}.

[1324] {Day3/75:20} and {Day3/77:9} to {Day3/77:20}.

[1325] {Day3/77:21} to {Day3/80:21}.

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1081. First, Post Office challenged Mrs Burke's statement at para 20 that "I had been watching my stack carefully and it told me to pay £150 to the customer" (emphasis added) {E1/4/4}. Mrs Burke responded fairly to the challenge put to here in this regard:

1081.1 She accepted the points put to her about how the stack / basket in fact operates.[1326]

1081.2 She agreed that it is only once the "Enter" key is pressed to close the basket that the user should pay the customer (or take payment from the customer, as appropriate).[1327] Her oral evidence was that she would ordinarily prepare the cash to pay to the customer (counting it out) and then pay it over after, or perhaps at the same time as, pressing the button to clear the stack.[1328] That is good practice. She understood (correctly) that it is only once "enter" is pressed to close the stack that the transactions enter into the accounts. Although she would quite sensibly profess no knowledge of the technical workings of the system "behind the scenes", she was aware that it was closing the stack that triggered the transactions being submitted / entered into the accounts:

Q: …What I suggest is that you would have known that it is when you close the stack that the transactions in the stack go into your accounts?

A: Yes, what should be in the stack, yes, should go into our accounts.

Q: And that happens when you close the stack, because that's when those transactions are finally confirmed?

A: When you press the "enter" button and it clears the screen, everything that's in the stack should be in your accounts.[1329]

1081.3 With the sensible caveat that she would not know how the back office procedures work, Mrs Burke agreed with the evidence that Ms Van Den Bogerd's gives in relation to bank withdrawals at para 105 of her witness statement {E2/5/25}.[1330]

[1326] {Day3/70:21} to {Day3/72:21}.

[1327] {Day3/73:3} to {Day3/74:21}.

[1328] {Day3/74:4} to {Day3/74:21}.

[1329] {Day3/76:23} to {Day3/77:7}.

[1330] {Day3/75:22} to {Day3/77:7}.

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1082. It follows from the points that Mrs Burke accepted that it was inaccurate to state that Horizon "told" her to pay £150 to the customer before the basket had been closed. The closest that the system will have come to this is informing the user that the withdrawal had been authorised by the bank: see the screenshot at {F/1848.06}. The transaction would then appear in the stack (along with any others): see {F/1848.07}.

1083. Second, Post Office challenged Mrs Burke's statement at para 19 that "*There was therefore no means through the Horizon system for the discrepancy to be identified or for its cause to be established in my situation*" {E1/4/4}. Similar phrases appear in other witness statements produced for the Horizon Trial: see Latif, para 8 {E1/1/2}, Tank, para 14 {E1/6/3} and Singh (not called), para 11 {E1/8/3}.

1084. In her oral evidence, Mrs Burke was characteristically careful and frank in accepting that it was wrong to say that the Horizon system did not provide a means to identify the discrepancy:

> *Q: ... I'm focussing quite closely, if I may, on the wording of the last sentence of para 19 of your statement. It says there: "There was therefore no means through the Horizon system for the discrepancy to be identified...". Stopping there, I suggest to you that's wrong because you knew exactly what the discrepancy would be, it would be a £150 shortfall. So that's not correct, is it?*
>
> *MR JUSTICE FRASER: Well, Mr Draper - - well, I will wait for the answer and then...*

A: Well, the Horizon system didn't identify it; I knew it was the £150. Oh, I see what you mean, I had the two receipts. Yes, I will agree with that.[1331]

1085. Mrs Burke also accepted that the cause of the discrepancy was in fact known to her at the time:

> *Q: And focussing on the second half please of the sentence: "or for its cause to be established in [your] situation". I suggested that based on what we have just discussed, you knew what the cause of the £150 shortfall would be, didn't you?*
>
> *A: Sorry, could you say that again?*
>
> *Q: You knew that when a £150 shortfall arose –*
>
> *A: Yes.*

[1331] {Day3/86:1} to {Day3/86:14}.

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Q: You knew what would have caused it, because you had worked out that the £150 withdrawal hadn't made its way to your account?

A: I did after studying all that paperwork, yes. [1332]

1086. The Court was interested to identify the precise means through which Horizon identified (or could have identified) the discrepancy to Mrs Burke. As to this:

1086.1 Mrs Burke was in fact able to identify the discrepancy and the cause of the discrepancy through the process that she describes in her witness statement at para 17, namely reviewing the transaction log[1333] to identify the transactions shown on the Disconnected Session Receipt[1334]: see {E1/4/3} and {Day3/83:9} to {Day3/85:2}. She knew from these documents, and the fact that she had paid out the £150, that the failed recovery would result in a £150 shortfall.

1086.2 Mrs Burke could also have identified the shortfall through running a balance snapshot (as she appeared to accept)[1335] or through conducting a trial balance of the relevant stock unit or through simply declaring the cash on the stock unit to identify any shortfall relative to the Horizon derived figure. All of these steps would involve Horizon identifying the shortfall in an on-screen balance. Mrs Burke was of course aware that one or more transactions from the disconnected session had not been recovered,[1336] so she would (at worst) have been on the lookout for any shortfall that matched the amount of one of those transactions when she ran the cash declarations on the evening of the same day. But this is purely hypothetical: Mrs Burke very sensibly dealt with the problem as soon as it arose and while she was best able to identify the shortfall and its cause.

1087. Horizon provided sufficient information to enable Mrs Burke to identify both the discrepancy (a £150 shortfall) and the cause of the discrepancy (the failed recovery of the £150 withdrawal transaction). The final sentence of para 19 of Mrs Burke's witness statement was therefore inaccurate, as she fairly acknowledged.

[1332] {Day3/86:15} to {Day3/87:3}.

[1333] The annotated transaction log is at {F/1465}.

[1334] The receipt is at {F/1461}.

[1335] {Day3/88:4}.

[1336] See the failed recovery receipt at {F/1464}.

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1088. Third, Post Office invited Mrs Burke to revisit the view expressed in her witness statement that the £150 shortfall would not have resolved the shortfall if she had not carried out her own investigation and collected evidence.[1337] Mrs Burke made clear in her witness statement that this was her view (rather than a fact), and she indicated the basis on which she had formed that view. Her evidence on the point was clear and straightforward.

1089. In cross-examination, Post Office took Mrs Burke to documents showing the work done by Fujitsu and Post Office to identify and resolve any shortfall arising from the failed recovery.[1338] The documents are as follows:

1089.1 A BIMS Incident Report[1339] produced by Fujitsu on 12 May 2016: {F/1470}. It shows (at the bottom of the page) that Fujitsu had identified a series of transactions across the network that were affected by the system outage on 9 May 2016 and required reconciliation action to be taken by Post Office.

1089.2 An email sent by Fujitsu to Post Office on 12 May 2016, attaching a spreadsheet identifying the transactions that required reconciliation: {F/1470.1}.

1089.3 The spreadsheet that was attached to that email, identifying Mrs Burke's branch at row 12 and stating as follows in column H {F/1848.4}:

> *The £150 cash withdrawal transaction was authorised by the FI and an AUTHORISED receipt was produced on the counter. However, when the user attempted to settle the transaction it failed due to the known datacentre issue at the time so disconnected session receipts were produced and the user was logged off. The user managed to log back in but recovery also failed. As an AUTHORISED receipt was produced the user should have handed money over to the customer but we cannot be certain that they actually did so. Assuming money was handed over the customer account will be correct but the branch will have a shortage given that the transaction hasn't been recorded on the system. This will need to be manually reconciled.*

[1337] See para 27 of Mrs Burke's witness statement: "Based on my initial experience of the Helpline, I do not think that Post Office would have resolved this if I had not had the clear proof that the £150 transaction had in fact been authorised and that the money had left the customer's bank account" {E1/4/5}.

[1338] See {Day3/95:11} to {Day3/104:2}.

[1339] BIMS stands for "Business Incident Management Service".

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1089.4 There is a later version of that spreadsheet in which Post Office had added a column indicating what it proposed to do {F/1848.5}. The above text appears at column H. In a new column J, headed "*Action taken*", the spreadsheet states: "*Branch contracted. Shortage in branch so TC issued to adjust cash*".

1089.5 There is a record of the TCs for the Newport branch, showing a £150 TC issued on 16 May 2016 {F/1687.1}. It states, in relevant part, as follows at row 5, column L: "*To correct communications failure on 9.5.16 for in pounds 150…so credit to office*".

1089.6 Mrs Burke confirmed that she received and processed the TC on 17 May 2016.[1340]

1090. The contemporaneous documents show that Fujitsu had been monitoring failed recoveries across the network and position and had by 12 May 2016 identified the unrecovered transaction at the Newport branch and informed Post Office that manual reconciliation would be required (i.e. issuing a TC to the branch, assuming that the money for the withdrawal had in fact been paid out to the customer). This confirms Mrs Van Den Bogerd's written evidence that "*there is a process built into Horizon for flagging non-recovered transactions which would have prompted an investigation and…would have led to the same outcome*".[1341] The need for a TC was identified before Mrs Burke told Post Office of the outcome of her own investigation on 13 May 2016.[1342]

1091. When Mrs Burke was invited to comment on what she could see from the Fujitsu and Post Office documents, she gave a short and fair response:

> *Q:…with the benefit of that what you have seen here about what Post Office and Fujitsu were doing in the background, as it were, unknown to you, with the benefit of that knowledge would you accept that it looks as though Post Office would have been able to resolve the problem in your branch even if you hadn't taken the steps that you did?*
>
> *A: Possibly, yes.*

[1340] {Day3/103:13}.

[1341] Para 110 {E2/5/26}.

[1342] Mrs Burke confirmed this date at {Day3/94:20} to {Day3/95:2}.

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1092. Post Office respectfully submits that the contemporaneous documents make clear that, even without Mrs Burke's diligence, the branch would have been compensated for the failed recovery through a TC, in the ordinary way. Mrs Burke confirmed in cross-examination that her usual experience was that discrepancies that could not be resolved by the branch itself were resolved through TCs.[1343]

Conclusion

1093. Given that Mrs Burke is not a claimant and that there is a fairly full evidential record before the Court (including from Mrs Burke herself), Post Office accepts that unqualified findings can properly be made.

1094. Mrs Burke was an honest and careful witness. She was a skilled and diligent SPM and assistant who appears to have encountered very few difficulties in operating Horizon over the years.[1344]

1095. It is regrettable that Mrs Burke was not saved the trouble of conducting her own investigations. The Helpline operators could have made it clearer to Mrs Burke that there would be a process of identifying unrecovered transactions and issuing TCs to affected branches as appropriate, allowing her to simply wait for the TC, as she says she usually did when faced with a shortfall that she could not herself resolve.[1345]

1096. Nonetheless, the documentary evidence shows that the supporting process around Horizon worked properly to identify the need for a TC resulting from the failed recovery. It follows that, even without Mrs Burke's diligence, the branch would not have suffered a lasting discrepancy. Mrs Burke's case provides no evidence of any bugs or errors in Horizon (beyond the point that the system, like any other, suffers occasionally from system outages, the consequences of which are addressed by the failed recovery procedures outlined above).

[1343] {Day3/69:2} to {Day3/70:12}.

[1344] See {Day3/68:20} to {Day3/70:12}. Note also the very few TCs shown at {F/1687.1}.

[1345] See {Day3/70:4} to {Day3/70:12}. It appears that Mrs Burke had not encountered a failed recovery before 9 May 2016, despite working in Post Office branches for many years.

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H2. Mr Henderson's Evidence

1097. Mr Henderson's witness statement is at {E1/5}.

1098. His evidence can be taken shortly. The Court made clear at the PTR that it would not permit the trial to be side-tracked into a consideration of whether or not conclusions in Second Sight's various reports were correct: see the Judgment dated 14 February 2019 at paras 10 and 11 {C7/41/4}.

1099. It is respectfully submitted that the Court was right to do this. Mr Henderson had little, if any, admissible evidence to give in relation to the Horizon Issues and it is difficult to understand why Cs felt it necessary – or even appropriate – to call him as a witness.

1100. Post Office cross-examined Mr Henderson purely on matters of which he could give non-opinion evidence. This was explained to Mr Henderson at the outset.[1346]

1101. He gave clear and fair answers to cross-examination. He confirmed the following in relation to the Mediation Scheme and Second Sight's role in it:

1101.1 Second Sight's investigation was substantially broader than the Horizon Issues.[1347]

1101.2 The anticipation at the outset of the Mediation Scheme was that the Working Group would set relatively demanding timeframes and progress quite quickly.[1348]

1101.3 Second Sight's role in the Mediation Scheme was to produce thematic reports and also case review reports ("**CRRs**") on the complaints made by individual participants in the scheme.[1349]

1101.4 Second Sight was, at least from July 2014,[1350] not required to determine every issue raised by an SPM, but only to carry out a reasonable investigation and offer

[1346] {Day4/166:11}.

[1347] {Day4/167:3} to {Day4/167:23}.

[1348] {Day4/172:24}.

[1349] {Day4/169:19} to {Day4/169:22}.

[1350] Post Office does not have any earlier agreement of similar detail to the July 2014 agreement at {F/1228.1}.

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an opinion on key issues.[1351]

1101.5 Under the Mediation Scheme, Second Sight's CRR was one of three key documents to go before the Working Group to enable it to decide whether or not to recommend mediation, the other two being the applicant's complaint and Post Office's response to it.[1352]

1101.6 The progress of the Mediation Scheme, including the preparation of those documents, went slower than had been hoped.[1353] This is apparent from the contemporaneous documents at {F/1325/137} (letter from Sir Anthony Hooper in mid-December 2014) and {F/1325/186} (letter from CEDR in March 2015), the latter showing that few of the 136 cases in the scheme had made it to the mediation stage.

1101.7 It was broadly consistent with Mr Henderson's recollection that by March 2015 there had been only 12 mediations.[1354]

1102. Mr Henderson also gave clear and fair oral evidence in relation to the termination of Second Sight's engagement in March 2015. The termination letter is at {F/1324.1}. A much longer letter, sent by Post Office on the same date, is at {F/1324.2}. That longer letter set out proposed terms for Second Sight to complete its outstanding work. Mr Henderson explained that he was told by Post Office at the time that "*we were at the point where the mediation process using CEDR could continue without any further input from the working group and that alternative arrangements would be made for Second Sight to complete the I think it was 20 outstanding reports at that point*".[1355]

[1351] {Day4/172:11}.

[1352] {Day4/174:14} to {Day4/175:2} (Mr Henderson quite fairly said that his recollection was slightly different but his answer was largely in agreement).

[1353] {Day4/175:14}.

[1354] {Day4/178:12}.

[1355] {Day4/180:15} to {Day4/180:20}.

[1356] The key letters and emails are at {F/1327.1} (letter from Second Sight dated 17 March 2015), {F/1328.1} (letter from Post Office dated 26 March 2015) and {F/1329.1} (email from Second Sight dated 30 March 2015).

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1103. There followed exchanges of correspondence[1356] through which new arrangements were negotiated, ultimately resulting in the agreement at {F/1333.2}. Under that agreement, which is dated 15 April 2015, Second Sight was given until 31 May 2015 to complete the outstanding CRRs and otherwise continued to work on terms that were relatively similar to those that pre-dated the termination.

1104. Mr Henderson confirmed the context in which the new arrangements were put in place in March-April 2015:

1104.1 By the time of the termination, Version 2 of the Part 2 Briefing Report (the final thematic report) was "*substantially complete*", and Second Sight were happy to agree to complete it by 10 April under a new agreement.[1357] A first draft of the report was in fact overdue by the date of termination.[1358]

1104.2 The CRRs that had not been completed by the time of termination were produced later than had been anticipated by the Working Group, but under the new arrangements Second Sight was able to produce them in relatively short order.[1359]

1104.3 Post Office and Second Sight engaged in negotiations over the new arrangements (referred to above), and the main point of difficulty was (as Mr Henderson could now recall) whether Post Office should pay for Second Sight's work indirectly through payments to applicants or through direct payment. Second Sight wanted to continue with direct payment, and Post Office "readily agreed" to that. [1360]

1105. The short point is that Second Sight was given time to complete the outstanding work. There is no hint in any of the correspondence following the termination that Post Office was requiring Second Sight to comply with impossible or even unduly difficult deadlines

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[1356] The key letters and emails are at {F/1327.1} (letter from Second Sight dated 17 March 2015), {F/1328.1} (letter from Post Office dated 26 March 2015) and {F/1329.1} (email from Second Sight dated 30 March 2015).

[1357] {Day4/180:24} to {Day4/181:3}.

[1358] {Day4/181:10}.

[1359] {Day4/182:15} to {Day4/182:23}. Second Sight was under a reasonable endeavours obligation to comply with deadlines set by the Working Group: see clause 5.3 of the agreement at {F/1288.1}.

[1360] {Day4/181:20} to {Day4/181:20}

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for the outstanding CRRs. As noted above, the Version 2 report was already substantially complete.

1106. In that context, some of the language used by Mr Henderson in his witness statement (see para 2.6 {E1/5/5}, for example) is unfortunate in that it might tend to suggest to the reader that the termination brought Second Sight's work to a premature end. Cs certainly try to paint that picture when referring to the termination of Second Sight's engagement. It is an unfair picture.

1107. As Mr Henderson acknowledged, the closure of the Working Group did not put a stop to mediations. On the contrary, Post Office offered mediation to all the remaining applicants in the scheme (save for criminal cases).

1108. Mr Henderson gave surprising evidence in relation to confidentiality restrictions that he said had prevented him giving the evidence that he otherwise would have given. He said this at the start of his cross-examination: "*I'm a party to an agreement between sort of Post Office and the claimants that restricts the matters on which I can give evidence, so that is a further limitation in my evidence today*".[1361]

1109. This was the first time it had been suggested to Post Office that Mr Henderson had evidence that he wished to give but was prevented from giving by a confidentiality restriction. No such point had been raised with Post Office in correspondence, despite the parties having corresponded at length in relation to the content of Mr Henderson's evidence (specifically, as to its status and admissibility).[1362]

1110. The only potentially relevant confidentiality restrictions are those contained in the agreements to which Mr Henderson was taken in cross-examination. However:

1110.1 Those restrictions were very substantially relaxed (at Cs' request) by a detailed agreement drafted for the purposes of these proceedings. It is at {F/1679.1} ("**the Protocol**"). The only matters that remain "off limits" under the Protocol are identified at clause 3.1.5 (principally, information subject to legal professional privilege). The Protocol requires cooperation (clauses 3.1.4 and 3.1.6).

[1361] {Day4/166:1}.

[1362] See {H/126} and {H/127}.

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1110.2 The Protocol also contains the following provision at clause 9.1

> *Any issues, disputes or matters for resolution or determination relating to this protocol shall be referred to the Managing Judge or the Managing Master nominated to manage the GLO.*

1111. There was therefore a clear mechanism for raising any concerns as to the confidentiality restrictions. It may not be Mr Henderson's fault that they were not used, but the fact they exist makes it very difficult to understand how he can have come to be in the difficult position to which he described in his oral evidence.[1363]

1112. Mr Henderson was asked whether confidentiality restrictions had caused him any inhibition in answering the questions put to him in cross-examination. He said that he had the issue in the back of his mind and that he had tried to make sure that his answers did not infringe the protocol.[1364] It is understandable that Mr Henderson would wish to be careful, but the idea that he was restricted in answering Post Office's questions is bizarre. He was asked, for the most part, about the conduct and administration of the mediation scheme – matters of public record, and nothing to do with (or even close to) legal professional privilege or data personal to non-claimants. Nothing that he was asked can have caused him difficulty.

I. DISCLOSURE

I1. Background

1113. There were various complaints about disclosure made by Cs in their Opening Submissions. These have been repeated and expanded during this trial.

1114. In circumstances where Cs have: (i) not made any formal applications for specific disclosure; (ii) not suggested that Post Office has breached any Order for disclosure; and

[1363] The only hint that confidentiality restrictions might be relevant in the witness statement is at para 1.5, where Mr Henderson says that he believes he has complied (without suggesting any concern or difficulty) {E1/5/3}.

[1364] {Day3/187:3}.

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(iii) failed to follow an agreed and Court ordered procedure for resolving any differences regarding disclosure, it is inappropriate for criticism to be directed at Post Office.

1115. The Court is reminded that because of the way in which the Horizon trial developed, Cs have never presented a properly pleaded case and that there are no detailed allegations made by reference to which disclosure was to be given. This has put Post Office into a difficult position.

1116. The Court directed Cs to provide an outline case.[1365] This was served on 17 August 2018.[1366] It was no substitute for a properly pleaded case, provided virtually no assistance to Post Office and has hardly been referred to by either party.

1117. Instead, Cs have developed their case through Mr Coyne's reports which are sprawling, scattergun documents. His so-called "Supplemental Report" (i.e. Coyne 2) is 273 pages long. It was served on 1 February 2019, a little over one month before the start of trial, presented an entirely new analysis and raised many new issues.

1118. Cs' general position appears to be that, notwithstanding this background, Post Office should have been able to infer all the documents Cs was likely to want without any proper, still less timely, explanation from Cs as to the categories of documents sought, and should have volunteered those documents even in the absence of any order or application.

I2. Model C Disclosure

1119. By the time the Horizon trial was ordered, it had already been ordered that there was to be no standard disclosure; and that Model C disclosure was to apply instead. Paragraph 5 of the Order dated 2/2/18[1367] provided that:

> *Save as otherwise specifically provided in this Order, pursuant to CPR r.31.5(7)(c), such disclosure is to be given on an issue by issue basis. Such disclosure shall be given in accordance with Model C and the draft Practice Direction 'Disclosure Pilot*

[1365] {C7/12/5} para 15.

[1366] {Coyne 1/2/1}.

[1367] {D7/11/2}.

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for the Business and Property Courts' (the "draft Practice Direction"), which shall be adopted save as follows:-

(a) The requirements of Paragraph 5 (Basic Disclosure) be dispensed with.

(b) The requirement upon the parties to produce Disclosure Review Documents in accordance with paragraphs 10 and Appendix 2 of the draft Practice Direction is dispensed with, as is any further requirement imposed upon the parties relating to Disclosure Review Documents.

(c) For all relevant purposes, any reference in the draft Practice Direction to Disclosure Review Documents shall be taken as a reference to the Electronic Disclosure Questionnaires exchanged by the parties in accordance with paragraph 11 of the First CMC Order.

1120. In relation to Extended Disclosure generally (of which Model C is one type) 51UPD.6 para 6.5 provides that:

"…It is for the party requesting Extended Disclosure to show that what is sought is appropriate, reasonable and proportionate (as defined in paragraph 6.4)…"

1121. Model C requires focused and specific requests: i.e. it is "Request-led search-based disclosure". 51UPD.8 provides in relation to Model C that:

(1) The court may order a party to give disclosure of particular documents or narrow classes of documents relating to a particular Issue for Disclosure, by reference to requests set out in or to be set out in Section 1B of the Disclosure Review Document or otherwise defined by the court.

(2) If the parties cannot agree that disclosure should be given, or the disclosure to be given, pursuant to a request, then the requesting party must raise the request at the case management conference…

1122. The reality of Cs' approach over the last year is that what Cs really wanted – and think they are entitled to – is standard disclosure. Cs have not produced properly focused requests for particular documents or narrow classes of documents; and Post Office has done far more than it was obliged to in providing documentation. Cs have also not sought to raise any complaints with the Court.

1123. The significant challenges started with Cs adopting a parallel track of seeking docs – some from Freeths, following Model C; and some presented as "Requests for Information" from Mr Coyne. Freeths did nothing to control this process or to ensure Mr Coyne's requests complied with Model C.

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1124. Given the emphasis in this trial on disclosure, it is unfortunately necessary to remind the Court of some of the detail of the relevant background.

1125. By the Court's Fourth CMC Order[1368] Post Office was ordered to disclose the documents set out in Schedule 1 to the Order. Schedule 1 was largely agreed by the parties (mainly before the CMC but some of it after). It focused on various documents (in particular reports and briefings) being provided to various categories of custodians which were defined in the Schedule itself.

1126. This was an example of Model C disclosure working broadly as it was intended to: Cs identifying categories of documents which related, or appeared to relate, to the issues such as they had been identified at that time.

I3. Expert-led Requests for disclosure

1127. By paragraph 13 of the Third CMC Order[1369] following a hearing on 22 February 2018 the Court wanted[1370] the following provision in the Order:

> *The parties and their IT experts are reminded that experts have a right, pursuant to CPR r,35,14, to file written requests to the Court for directions for the purpose of assisting them in carrying out their functions.*

1128. Pursuant to this, Mr Coyne made his own separate requests for information and documents and it is this separate stream of requests which has given rise to many of the complaints in the case. It is unclear to Post Office what if any involvement Freeths had in this process. It should have taken control of Mr Coyne and ensured that his requests aligned with the requirements of Model C. Freeths failed to do so, and instead allowed Mr Coyne to pursue these matters.

[1368] {C7/18}.

[1369] {C7/12/4}.

[1370] {C8.4/4/73} line B.

[1371] {C5/8}.

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1129. Mr Coyne's first request was sent to the Court on 29 May 2018.[1371] Post Office responded to this on 4 June 2018[1372] i.e. the day before the Fourth CMC. At that CMC, the Court, by paragraphs 8 and 9 of the Order, ordered the experts to provide an Error Codes List and jointly to compile a list of information which either or both considered they required.[1373]

1130. This joint report was duly produced on 26 June 2018.[1374] It is a request for a huge amount of information, explanation and documentation. Dr Worden did not support the requests since his view was that his current requirements for information were already being met and that he preferred to develop his understanding further before deciding to ask *"the right focused questions"*.[1375]

1131. On 20 July 2018 Mr Coyne sent an email to Freeths and WBD requesting various wide-ranging requests for documents which he wanted following an inspection of the TfS and Peak systems.[1376] These documents were generally Fujitsu documents and Post Office did not understand many of the requests or precisely why they were relevant to issues in the case.

I4. The Fifth CMC Order

1132. Some mechanism was clearly required in order that (i) each side's position on the various requests being generated by Mr Coyne was properly set out and could be fully considered and (ii) the requirements of Model C were met.

1133. The parties agreed a sensible mechanism which the Court approved in the Fifth CMC Order dated 24 July 2018.[1377] The parties agreed, and the Court ordered, the following:

[1372] {C5/11}.

[1371] {C5/8}.

[1373] {C7/18/3}.

[1374] {C5/13}.

[1375] {C5/13/2}.

[1376] {C5/16/1}.

[1377] {C7/22}.

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> *1. The Defendant shall, by 8 August 2018, provide to both experts the information requested by Mr Coyne (i) in the "Requests for Information" documents sent 12 July 2018 and dated 26 June 2018 (ii) in relation to the PEAK system, by email on 20 July 2018, save in respect of any requests to which the Defendant serves an objection (stating reasons) in writing, by the same date.*
>
> *2. If the Defendant objects to a request, and the Claimants still wish to pursue that request, the Claimants will within 10 days of the. Defendant's objection explain in writing (i) the relevance of the request to the determination of the Horizon Issues (ii) why the request is reasonable and proportionate and (iii) why it falls within CPR 35.9*

1134. If the procedure set out in this Order had been followed by Cs, they would have explained the relevance, reasonableness and proportionality of any disputed requests by the middle of August 2018. With the benefit of such explanations, the parties would have been in a position to liaise and cooperate with each other with a view to achieving an agreed position. If any issues remained these could and should have been brought before the Court and determined, long before the trial.

1135. Many of the challenges relating to disclosure stem from Cs' failure to comply with the terms of this Order, and with the requirements of Model C Disclosure. Cs have never provided any explanation as to why they did not comply with the Fifth CMC Order.

1136. Post Office provided its response, as required by the Fifth CMC Order, on 8 August 2018.[1378] In many cases, it provided the information requested and additional documentation. In other cases it did not. Post Office was genuinely unsure of what Cs' case was in relation to many of the Horizon Issues – neither the Outline Document nor Mr Coyne's reports had been served at this point – and many of the requests sought not categories of documents but lengthy analyses and explanations of matters which Post Office did not have and which appeared to cut across the carefully negotiated categories of documentation which the Court had ordered at the Fourth CMC.

1137. Following this impasse, Cs were put to their election. Pursuant to the Fifth CMC Order, Cs should have served an explanation by 18 August 2018 if they maintained a claim to any of these requests, together with an explanation of how they related to the Horizon Issues. This would have enabled Post Office to consider whether the requests were valid

[1378] {C5/21}.

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Model C requests relevant to an issue in the case. Cs did not do so: and have never provided any explanation as to why they feel able to flout the Court's Order.

1138. On 19 September 2018[1379] Freeths sent WBD a document from Mr Coyne marked "Draft"[1380] which sought to resurrect various of his original requests. WBD responded on 25 September 2018[1381] pointing out that Cs had failed to comply with the Fifth CMC Order, either as to time or substance and requesting a proper explanation as to why the requested documents were relevant to the Horizon Issues and reasonable and proportionate.

1139. Nothing was heard until Mr Coyne's further RFI dated 14 December 2018[1382] which repeated some of the original requests and introduced some new ones. WBD responded on 21 December 2018[1383] again pointing out the flagrant breach of the Fifth CMC Order and asking again for an explanation. Despite not receiving any such explanations, Post Office had by this time seen Coyne 1 and WBD did respond to Mr Coyne's latest RFI on 17 January 2019.[1384]

1140. This is a deeply unsatisfactory approach by Cs to disclosure in a difficult, complex trial where the issues have never been properly pleaded.

I5. Burden on Post Office

1141. The burden of disclosure on PO has been immense. In this regard, the disparity between the respective burdens on the parties has also been extraordinary: Post Office has disclosed some 517,965 documents and Cs only 1525. The approach of Cs to their own disclosure obligations has been unsatisfactory, as set out below.

[1379] {C5/25}.

[1380] {C5/26}.

[1381] {C5/27}.

[1382] {C5/29}.

[1383] {C5/30}.

[1384] {C5/33}.

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1142. Moreover, Post Office has been heavily dependent on Fujitsu who themselves have had to search for documents over a 20-year period. This is exceptional. It will only be necessary on the rarest of occasions for searches to take place over such a lengthy period of time and on the scale required here. It is inevitable that there will be archiving and deletions and that the searches will be complex and in some cases unsuccessful.

1143. Post Office's approach has been as follows:

1143.1 Where a proper Model C request has been made for relevant documents, Post Office responded co-operatively and has generally given far more documents than Cs were strictly entitled to;

1143.2 On many occasions, the breadth of docs requested has been enormous. Documents were often not kept in the way the request pre-supposed e.g. where Cs asked for documents relating to bugs which affected branches or the like. Where Post Office or Fujitsu could not provide such documents, Post Office has resisted the full request – often not refusing outright but reasonably requesting a narrowing of the category or further explanation of relevance.

1144. Cs' approach has hampered this process. Freeths did not control Mr Coyne's requests, nor did it follow them up as required by the Fifth CMC Order. If Cs had genuine concerns about the scope and contents of Post Office's disclosure, they could and should have made appropriate applications to the Court back in July or August 2018. They did not do so. Even today, after the issue of disclosure has featured repeatedly, Cs have advanced no complaint that Post Office is in breach of any Court Order.

I6. The Court's interventions on disclosure

1145. Post Office is concerned that the Court may have lost sight of the nature of the Orders made and of the approach which the Court ordered. It is striking that Cs have not themselves made any applications for specific disclosure nor have they advanced any complaint that particular disclosure orders have not been complied with.

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1146. The recent judgment of the Court of Appeal in Serafin v Malkiewicz & ors [2019] EWCA Civ 852 @ para 118 is relevant:

> *"We are also highly troubled by the repeated demands and criticisms by the Judge regarding the Claimant's disclosure, in circumstances where pre-trial disclosure had been completed by both sides at a time when both the Claimant and Defendants had been represented by solicitors and counsel, and no application for further disclosure had been made by the Defendants…"*

KELs

1147. Post Office has never denied that KELs existed. There was debate in the early stages as to their relevance. However, as early as 22 September 2017 Post Office offered to allow Cs' expert to inspect the KEL database.[1385]

1148. KELs were agreed to be disclosed once the Horizon Issues Trial was ordered, and were disclosed on 9 May 2018. Post Office was not initially made aware by Fujitsu that some KELs had been deleted (meaning archived). Once that was discovered the additional KELs were disclosed on 17 January 2019.[1386]

1149. In any event, Cs had the KELs in good time. Mr Coyne says in Coyne 1 that he examined 5,114 of them. There is therefore no legitimate complaint to be made here.

Peaks

1150. The Peak system was included in Post Office's EDQ filed on 6 December 2017 before any disclosure ordered. See {C9/1/47}: *"If Fujitsu identifies an issue in Horizon or Horizon Online that requires a programmatic fix then it is logged in its database, the Peak System, and labelled as a 'Peak'."*

[1385] {H/13}.

[1386] {H/169/8}.

[1387] {C5/11/4}.

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1151. Mr Coyne asked for access to the Peak system in his RFI dated 4 June 2018.[1387] By para 6 of the Fourth CMC Order[1388] Post Office made arrangements for the experts to have joint access to Peak database on 15 June 2018.

1152. Following the Fifth CMC Order, WBD sent a response[1389] to Mr Coyne's RFI[1390] and his email dated 20 July 2018[1391] saying that Post Office was working with Fujitsu to see if some mechanism could be created to provide access to 200,000 Peak entries. The Peaks are stored in a proprietary Fujitsu database – raw data disclosure of which would be illegible and useless. This exercise was a software project in its own right which took time and a considerable amount of resources.

1153. Mr Coyne was invited to a second day of Peak inspection but he did not take up invitation.

1154. Disclosure of c.218,000 Peaks was given on 27 September 2018. A further 3,885 Peaks were disclosed on 25 October 2018 after review – these had been responsive to a privileged search term.

1155. Post Office did all it reasonably could to accommodate Cs' requests here.

MSCs & OCPs

1156. As part of Mr Coyne's email on 20 July 2018, disclosure was sought of any Master Service Change ("**MSC**"), Operational Corrective Requests ("**OCR**") or Operation Control Procedures ("**OCP**") "*where the data to be changed has had a financial impact on Post Office or where they relate to fixing a peak*".[1392] On 1 August 2018, Post Office sought clarification of this request,[1393] in particular why the MSCs, OCRs and OCPs

[1388] {C7/18/2}.

[1387] {C5/11/4}.

[1389] {C5/21}.

[1390] {C5/8}.

[1391] {C5/22}.

[1392] {C5/16}.

[1393] {C5/17}.

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were relevant to the Horizon Issues and what was meant by "financial impact on Post Office". No response was received to this request for clarification.

1157. Pursuant to the mechanism set out in paragraph 1 of the Fifth CMC Order,[1394] on 8 August 2018 Post Office objected to the request for disclosure of the MSCs, OCRs and OCPs on the basis that it would be necessary for Fujitsu to carry out a retrospective analysis to attempt to locate the documents which would fall within the disclosure request since the information had not been pooled or collated as part of ordinary working practices. If the Cs wished to continue to pursue these requests then they were required by 18 August 2018 to provide the explanation and particulars required by paragraph 2 of the Fifth CMC Order.[1395]

1158. Cs did not reply until 19 September 2018[1396] when Freeths wrote to WBD explaining that Mr Coyne had considered Post Office's responses to his RFIs and asked Post Office to reconsider its objection to the disclosure of the MSCs, OCRs and OCPs.

1159. On 25 September 2018, [1397] further information was sought by WBD from Cs as to why these requests for disclosure were relevant to the determination of the Horizon Issues.

1160. On 14 December 2018, [1398] almost 3 months after WBD's letter of 25 September 2018 and almost 4 months later than ordered by the Court in the Fifth CMC Order, Mr Coyne provided a revised RFI which contained those outstanding requests which he believed were of the most significance to his preparation of his supplemental report. The revised RFI requested disclosure of the MSC, OCRs and OCPs, gave a brief response to the clarification sought on the meaning of financial impact and then merely stated "*Request still valid*".

1161. Disclosure of the MSCs was given on 21 December 2018. [1399] On 17 January 2017,[1400]

[1394] {C7/22/1}.

[1395] {C7/22/1}.

[1396] {C5/25}.

[1397] {C5/27}.

[1398] {C5/28}; {C5/29}.

[1399] {H/155}.

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WBD explained that Fujitsu had developed and tested a solution to extract the OCPs and disclosure of the OCPs and OCRs was given on 24 January 2019.[1401]

1162. On 18 April 2019 WBD wrote to Cs and explained that Post Office had recently been provided with an additional tranche of OCRs by Fujitsu and provided disclosure in respect of them.[1402] In a letter dated 3 May 2019 WBD set out how these additional OCRs had come to the attention of Post Office.[1403] In short, Fujitsu had found a back-up of pre-August 2006 OCRs which Fujitsu had previously believed no longer existed. Further detail was provided by WBD in its letter dated 3 June 2019.[1404] At the Court's direction, a witness statement was provided which sets out the history of the disclosure of these further OCRs in April 2019.[1405]

Release Notes

1163. Complaint was also made in Cs' Opening Submissions about release notes. Cs' account of this is misleading. An accurate history is set out in WBD's letter of 5 March 2019.[1406]

1164. Mr Coyne did not originally ask for all Release Notes; he asked for a chronology of them. No such chronology existed but Post Office with help from Fujitsu created one, which was provided on 8 August 2018.

1165. On 8 August 2018 Post Office invited Mr Coyne to say if there were any particular Release Notes he was interested in but that invitation was not taken up.[1407] Nor was any complaint raised pursuant to the Fifth CMC Order. In the circumstances Post Office reasonably assumed that the request had been answered.

[1400] {C5/33/9}.

[1401] {H/179}.

[1402] {H/263}.

[1403] {H/273}.

[1404] {H/323}.

[1405] Andrew Parsons' 18th witness statement {C11/23}.

[1406] {H/233}.

[1407] {H/233}.

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1166. On 14 December 2018 Mr Coyne raised what appeared to be a repeat of his original request in which he sought *"the dates and release names (or version name) of each version/release of software that was in use in branches from Horizon inception to present day"*.[1408] Disclosure of particular release notes were not asked for.

1167. Post Office responded on 17 January 2019[1409] saying that it did not have branch by branch information of the type requested.

1168. On 14 February 2019[1410] Cs said that what they were seeking were names and documents such as release notes, of different versions of Horizon software used in branches during the currency of Horizon. This was the first request for a copy of an actual release note. The release notes requested were provided to Freeths by way of letter on 5 March 2019.[1411]

Royal Mail disclosure

1169. There was a mix-up made by Post Office in relation to the disclosure of certain documents held by Royal Mail. These documents were not held by Post Office but by a third party, namely Royal Mail. WBD mistakenly believed that pre-2011 E&Y audit reports had been requested from Royal Mail whereas in fact the request made had been narrower. As soon as this was discovered, Freeths and the Court were informed. The Court ordered a witness statement to be provided and the situation was explained.[1412] The incident was regrettable but should not be the subject of criticism of Post Office.

I7. Cs' Own Disclosure

1170. Despite Post Office making appropriate and narrow requests for Model C disclosure of documents held by those claimants who were witnesses in the Horizon Issues Trial, Cs

[1408] {C5/29/6}.

[1409] {C5/33/11} to {C5/33/12}.

[1410] {H/204}.

[1411] {H/233}.

[1412] {C11/17}.

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have not engaged in discussions concerning the scope of Cs disclosure nor provided disclosure of the documents sought by Post Office.

1171. By paragraph 5 of the Fourth CMC Order, Cs were ordered to provide disclosure of documents upon which they intend to rely at Horizon Issues Trial by 17 July 2018:[1413] the reason for such an order was that there was to be no claimant-specific evidence. Cs were also required to provide disclosure of known adverse documents as an ongoing duty under Practice Direction 51U, part 3.1(2).[1414]

1172. It should be noted that the Fourth CMC Order provided for witness statements to be limited to *"any witness of fact whose generic evidence (in distinction to Claimant-specific evidence) they wish to rely upon for the purposes of determining the Horizon Issues."*[1415]

1173. It was therefore not appropriate for Cs to serve claimant-specific evidence from current or former SPMs and therefore disclosure of documents from such custodians was not sought by Post Office at the time of the Fourth CMC Order. Given the limit on the scope of the evidence, orders for such disclosure were not envisaged as being required by either the Court or Post Office.

1174. On 17 July 2018 Cs provided disclosure of 45 documents. At this time it was not known to Post Office that Cs would be serving extensive claimant-specific witness statements. Cs premised their disclosure with the comment that "*For the avoidance of doubt, the intention of paragraph 5 of the Fourth CMC order is not to preclude the Claimants from relying on any further documents that come to their attention and fall to be disclosed, pursuant to the their ongoing duty of disclosure.*"[1416]

1175. Post Office was concerned by these comments and sought confirmation from Cs on 20 July 2018 as to how they had sought to identify disclosable documents.[1417] On 30 July

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[1413] {C7/18/2}.

[1414] The draft Practice Direction Disclosure Pilot for the Business and Property Courts, which is now known as CPR 51U, was ordered to be adopted by the parties at paragraph 5 of the Second CMC Order {C7/11/2}.

[1415] Paragraph 10; {C7/18/3}.

[1416] {H/91}.

[1417] {H/93}.

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2018, the Cs responded stating that "*additional relevant documents may come to their attention, and most likely as a result of the work of the experts.*"[1418]

1176. No mention was made by Cs that they would be serving claimant-specific evidence and that no disclosure had been provided by any of those claimant witnesses on 17 July 2018. Cs did however confirm that "*However, at present, it is not the Claimants' intention to make another round of disclosure in relation to the Horizon Issues trial.*"[1419]

1177. Between 2 August 2018 and 25 September 2018 Post Office continued to press Freeths on the scope of disclosure which had been given by Cs.[1420]

1178. Post Office was therefore seeking to work with Cs to ensure that as far as possible all relevant disclosure for the Horizon Issues Trial had been provided by Cs so as to avoid a repeat of the late disclosure of documents close to trial which had happened in the Common Issues Trial. At the same time, in relation the Common Issues Trial, Cs provided on 6 September 2018 the fourth additional round of Lead Claimant disclosure which amounted to c.1451 pages and should have been disclosed in February 2018 pursuant to the Court's Order.[1421]

1179. On 28 September 2018, Cs served 9 witness statements, 6 of which were claimant-specific evidence from current or former SPMs (or, in one case, the son of an SPM). These included witness statements were served by Mr Latif[1422] and Mr Tank.[1423]

1180. These exhibited seventeen documents none of which had not been previously disclosed. The disclosure list contained the documents exhibited to Cs' witness statements and a number of other documents relating to Dalmellington, Newport and Remuneration

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[1418] {H/97}.

[1419] {H/97}.

[1420] See correspondence from WBD to Freeths on 2 August 2018 {H/101}, from Freeths to WBD on 3 August 2018 {H/102}, from WBD to Freeths on 12 September 2018 {H/113/2} and 25 September 2018 {H/117}.

[1421] {H/113/1}. The total number of documents disclosed by the Claimants in these four additional tranches amounted to 433 documents (2,149 pages) meaning 10% was disclosed late by the Cs with no explanation.

[1422] {E1/1}.

[1423] {E1/6}.

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overpayments were provided on 2 October 2018.[1424] A total of thirty new documents were disclosed by Cs.

1181. In light of further disclosure provided by Cs, on 1 October 2018 Post Office continued to seek information from Cs on the scope of their disclosure.[1425] Post Office wrote to the Cs again on 22 October 2018,[1426] 7 November 2018,[1427] 30 November 2018[1428] and 20 December 2018.[1429] No response was received.

1182. Cs responded on 14 January 2019, stating that the reason for disclosure not being ordered by specific Claimants for the Horizon Issues Trial was: *"Given the nature of the Horizon Issues Trial, there was good reason for the court to seek to limit the ambit and cost of disclosure from the Claimants themselves. Hence, the disclosure order made here; the obvious good sense of that has not changed."*[1430]

1183. This reasoning was of course misconceived in light of the fact that Cs had served the claimant-specific evidence.

1184. Given that Cs had flouted that Order, Post Office sought to understand what searches (if any) had been conducted by Cs so that it could understand whether further disclosure would be required in light of Cs evidence. A further request for details by Cs was made by Post Office on 17 January 2019.[1431]

1185. This lack of response by the Cs should be viewed in light of the approach adopted by Post Office. One example of the further disclosure that Post Office has agreed to give to Cs which is outside that ordered by the Court is the requests for disclosure made by Cs on 18 December 2018 in which the Cs sought:

> *"... disclosure of the documents that were responsive to searches by, and collated by, the Defendant in respect of the operation of branches by Angela Burke, Akash Patny,*

[1424] {H/122}.

[1425] {H120.1}.

[1426] {H/130}.

[1427] {H/133/2}.

[1428] {H/142}.

[1429] {H/152}.

[1430] {H/167}.

[1431] {H/169/6}.

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Anup Patny, Jayesh Tank, Setpal Singh and Adrees Latif. We would expect such documents to include but not be limited to:

Filtered transactional data

Unfiltered transactional data

Audit Request Query data

Audit Store data

NBSC Call logs

Lists of all transaction corrections sent to the branch.

Internal Post Office communications regarding (or relating to) the issues addressed in the witness statements of the above-named individuals.

Adverse documents relating to the above-named individuals."[1432]

1186. Further requests for claimant-specific disclosure were made by Cs of Post Office on 4 February 2019, with Cs raising 16 new clarification / disclosure requests.[1433] Post Office responded to these requests on 11 February 2019[1434] and provided disclosure of these documents on 20 February 2019.[1435] The failure by Cs to provide their own claimant-specific disclosure suggests that they clearly intended disclosure to be a one-sided exercise.

1187. On 26 February 2019, Cs wrote to Post Office explaining that:

"Mr Tank's review of the responsive witness evidence given by Ms Van Den Bogerd at paragraphs 75-84 of her second witness statement, including Ms Van Den Bogerd's description of a £195.04 shortfall and the related PEAK, has prompted Mr Tank to search within an archived Subpostmasters "Yahoo Groups" forum that he used to post in for any relevant posts.

From this search, Mr Tank has identified a post he made on 13 December 2011 relating to the £195.04 shortfall referred to by Ms Van Den Bogerd and also a post he made on 29 September 2014 relating to the £600 shortfall that he refers to in paragraphs 6-11 of his witness statement. Mr Tank has also found a letter he received from Post Office's Agents Accounting Team in Chesterfield dated 13

[1432] {H/149}.

[1433] {H/186}.

[1434] {H/196/6}.

[1435] {H/213}.

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October 2014 which relates to this shortfall (and which Mr Tank referred to in his forum post)."[1436]

1188. Ms Van Den Bogerd's second witness statement had been served on 16 November 2018 and no explanation was provided as the timing of this disclosure or as to why such a long period had passed between service of the witness statement and this disclosure being provided. [1437]

Mr Tank

1189. During cross examination of Mr Tank (Day 2), Mr Tank was asked a number of questions about the approach which he had taken in relation to disclosure.

Q. And when you prepared your first witness statement you obviously knew this resource existed, didn't you?

A. I did.

Q. And it is plain that it is relevant to your evidence, isn't it?

A. It is.

Q. Why didn't you think to look for this material when you were preparing your first witness statement?

A. Because my first witness statement was I think short, brief, and it was just my way of -- I didn't really fully research the whole background regarding it, I just put my statement in.

Q. Can I just press you a little bit on that. You understand that what's being said in this case, by you amongst many others, is that you carried out certain very specific actions which you did correctly and that the Post Office is at fault, or the Horizon system is at fault?

A. Yes.

Q. So it is important, isn't it, to have been precise in the evidence that you give?

A. Yes.

Q. And I'm just wondering why you didn't make some effort to find what was plainly a relevant document in putting forward what you agree to be the need for precise evidence?

[1436] {H/224}.

[1437] {E2/5}.

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A. Because I didn't -- I didn't feel that my information in my initial witness statement was going to be taken any further, so I -- it wasn't as important as it now has become.

Q. Were you asked to look for relevant documents?

A. Yes.

Q. And what effort did you make to find them?

A. I kept all my Post Office sort of related paperwork in a box file and that's -- when I was asked to look for evidence I went strictly to that box file and that's where I sourced all my information from.

Q. Can we look at your second witness statement {E1/11/2} in paragraph 6. Your evidence there is you hadn't looked at this previously: "... as I did not think I would be able to access the forum group and it did not seem relevant." Can you just explain how on earth you could conclude that it wouldn't seem relevant?

A. Sorry, can you ask the question again.

Q. How did you reach the conclusion that the forum posts would not be relevant?

A. I didn't reach that conclusion.

Q. Well, you say in paragraph 6, Mr Tank: "... I did not think I would be able to access the forum group and it did not seem relevant." I'm just wondering how you reached that conclusion?

A. Because when I made my first initial witness statement I wasn't aware of £195.04 loss, that information only came to light after reading Ms van den Bogerd's statement.[1438]

1190. Later in cross examination, Mr Tank also explained:

"Q. Now, why were you able to say that it definitely occurred in those dates?

A. Because when I went to the box file that I mentioned earlier there would have been a handwritten note somewhere in amongst that that would refer to that incident and that's what led me to believe that that was the particular date."[1439]

1191. Mr Tank continued:

" A. I couldn't say for sure. As I tried to explain earlier, in drafting my original witness statement I went back to my box file and it was filled with various bits of paper, different sizes, different formats and with handwritten scribbled notes on and

[1438] {Day 2/104:11} to {Day2/106:16}.

[1439] {Day2/108:13}.

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that's where I tried to piece together the information that I provided in this."[1440]

1192. Further:

> *"Q. And again can you help with how that error came to be made?*
>
> *A. Again, my initial witness statement I was just relying on my memory and my supplemental witness statement is when I was able to research it a bit more.*
>
> *Q. And what was the evidence that you got for your second witness statement that helped you on this date, because I'm not sure that I'm aware of any?*
>
> *A. Again, it was Horizon generated receipts, print-outs, with hand-written dates and reference numbers on them.*
>
> *Q. Sorry, where are these documents?*
>
> *A. With my solicitors.*
>
> *Q. Oh. I don't think they have made their way over, but I might be wrong."*[1441]

1193. As a result of locating these documents, Mr Tank served a supplemental witness statement on 27 February 2019.[1442] Disclosure of these documents should have been provided by Cs on 17 July 2018. As explained in WBD's letter of 5 March 2019 no reason was provided by Cs as to why Mr Tank did not try and access the Yahoo forum to locate relevant documents which would be relied upon at trial nor why it was not brought to Post Office's attention that there was a document source which contained relevant (and potentially adverse documents) which the Cs could not access.[1443]

Mr Latif

1194. In relation to Mr Latif's disclosure, Mr Latif served an amended witness statement on 1 March 2019.[1444] This amendment is understood to have been made following enquires with Mr Latif's former branch manager, who consulted the documents within the branch

[1440] {Day2/117:22} to {Day2/118/3}.

[1441] {Day2/146:8} to {Day2/146:21}.

[1442] {E1/11}.

[1443] {H/235}.

[1444] {E1/1}.

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to confirm the date on which the transaction corrections had been issued.[1445] Mr Latif did not provide any disclosure of these documents for the Horizon Issues Trial.

1195. During cross examination of Mr Latif on Day 2 of the Horizon Issues Trial, Mr Latif explained:

> *" Q. First question about that: by amendment to your statement you now say that this was in around January 2018 rather than March 2018.*
>
> *A. Correct.*
>
> *Q. What caused you to make that correction?*
>
> *A. I had a look at the -- we hold the records for the information in the office, so I had my assistants look at the records, transaction logs and that's when I confirmed that it was January rather than March. (Inaudible) was logs in March as well. We made calls effectively every month to Horizon help desk concerning this issue.*
>
> *Q. When do you say you asked your assistants to check about the date?*
>
> *A. Yes.*
>
> *Q. Sorry, when do you say that happened?*
>
> *A. It was after I made the initial statement, I was checking.*
>
> *Q. Roughly when, Mr Latif?*
>
> *A. It would have been a few weeks ago, sir.*
>
> *Q. So is it right that you didn't check those records from the branch before making your witness statement?*
>
> *A. No, I thought I was correct but I double checked and made sure that actually in fact they were correct, those (inaudible), so I was right but initial incident happened in January when TA (inaudible) transaction acknowledgement, the TC, the corrections, they came in March.*
>
> *Q. Okay. So you say, do you, that the TCs in relation to these transaction acknowledgements came in March 2018?*
>
> *A. Yes.*
>
> *Q. And you say that's something you have checked from your records?*
>
> *A. Yes."*[1446]

[1445] {Day2/67:16}.

[1446] {Day2/67:11} to {Day2/68:19}.

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Requests for Disclosure

1196. In light of the above cross examination of Mr Latif and Mr Tank, Post Office wrote to Cs on 15 March 2019 requesting disclosure of:

1196.1 Records and transaction logs consulted by Mr Latif for the purposes of drafting his witness statement;

1196.2 Mr Tank's handwritten notes, documents in the "box file" and the CCTV recordings which were consulted by Mr Tank for the purposes of drafting his witness statement;

1196.3 Any other documents consulted by Mr Latif and Mr Tank in the course of drafting their witness statements; and

1196.4 Any other documents which should have been disclosed by the Claimants pursuant to paragraph 3 of the Fourth CMC Order or due to being adverse documents.[1447]

1197. On Days 6 and 7 of the Horizon Issues Trial, Mr de Garr Robinson QC also brought the non-disclosure of these documents to the attention of the Court, and noted that a response from Cs to Post Office's letter was still awaited.[1448]

1198. Cs responded to these requests on 27 March 2019 refusing to provide disclosure of the requested documents on the basis that they were either outside of Cs' control, no longer existed or were not relevant the Cs evidence and not relied upon at trial.[1449]

1199. Post Office responded on 14 May 2019 offering to assist with gaining access to the documents which were held in Mr Latif's former branch (and therefore outside of his control despite his former branch manager accessing them for the purposes of witness evidence) and repeating its request for disclosure. Post Office also asked that these

[1447] {H/242.6/3}.

[1448] {Day6/4:2} to {Day6/4:23};{Day7/1:6} to {Day7/2:10}.

[1449] {H/255}.

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requests be treated as Model C requests for disclosure.[1450] Post Office chased for a response on 23 May 2019.[1451] Cs responded on 29 May 2019 refusing to provide disclosure of the documents sought:[1452] in relation to Mr Latif, Cs said there were no documents to disclose and in relation to Mr Tank Cs stated that they had considered the documents in his "*box file*" and concluded that they were not "*known adverse documents*".

1200. Cs are showing double standards in their attitudes. In contrast to Post Office's approach, Cs have taken a narrow and restrictive view of their disclosure obligations. At the same time they direct bitter criticism towards Post Office who have adopted a much more co-operative approach.

J. MISCELLANEOUS

"Shadow experts"

1201. In its Opening Submissions, Cs made a number of points about so-called "shadow experts" which are improper and misleading. Due to time constraints, Post Office did not deal with these in oral opening but indicated that these points would be covered in closing.

1202. In dealing with these points, Post Office does not in any way waive privilege.

1203. It is commonplace in litigation of this scale that independent advisers are retained to assist parties. The mere fact of the retainer should be no criticism

1204. As a preliminary point, the suggestion that the advisers have been used in order to shield Dr Worden from evidence is an allegation which should not have been made: it is baseless, improper and should be withdrawn.

[1450] {H/280}.

[1451] {H/297}.

[1452] {H/303}.

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1205. In fact, advisers were not retained as expert witnesses but as an investigation team. Their principal role was to assist with the pleading of the defence and most of their work occurred before this point.

1206. Indeed, apart from a handful of small follow up questions, their work was concluded before the Second CMC on 2 February 2018 – i.e. the first time the Horizon Issues Trial was canvassed. They had no role in scoping disclosure or in reviewing documents to be disclosed or in making decisions on documents to be disclosed

1207. As part of their investigation they provided a list of documents they had reviewed. That list is privileged but all documents on that list have been disclosed.

ANTHONY DE GARR ROBINSON QC

SIMON HENDERSON

OWAIN DRAPER

REBECCA KEATING

One Essex Court and 4 Pump Court

27 June 2019

K. APPENDICES

K1. APPENDIX 1: POST OFFICE ANALYSIS OF MR COYNE'S ADDITIONAL "COST/BENEFIT" PEAKS

1. PC0055804:[1453]

[1453] {F/78.1}.

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1.1 This Peak relates to an issue with APSC2053 "abending" (crashing) resulting in there being no APS reports for three days in respect of branch FAD 3746429. The Peak notes that "*[t]his problem has been identified as real and still needs fixing*".

1.2 As a temporary fix for the issue, an OCP (2771) was applied to the live system. At that point, the Peak cited by Mr Coyne was cloned from PC0055265 for *"detailed analysis at a later date"*, noting that the *"QFP forum has assessed this as having a low business impact"*.

1.3 A permanent fix was scheduled to be issued in the next release (M1), however, upon investigation, the problem was found to be *"bigger than expected"*. The Peak notes that *"[t]his fix is needed to make the system clean, but is not urgent for M1 as database contraints [sic] have been relaxed"*, referring to the temporary fix applied by OCP 2771.

1.4 The Peak notes that the permanent fix "*is also going to be tricky to implement and will take time and care*" and so is delayed until after M1. Ultimately, the Peak concludes that "*at best it would not be cost effective and could be counter-productive to analysecfurther [sic] or attempt to fix this call without demonstration that it still occurs in the system currently under test or in Live. Moving to Awaiting KEL in preparation for closure*".

1.5 The clear inference from the Peak is that the fix being potentially not *"cost-effective"* is not the primary reason for not implementing it. It appears that the fix would be complex and potentially *"counter-productive"*, and may not be necessary in light of a lack of evidence that the issue can still occur in a test/live environment. In any event, this issue would not have had an impact on branch accounts.

2. PC0133933:[1454]

2.1 This Peak relates to a branch (FAD 101801) whose Harvester Exception Report (TPSC254) showed an error message reflecting a new harvester exception as a result of Riposte messages containing null mode attributes. On the day that the Peak was raised, the specific problem transaction was repaired.

[1454] {F/338}.

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2.2 The issue is described as *"a well known problem and does not just affect Mails messages"* and it is initially suggested that the call should be passed to Escher to develop a fix on the basis that the issue may be caused by a bug in its code.

2.3 Ultimately, it was concluded that the Peak could be closed on the basis that an adequate workaround was already in place. Further, without a reproducible scenario, it was thought unsuitable to pass the investigation of the root cause to Escher. For these reasons *"and the limited life expectancy of the Horizon counter it was agreed that [attempting to fix the underlying cause] would not be cost effective and hence this PEAK should be closed"*. Anne Chambers, who originally investigated the issue, later comments that *"I never really expected the root cause to be investigated or fixed. The typo which caused the agent circumvention to fail was fixed a long time ago. Closing call"*.

2.4 Whilst cost-effectiveness is mentioned, the primary reason for not implementing a fix in relation to this issue therefore appears to be that an adequate workaround was already in place. In any event, this issue would not have had an impact on branch accounts.

3. PC0136622:[1455]

3.1 This Peak relates to an issue raised by System Testing relating to a Geller PC attempting to start Avery D104 scales upon reboot and raising a "red event" when it cannot do so (there are no scales connected to a Geller PC).

3.2 The Peak notes that "*[t]he event causes no problems operationally and it has been KEL'd in KSaunders5754S but it would be nice to have a fix for the next Geller build if possible*" and, later, that "*[a]t worst we may just have to live with the event*".

3.3 A fix was applied which addressed the problems caused by the issue, however, the Peak notes that, "*[s]trictly speaking, the root cause has not been fixed but because of the architecture of this platform, it would probably not be cost*

[1455] {F/345.1}.

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effective to do so. The problems caused by this have however been resolves [sic] so call can be closed".

3.4 Cost-effectiveness is considered as part of the ultimate decision to not implement a fix. However, this is in the context of an issue which has no operational impact and whose associated problems have been resolved. In any event, this issue would not have had an impact on branch accounts.

4. PC0227613:[1456]

4.1 This Peak relates to an HMS/TMS issue resulting in card payment authorisation requests being timed out for a 25-minute period. The Peak notes that, as a result, *"[t]ens of thousands of customers unable to pay by card at branches for over 30 minutes. Two known occurrences in 15 months. If the DCS agent handled the situation better, the duration of the outage may have been significantly reduced and the issue might have been noticed more quickly"*.

4.2 The Peak notes that *"[t]hrough the changes we deployed we mitigated this issue to the extent that we will not suffer from it again"*. Two options were being considered in order to permanently fix the issue. The decision not to implement a permanent fix is explained in two entries in the Peak:

(a) *"I am guessing we would need a business case and many more inputs than we have today, the forum would need to be extended initially to involve the solution owner and then commercial people. Ultimately we would need enough justification to get this on the road map, not knowing the costs it would be difficult to say how the account would like to progress option 2 if indeed it got that far the first step for me would be an internal feasibility study to identify whether or not this would be worthwhile in the current landscape as we don't have all the information to answer that at present"*

(b) *"We did briefly pursue this with both architecture and senior service mgmt at the time, I recall a brief discussion with Alex who informed us that the current x25 circuits are either already paid for until the end of the current contract or contractual agreements are in place to that effect and therefore circuit cost reduction savings would not be recognized. This combined with where we are today with the customer, (Towers Model) and service extension projects throughout next year to me means we have less reasons today for pursuing this than we did at the time of the high profile fault*

[1456] {F/1115.1}.

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when the decision then was to not pursue migrating this service onto TCP/IP.

I would suggest closing the PEAK down as the issue has been mitigated to the extent that it will no longer impact service. Whether or not we ever end up migrating DCS onto an e2e TCP/IP service can remain as a potential option for us at any point in time whilst we are still an active player in this service, we don?t really need a PEAK for that but it does give us justification if we ever did go down that path.

Included Alex/Steve just in case they disagree with any of the above, I may have quoted Alex incorrectly about the X25 circuits as it was a long time ago but I am pretty sure even if I have the net result is the same, no cost benefit"

(c) Note that the reference in b) to *"cost reduction savings"* and *"no cost benefit"* appears to be a reference to the fact that the preferred permanent fix was initially thought to have the collateral benefit of reducing costs. It was later determined that this was not the case. This particular quote is therefore not an example of a fix not being implemented because of the associated costs.

(d) The Peak demonstrates that a number of factors influenced the decision not to implement a permanent fix; primarily, the issue had been *"mitigated to the extent that it will no longer impact service"*. Whilst the potential costs of a permanent fix are referred to, they are not considered in any detail. In any event, this was an issue affecting the back office and would not have had an impact on branch accounts.

5. PC0083308:[1457]

5.1 This Peak relates to an issue in which the ACDB and OCMS audit log switch fails. This Peak is a clone of PC0081847 (POL-0255113 –not in the trial bundle). The Peak (which was assigned to Richard Roll) notes that the issue is *"not a High priority and can be targeted at BI3"*.

5.2 A workaround was developed whilst a *"full solution"* was being considered. At this point, the Peak referred to by Mr Coyne is cloned from PC0081847 to investigate the full solution.

[1457] {F/123.21}.

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5.3 The Peak concludes that "*[i]t has been agreed that there is insufficient cost benefit to justify this development, which affects several platforms. The Maestro workaround described above has fixed the immediate problem*".

5.4 Whilst "cost benefit" is considered, the primary reason for the decision not to implement the permanent fix is that an adequate workaround is already in place. In any event, that this issue affected the back office and would not have had an impact on branch accounts.

6. PC0145617:[1458]

6.1 This Peak relates to an issue at branch FAD 468519 in which the system freezes during a transaction. The issue was caused by a combination of intermittent comms issues on a dial-on-demand network together with a Riposte timer issue.

6.2 The Peak notes that *"[i]nitial investigation has shown that the problem is affecting 10-12 Post Offices, who are getting the symptoms 2-3 times per week*".

6.3 The Peak was cloned from PC0145212 (POL-0315551 – this is not in the trial bundle). PC0145617 considers the Riposte timer issue; PC0145212 considers the comms issue. PC0145212 results in a fix being implemented for the comms issue.

6.4 A workaround for the PC0145617 issue was developed in spite of the associated cost of using it, since it is concluded that *"it would be more cost-effective than the alternatives"*. Various factors are considered in the decision to rely on the workaround without implementing a permanent fix: *"this problem is not readily reproducible and any potential (speculative) fix is likely to be fairly invasive"* and *"significant testing would be required"*. It is thought unlikely that Escher would develop a fix and even if they did, it was thought very unlikely that it would be implemented

6.5 A possible alternative is described as *"brutal"*, clumsy, lacking in recovery actions, *"more likely to cause problems than to solve them"* and having *"possible side effects"*.

[1458] {F/414.1}.

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6.6 The Peak does mention that there will need to be a discussion of the *"cost-benefit and likely timing of making a NB Framework change before committing more effort to investigating potential fixes"*. However, the decision not to develop a permanent fix is primarily based upon the lack of viable options (as set out above) together with the adequacy of the workaround.

6.7 In any event, this issue would not have impacted branch accounts.

7. KEL LKiang4936R:[1459]

7.1 This KEL relates to a reporting issue in which the "host figure" was missing a £36.79 reversal but the counter figures were correct (branch FAD 163925). The KEL stems from PC0100350 (F/198.1), which provides slightly more detail than the KEL.

7.2 The Peak notes that no reconciliation was required for the branch in question, since it was a reporting issue only.

7.3 Ultimately, it is concluded in the Peak that "*[s]ince the problem is now over a year old and module TPSC268 will be discontinued in approximately 2 to 3 months time (when TPS migrates to S80) I agree that it will not be cost effective to fix this problem*". This is reflected in the KEL. Therefore, whilst cost-effectiveness is mentioned, ultimately, the primary reason for not implementing a fix is that the issue would be resolved upon the migration of TPS anyway. In any event, this issue affected the back office and would not have had an impact on branch accounts.

[1459] {F/198.2}.

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K2. APPENDIX 2: THE 29 BUGS IN JS2

The Bug Appendix

1. This Appendix addresses the 29 bugs alleged in the JS2 Bug Table[1460] in the order in which they appear in that Bug Table. It should be read in conjunction with Section F of Post Office's Closing Submissions.

2. Hundreds of Peaks and KELs are referred to in JS2. It is not possible to address each and every Peak and KEL. This Appendix considers the main Peaks and KELs relevant to each alleged bug.

3. Of the 29 bugs, the relevant Peaks and KELs demonstrate that:

    3.1 Eight are not bugs at all.[1461]

    3.2 Three had no branch impact.[1462]

    3.3 Nine had or potentially had only transient impact.[1463]

    3.4 Nine caused or had the potential to cause lasting impact, but were resolved by Post Office and Fujitsu.[1464]

4. The following alleged bugs are not bugs at all:

    4.1 Bug 8: Recovery Issues.

[1460] {D1/2/3} to {D1/2/26}.

[1461] Bug 8: Recovery Issues; Bug 13: Withdrawn Stock Discrepancies; Bug 15: Phantom Transactions; Bug 16: Reconciliation Issues; Bug 17: Branch Customer Discrepancies and Bug 20: Recovery Failures; Bug 23: Bureau de Change and Bug 29: Network Banking.

[1462] Bug 11: Girobank; Bug 21: Transaction Corrections and Bug 22: Bugs/Errors Defects introduced by previously applied Peak Fixes.

[1463] Bug 2: Callendar Square; Bug 4: Dalmellington; Bug 5: Remming In; Bug 6: Remming Out; Bug 7: Local Suspense; Bug 9: Reversals; Bug 12: Counter Replacement; Bug 19: Post & Go/TA Discrepancies and Bug 25: Lyca top up.

[1464] Bug 1: Receipts and Payments Mismatch; Bug 3: Suspense Account; Bug 10: Data Tree Build; Bug 14: Bureau Discrepancies; Bug 18: Concurrent Logins; Bug 24: Wrong branch customer; Bug 26: TPSC250; Bug 27: TPS and Bug 28: Drop and Go.

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4.2 Bug 13: Withdrawn Stock Discrepancies.

4.3 Bug 15: Phantom Transactions.

4.4 Bug 16: Reconciliation Issues.

4.5 Bug 17: Branch Customer Discrepancies.

4.6 Bug 20: Recovery Failures.

4.7 Bug 29: Network Banking.

4.8 Bug 23: Bureau de Change.

5. The following bugs had no branch impact:

5.1 Bug 11: Girobank.

5.2 Bug 21: Transaction Corrections.

5.3 Bug 22: Bugs/Errors Defects introduced by previously applied Peak Fixes.

6. The following bugs had transient impact:

6.1 Bug 2: Callendar Square.

6.2 Bug 4: Dalmellington.

6.3 Bug 5: Remming In.

6.4 Bug 6: Remming Out.

6.5 Bug 7: Local Suspense.

6.6 Bug 9: Reversals.

6.7 Bug 12: Counter Replacement.

6.8 Bug 19: Post & Go/TA Discrepancies.

6.9 Bug 25: Lyca top up.

7. The following are bugs with lasting impact (although they were resolved):

7.1 Bug 1: Receipts and Payments Mismatch.

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7.2 Bug 3: Suspense Account.

7.3 Bug 10: Data Tree Build.

7.4 Bug 14: Bureau Discrepancies.

7.5 Bug 18: Concurrent Logins.

7.6 Bug 24: Wrong branch customer.

7.7 Bug 26: TPSC250.

7.8 Bug 27: TPS.

7.9 Bug 28: Drop and Go.

Bug 1: Receipts & Payments Mismatch

1. The key documents:

1.1 Peaks: PC0204765;[1465] PC0204263;[1466] PC0203864;[1467] PC0204537;[1468] PC0204889;[1469] and PC0205076.[1470]

1.2 Coyne 2, paras 3.27 – 3.33.[1471]

1.3 JS2.[1472]

Summary:

2. Post Office accepts that Bug 1: Receipts and Payments Mismatch had a potentially lasting financial impact. In the event, however, this bug resulted in transient impact only.

[1465] {F/718}.

[1466] {F/709}.

[1467] {F/705}.

[1468] {F/714}.

[1469] {F/721}.

[1470] {F/726}.

[1471] {D2/4.1/19} to {D2/4.1/22}.

[1472] {D1/2/3}.

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Nature of the issue

3. This bug was acknowledged by Post Office in its Letter of Response on 28 July 2016.[1473] It was investigated by Fujitsu, which produced a note entitled 'Correcting Accounts for "lost" discrepancies' (the "Lost Discrepancies Note").[1474]

4. KEL wrightm33145J[1475] shows that the issue related to the process of moving discrepancies into a branch's local suspense account. It occurred following an unusual sequence of events, namely:

   4.1 The branch had an unresolved discrepancy.

   4.2 The SPM, during the balancing of a stock unit, pressed the Preview or Print button to produce the Trial Balance Report, causing the counter to return to the rollover screen.

   4.3 Having checked the Trial Balance Report, the SPM then pressed the rollover button.

   4.4 Due to the unresolved discrepancy, Horizon would then ask the SPM whether they would like to:

      (a) transfer the relevant discrepancy to the branch's local suspense account; or

      (b) cancel the rollover.

   4.5 Instead of transferring the discrepancy to local suspense, the SPM chose to 'cancel' the rollover.

   4.6 This would cause the system to return to the rollover screen, allowing the SPM various choices, including cancelling the entire the rollover process or the choice of again pressing the Preview or Print button to produce the Trial Balance Report.

   4.7 The SPM then proceeded to rollover to a new Trading Period in the same session.

   4.8 If all those things happened, a bug in the code was triggered by the 'cancel' button being pressed and this incorrectly caused the discrepancy to be cleared.

[1473] {H/2/97}.

[1474] {F/1000}.

[1475] {F/1450}.

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Following the above steps, the SPM was able to rollover with an unresolved discrepancy.

Detection and resolution

5. Peak PC0204765 (25 September 2010) is cited in JS2.[1476] The Peak indicates that multiple branches had been affected by this issue (the "Payments Mismatch" issue) and it refers to several earlier Peaks.

6. The Peak records that the issue was being detected and monitored by Fujitsu and that all instances were being reported to Post Office's Duty Manager, together with the relevant figures and reports. It also records that Post Office was to make contact with the relevant SPM regarding any required remedial action.[1477]

7. The Lost Discrepancies Note provides details about the processes Fujitsu followed to identify those branches that had been affected by the bug and ensure that monitoring continued to enable Fujitsu to identify any future instances,[1478] including raising Peaks for each occurrence of the issue and running a monthly check.[1479]

8. Fujitsu prepared three spreadsheets showing those branches that had been affected by the bug as follows:

    8.1 Interim spreadsheet dated 21 October 2010.[1480]

    8.2 Spreadsheet dated 9 December 2010 confirming there were 62 individual branches affected between 31.03.2010 and 20.10.2010, with 2 branches being affected twice – i.e. there were 64 different instances and 62 affected branches.[1481]

    8.3 Final spreadsheet in December 2010.[1482]

[1476] {F/718}.

[1477] {F/718/7}.

[1478] {F/1000/2} to {F/1000/3}.

[1479] {F/1000/3}.

[1480] {F/736.1}.

[1481] {F/754.1}.

[1482] {F/754.2}.

[1483] {F/1001/3}.

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9. As can be seen from the 'issue notes' prepared by Fujitsu,[1483] Post Office elected to resolve any discrepancies with the affected branches via TCs. There was one exception to this: in the occurrence recorded in Peak PC0204765, Fujitsu injected a transaction into the branch's accounts (as explained in Post Office's Letter of Response).[1484]

10. Mr Coyne suggested that the true extent of the bug is not fully confirmed. There was no time to cross examine him about this, but it is worth noting that he did not refer to the steps taken by Fujitsu to identify those branches affected by the bug or to the fact that PC0204765 confirmed that Post Office would in due course make contact with the relevant SPM regarding any required remedial action.[1485]

11. As can be seen from PC0204263,[1486] Fujitsu implemented a reference data fix to correct the issue in the code that was causing the discrepancies to become 'lost'.

Relevant discussions during trial

12. During Dr Worden's cross-examination, Mr Green QC referred Dr Worden to the Payments Mismatch 'issue notes',[1487] specifically the following extract:

> "*Note the Branch will not get a prompt from the system to say there is Receipts and Payments mismatch, therefore the branch will believe they have balanced correctly*"[1488]

Mr Green QC noted that, in relation to the Payments Mismatch issue:

> "*That is not the system alerting the Subpostmaster or subpostmistress to what's going on is it?*"[1489]

In response, Dr Worden confirmed:

> "*I agree that is different from other cases where I think receipts and payments mismatch shows in a trial balance or something that the postmaster sees*"[1490]

[1484] {H/2/25}.

[1485] {F/718/7}.

[1486] {F/709}.

[1487] {F/1001/3}.

[1488] {Day19/135} to {Day19/136}.

[1489] {Day19/136:6} to {Day19/136:8}.

[1490] {Day19/136:9} to {Day19/136:11}.

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13. As indicated above, the Payments Mismatch issue only occurred following an unusual sequence of events during the process of moving discrepancies into the local suspense account. It did not generate a receipts and payments mismatch alert when the branch balanced at the end of its trading period, but Fujitsu was able to identify instances of the bug (and indeed identified the existence of the bug) and it would have been visible to the SPM via their Final Balance Report (see KEL wrightm33145J)[1491].

Conclusion

14. Ordinarily Horizon alerts a SPM to a receipts and payments mismatch when they balance at the end of a trading period, but that did not happen here for the reasons given above. However, as can be seen from KEL wrightm33145J, the unresolved discrepancy would have been visible to the SPM if they checked their Final Balance Report. Instances of the bug were picked up and carefully monitored thereafter. All previous instances identified and were made good.

Bug 2: Callendar Square

1. The key documents:

   1.1 Peaks: PC0126042[1492]; and PC0126376.[1493]

   1.2 Coyne 2, paras 3.34 – 3.42.[1494]

   1.3 JS2.[1495]

Summary

2. Mr Coyne asserts that Bug 2: Callendar Square is a bug with lasting financial impact and in JS2, Dr Worden appears to agree that there is strong evidence of this, but the underlying documents show that the bug was identified early and Fujitsu dealt with

[1491] {F/1450}.

[1492] {F/297}.

[1493] {F/298}.

[1494] {D2/4.1/22} to {D2/4.1/25}.

[1495] {D1/2/3}.

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relevant instances as and when they arose. They make it clear that the bug resulted in transient impact only.

Nature of the issue

3. The Callendar Square bug was acknowledged by Post Office in its Letter of Response on 28 July 2016.[1496] It concerned the process in Legacy Horizon of transferring cash between different stock units ("SUs") in a branch[1497] which involved the following two transactions:

   3.1 a 'Transfer Out' transaction for one SU, which resulted in a message containing the relevant details about the transfer being created and replicated to all counters in the branch;[1498] and

   3.2 a corresponding 'Transfer In' transaction for the 'receiving SU', which used details from the message to complete the transfer.[1499]

4. There was a bug in the Riposte software (used to replicate data between counters in the branch) which meant that, when the SPM completed the Transfer In on one counter:

   4.1 The message indicating that the SPM had completed the Transfer In was not replicated to all the counters in the branch.

   4.2 The SPM was accordingly able to duplicate the Transfer In on another counter in the branch.

   4.3 As a result of the above, the counter on which the SPM completed the original Transfer In would become temporarily unusable until it was restarted.

5. The Riposte bug had several manifestations. The Callendar Square manifestation only occurred in unusual circumstances. Dr Worden termed this an "*event storm*".[1500]

[1496] {H.2.96}.

[1497] See Godeseth 2, para 13.2 {E2/7/4} for an explanation of why it would have been necessary to transfer cash between different stock units in a branch.

[1498] {E2/7/4}.

[1499] {E2/7/4}.

[1500] {Day19/172:1} to {Day17/172:2}.

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Detection and resolution

6. Fujitsu was aware of the wider Ripsote issue for quite some time. Its various manifestations were being identified and resolved long before the Callendar Square Peak was raised. PC0126042,[1501] the Callendar Square Peak, arose when the SPM at the Callendar Square branch reported that he could see a transfer on certain counters in the branch, but not on counter 3, and requested that this be investigated.

7. As is shown in the BIMS Incident Report BE/0126042[1502] for the Callendar Square branch:

   7.1 the "*Riposte errors*" allowed the SPM to complete three different Transfers In twice, resulting in a loss of £3,489.69;

   7.2 the loss of £3,489.69 would need to be corrected by Post Office via an error notice; and

   7.3 Fujitsu telephoned the SPM to explain what the problem was and advised the SPM to contact the NBSC regarding any further issues.

8. Mr Coyne suggests that it is "*unclear how this bug was resolved*".[1503] But as is shown in PC0126376,[1504] the Riposte bug was fixed as part of the Horizon software update s90 released in 2006.

9. Mr Coyne notes from the documents that the Callendar Square bug was "*operating and resident in the system for years without any comprehensive linkage being observed by Fujitsu*". However, this provides only an incomplete picture, as Post Office would have demonstrated if it had had the time it would have need to cross examine him on this bug (that time was taken by Mr Coyne's extraordinary changes in evidence on the afternoon of Day 17, the final afternoon of his cross examination). Two further points should also be noted from the documents:

[1501] {F/287}.

[1502] {F/653.1}.

[1503] {D2/4.1/24} to {D2/4.1/25}.

[1504] {F/298.5}.

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9.1 The first relates to those instances where a duplicate 'Transfer In' had incorrectly taken place. These occurrences resulted in a receipts and payments mismatch at the branch, which were in turn detected by Fujitsu using the following reports:

(a) The Host Detected Cash Account Lines Comparison Report TPSC256, which is run on a daily basis and shows those branches where the net total of the transactions in branch, i.e. the value of credits less debits, does not net to the value of zero, as expected.[1505]

(b) The TPSC268 Host Cash Account Reconciliation Report which shows the discrepancies between the values at the Counter and the TPS-Host.[1506]

These reports are discussed in Appendix 3.[1507] As can be seen from Coyne 1,[1508] Mr Coyne knew about the TPS Report set.[1509]

9.2 Second, as shown in JBallantyne5245K,[1510] a temporary solution was in place between 2000 and 2006 whereby the SMC would monitor for relevant events and, where an event was spotted, they would contact the SPM and advise them to restart the counter, which would typically resolve the issue.

10. Finally, once Fujitsu had identified that there was an issue with a particular branch, either via one of the receipts and payments mismatch reports or as a result of Fujitsu's monitoring of events or as a result of a call from an SPM, a Peak would be raised and the SPM made good in the ordinary course.[1511] It was open to Cs to search for all the relevant Peaks in the 220,000+ Peaks that have been disclosed, but most of them were identified by Anne Chambers when she was asked to do so nine years after the event, in 2015. These are set out in the spreadsheet 'Branches affected by Riposte lock problem',[1512] which indicates that she had identified 30 instances of the wider Riposte

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[1505] {F/896/67}.

[1506] {F/100.2/45} and JC2 at {D2/4.1/58}.

[1507] See Appendix 3.

[1508] {D2/1/201}.

[1509] {Day15/64:1} to {Day15/64:12} and {Day15/64:13} to {Day15/65:3}.

[1510] {F/565/3}.

[1511] {F/224.1}; {F/253} and {F/210}.

[1512] {F/322.1}.

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since the launch of Horizon, including 19 instances of the mismatch issue seen at Callendar Square.

Relevant discussions during trial

11. Dr Worden described how a receipts and payments mismatch would be *"a pretty prominent red flag to Fujitsu"* during cross-examination:

> *A. Well, we always have this issue of if there is a discrepancy, how obvious is it and therefore how much can one infer about whether it is likely to have been corrected or not? And receipts/payment mismatch, which I think this eventually led to, is a pretty prominent red flag to Fujitsu. And so a lot of receipts/payment mismatches I would expect -- you see them in PEAKs when they occur and you see the amount involved, so I would expect on a high proportion of cases generally R/P mismatches would be sorted out.*[1513]

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13. Dr Worden was taken through the first Callendar Square Peak,[1515] but was not referred to earlier Peaks which addressed the underlying Riposte issue. In re-examination, Dr Worden was therefore asked about a number of Peaks which arose prior to the Callendar Square Peak and which demonstrate that the Riposte issue was not lurking in Horizon undetected. He was referred to:[1516]

[1513] {Day19/133:13} to {Day19/133:22}.

[1514] {Day19/133:13} to {Day19/133:22}.

[1515] {F/312.1}.

[1516] {Day20/175} to {Day20/179}.

[1517] {F/224.1}.

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13.1 PC0109305 (8 October 2004)[1517] which was raised in response to the affected branch appearing in the following automatic reports: TPSC256 and TPSC268 reports (both explained in Appendix 3).[1518]

13.2 PC0116670 (24 February 2005)[1519] which was raised in response to the affected branch appearing in the following automatic reports: TPSC256, TPSC252 and TPSC268.

13.3 PC0103864 (3 June 2004)[1520] which was raised in response to the SPM raising an issue with the NBSC, however, as per the entry on 8 June 2004 at 14:48, the branch also appeared in Fujitsu's TPSC252, TPSC256 and TPSC268 reports.[1521]

14. When asked about these documents, Dr Worden said:

14.1 PC0109305[1522] showed that some of the instances of the Riposte issue:

> *... were being detected by routine monitoring and, for instance I would also suspect that any manifestation of the Riposte bug which led to a double stock transfer in and a single stock transfer out, that is a double entry accounting failure and that would certainly be picked up at some stage. So there are lots of ways in which the phenomenon would be automatically detected or easily detected at the back-end.*[1523]

14.2 PC0116670[1524] showed that

> *several manifestations of the Riposte problem were easily detectable by Fujtisu and they would be. They had systems set up to detect just this sort of thing.*[1525]

14.3 The symptoms that we now refer to as Callendar Square involved a

> *double stock transfer in, single stock transfer in. That is a double entry accounting mismatch failure and that will certainly be detected at the back*

[1518] See Appendix 3.

[1517] {F/224.1}.

[1519] {F/253}.

[1520] {F/210}.

[1521] {F/210/3}.

[1522] {F/224.1}.

[1523] {Day20/178} to {Day20/179}.

[1524] {F/253}.

[1525] {F/253}.

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end when it gets to POLSAP or if not before.[1526]

14.4 PC0103864[1527] showed that the actual Callendar Square symptoms would be picked up by Fujitsu using the TPSC252, TPSC256 and TPSC268 reports.[1528] The symptoms were:

> *picked up on three reports at the back-end. There is a lot of going back and forth, but end of the back and forth is the BIMS and Post Office being alerted and the branch being sorted out*[1529]

15. Dr Worden's analysis, which is clearly supported by the three Peaks,[1530] confirms that Fujitsu's automatic reporting was robust in terms of alerting Fujitsu to both the wider Riposte issues and the particular Callendar Square issue and furthermore that Fujitsu ensured that any exceptions in the relevant reports were investigated, so that any financial impact on branch accounts would be resolved by Post Office.

Did not persist until 2010

16. It was suggested to Dr Worden during cross-examination that the Callendar Square issue may have continued to 2010. This is incorrect. As Dr Worden pointed out, Callendar Square arose following a number of specific steps occurring:

> *Q. Did you get a feel in your reading into this problem of how long this problem had been around for and how many branches it was actually affecting?*
>
> *A. Well, there is a real problem about the definition of what "this problem" is because there is the Riposte bug and then there's certain event storms which causes problems in replication, which may be short-term problems for a few minutes, and then there are event storms which make them long-term problems, and then there's what happens in event storms and in particular the double transfer in. So the whole of Callendar Square is those things all happening together, whereas I think some of the 20 PEAKs or 30 PEAKs, whatever, are different from that, different combinations.*[1531]

17. Dr Worden confirmed this again:

[1526] {Day20/180}.

[1527] {F/210}.

[1528] {Day20/182}.

[1529] {Day20/184}.

[1530] {F/224.1}; {F/253}; and {F/210}.

[1531] {Day19/169:15} to {Day19/170:4}.

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> *A. As I said, my view has always been that there is a chain of events and the Riposte lock problem, which is at the source of the chain, happens much more frequently than the whole chain.*[1532]

18. In response to the suggestion that the bug may have persisted until 2010 Dr Worden confirmed that "*this is on the message correspondence server and it is a different thing from failure to replicate in the branch.*"[1533]

19. Dr Worden expanded on these points in re-examination:

> *Q. You say another symptom of the Riposte problem. Perhaps you could explain a little bit what you mean by that?*
>
> *A. Well, I did explain and I will explain it again. That there is a problem in Riposte which leads to a failure to replicate -- failures to release a lock I think -- and then on certain occasions that leads to a short-term failure to replicate. On other occasions there is a so-called event storm during which there is a longer term failure to replicate and during these failures to replicate all sorts of different things may happen, for instance they double transfer into a stock (inaudible), a precise Callendar Square phenomenon; whereas other things such as system freezes, I can't remember all the other details, but there are many other symptoms of then underlying Riposte problem and they have been noted over this whole period.*[1534]

20. Finally, Dr Worden confirmed he was not aware of any later incidents of Callendar Square.[1535]

21. The only basis for any suggestion that the Callendar Square issue may have persisted after the 2006 fix was the fact that a relevant KEL (KEL JSimpkins338Q)[1536] was updated in 2010 by the addition of a new Peak, PC0193012 (dated 9 January 2010).[1537] However, even a brief perusal of that Peak is sufficient to demonstrate that the issue it records is not the Callendar Square issue.

[1532] {Day19/171:18} to {Day19/171:21}.

[1533] {Day19/175:1} to {Day19/175:8}.

[1534] {Day20/174:15} to {Day20/175:5}.

[1535] {Day20/185:5} to {Day20/185:10}.

[1536] {F/565}.

[1537] {F/563}.

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Bug 3: Suspense Account Bug

1. The key documents:

   1.1 Peaks: PC0223870;[1538] PC0224126;[1539] PC0198077;[1540] and Release Peak PC0228641.[1541]

   1.2 Coyne 2, paras 3.43 – 3.45.[1542]

   1.3 JS2.[1543]

Summary

2. Post Office accepts that Bug 3:Suspense Account Bug had a potentially lasting financial impact. In the event, however, this bug resulted in transient impact only.

Background: Local Suspense account

3. This issue relates to the Local Suspense account. If the SPM declares that there is a discrepancy between:

   3.1 the amount of cash and/ or stock in the branch and the amount of cash; and/ or

   3.2 the amount of stock recorded on Horizon

   the loss or gain is stored as a temporary accounting record in a separate part of Horizon called the 'Discrepancy Account'. This enables the SPM to remove the discrepancies from the branch's live Horizon records.[1544]

4. At the end of the Trading Period, the figures in the Discrepancy Account must be cleared before the branch can rollover into the next Trading Period. To do this, the SPM must transfer the net value of all discrepancies recorded in the Discrepancy Account into the

[1538] {F/1045}.

[1539] {F/1048.1}.

[1540] {F/630}.

[1541] {F/1141.1}.

[1542] {D2/4.1/25} to {D2/4.1/26}.

[1543] {D1/2/4}.

[1544] {H/2/97}.

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Local Suspense Account. The SPM is then required to resolve any shortfall or surplus in the Local Suspense Account. Once the discrepancy has been resolved, the Local Suspense Account will reset to zero and the branch will be able to rollover to the next Trading Period.[1545]

Nature of this issue

5. This bug was acknowledged by Post Office in its Letter of Response on 28 July 2016.[1546] The bug has been investigated separately by Fujitsu, who prepared a note for Post Office titled 'Local Suspense Problem' which addressed this issue (the "**Suspense Problem Note**").[1547] Additionally, Fujitsu identified the 14 affected branches.[1548]

6. In terms of the specific issue that arose, as can be seen from Peak PC0223870[1549] and the Suspense Problem Note:[1550]

   6.1 Changes were made to the archiving strategy relating to SUs on 3 July 2011. This change inadvertently caused certain records in the Local Suspense Account that should have been deleted to be left in the relevant table used for creating the Branch Trading Statement.[1551]

   6.2 As a result, the Local Suspense values that should have been deleted, later appeared in the affected branches' Branch Trading Statements when the same Trading Period was next reached. Taking the Willen Village branch as an example, this meant:

      (a) 8 December 2010: The branch rolled over from Trading Period 9 to Trading Period 10. The branch experienced a genuine loss for SU 1 of £9,799.88.[1552]

[1545] {H/2/97}.

[1546] {H/2/97} to {H/2/98}.

[1547] {F/1075}.

[1548] {F/1075/3}.

[1549] {F/1045/4}.

[1550] {F/1075/3} to {F/1075/4}.

[1551] {F/1075/2}.

[1552] {F/1075/4}.

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(b) 3 July 2011: The change to the archiving strategy happened (as explained above at para. 13.1).[1553]

(c) 4 January 2012: The branch rolled over from Trading Period 9 to Trading Period 10. The archived record, being the £9,799.88 loss, incorrectly reappeared in the Branch Trading Statement.[1554]

(d) 2 January 2013: The branch rolled over from Trading Period 9 to Trading Period 10. The archived record, again being the £9,799.88 loss, incorrectly reappeared in the Branch Trading Statement.

6.3 As a result of the historical entries incorrectly reappearing in the affected branches Branch Trading Statement, SPMs re-settled entries in order to clear their Local Suspense Accounts on two further occasions, despite those entries having been previously settled.[1555]

Detection and resolution

7. As shown in the Release Peak PC0228641,[1556] Fujitsu produced a code fix in 2013. This was first piloted to 50 branches on 21 October 2013[1557] and deployed to all branches on 29 October 2013.[1558]

8. In relation to the affected branches, PC0223870 indicates the lengths that Fujitsu went to in order to investigate the issue and identify the 14 branches impacted by the bug.[1559] The Peak records that there was a conference call between Fujitsu and Post Office on 28 February 2013 and that the spreadsheet showing the impact of the problem on the 14 branches was sent to Post Office by Steve Bansal of Fujitsu.[1560]

[1553] {F/1075/5}.

[1554] {F/1075/5}.

[1555] {F/1045/5}.

[1556] {F/1141.1}.

[1557] {F/1141.1/4}.

[1558] {F/1141.1/4}.

[1559] {F/1045/4} to {F/1045/5}.

[1560] {F/1045/6}.

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9. Mr Coyne's view is that this bug could have affected branches prior to Fujitsu's investigations and as a consequence suggests that it is unlikely that Post Office and/ or Fujitsu have captured its full effects. However, as shown in the Peak:

9.1 Fujitsu identified that the historical data that was incorrectly retained related to Autumn 2010.[1561] It was not possible for the bug to have affected branches prior to this date.

9.2 Fujitsu was able to identify those affected branches from both the Branch Trading Statements and the Suspense Account Reports.[1562]

9.3 Events would be raised with Fujitsu moving forwards on branch rollover if:

(a) the next Trading Period's Opening Figures, generated for stock units, included Local Suspense products that did not net to zero value; and

(b) the sum of the two Discrepancy Transferred lines on the Branch Trading Statement, for the Branch Total, do not equal the sum of the two Discrepancy Resolved lines.[1563]

This meant that Fujitsu would automatically be alerted to any reoccurrences of this issue.

[1561] {F/1045/5}.

[1562] {F/1045/5}.

[1563] {F/1045/10}.

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Bug 4: Dalmellington

1. The key documents:

   1.1 Peaks: PC0246949;[1564] PC0246997;[1565] PC0247207;[1566] PC0247250[1567] and Release Peak PC0248024.[1568]

   1.2 KEL: acha621P.[1569]

   1.3 Coyne Supplemental Report 3.46 – 3.54.[1570]

   1.4 JS2.[1571]

Summary

2. This is a bug which Mr Coyne states has lasting impact on branch accounts. Post Office submits that there was no lasting impact on branch accounts.

Background: outreach branches

3. The issue relates to outreach branches. These are usually small part-time branches, for example, in a village hall or mobile van, and will be connected to a 'core' branch. While Horizon treats outreach branches as being separate from their core branches, all money is sent to and from the core branch, meaning it is the SPM's responsibility to transfer money between their respective core and outreach branches.

[1564] {F/1393}.

[1565] {F/1389.1}.

[1566] {F/1393}.

[1567] {F/1393.1}.

[1568] {F/1408.1}.

[1569] {F/1426}.

[1570] {D2/4.1/26} to {D2/4.1/28}.

[1571] {D1/2/4} to {D1/2/5}.

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Nature of the issue

4. Peak PC0246949[1572] relates to a problem that arose when a core branch, being the Dalmellington branch, attempted to transfer cash to its outreach branches.

5. This problem involved two separate issues relating to two different scripts.[1573] As shown in the Peak[1574] and KEL,[1575] it resulted in the following sequence of events being possible:

   5.1 The SPM logged into Horizon to make a cash declaration. Due to inactivity, the SPM was logged out of the counter.

   5.2 The SPM logged back into the counter and performed a transfer of cash from their core branch to the outreach branch. After the two receipts were printed, the user pressed 'Enter' which printed the 'Rem In' slip.

   5.3 Instead of the 'Remittances and Transfers Home' screen being displayed, the 'Pouch Delivery' screen was still showing, with 'Enter' enabled.

   5.4 The SPM pressed 'Enter' a further 3 times, resulting the total amount of £32,000 cash being 'Remmed Out' of the core branch.

6. All occurrences of the Dalmellington issue would have been clearly visible to the relevant SPM, who would have had sight of both the duplicate Rems In to the outreach branches and relevant Rem Out from the core branch.

Detection and resolution

7. In response to the Dalmellington issue being brought to Post Office and Fujitsu's attention,[1576] steps were taken to identify the full extent of the issue and those branches affected that may require financial reconciliation:

[1572] {F/1389}.

[1573] {F/1415}.

[1574] {F/1389/4}.

[1575] {F/1426/1}.

[1576] {F/1389}.

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7.1 In 2015 Post Office instructed Fujitsu to undertake an audit of the files sent to POL SAP each day. These files contain a summary of each day's transactions for each branch (the "**BLE files**").

7.2 As part of this audit and to identify potential occurrences of the Dalmellington issue, Fujitsu specifically searched for occurrences of Duplicate Pouch IDs being Remmed In over the course of the previous 5 year period within the BLE files.[1577]

7.3 On 10 December 2015, Fujitsu provided Post Office with the Branch Outreach Issue (Initial Findings) presentation (the "**Initial Findings Presentation**")[1578] which summarised the results of the audit.

8. The Initial Findings Presentation was revealing: Fujitsu identified 112 potential occurrences of the Dalmellington issue. Of these 112 potential occurrences, 108 items were corrected at the time, either by Post Office issuing a Transaction Correction or the SPM reversing the duplicate Rem In.[1579] This left 4 remaining potential occurrences, for which Fujitsu had not yet established the outcome.

9. As shown in the Release Peak,[1580] once the full extent of the Dalmellington issue was understood, Fujitsu produced a code fix without delay and it was rolled out in January 2016.

Relevant discussions from trial

10. Mr Coyne treats this as a branch affecting bug and he draws attention to the fact that it operated for five years without detection.

11. As can be seen from the Initial Findings Presentation, the nature of the issue was such that it was not reported to Fujitsu until 2015 (because occurrences of it were either resolved in by the SPM or Post Office issuing a transaction correction). It cannot fairly be characterised as a bug which was left to linger in the system while its impacts were unresolved.

12. During Mr Coyne's cross-examination, Mr de Garr Robinson QC asked Mr Coyne:

[1577] {F/1415/3}.

[1578] {F/1415}.

[1579] {F/1415/3}.

[1580] {F/1389.1/9} to {F/1389.1/10}.

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"*So would you accept that, in relation to the Dalmellington bug, the overwhelming likelihood is that that bug caused no lasting deficiencies in branch accounts*"[1581]

Mr de Garr Robinson QC explained what he meant in relation to the lasting deficiencies in branch accounts as follows:

"*All of those instances were picked up by the system and either the SPM himself reversed the Rem in some way and made himself good, or it was picked up by Post Office and TCs were sent, correct*"[1582]

To which Mr Coyne agreed and confirmed:

"*..I think once everything was detected everything was made good*"[1583]

13. Although Mr Coyne gave the impression in his reports that Dalmellington lay undetected, he agreed in cross-examination that one of the reasons the issue was able to exist in Horizon without detection was because robust automatic processes were in place that would ensure instances involving duplicate remittances were resolved.

14. As put to Mr Coyne by Mr de Garr Robinson, from an outsider's perspective, you would not be able to tell the difference between someone remming in twice by accident, due to human error and someone remming in twice because of an error on screen. While Mr Coyne did not wish to admit this point, he acknowledged that the fact that something had been remmed in twice would always be visible in the logs and receipts and information available to the SPM, and specifically confirmed:

"*Yes, if you was to review the detail then typically that information will be in there, yes*"[1584]

15. It is clear that the issue was not resolved until 2015 because it was extremely difficult to distinguish from human error and SPMs had no difficulty in reviewing and resolving their duplicate remittances in any event.

[1581] {Day15/162}.

[1582] {Day15/162}.

[1583] {Day15/163}.

[1584] {Day15/144}.

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The "unknown outcomes"

16. Mr Coyne noted that the impact of the issue for four branches was still to be confirmed.[1585] However:

    16.1 As shown in the Initial Findings Presentation, two of these occurrences relate to *de-minimis* values, namely £1.00 and £0.01.[1586]

    16.2 Post Office investigated the other two occurrences, namely £25,000 and £2,500, by reviewing NBSC call logs, Credence data and branch audit data and making enquiries of the FSC team in relation to the knowledge of any Transaction Corrections issued to the relevant branches.[1587] These investigations confirmed that, in relation to these two occurrences:

        (a) neither of these branches operates outreach services;

        (b) the potentially 'duplicate' remittance transactions were completed on different counters;[1588]

        (c) where a pouch does not scan and needs to be entered manually, there is a possibility of the same barcode being entered twice. This can only occur if the transaction is completed in two separate sessions;[1589]

        (d) although it was widely thought that all pouch barcodes were unique, Fujitsu had found that there are a small number of duplicate barcodes on the system;[1590]

        (e) there was no shortage or transaction correction recorded for these branches;[1591] and

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[1585] {D2/4.1/28}.

[1586] {F/1415/7} to {F/1415/8}.

[1587] {F/1427.1/3} and {F/1427.1/5} to {F/1427.1/6}.

[1588] {F/1427.1/1}.

[1589] {F/1427.1/1}.

[1590] {F/1427.1/8}.

[1591] {F/1427.1/2}.

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(f) there was no contact from these branches raising issues for the relevant periods in question, being February and March 2013.[1592]

16.3 As a result of the above, Post Office concluded that the correct amount of cash pouches were delivered and Remmed In on Horizon.[1593] In cross-examination, Mr Coyne stated that he was not of the view that Post Office did nothing about these remming issues. Indeed, he was of the view that "*the opposite*" was the case. That is *"likely that they do something about it."*[1594]

17. During Mr Coyne's cross-examination, Mr de Garr Robinson QC referred Mr Coyne to the report prepared by Post Office[1595] on these unknown issues, which summarised the conclusions reached above.[1596] Mr Coyne confirmed that he:

17.1 Accepted that the investigation in terms of the conclusions reached in relation to the £25,000 and £2,500 unknown outcomes.[1597]

17.2 Had no reason to think that Post Office's investigation and conclusions reached were wrong.[1598]

17.3 Agreed that in the main Fujitsu are quite good at identifying the branches that have been affected by bugs like Dalmellington.[1599]

17.4 The chances of the two smaller unknown occurrences being unresolved – i.e. not made good by Post Office were "*very small*".[1600]

[1592] {F/1427.1/2}.

[1593] {F/1427.1/2}.

[1594] {Day14/54:17} to {Day14/55:22}.

[1595] {F/1427}.

[1596] {Day17/158} to {Day17/160}.

[1597] {Day17/159} to {Day17/160}.

[1598] {Day17/159} to {Day17/160}.

[1599] {Day14/93:12} to {Day14/93:15}.

[1600] {Day17/161:14}.

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Bug 5: Remming In

1. The key documents:

   1.1 PC0203085[1601]; PC0195380.[1602]

   1.2 KEL acha4221Q.[1603]

   1.3 Coyne 2, paras 3.56 – 3.66.[1604]

   1.4 JS2.[1605]

Summary

2. Mr Coyne states that Bug 5: Remming In is a bug with lasting financial impact. Post Office submits that any discrepancy would be transient as instances of this bug are caught by automatic reporting.

Nature of this issue

3. Mr Coyne has conflated two distinct issues under the heading of "*Remming In*":

   3.1 Coyne 2, paras 3.56 – 3.59 relate to PC0203085[1606] ("Issue 1").

   3.2 Coyne 2, para 3.60 relates to PC0195380[1607] and other Peaks associated with KEL acha4221Q[1608] ("Issue 2").

4. Both issues relate to remming in cash and result in a cash pouch being recorded twice in error, but the sequence of steps taken by the Subpostmasters to trigger them are significantly different.

[1601] {F/695.1}.

[1602] {F/588}.

[1603] {F/794}.

[1604] {D2/4.1/29} to {D2/4.1/33}.

[1605] {D1/2/5}.

[1606] {F/695.1}.

[1607] {F/588}.

[1608] {F/794}.

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5. Subpostmasters rem in pouches of cash sent to the branch from the Post Office cash centre. Each pouch has a unique barcode that needs to be scanned by the branch. This automatically looks up the contents of the pouch so that the branch can confirm that the physical contents of the pouch match up to the record on Horizon. Horizon then prints a physical receipt to rem in and the cash is then added to the branch cash holdings.

6. If there is a difference between what the system says is in a pouch of cash and the amount of cash actually in the pouch, the Subpostmaster should raise the issue with NBSC in order to get a Transaction Correction.

7. A remming error leads to a mismatch between the amounts of cash remmed out to one place and the amounts remmed in from another. Remming errors are a violation of Data Entry Accounting and are picked up by Horizon.

8. During his cross-examination Mr Coyne confirmed that he believed these bugs to have lasting financial impact.[1609] This is incorrect. While both caused shortfalls in branch accounts, those shortfalls were cancelled out by Transaction Corrections.

Issue 1

9. As set out in Peak PC0203085, the Subpostmaster started remming in a pouch on Counter 1 by scanning its barcode. The Subpostmaster did not complete the rem but stopped doing it halfway through, without cancelling it. She then moved to a different counter and, whilst remaining logged onto Counter 1 and using someone else's log on details on Counter 2, scanned the pouch barcode again and the rem was completed as normal. The Subpostmaster then completed the same on Counter 1, which caused the rem to be recorded twice and two lots of cash to be added to the branch accounts on Horizon, creating a shortfall because there was actually only one lot of cash.

10. The duplicate rem would have been clearly recorded and visible to the Subpostmaster in the transaction log. Rem ins are large, round numbers due to them being cash deliveries and the resultant shortfall would therefore have been large and noticeable to the Subpostmaster.

11. Horizon keeps a list of all remmed in pouches and if a pouch has been remmed in already, it will reject the pouch when the barcode is scanned in. However, a pouch is

[1609] {Day17/130:9} to {Day17/130:12}.

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only added to the remmed in list once the rem in process is fully completed. However, in this case the Subpostmaster did not complete the rem in process on Counter 1 before she scanned the same pouch on Counter 2, which led to Horizon allowing the rem to go through. Had the Subpostmaster cancelled and restarted the process by scanning the barcode again, Horizon would not have allowed the second rem on Counter 1, because it would have been recorded as already completed on Counter 2.

12. Mr Coyne states at para. 3.58 of his report that it took ten months to fix this issue.[1610] This is inaccurate and it appears that Mr Coyne has muddled the two issues, counting from the start of Issue 2 (March 2010) to the end of Issue 1 (January 2011). Issue 1 was raised on 17 August 2010 and a BIMS was issued to Post Office containing information for Post Office to remedy the discrepancy on 18 August 2010. Fujitsu then developed a fix to prevent further occurrences.

13. Mr Coyne states at paras. 3.59 of his report that "*[t]his bug was only brought to the attention of Fujitsu/Post Office following notification from the Subpostmaster.*"[1611] While it is correct that the issue was reported by the Subpostmaster, it would have been spotted by Post Office in any event because Post Office reconciles all rems on Horizon with cash leaving their cash centre.

14. Mr Coyne's suggestion at paragraphs 3.59 and 3.60 that the two Issues were related to Dalmellington and "*differing manifestation[s] relating from the same core bug*" is not correct.[1612] Dalmellington was a separate issue that only affected outreach branches (although both issues had similar symptoms).

15. A fix was implemented on 23 January 2011[1613]. This meant that pouches are temporarily added to the "remmed in" list once the barcode is scanned, rather than waiting for the rem to be completed. This was part of the original design of the system, but it was not properly implemented.

[1610] {D2/4.1/30}.

[1611] {D2/4.1/30}.

[1612] {D2/4.1/30}.

[1613] {F/695.1}.

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Issue 2

16. In Peak PC0195380, the Subpostmaster started remming in a pouch by scanning in its barcode and then pressed "PREV" which moved them back one screen. They then scanned the barcode again. Horizon recorded the same pouch twice but only printed one receipt. This caused a shortfall in the branch accounts.

17. The duplicate rem would have been evident in the branch's transaction records.

18. This issue occurred in the pilot phase of HNG-X. A fix was implemented that disabled the "PREV" button from the rem in process. Thereby eliminating the risk of Subpostmasters moving back a screen and duplicating the rem in. Affected branches would have been corrected by ordinary rem checks.

19. Mr Coyne has correctly identified at para. 3.62 of his Supplemental Report that an associated Peak to KEL acha4221Q was raised after Peak PC0195380 was fixed.[1614] This is likely to be because it can take a few days for a fix to percolate through the entire network.

20. Regarding the other Peaks associated with KEL acha4221Q referred to by Mr Coyne in para 3.63 of Coyne 2:[1615]

    20.1.1 PC0195511[1616]; PC0196120[1617] and PC0196154[1618] are all duplicates of Peak PC0195380[1619] and were sent by Fujitsu to Post Office to compensate the Subpostmaster on 4 March 2010, 23 March 2010 and 18 March 2010 respectively.

[1614] {D2/4.1/31}.

[1615] {F/794}.

[1616] {F/589}.

[1617] {F/595}.

[1618] {F/596}.

[1619] {F/588}.

[1620] {F/599}.

[1621] {F/603}.

[1622] {F/604}.

[1623] {F/612}.

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20.1.2 PC0196671;[1620] PC0197032;[1621] PC0197034;[1622] PC0197605;[1623] PC0197651;[1624] PC0197753[1625]; PC0197828;[1626] PC0197837;[1627] PC0197838;[1628] PC0197872;[1629] PC0197873;[1630] PC0198115[1631] are all issues that were detected by Fujitsu. Fujitsu produced a report that would detect all of them except PC0197605[1632] (because that did not involve an error and the duplicate rem was intentional). The report enables MSU to detect any further incidents of the issues and raise a BIMS without SSC involvement. BIMS were sent to Post Office by Fujitsu to compensate the relevant Subpostmasters on various dates in April and May 2010.

20.1.3 It is unclear why PC0226230[1633] is on Mr Coyne's list, as there is no reference to KEL acha4221Q within it.

20.1.4 PC0246629[1634] is not a Horizon error, as Mr Coyne correctly identifies. It appears to be user error.[1635]

20.1.5 PC0251952[1636] is an operational issue, not a bug. It refers to the branch having incorrect pouch types.

21. Mr Coyne's suggestion at para. 3.64 of Coyne 2 that "*[t]he Release PEAK in relation to the fix for PC0195380 (referenced by Dr Worden and Mr Parker in relation to KEL*

[1620] {F/599}.
[1621] {F/603}.
[1622] {F/604}.
[1624] {F/615}.
[1625] {F/620}.
[1626] {F/622}.
[1627] {F/623}.
[1628] {F/624}.
[1629] {F/626}.
[1630] {F/627}.
[1631] {F/632}.
[1632] {F/612}.
[1633] {F/1081}.
[1634] {F/1380}.
[1635] {D2/4.1/32}.
[1636] {F/1484}.

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acha4221Q) does not document every PEAK that would be impacted by the fix or reference that the fix specifically applied to KEL acha4221Q. It also does not record whether it was fully rolled out across the estate as at 19 April 2010 (the date given by Mr Parker in his witness statement)"[1637] is incorrect: that is not the purpose of a Release Peak. The purpose of a release Peak is to show which software fixes have been issued. The original Peak PC0195911[1638] stated that the fix was to be rolled out from 19 April 2010 (which is presumably the document from which Mr Parker obtained this information). The Release Peak says that it was actually rolled out from 22 April 2010.

Conclusion on Bug 5: Remming In

22. These issues occurred because of unusual steps taken by Subpostmasters.

23. Peak PC0195380 occurred during the pilot phase of Horizon Online and the other Peaks in Issue 2 led to a report being created by Fujitsu to detect further occurrences and report them to Post Office so that Post Office could issue Transaction Corrections. The two branches in Issue 1 were also remediated with Transaction Corrections.

Bug 6: Remming out

1. The key documents:

   1.1 PC0143435;[1639] PC0120937.[1640]

   1.2 Coyne 2, paras 3.67 - 3.77.[1641]

   1.3 JS2.[1642]

[1637] {D2/4.1/32} to {D2/4.1/33}.

[1638] {F/593.1}.

[1639] {F/384}.

[1640] {F/271}.

[1641] {D2/4.1/33} to {D2/4.1/37}.

[1642] {D1/2/5} to {D1/2/6}.

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1.4 KEL acha508S;[1643] GMaxwell3853P.[1644]

1.5 Service Review Book February 2007.[1645]

Summary

2. Mr Coyne states that Bug 6: Remming Out is a bug with lasting financial impact. It comprises two separate issues, only one of which was a bug. Any discrepancy caused by wither issue would be transient as instances of both issues were caught by automatic reporting.

Nature of this issue

3. Mr Coyne has conflated two unrelated issues under the heading "*Remming Out*":

3.1 Para 3.67 – 3.72 relate to PC0143435[1646] and other Peaks that relate to the remming out of coins ("Issue 1").

3.2 Paras 3.73 – 3.76 relate to issue 2 (PC0120937)[1647] ("Issue 2").

4. These Issues occurred in Legacy Horizon.

5. Mr Coyne confirmed in his cross-examination that he believed "Remming Out" at 6(1) and 6(2) of JS2 had lasting financial impact.[1648]

6. A remming error leads to a mismatch between the amounts of cash remmed out to one place and the amounts remmed in from another. Remming errors are a clear violation of Data Entry Accounting and are picked up by Horizon.

[1643] {F/403}.

[1644] {F/276}.

[1645] {F/409.1}.

[1646] {F/384}.

[1647] {F/271}.

[1648] {Day17/130:13} to {Day17/130:16}.

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Issue 1

7. By way of background, Subpostmasters rem out pouches of cash to be returned to the Post Office Cash Centre. A single bag may contain multiple bags of coins or cash and each bag can only hold one denomination.

8. There is a limit on how much cash can go in one bag, with two or more bags being used if this limit is exceeded.

9. A branch has to record on Horizon the amount being placed in each pouch, by number of bags, value and denomination. Once remmed out, the cash is removed from the branch's cash holdings in the accounts and is no longer part of the branch's cash position for balancing purposes. It is temporarily recorded on a separate line in the accounts as "cash in pouches". This is a holding area in the accounts for the cash, where it remains until the pouch is physically collected by cash collection van – usually the same day or the next day. On collection, the collection team scan a barcode on the pouch and the cash is removed from the "cash in pouches" line of the accounts.

10. When remming cash out, branches should have made one entry for each denomination and value and, if there were multiple bags for a particular denomination, the quantity of bags should have been specified in that single entry (e.g. 2 x £500 of £2 coins). However, some Subpostmasters made multiple entries for each denomination and value (e.g. one entry for 1 x £500 of £2 coins and then a second entry for 1 x £500 of £2 coins). Horizon only recorded the first bag as having left the branch's cash holdings, but all of the bags would show on the "cash in pouches" line. Therefore when the pouches were collected a shortfall was created in the branch accounts (e.g. only £500 of £2 coins were recorded in the accounts as being remmed out, but in reality two bags were physically removed from the branch).

11. If the branch spotted the error and reversed the rem, only one bag would be returned to the branch. This would mean that the cash position in the branch accounts would be correct (one bag remmed out; one bag reversed back in), but the "cash in pouches" position would also only reverse one bag (two bags put in "cash in pouches" and only one reversed; leaving one bag to be collected). If the bag was collected, this would create a shortfall.

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12. This issue occurred as a result of Release T30 INC1.[1649]

13. Of the twenty-one Peaks referred to by Mr Coyne, two were erroneous duplicates, six originated from calls to Subpostmasters and thirteen originated from an automated payments mismatch report.

14. Fujitsu created KEL acha508S to advise branches to correct the problem manually and ran automated reports to spot any further occurrences. Fujitsu then made changes to Release T30 INC1 and rolled it back out to fix the issue.[1650]

15. In these cases the shortfalls were caused by the way in which users remmed out cash. Fujitsu ran automated reports to spot further occurrences in the period until the fix was rolled out.

Issue 2

16. In Peak PC0120937[1651] the Subpostmaster was trying to process a rem out of £100 of 5p coins. The Subpostmaster scanned the barcode on a stock pouch when they were trying to rem out coins and Horizon generated a message saying "Incorrect Pouch Type". This is because the Subpostmaster should have used the pouch designated for coins. The Subpostmaster was then presented with the option to either cancel the rem out or retry.

17. In this instance, the Subpostmaster pressed cancel. Horizon then began the process of reversing the rem out. During this process, the "Home" button was displayed for a brief moment and the Subpostmaster could press the icon while it was displayed. The "Home" button is a commonly used button that returns the Subpostmaster to the home screen on Horizon. Pressing it caused the remittance of £100 to be transferred to the suspense account rather than be cancelled.[1652]

18. As the sum was placed in the suspense account with no correlating pouch ID (because the barcode scan failed), the Subpostmaster could not remove the sum from the suspense account and so called the helpline.

[1649] {F/409.1}.

[1650] {F/384/5}.

[1651] {F/271}.

[1652] {F/271/2}.

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19. Mr Coyne states that there was a "*lack of system control preventing the input error in relation to remming out coins*" and that "*this issue arises from functionality that should not be available (but is) when the Horizon system is under load*"[1653]. As is evident from the Peak, Fujitsu attempted to recreate this situation but they could not access the "Home" button. They then reviewed the Horizon software code to find the issue. This led them to conclude that for a brief moment, following the cancellation of a rem when Horizon was doing automated actions (no user input required), the Home button might be displayed[1654]. It was only likely to be possible for a user to press the home button on a "*very slow or extremely busy*"[1655] branch terminal, presumably because on a slow machine the Home button would be displayed for a slightly longer period allowing the user to press it before it automatically disappeared.

20. Mr Coyne is correct in his suggestion that there was no fix for this bug. Rather, KEL GMaxwell3853P was created and a Transaction Correction was issued to fix the single known incident.[1656] As set out in the Peak, a decision was made "*[g]iven the frequency of the problem & the apparent risk involved in introducing a code fix*" that "*the KEL should be adequate*".[1657]

21. This incident only affected one branch. Also, it caused no financial impact, which Mr Coyne has failed to acknowledge: the £100 remittance was recorded in the suspense account, which was still part of the branch accounts. It would not have left the branch's because the remittance process was not completed on Horizon, meaning there was no loss or gain.

Conclusion on Bug 6: Remming Out

22. Issue 1 was a bug having an impact on branch accounts, was caused by an unexpected series of events. In any event, it was picked up automatically.

23. Issue 2 was not a bug and had no impact on branch accounts. A KEL was put in place in case a Subpostmaster came across this incident again.

[1653] {D2/4.1/36}.

[1654] {F/271/3} to {F/271/4}.

[1655] {F/271/3}.

[1656] {F/276}.

[1657] {F/271/5}.

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24. Mr Coyne's suggestion at para. 3.77 that Issues 1 and 2 "*illustrate how a bug that manifests in slightly different ways can be analysed and diagnosed differently amongst the varying technical support members*" is incorrect. Issues 1 and 2 were distinct issues.

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Bug 7: Local Suspense Issue

1. The key documents:

   1.1 Peaks: PC0197409;[1658] PC0198077;[1659] PC0197797;[1660] and PC0204396.[1661]

   1.2 KELs: acha5259Q[1662] and PorterS199P.[1663]

   1.3 Coyne 2, paras 3.78 – 3.83.[1664]

   1.4 JS2.[1665]

Summary

2. Mr Coyne states that Bug 7: Local Suspense is a bug with lasting financial impact. Post Office submits that any discrepancy would not be lasting.

Nature of this issue

3. Peak PC0197409[1666] relates to an intermittent system issue which temporarily prevented branches from rolling over into the next Trading Period.

4. This issue only affected those branches that had unresolved discrepancies in their Discrepancy Accounts. Unresolved discrepancies must be cleared by the SPM before the branch can rollover.

5. After the SPM had selected a settlement option for the relevant discrepancy, the next step should have been for a message to appear on Horizon to confirm the Stock Unit had

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[1658] {F/609}.

[1659] {F/630}.

[1660] {F/618}.

[1661] {F/711}.

[1662] {F/637}.

[1663] {F/629}.

[1664] {D2/4.1/37} to {D2/4.1/39}.

[1665] {D1/2/6} to {D1/2/7}.

[1666] {F/609}.

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rolled over. However, this issue caused Horizon to repeatedly ask the SPM how they wanted to settle the discrepancy and then to display an error message. This meant that the branch was unable to rollover into its next Trading Period.

6. There were two consequences for the affected branches:

   6.1 they were temporarily unable to rollover; and

   6.2 where the SPMs kept selecting to make good the discrepancy, their balance snapshot would show a nil-discrepancy and an inflated cash figure.

Detection and Resolution

7. This issue would have been clearly visible to the SPM as they were repeatedly asked to make good the discrepancy, they were shown an error message and they were unable to rollover. Peak PC0197409[1667] shows that the issue was reported to the NBSC by a number of SPMs in April 2010, during the early days of Horizon Online (during the pilot scheme when Horizon Online was rolled out to a limited number of branches).

8. As can be seen from Peak PC0197797,[1668] in response to an issue reported by SPMs Fujitsu:

   8.1 Investigated the issue and determined that branches would be able to use their housekeeping functions to rectify the issue and clear the losses and/ or gains from their Local Suspense Accounts.[1669]

   8.2 Searched for "*other branches which were affected by the same problem.*"[1670]

   8.3 Prepared a spreadsheet identifying the 33 branches which were affected by the problem and highlighting those branches that "*may need action*" before the end of the Trading Period.[1671] As per the entry in PC0197797 on 28 April 2010 at 17:39,[1672] Anne Chambers asked for this spreadsheet to be passed to Post Office,

[1667] {F/609}.

[1668] {F/618}.

[1669] {F/618/4}.

[1670] {F/618/4}.

[1671] {F/618}.

[1672] {F/618/4}.

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together with the information relating to the ability for SPMs to use their housekeeping functions to correct the position in their Local Suspense Accounts.

8.4 Issued a BIMS Incident Management report on 30 April 2010.[1673]

8.5 Passed the issue to development for further investigation.[1674]

9. A permanent code fix was released in September 2010, Release Peak PC0198077.[1675]

10. As can be seen from Peak PC0204396, in April 2010.[1676]

10.1 Anne Chambers confirmed that there had been no further occurrences of the issue since the code fix was implemented in September 2010.[1677]

10.2 On 17 September 2010 at 11:18 Anne Chambers stated that she would "*make some checks for branches affected by this problem and send details via BIMS.*"[1678]

10.3 Anne Chambers prepared a spreadsheet which showed that 60 branches had been affected by this problem since June, of which she confirmed she had fully investigated 27 instances where the impact was greater than £20.[1679]

10.4 A final BIMS report, together with the spreadsheet containing the 60 branches that had been affected by this problem since June was sent to Post Office on 24 September 2010.[1680]

Conclusion

11. This was a teething problem that arose in the early days of the Horizon Online pilot scheme. The problem was immediately identified and Fujitsu implemented checks to identify the affected branches and investigated the individual instances. Once its

[1673] {F/618/8}.

[1674] {F/618/8}.

[1675] {F/630}.

[1676] {F/711/5}.

[1677] {F/711/5}.

[1678] {F/711/5}.

[1679] {F/713.1}.

[1680] {F/711/6}.

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investigations were complete, Fujitsu sent details of the affected branches to Post Office to ensure that there were no lasting discrepancies in the affected branches.

12. Despite Mr Coyne stating during cross-examination that there is evidence that this bug had lasting financial impact,[1681] his reports make no reference to any such evidence. The affected branches would never have suffered lasting discrepancies, because as well as causing Horizon to repeatedly ask the affected branches how they wanted to settle the discrepancy and to display an error message, the bug prevented them from rolling over. The matter was bound to come to Fujitsu's attention very quickly, as indeed it did.

Bug 8: Recovery Issues

The key documents

1. Peaks: PC0197769,[1682] PC0198352[1683] and PC0199000[1684].

2. Coyne 2, paras 3.84 – 3.87.[1685]

3. JS2.[1686]

Summary

4. Mr Coyne states that Bug 9: Reversals is a bug with lasting financial impact. Post Office submits that any discrepancy would not be lasting.

Nature of this issue

5. Sometimes a basket of transactions is interrupted during the course of dealing with a customer, which could be for several reasons including a power failure, system crash or communication failure between the branch and data centre. There is no way to eliminate this risk, which is why a safeguard is needed in the form of a recovery process.

[1681] {Day 17/130:17} to {Day17/130:18}.

[1682] {F/617}.

[1683] {F/636}.

[1684] {F/650.1}.

[1685] {D2/4.1/39} to {D2/4.1/40}.

[1686] {D1/2/7}.

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6. Horizon runs various automated reports each day to look for failed recovery events. Where there has been a failed recovery, this is flagged automatically by Horizon to SSC at Fujitsu for investigation[1687].

7. Mr Coyne refers to two distinct recovery issues in his report:

   7.1 Para 3.84 relates to issue 1 (PC0197769) ("Issue 1").

   7.2 Para 3.87 relates to issue 2 (KEL acha959T[1688]) ("Issue 2").

Issue 1

8. Mr Coyne refers to PC0197769 and its associated KEL acha5650L. It is evident from the Peak that:

   8.1 this issue arose during the pilot phase of Horizon Online;

   8.2 the Peak was raised on 15 April 2010 and Fujitsu identified the root cause of the issue on 26 April 2010;

   8.3 work on a fix began on 27 April 2010; and

   8.4 a report was put in place to detect other affected branches.

9. Release Peak PC0199000[1689] shows that a fix was implemented quickly by Fujitsu. It went to the Model Office on 1 June 2010 and Fujitsu have advised that it would have been rolled out to the rest of HNG-X pilot by mid-June.

10. The issue is described in KEL acha5650L.[1690] It involved recovered transactions being written to a different trading period than the original transaction. In summary:

    10.1 if a transaction failed in one trading period and the recovered transaction went into the next trading period, there would be a loss in the first trading period 5 and a corresponding gain in the next trading period such that there would be no overall loss in the branch; and

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[1687] SVM/SDM/PRO/0012 {F/1051}.

[1688] {F/1700}.

[1689] {F/650.1}.

[1690] {F/1025}.

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10.2 if the recovered transaction was written to an earlier trading period, there would be a loss in the current trading period but no corresponding gain because the previous trading period would have already been rolled over again. There would be a net loss in that scenario.

11. In his first witness statement Mr Parker[1691] discussed KEL acha5650L[1692] and commented that there was no financial impact because there were offsetting transactions at the one branch in question. That analysis is correct for the branch in question.

12. Mr Coyne refers to Peak PC0198352[1693] as an example of this issue happening in another branch on 29 April 2010 and creating a discrepancy. However, Mr Coyne overlooks the fact that:

12.1 PC0198352 (2 May 2010)[1694] was raised as a result of the automated reports that Fujitsu had put in place to detect further occurrences of this bug; and

12.2 the Peak shows that a BIMS was issued to POL to give POL the information needed to correct the issue, presumably by way of a transaction correction.

13. Mr Coyne's conclusion in para 3.86: "*It is my opinion that with additional research, further financial discrepancies would be likely in respect of this same KEL issue.*"[1695] This overlooks the fact that any further branches affected by this bug would have no lasting impact due to the monitoring put in place by Fujitsu and Fujitsu reporting any further occurrences of the issue (before the fix was implemented) to Post Office.

Issue 2

14. Mr Coyne references several KELs and Peaks in support of his assertion that failed recoveries do happen and that they cause a financial impact. However, the definition of financial impact appears to be the actual point in issue.

[1691] {E2/11/76}.

[1692] {F/1025}.

[1693] {F/636}.

[1694] {F/636}.

[1695] {D2/4.1/40}.

[1696] {F/1700}.

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15. KEL acha959T[1696] is the master KEL for when the automatic monitoring for failed recoveries identifies an issue (a "State 4"). It was created on 28 February 2010 during the early pilot of Horizon Online. It is therefore frequently referenced in Peaks and in other KELs, such as KEL cardc464Q. At paragraph 3.95 of his report Mr Coyne states that he has randomly selected a Peak that refers to KEL cardc464Q and states at paragraph 3.96 that it relates to issues "*where customer transactions are part processed but the transactions are not recorded in the BRDB or on the Counter.*"[1697]

16. It should be noted that this recovery process only relates to Horizon Online and no transactions are recorded on the Counter in Horizon Online (that is how Old Horizon worked). Leaving that point to one side, this entire sequence of KELs and Peaks is designed to capture and correct exactly the scenario described by Mr Coyne and KELs and Peaks referred to by Mr Coyne show that the monitoring process is working.

17. At paragraph 3.89 Mr Coyne notes that the resolution of Peak PC0256502 was not recorded in the Peak "*as this would ultimately be down to Post Office to issue a Transaction Correction, whether they did or did not has been deemed out of scope by Post Office.*"[1698]

18. Mr Coyne does refer to one specific incident (PC0256566[1699] and PC0256502[1700]) which he tries to use as an example of how a failed recovery could impact a branch, but a full review of the Peaks show that the above monitoring and correction process worked as designed.

19. Mr Coyne's handling of Peaks PC0256566[1701] and PC0256502[1702] is muddled by the fact that he refers to them in reverse chronological order, which means he appears to have become confused about the outcome. The SPM suffered a transaction failure due to a communications issue – this is not a bug but an inherent risk in any networked IT system. The recovery process also failed due to a communications issues. There was no bug – the communications issues were outside of Post Office's control.

[1697] {D2/4.1/43}.

[1698] {D2/4.1/41}.

[1699] {F/1602}.

[1700] {F/1600}.

[1701] {F/1602}.

[1702] {F/1600}.

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20. This is a clear example of why Fujitsu has monitoring in place. On 16 January 2017, the automatic monitoring service spotted the failed recovery and Peak PC0256502[1703] was raised by Fujitsu. A BIMS was issued to Post Office to correct the discrepancy[1704].

21. On 17 January 2017, the SPM contacted the helpline regarding the same issue. A second Peak PC0256566 is raised. As quoted by Mr Coyne in his report, this Peak clearly records that this issue was already identified by Fujitsu and resolved under the earlier Peak. Hence the late Peak is closed without any action being taken.

22. At para 3.89 Mr Coyne insinuates that the Peaks were closed and recorded as "*no impact*" even though there was a financial impact and that a "*manual reconciliation*" was required to correct it. This fails to recognise the failed recoveries monitoring and the BIMS process was already in motion and correcting the issue.

Conclusion

23. There is no way to eliminate the risk of a basket of transactions being interrupted during the course of dealing with a customer, which is why a safeguard is needed in the form of a recovery process.

24. Dr Worden addressed why manual recovery processes are necessary:

> *A. It is a different theory really. Recoverable transactions are a big subject and they are complicated because the point at which a recoverable transaction can go wrong is very variable through the sequence, and therefore the number of recovery actions, the type of recovery actions is complicated. Horizon was designed so that with the assistance of the postmaster most of these could be recovered, but there are things called failed recoveries, which again were part of the design of Horizon, and those were the failed recoveries but particularly the ones where Fujitsu had to get involved. But failed recoveries means the recovery process had failed, that's the way Horizon was designed because these things are so complicated you can't handle them all automatically. So it is a big subject but there is plenty of useful evidence about it.*[1705]

[1703] {F/1600}.

[1704] {F/1601/1}.

[1705] {Day20/39:19} to {Day20/40:9}.

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25. Horizon contains various automated reports which look for failed recovery events and these are flagged automatically by Horizon to SSC at Fujitsu for investigation. Fujitsu then passes information to Post Office where appropriate. The KELs and Peaks referred to by Mr Coyne are examples of this.

Bug 9: Recovery Issues

1. **The key documents:**

1.1 Peaks: PC0089918;[1706] PC0090109[1707] and PC0083954.[1708]

1.2 KEL PSteed2847N.[1709]

1.3 Coyne 2, paras 3.99 – 3.104.[1710]

1.4 Second Joint Statement.[1711]

Summary

2. Mr Coyne states that Bug 9: Reversals is a bug with lasting financial impact. Post Office submits that any discrepancy would not be lasting.

Nature of this issue

3. Peak PC0089918[1712] relates to an issue in which attempted reversals of remming in transactions resulted in the magnitude of the transaction doubling, rather than the transaction being reversed.

4. The Subpostmaster (branch FAD003227) was trading in Stock Unit Y and remmed in £13,910 of cash. He continued to trade in that stock unit in error, instead of moving to

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[1706] {F/149}.

[1707] {F/149.1}.

[1708] {F/127}.

[1709] {F/152}.

[1710] {D2/4.1/44} to {D2/4.1/45}.

[1711] {D1/2/8} to {D1/2/9}.

[1712] {F/149}.

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Stock Unit I. He therefore attempted to reverse all of the transactions he had made in Y (including the rem in). Instead of Y showing a balance of zero, the rem in had doubled to show a discrepancy of £27,820. Having spoken to NBSC, the Subpostmaster attempted further reversals but these failed and produced an error message indicating that the initial reversal had been completed successfully.

5. The issue was caused by a software error, which had been introduced as part of implementing the fix for PC0083954 in Legacy Horizon, and which incorrectly calculated the reversal value and quantity (essentially, the wrong mathematical sign was applied when reversing RIAD transactions (+ instead of -)).[1713] The PC0083954 fix introduced a code change to ensure that a partial settlement of cash always tried to reduce the stack value. However, that fix did not work when reversing a rem in and so the solution was to pass the mode to the function also.

Resolution

6. Within 3 days of the issue first being identified, KEL PSteed2847N[1714] had been raised. Within 6 days of the issue first being identified, Fujitsu's 4th line team had identified the root cause – a software error was introduced when a fix was implemented in respect of Peak PC0083954.[1715] Because of the potential impact on live branches, the development of a fix was fast-tracked; within 15 days of the issue first being raised, Fujitsu had implemented a fix to 2,178 branches. It is not known precisely when the fix reached all branches in the estate, but Fujitsu believe it is likely to have been before 2 June 2003 (PC0089918 was raised on 25 April 2003).[1716]

Branch impact

7. In ordinary circumstances, a transaction and its reversal are preceded by opposing mathematical signs (+ or -) on the transaction report. The effect of this issue was that the transaction and its reversal were preceded by the same mathematical sign on the transaction report. Therefore, the issue would have been apparent to a Subpostmaster

[1713] {F/127}.

[1714] {F/152}.

[1715] {F/127}.

[1716] {F/149}.

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from his transaction report and, as a result, any financial impact of the issue should have been transient.

8. In this particular case, the Subpostmaster noticed and raised the issue. The Peak notes that MSU and NBSC were going to liaise in order to assist the Subpostmaster with dealing with the discrepancy and that an error notice would need to be issued to the Subpostmaster.

9. Whilst PC0089918 notes that more than one branch was affected by the issue, no other similar Peaks or references to KEL PSteed2847N have been found.[1717] This will be partly attributable to the fact that the 1st line help desks are notified of identified issues and instructed to advise Subpostmasters accordingly.

Conclusion

10. The issue referred to in PC0089918 had the potential to impact branch accounts.[1718] However, the issue would have been apparent to a Subpostmaster from his/her transaction report and would have been rectified by an error notice, therefore, any financial impact is likely to have been transient.

11. Fujitsu fast-tracked the investigation of the issue, based on its potential impact, and were able to diagnose the issue, and develop and implement a fix within a short period of time.

[1717] {F/152}.

[1718] {F/149}.

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Bug 10: Data tree build issues

The key documents:

1. Issue 1:

    1.1 Peaks: PC0033128;1719 PC0058161;1720 PC0046811;1721 PC0055964;1722 PC0059497;1723 PC0038631;1724 PC00458471725 and PC0043811.1726

    1.2 Coyne 2, para 3.106.1727

    1.3 Second Joint Statement.1728

2. Issue 2:

    2.1 Peaks: PC0121925;1729 PC0123319;1730 PC01321331731 and PC0144386.1732

    2.2 KEL MSCardifield2219S.1733

    2.3 Coyne 2, paras 3.1101734 and 3.1151735.

[1719] {F/22}.

[1720] {F/76}.

[1721] {F/29}.

[1722] {F/66}.

[1723] {F/76.1}.

[1724] {F/26}.

[1725] {F/27}.

[1726] {F/24}.

[1727] {D2/4.1/45}.

[1728] {D1/2/9}.

[1729] {F/275.1}.

[1730] {F/288.1}.

[1731] {F/332}.

[1732] {F/410}.

[1733] {F/428}.

[1734] {D2/4.1/47}.

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2.4 Second Joint Statement.[1736]

Summary

3. Bug 10: Data Tree Build is a bug with the potential for lasting financial impact. Mr Coyne has drawn together two distinct issues under the heading of "*data tree build failure discrepancies.*" The first arose early in the life of Horizon, was detected quickly and was fixed. Only three branches were affected and all three were identified. The second was identified in testing before the changes made to Horizon in 2005 and was fixed by a notification procedure before those changes were rolled out. There were some rare instances where this procedure was switched off and monitoring system was put in place to counter this.

Horizon's "data tree"

4. The data tree was part of the Legacy Horizon counter, which was used to build up a picture of the accounts based on a search for all transactions within a given period (the current balancing period). The counter would scan the messagestore for each transaction between limits specified by marker objects and, for each transaction found, would assign it to one or more points within the accounting hierarchy (defined in reference data). This then enabled reports such as office snapshots to be produced and any discrepancies to be identified.

Nature of this issue

5. Mr Coyne has drawn together two distinct issues under the heading of "*data tree build failure discrepancies*":

5.1 Para 3.106[1737] relates to issue 1 (PC0033128[1738]) ("Issue 1").

[1735] {D2/4.1/48}.

[1736] {D1/2/9}.

[1737] {D2/4.1/45}.

[1738] {F/22}.

[1739] {D2/4.1/47}.

[1740] {D2/4.1/48}.

[1741] {F/332}.

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5.2 Paras 3.110[1739] and 3.115[1740] relate to issue 2 (PC0132133[1741] and PC0144386[1742]) ("Issue 2").

Issue 1

6. Peak PC0033128 relates to an issue in November 1999; the Subpostmaster (Dungannon branch) reported a £43,000 discrepancy after balancing stock units and doing an office snapshot.[1743]

7. An office snapshot is a report that could be run from Horizon that showed the current accounting position of the branch, including any cash discrepancy. To produce the office snapshot, Horizon scanned the messagestore for the necessary information (eg. initial cash and stock levels, all cash and stock transactions, plus other service transactions). It then compiled that information together in order to produce the office snapshot. This is the "data tree".

8. Horizon would, on occasion, fail to read the necessary transaction data for a number of reasons and so fail to compile an accurate report. In the case of the Dungannon branch, this failure was caused by a missing payments node.

9. Issue 1 caused the incomplete data tree to be built. This meant that the Subpostmaster would be presented with an incorrect office snapshot with no knowledge that it was incorrect. That office snapshot might show a shortfall that was not real. The Dungannon branch's snapshot showed a false shortfall of £43,000.

10. In addition to the Dungannon branch, two branches were identified in March 2000 as having been affected by Issue 1 – Yate Sodbury (FAD 025511) and Appleby-in-Westmorland (FAD 158410). Yate Sodbury's snapshot showed a false shortfall of £52,814.29 and Appleby's snapshot showed a false shortfall of £9,368.40. MSU were involved in the investigation of Issue 1 and it is therefore likely that the issues at Yate Sodbury and Appleby were resolved via a BIMS report and that the Subpostmasters

[1742] {F/410}.

[1739] {D2/4.1/47}.

[1740] {D2/4.1/48}.

[1741] {F/332}.

[1743] {F/22}.

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were held harmless. However, due to the age of Issue 1, comprehensive records are not available and therefore Post Office is not in a position to provide detailed commentary.

11. PC0058161 was also affected by Issue 1, resulting in a £3,236 discrepancy.[1744] The diagnostic fix referred to above was in the process of being rolled out when this discrepancy arose; a BIMS report was raised in order for the Subpostmaster to be held harmless.

12. Mr Coyne also refers to a number of other Peaks which relate to Issue 1. These are: PC0046811,[1745] PC0055964[1746] and PC0059497.[1747] PC0038631 relates to a separate issue but stems from a similar (possibly identical) data server issue root cause as Issue 1.[1748] Owing to the age of these Peaks, comprehensive records are no longer available and Post Office is therefore not in a position to provide detailed commentary on them.

Resolution

13. In the short term, in the case of the Dungannon branch, the branch manager and Post Office agreed to adjust the branch's figures to remove the discrepancy. This occurred 2 days after the Peak was raised.

14. In the long term, as confirmed in PC0033128, a diagnostic fix had been implemented across 99% of the estate by 16 May 2000.[1749] A full fix for Issue 1 was released in the second half or 2000 (a more precise date is not available). On 9 October 2000, the Peak notes that no further instances of Issue 1 have been detected since the fix was implemented. The issues experienced by the branches referred to in PC0045847 and PC0043811 were addressed by the fix.

Branch impact

15. Of itself, Issue 1 would not affect branch accounts; there was no issue with the underlying transaction data and, if the office snapshot was re-run, it would very likely

[1744] {F/76}.

[1745] {F/29}.

[1746] {F/66}.

[1747] {F/76.1}.

[1748] {F/26}.

[1749] {F/22}.

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provide the correct information, because the data reading issue was temporary. However, if the branch ran the office snapshot, got an inaccurate report and then rolled over (making good any discrepancies in the process), then the shortfall would have an impact on branch accounts.

16. Further, hardware issues such as that which caused Issue 1 would generate a "systems event" which is visible to Fujitsu's SMC (2nd line support team) who monitor all serious system events and raise these with SSC. This is a means by which Fujitsu can identify affected branches.

17. Given that Dungannon's balance figures were manually adjusted between the branch manager and Post Office, there was no lasting impact on branch accounts caused by Issue 1.

18. PC0033128 is likely to have been created during the initial rollout of Horizon to branches, with pilots having been run since approximately September 1996. The Peak notes that "*Certainly, with the current system, a missing Payments node now would not go undetected*". This is because Fujitsu made improvements to counter error handling based on their experiences – including their experience of issues such as Issue 1 – of the testing cycle of early Horizon.

19. The age of Issue 1 also means that comprehensive records are not available and Post Office is therefore not in a position to provide a detailed commentary in relation to every Peak referred to by Mr Coyne.

Issue 2

20. As part of the changes to support IMPACT (the move from weekly cash account to monthly branch trading statements), some optimisations were introduced to the data server to reduce the number of times that the messagestore was scanned to pick up transactions during balancing. A Riposte mechanism known as "Notifications" was used to add new transactions to the existing totals as further transactions were generated during the balancing process (rather than rebuilding the data server tree of transactions from scratch).

21. Peak PC0121925 relates to an issue which was initially raised by Post Office in respect of one of its test branches.[1750] A test branch is operated by Post Office on a Fujitsu test

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rig; it is not a live branch and therefore any issue in a test branch has no impact on live branches.

22. The test branch experienced a gain of £45.05 following a cash declaration and rolling into branch trading. Initially, Escher were unable to replicate this scenario and so no further action could be taken. Subsequently, as demonstrated in PC0123319[1751] (a clone of PC0121925), Fujitsu were able to replicate the scenario and implement a fix on 5 September 2005. The fix was implemented before any branches had switched to use the new branch trading code, meaning that the issue in PC0121925 could not have impacted any live branches.

23. PC0132133[1752] relates to an issue in which the notification mechanism referred to in PC0121925 was accidentally switched off.[1753] Mr Coyne notes at para 3.112 that this Subpostmaster "*did not suffer an actual discrepancy*" and that "*a software bug fix was subsequently implemented*".[1754] Additional diagnostics were also added in order to trap any other manifestations of failures in the notification mechanism. It is therefore not disputed that this issue did not impact branch accounts.

24. PC0144386[1755] is a manifestation of the same issue as in PC0132133.[1756] As noted in the Peak, the Subpostmaster noticed the issue, reported it and the discrepancy was cleared, so there was no long term impact on branch accounts.

Bug 11: Girobank Discrepancies

1. The key documents:

   (1) Issue 1: KEL mwright531p;[1757] PC0044232;[1758] PC0050418;

[1750] {F/275.1}.

[1751] {F/288.1}.

[1752] {F/332}.

[1753] {F/275.1}.

[1754] {D2/4.1/47}.

[1755] {F/410}.

[1756] {F/332}.

[1757] This KEL has been deleted and is irretrievable.

[1758] {F/25}.

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(2) [1759] PC0050861;[1760] PC0052804;[1761] PC0053975[1762] and PC0054846.[1763]

(3) Issue 2: PC0044232.[1764]

(4) Issue 3: PC0052575[1765] and PC0052704.[1766]

(5) Issue 4: PC0068633.[1767]

(6) Issue 5: PC0073855[1768] and PC0075312.[1769]

(7) Issue 6: PC0076065.[1770]

(8) Coyne 2, paras 3.119 – 3.128.[1771]

(9) Second Joint Statement.[1772]

Summary:

2. Mr Coyne states that Bug 11: Girobank is a bug with lasting financial impact. Post Office submits that there is no evidence of any financial impact on branch accounts, let alone a lasting impact.

3. This was another example of an issue Mr Coyne drew attention to which arose early in the life of Horizon:

Q. So again very early days in Legacy Horizon?

[1759] {F/36}.
[1760] {F/38}.
[1761] {F/55}.
[1762] {F/60}.
[1763] {F/64}.
[1764] {F/25}.
[1765] {F/49.1}.
[1766] {F/52}.
[1767] {F/101}.
[1768] {F/112}.
[1769] {F/114}.
[1770] {F/118}.
[1771] {D2/4.1/48} to {D2/4.1/51}.
[1772] {D1/2/9} to {D1/2/10}.

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A. Yes.[1773]

Nature of this issue

4. Mr Coyne has drawn together six distinct issues under the heading "*Girobank discrepancies*". Each issue is summarised below.

Issue 1

"Giros"

5. There are several different types of product referred to as "giros". In this issue, it refers to giro payments. This is where a customer presents the branch with a giro (that looks like a cheque and is sometimes referred to as a docket or voucher) and exchanges it for cash. Giros could be issued for several reasons but were commonly used for benefit payments in the early 2000s.

6. In simple terms, the process for giros was that: i) the branch took the giro from the customer and entered it on Horizon; ii) the branch gave the customer the cash; iii) at the end of each day, the branch sent the paper giro to Girobank; and iv) Girobank compared the paper giros for each day to the entries on Horizon.

7. The dispatch of the giros from the branch to Girobank could occur before the end of the trading day; for example, because the post was collected prior to the closing time of the branch. This meant that additional giros could be taken after the day's giros were dispatched. As a result, branches had to "cut-off" the day at some point before the giros were dispatched in order to notionally demarcate the start of one day and the beginning of the next. Therefore, for example, a Wednesday dispatch of giros may contain some giros from Tuesday evening.

8. When Girobank compared the paper giros with the Horizon entries, Girobank would inform Post Office if there was a difference. If the relevant paper giros could not be found in order to address the discrepancy, Girobank would not pay Post Office and that could result in a transaction correction (formerly an error notice) being issued to the branch.

[1773] {Day17/39:9} to {Day17/39:10}.

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Peaks referred to by Mr Coyne

9. The following Peaks, which were raised in 2000, are examples of Issue 1. Due to the age of these Peaks, comprehensive records are not available and Post Office is therefore not in a position to provide detailed commentary.

10. In PC0044232, being the main Peak referred to by Mr Coyne in relation to Issue 1, Girobank had noticed that there was a £505.72 discrepancy between a branch's cash account and its daily reports:

    (1) This was a known issue dealt with by KEL MWright531p. This KEL is now deleted and irretrievable, but details about it can be gleaned from its associated Peaks.

    (2) The issue arose when a giro transaction was entered and then reversed, with the reversal being entered after the report cut-off time. This meant that the transaction was included on that day's daily report (which was sent to Girobank), but the reversal was not included until the following day's report. Girobank would have been expecting to receive the paper giro for the transaction, whilst the branch would not have submitted it because they thought they had reversed the transaction.

    (3) This led to an error notice being issued on the mistaken basis that the branch had a discrepancy.

    (4) The fact that the reversal, performed after the daily cut-off, did not show on that day's report reflects the intended operation of Horizon. Subpostmasters were instructed that, if a reversal is carried out to giro transactions after cut-off, a manual summary will need to be produced for Girobank. Issue 1 is therefore not a "bug".

    (5) Rather, Issue 1 relates to reporting. The underlying data is correct and the branch's accounts would have been correct at the end of the trading period, once the reversal had been recognised (at the time of this Peak, the trading period was weekly). Mr Coyne appeared to accept this in cross-examination.[1774] In this particular case, the only possible impact would be if the branch had accepted the error notice received because of the reporting issue.

[1774] {Day17/51:6} to {Day17/51:25}.

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(6) This also means that a "fix" would not have been deemed necessary; a KEL was already in place and the issue is one of reporting rather than any issue with the underlying data.

(7) Mr Coyne accepted in cross-examination that the detection and investigation of Issue 1 and Issue 2 in PC0044232 demonstrated the good and effective operation of robustness countermeasures in Horizon (RDS and MID)[1775] and that PC0044232 was not evidence of a transaction correction or error notice being issued to the Subpostmaster in such a way as to subject him to a risk of loss.[1776]

11. Mr Coyne admitted that this Peak is in fact an example of the good and effective operation of countermeasures:

> *Q. There was a reconciliation problem and it went straight to the SSC, and the SSC worked out what the cause of the problem was. Do you accept that what this PEAK shows is not a threat to the robustness of Horizon, actually it shows the operation, the good and effective operation of countermeasures to possible threats to Horizon, do you see?*
>
> *A. I do, but it is a little obvious that what we are looking at is PEAKs, so we will only see the times that somebody calls in and it is recorded. We won't have records if somebody hasn't reported it.*[1777]

12. The issue in PC0050418 was thought to be the same issue – the branch's largest discrepancy was £323.32. However, due to the length of time it took for the issue to reach SSC, the branch's messagestore had been archived – the Subpostmaster raised the call on 29 June and the call was sent to PINICL on 17 July. The Subpostmaster was told that they would need to provide further information (such as the Transaction ID) to allow Fujitsu to investigate. The Subpostmaster does not appear to have pursued this. The Peak notes that Girobank were going to send an error notice, but due to the age of this Peak the relevant records are not available and Post Office is not in a position to provide detailed commentary.

13. The issue in PC0050861 was thought to be the same issue – the branch experienced discrepancies of £59.33 and £40.00. The Peak notes that the branch received an error

[1775] {Day17/52} to {Day17/56} and {Day17/63} to {Day17/64}.

[1776] {Day17/65:6} to {Day17/65:23}.

[1777] {Day17/53:4} to {Day17/53:14}.

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notice. The Peak also states that the fact that a reversal does not show on a daily report if it is performed after cut-off is "*how the system is supposed to work*".

14. In PC0052804, the Subpostmaster reported a £55 Girobank discrepancy, based on an issue which was ultimately diagnosed as the same known mwright531p issue. The branch's weekly reports were correct. No error notice would have been needed as the Subpostmaster had ultimately just misread their report.

15. In PC0053975, the Subpostmaster (FAD 11413) reported a £40 difference between their daily report and CAP (having been notified of it by Girobank). This was diagnosed as the known mwright531p issue and the weekly reports were correct.

16. In PC0054846, the Subpostmaster (FAD 212113) reported a £99.13 Girobank discrepancy. This was diagnosed as the known mwright531p issue and the weekly reports were correct.

Issue 2

17. Mr Coyne refers to a "*secondary problem*"[1778] in relation to PC0044232 (this issue was picked up by Fujitsu in the course of investigating Issue 1). Issue 2 was that an £81 giro deposit was included on two consecutive daily reports. This is because the transaction was entered onto Horizon in a precise (and very small) window of time between two system calls being undertaken, resulting in a duplication. The overall branch position would still have been correct, but the daily reports to Girobank may have been wrong. If they were (i.e. if the same transaction was included on two consecutive daily reports), it is expected that this would have been spotted and a TC would not have been issued to the branch.

18. Fujitsu's fix for the issue was actioned on 30 May 2000 and so would have been released between that date and 23 June 2000.

Issue 3

19. Issue 3 applies to two Peaks listed in the table at para 3.123[1779]. These Peaks were raised in 2000 and so comprehensive records are not available.

[1778] {D2/4.1/49}.

[1779] {D2/4.1/49} to {D2/4.1/50}.

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20. In PC0052575, the Subpostmaster reported £20 and £628.25 discrepancies between the daily giro report and the office daily report. On 31 August, the issue was diagnosed as arising out of the use of a shared stock unit. There is a window of time between a user printing and cutting-off a report. If another user was to perform a transaction during that window, that transaction may not show on the report. The issue was already due to be fixed in a future release. Mr Coyne accepted in cross-examination that:
    20.1. this issue was not a bug which creates discrepancies in branch accounts[1780];
    20.2. in fact, the Peak demonstrates that "*the Horizon system and all the support operations surrounding it and supporting it operated well in identifying if there were any discrepancies and checking to see if there were any problems created by those discrepancies*"[1781];
    20.3. the Peak is a good example of "*how these countermeasures increase rather than detract from the robustness of Horizon*"[1782]; and
    20.4. the Peak was not evidence of a transaction correction or error notice being issued to the Subpostmaster in such a way as to subject him to a risk of loss.[1783]

21. Mr Coyne admitted that PC0052575 indicated a problem with a report, and not the transaction log.1784 Mr Coyne also agreed that the issue is not one with the software that generates branch accounts.1785 Mr Coyne went on to agree that this Peak does not relate to a discrepancy in branch accounts.1786

22. In PC0052704, the relief Subpostmaster reported that two transactions were missing from his 3-week balance (total £116.08). The Subpostmaster attempted to re-enter the two transactions before cut-off, resulting in the same issue as in PC0052575. Ultimately, when the branch re-checked the figures there were no outstanding issues. Using the wrong

[1780] {Day17/60:8} to {Day17/60:13}.
[1781] {Day17/61:11} to {Day17/61:19}.
[1782] {Day17/62:19} to {Day17/63:9}.
[1783] {Day17/65:6} to {Day17/65:23}.
[1784] {Day17/58:20} to {Day17/59:6}.
[1785] {Day17/60:2} to {Day/60:7}.
[1786] {Day17/62:10} to {Day17/62:12}.

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report (human error) caused the Subpostmaster to re-enter two transactions he believed were missing and it's likely that he reversed the later transactions.

23. It was put to Mr Coyne that:

> *Q. That, I would suggest, is not the result of a bug in Horizon.*
>
> *A. So if that was right, why would Martin Harvey, when he wrote that at 9.30 on 23rd August, choose to reference the KEL for that particular defect? It would make no sense if he didn't consider that that was part of his consideration.*[1787]

24. There are many reasons why a KEL may be referred to in the context of a Peak. It may be to signal a particular defect is that set out in the KEL. It can also be so that others can identify that this Peak is an example where, although symptoms may look similar, the issue is not the same. The Peak does not state that this incident is a manifestation of the issues set out in the KEL.

25. Issue 3 would therefore have no direct financial impact on branches; it affected reporting only and not data.

Issue 4

26. Issue 4 applies to PC0068633 (referred to at para 3.124[1788]). This Peak was raised in 2001 and so comprehensive records are not available.

27. In that Peak, the Subpostmaster reported that his cash account showed two giro deposits of £1,503 but that his reports showed only one. The Subpostmaster received an error notice from Girobank which cleared the error, but he raised the issue because he believed that an error in Horizon was duplicating the transaction.

28. The issue was caused by a cut-off being performed on one counter despite an attempt to print a transaction failing on another counter. This resulted in the cut-off report including the transaction that had failed to print.

29. A fix was actioned by Fujitsu on 18 December 2001.

[1787] {Day17/74:15} to {Day17/74:21}.

[1788] {D2/4.1/50}.

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30. Issue 4 only occurred in a very specific set of circumstances and would have had no direct financial impact on accounts; it merely had the effect that a transaction was missing from the reports.

Issue 5

31. Issue 5 applies to PC0073855 and PC0075312 (referred to in the table at para 3.127[1789]). These Peaks were raised in 2002 and so comprehensive records are not available.

    31.1. In PC0073855, a Subpostmaster (FAD 233618) reported that his office snapshot figures were double the figures on the balance snapshot (£6.76 discrepancy). Fujitsu were unable to replicate the issue and were therefore unable to issue a specific fix. However, a new version of the component was released with extra tracing code so that if the issue re-occurred, Fujitsu would be able to gather more evidence.

    31.2. The issue affected the office snapshot but not the balance report or the cash account figures. This means that the Subpostmaster was provided with an inaccurate report but that all the correct data was still available and would not have affected the branch when balancing.

    31.3. In PC0075312, a Subpostmaster (FAD 159546) raised an issue with printing her giro deposits. The issue was identified as being caused by the same root issue as PC0073855 which was already with the development team.

    31.4. Mr Coyne clarified in cross-examination that the Peaks referred to in the table at para 3.1271790 were not intended to be presented as Peaks which, in his opinion, constitute bugs within Horizon that impact branch accounts; rather, they are merely Peaks which refer to KEL AChambers4410R.1791

[1789] {D2/4.1/50} to {D2/4.1/51}.

[1790] {D2/4.1/50} to {D2/4.1/51}.

[1791] {Day17/44:6} to {Day17/45:8}.

[1792] {D2/4.1/50} to {D2/4.1/51}.

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Issue 6

32. Issue 6 applies to PC0076065 (referred to in the table at para 3.127[1792]). In that Peak, the Subpostmaster (FAD 179309) reported that two giro deposits (£11 and £24) made the previous day were not showing on the previous or that day's reports. Fujitsu discovered that the Subpostmaster had produced two reports. The first report was produced before the transactions were committed (and therefore did not include them). The second, subsequent report did show the transactions. It was assumed that the Subpostmaster had been mistakenly looking at the first report. This means that there was no actual discrepancy and the issue was user error.

33. Mr Coyne was initially evasive as to whether Peak PC0076065 was or was not an example of a discrepancy relating to the Girobank bug. Mr Coyne's report, upon an ordinary reading, clearly suggested that the Peaks set out in the table above paragraph 3.128 contained examples of bugs causing financial discrepancies in branch accounts. Mr Coyne confirmed that the table that contains Peak PC0076065, along with another table, sets out examples of bugs causing branch discrepancy:

> *Q. Sorry, if you look at 3.127 below, I'm a bit confused: "Further associated PEAKs that reference [that KEL] are provided in the table below." I would like to ask you about those. It is the PEAK on page 51. It is PC0076065 at {F/118/1}. If we could look at that please. I should, for completeness, actually read out what you say immediately below that table. This is in 3.128, we don't need to go back to it on the transcript -- on the machine: "The above PEAKs related to Girobank discrepancies are clear examples of bugs within Horizon that affect branch accounts by way of a financial discrepancy and illustrate, by their interlinking natures, the complexities of the PEAKs/KELs." So what you are saying there is that the PEAKs referred to in that table are clear examples of bugs in Horizon that affect -- that create financial discrepancies in branch accounts, correct?*
>
> *A. Yes, I'm referring to the PEAKs within this section, not just that particular table. If you read up, there is a table there and there is a table before it.*[1793]

34. Despite saying this when asked specifically about Peak PC0076065[1794] Mr Coyne was evasive as to whether or not it was an example of a bug causing a financial discrepancy in branch accounts. It should have been a simple yes or no response:

[1793] {Day17/40:19} to {Day17/41:14}.

[1794] {F/118}.

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Q. What I'm seeking to elicit from you, Mr Coyne, and I think you have confirmed it, is that it is your contention, your judgment, your expert opinion that {F/118/1} is a clear example of a bug which has caused a financial discrepancy in a branch account?

A. The text in my report is: "Giro deposit cut off ... Branch unknown." So a number of other ones in the table actually list the discrepancy. That one doesn't list the discrepancy next to it.[1795]

35. Mr Coyne was asked again:

Q. So you accept then that {F/118/1} isn't a bug which creates discrepancies in branch accounts?

A. No, it is linked by way of KEL; the Anne Chambers --[1796]

36. Yet again Mr Coyne was asked:

Q. We can save some time then. You accept that {F/118/1}, or the PEAK that is referred to there, isn't a bug at all, don't you?

A. I have described it here as a cut-off issue, branch unknown. So it likely isn't a --[1797]

37. Mr Coyne accepted in cross-examination that Issue 6 is not a bug,[1798] much less a bug which creates discrepancies in branch accounts.[1799]

Conclusion

38. Mr Coyne comments that the "above PEAKs related to Girobank discrepancies are clear examples of bugs within Horizon that affect branch accounts by way of a financial discrepancy and illustrate, by their interlinking natures, the complexities of the PEAKs/KELs."[1800]

39. That analysis is incorrect. None of the Peaks referred to by Mr Coyne demonstrate a direct financial impact on branches; in most cases this is because the issue affects

[1795] {Day17/41:15} to {Day17/41:24}.

[1796] {Day17/44:15} to {Day17/44:17}.

[1797] {Day17/45:9} to {Day17/45:13}.

[1798] {Day17/46:25} to {Day17/47:8}.

[1799] {Day17/44:15} to {Day17/44:17}.

[1800] {D2/4.1/51}.

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reporting whilst the underlying data remains unaffected. Issue 1 reflects Horizon working as intended (and is therefore not a bug) and Issue 6 is pure user error. Mr Coyne accepted in cross-examination that a number of the Peaks referred to did not concern issues which had impact on branch accounts.

40. Many of the Peaks referred to by Mr Coyne were raised in 2000. As Mr Coyne accepted in cross-examination,[1801] this demonstrates that the issues experienced in the very early days of Horizon had not manifested themselves in any Peaks or KELs since then.

Bug 12: Counter Replacement Causing One Sided Transactions

1. The key documents:

   1.1. Peaks: PC0058528;[1802] PC0052823;[1803] PC0071836;[1804] PC01338221[1805] and PC0153851.[1806]

   1.2. KEL JBallantyne5328R.[1807]

   1.3. Coyne 2, paras 3.129 – 3.131.[1808]

   1.4. Second Joint Statement.[1809]

Summary

2. Mr Coyne states that Bug 12: Counter replacement is a bug with lasting financial impact. Post Office submits that any discrepancy would not be lasting.

[1801] {Day17/39:5} to {Day17/39:16}.

[1802] {F/77.1}.

[1803] {F/54}.

[1804] {F/107}.

[1805] {F/337}.

[1806] {F/438}.

[1807] {F/421}.

[1808] {D2/4.1/51} to {D2/4.1/52}.

[1809] {D1/2/10} to {D1/2/11}.

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Nature of this issue

3. PC0058528 relates to an issue in November 2000 in which the branch (FAD 253329) was a single counter branch whose counter's hard drive had been replaced due to a hardware issue. That replacement caused two messages relating to an OBCS transaction to be overwritten, resulting in a receipts and payments mismatch; a transaction with a value of £167.12 was not added to the cash account.

4. When a counter is replaced, it builds its messagestore by replicating with its neighbours in "recovery mode". The neighbours it has depends on the office size and node number.

5. For a single counter office, the neighbours are the correspondence server in the datacentre and the mirror disk (the second hard drive in the same counter).

6. For node 1 at a multi-counter office, the neighbours are the correspondence server and all other nodes at the office.

7. For any node number higher than 1 at a multi-counter office, it is all other nodes in the office (known as slaves).

8. A replacement counter will come out of recovery mode when it believes it has successfully replicated all relevant messages from its neighbours. In this case, the replacement counter came out of recovery mode early, before it had replicated all messages from its neighbour.

9. The replacement counter started writing messages from the point at which it believed it had replicated all relevant messages from its neighbour. This meant that it used message IDs that had been used for messages that had not been replicated from its neighbour and this prevented the "missing" messages from being replicated later on (because that would have created duplicate message IDs). The missing message was therefore "overwritten" by the replacement counter.

10. The issue arose in cases of counter replacements where the new counter was not connected to all of its configured neighbours while rebuilding. This may have been because the branch infrastructure was not complete (eg not all neighbouring counters are online, multiple swaps or a counter increase/decrease occurring) or the engineer did not

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connect the system properly. Engineering instructions were constantly being refined to avoid instances of this happening.

Resolution

11. The branch reported a receipts and payments mismatch of £167.12. This discrepancy would have been flagged to the Subpostmaster on the cash account when he attempted to roll over.

12. The SSC inspected the Riposte mirror messagestore, compared the relevant messages in the neighbour's messagestore with those in the node reporting the problem, and thereby identified and retrieved the specific messages which had been overwritten. This is detailed in KEL JBallantyne5328R and does not involve inserting a message into Riposte.

13. Information of the overwritten messages was passed to MSU who created a BIMS report for Post Office and an error notice would have been issued to hold the branch harmless thereafter.

14. The long-term fix for the issue is detailed in PC0052823. The fix involved enforcing a minimum number of local neighbours for replication and then to slowly lower this number over time. A further change was made to stop Riposte writing messages as it came online.

Other Peaks associated with JBallantyne5328R

15. Mr Coyne states that he has performed a search of all Peaks disclosed for references to KEL JBallantyne5328R and that that search returned "*approximately 88 further PEAKs*".[1810] Mr Coyne has "*randomly selected*" three of these Peaks for analysis:

    15.1. **PC0071836**:[1811] this is an example of the same issue as JBallantyne5328R. This Subpostmaster had a receipts and payments mismatch of £3.27 as a result of three overwritten messages following a replacement of the branch's single counter. The same fix was applied following KEL JBallantyne5328R. Due to the age of this

[1810] {D2/4.1/51}.

[1811] {F/107}.

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issue, comprehensive records are no longer available and therefore Post Office is not in a position to provide detailed commentary.

15.2. **PC0133822**:[1812] this is not the same issue as JBallantyne5328R but is related. The branch had two counters removed, leaving it as a single counter branch. However, the counter did not have a mirror disk; the mirror disk was a second hard disk within a single counter that provided a replication neighbour for the main hard disk messagestore. This meant that the branch would have no replication of data if it was not connected to the datacentre and six messages on the counter had not been replicated to the data centre. The messages were extracted and sent to MSU for a BIMS report[1813] to be raised. An error notice would have followed the BIMS report and so there would have been no lasting impact on branch accounts.

15.3. **PC0153851**:[1814] this is not the same issue as JBallantyne5328R but it does involve a receipts and payments mismatch. Riposte failed to index four messages resulting in some items being missing from the receipts side of the balance report. The Peak notes that the branch did not experience a discrepancy as a result because this was a reporting issue only; indexes are not used when replicating data and so cash/stock were unaffected. The Subpostmaster was happy with the explanation provided and the call was closed. No BIMS report was required in respect of this Peak.

Branch impact

16. In PC0058528,[1815] the Subpostmaster noticed the receipts and payments mismatch and reported the issue; in any event, the issue would have been flagged on the cash account when he attempted to roll over. MSU issued a BIMS report to Post Office which would have resulted in an error notice being issued to the branch; there would be no lasting impact on the branch's accounts.

[1812] {F/337}.

[1813] {F/680.1}.

[1814] {F/438}.

[1815] {F/77.1}.

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17. In respect of other branches, the issue would not necessarily create an impact – transient or otherwise – on branch accounts; the effect of the issue would depend upon the precise messages that were overwritten and the reason why the data did not replicate correctly in the first instance.

18. If all the un-replicated events were overwritten then it would be detected through a payment/receipts mismatch or a balance issue. If not, all the messages were overwritten, and an old message for the counter existed elsewhere, then events would be created by Riposte and detected by the SMC (self-originating message detected).

19. This issue was limited to Legacy Horizon; data has not been held on counters since the introduction of Horizon Online.

Inserting items within the Horizon messagestore

20. Mr Coyne's conclusion in relation to this issue is that "since Fujitsu support had the facility to insert items within the Horizon message store, without process audit…the effects of one-sided transactions and their applied corrective fixes is clearly larger than the "one balancing transaction" as suggested by Post Office".[1816] Mr Coyne has arrived at that conclusion on the basis of a misunderstanding of the fix for this issue and the different Horizon systems. To be clear:

    (1) Fujitsu did not insert messages into branch systems in order to fix this issue.

    (2) Fujitsu identifies the source of the issue and passed the information to MSU, who issued a BIMS report to Post Office.

[1816] {D2/4.1/52}.

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Bug 13 – Withdrawn stock discrepancies

1. The key documents:

   121.1 Peaks: PC0207834;[1817] PC0208918;[1818] PC0209602[1819] and PC0211932.[1820]

   121.2 KEL PothapragadaC4913L.[1821]

   121.3 Coyne 2, paras 3.132 – 3.139.[1822]

   121.4 Second Joint Statement.[1823]

Summary

2. Mr Coyne states that Bug 13: Withdrawn Stock Discrepancies is a bug with lasting financial impact. Post Office submits that this is not a bug at all.

Post Office's withdrawal of products

3. Post Office add and withdraw products from sale for a variety of reasons. Before a product is withdrawn, this is communicated to branches by way of Branch Focus which outlines precisely what branches need to do in relation to the withdrawal. When a product is withdrawn from sale, any corresponding stock in the branch will either need to be destroyed or returned to Post Office within a certain period of time.

4. When a product is withdrawn from sale the various corresponding processes within Horizon will be withdrawn. This is done by an update to reference data and not a change to the core code in the system.

[1817] {F/765}.

[1818] {F/783}.

[1819] {F/789}.

[1820] {F/830.1}.

[1821] {F/678}.

[1822] {D2/4.1/52} to {D2/4.1/54}.

[1823] {D1/2/11} to {D1/2/12}.

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Nature of this issue

5. Peak PC0207834 relates to Post Office withdrawing a £5 saving stamp from sale.[1824] Subpostmasters would have been instructed to rem out any excess stock of the stamps and then return them to Post Office within a certain period of time before the processes for transacting the stamps were withdrawn on Horizon.

6. However, the Subpostmaster in this case returned the stamps (with a total value of £685) to Post Office without first remming them out. This aspect of PC0207834 was pure user error.[1825]

7. The branch conducted a trading period balance on 17 November 2010 which, necessarily, would have involved the Subpostmaster undertaking either a stock declaration or a stock adjustment to reflect that the stock of stamps held was actually zero. The relevance of the distinction between the two processes is explained below.

8. The branch declared a £685 shortfall. The lack of a rem out meant that Horizon thought that the branch was still holding the stamps and therefore when the Subpostmaster either declared or adjusted the stock of stamps to zero without a corresponding gain in cash, a shortfall was generated. The Subpostmaster elected to make good the shortfall and a credit transaction correction was subsequently issued for £685 to rectify the issue.

9. However, a bug in Horizon caused the £685 of stamps to be subsequently re-introduced into the branch's accounts on two occasions. By this point, Horizon was showing that the branch was holding £1,370 of the stamps. The Subpostmaster noticed this, adjusted or declared the stock as zero, and reported the issue. At that point, PC0207834 was created.[1826]

10. The Peak shows that the Subpostmaster was also experiencing some other, unrelated trading issues (such as a gain of £537.49 in December 2010). These issues are unrelated to the withdrawn stock issue except to the extent that it is possible that they caused him not to notice the first instance of the withdrawn stock being re-introduced at first.

11. This issue relates only to HNG-X and not also to Legacy Horizon.

[1824] {F/765}.

[1825] {F/765}.

[1826] {F/765}.

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Resolution

12. This issue was an example of a known issue covered by KEL PothapragadaC4913L. That KEL concerned foreign currency, but the same issue could occur in other products (such as the stamps in PC0207834).

13. PothapragadaC4913L contains a workaround for the issue. The Subpostmaster must undertake a stock declaration (not a stock adjustment) and declare the stock of the withdrawn product as zero. This prevents the withdrawn stock from being subsequently re-introduced. Performing a stock adjustment would not solve the issue.

14. Stock declarations and stock adjustments are different processes which produce the same end result (except for the purposes of the workaround). However, stock adjustments are quicker and easier to perform and Subpostmasters perform them much more often than stock declarations. In PC0207834, it appears that the Subpostmaster must have initially performed a stock adjustment, meaning that the stamps issue would not be resolved, and that it was only upon NBSC talking him through the workaround (whereby it would be clear that a stock declaration was required) that the issue was resolved.[1827] This is not explicit from the documents available but is thought to be the likely explanation for the Subpostmaster's issue in resolving the problem.

15. NBSC assisted the Subpostmaster in implementing the workaround by 2 March 2011. On 1 April 2011, a reference data fix was issued to address the root cause (recorded in PC0208918).[1828] PC0209602[1829] was subsequently opened by Fujitsu in order to investigate the possibility of correcting the relevant Horizon code in order to prevent the issue occurring in relation to other products; that fix was issued to the live estate on 21 September 2011 (PC0211932).[1830]

Branch impact

16. The original £685 shortfall was caused by user error by virtue of the Subpostmaster failing to rem out the stamps and then, most likely, undertaking a stock adjustment

[1827] {F/765}.

[1828] {F/783}.

[1829] {F/789}.

[1830] {F/830.1}.

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instead of a stock declaration. A branch who rems out the withdrawn stock as instructed would experience no financial impact. Further, a branch who does not do so, but who subsequently performs a stock declaration as instructed, would not experience the issue of the withdrawn stock being re-introduced.

17. The second issue was identified by the Subpostmaster and resolved promptly via a workaround.

Conclusion

18. For the reasons set out above, this was not a bug at all. The issues set out in the Peaks arose as a result of human error and not as a result of any bug, error or defect in Horizon.

Bug 14 – Bureau discrepancies

1. Mr Coyne draws together two distinct issues under the heading "*bureau discrepancies*".

The key documents

2. Issue 1:

    2.1 Peaks: PC0261541[1831] and PC0261710[1832].

    2.2 Coyne 2, paras 3.140 – 3.143.[1833]

    2.3 Second Joint Statement.[1834]

3. Issue 2:

    3.1 Peaks: PC0265443[1835].

    3.2 Coyne 2, paras 3.145 – 3.146.[1836]

[1831] {F/1679}.

[1832] {F/1681}.

[1833] {D2/4.1/54}.

[1834] {D1/2/12} to {D1/2/13}.

[1835] {F/1722}.

[1836] {D2/4.1/55} to {D2/4.1/56}.

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3.3 Second Joint Statement.[1837]

Summary

4. Bug 14: Bureau Discrepancies is a bug with the potential for lasting financial impact. There are two distinct issues which fall under this heading. With regards to the first issue the branch was made good and a fix was implemented. The second issue was not a bug in Horizon nor an issue which could have impacted branch accounts; it created what was essentially a cash flow problem for the branch.

Issue 1

Nature of the issue

5. PC0261541 relates to an issue involving a branch (FAD 2078430) attempting to pre-order two currencies.[1838] The Subpostmaster tried to pre-order £1,000.07 in Indonesian rupiah and £204.59 in Singaporean dollars for a customer. The rupiah order was created, but there was a network timeout at the point when the Subpostmaster tried to add the dollar order.

6. When the system re-connected, a warning message suggested that the second order may not have been placed, but the basket and transaction log were showing both orders. The Subpostmaster attempted to cancel the whole order, but the cancellation only worked for the rupiah order, leaving the dollar order of £204.59 in the branch accounts.

7. This is because, at the time of the Peak, multiple currency orders were processed as multiple transactions. The rupiah order was added first at the counter and then sent to the BAL, and this caused the order ID PBX1048411 to be created. The network timeout occurred at such a time that the dollar order had been added to the counter stack but it had not yet reached the BAL. This meant that it did not become associated with order PBX1048411 and so, when the Subpostmaster attempted to cancel the whole transaction (PBX1048411), the dollar order was not cancelled. This would then create a shortfall as Horizon will have expected the Subpostmaster to have taken a payment from the customer of £204.59.

[1837] {D1/2/12} to {D1/2/13}.

[1838] {F/1679}.

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8. This issue could only occur because of the very specific circumstances of PC0261541 including the occurrence of a network timeout at a very precise moment in the transaction.[1839]

Resolution

9. The Peak's priority was raised by Fujitsu because of the possible financial impact of the issue.

10. The Peak notes that the issue was referred to Post Office in order for them to "*decide what reconciliation or transaction correction is required to balance*" at the branch. Post Office have confirmed that a transaction correction was issued to the branch on 2 November 2017 and accepted by the branch on 7 November 2017 – this is not apparent from the Peak itself.

11. PC0261541[1840] was cloned and the technical investigation into the root cause continued under PC0261710.[1841] Ultimately, the issue was fixed in November 2017 via a change to the AP-ADC script which had the effect of simplifying multiple currency orders to be processed as a single transaction, meaning that the window of time in which the network timeout occurred in PC0261541 no longer existed.

Issue 2

Nature of the issue

12. PC0265443 relates to an issue at branch FAD 091912.[1842] Post Office's internal cash management team's system (POLSAP) indicated that the branch was holding €4,500 and $1,000 more than the branch was declaring it held. This meant that, from the cash management team's perspective, the branch should have been holding sufficient cash to conduct transactions, and so were reluctant to provide more cash to the branch. This resulted in a cash flow issue for the branch who were sometimes unable to serve customers as a result.

Resolution

[1839] {F/1679}.

[1840] {F/1679}.

[1841] {F/1681}.

[1842] {F/1722}.

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13. The Peak is long and complex and it demonstrates that the issue was extensively investigated by Post Office, ATOS, Accenture and Fujitsu, since the issue was thought to be occurring somewhere between the branch, Horizon and POLSAP. The conclusion of Fujitsu and Accenture's investigations (over approximately six months) was that the issue was not caused by any issue within their respective systems. Further, Post Office sent a trainer to the branch to verify the cash position and found no discrepancies; the amount of cash physically held in branch was the same as the amount showing on Horizon (but not POLSAP).

14. The root cause of the issue does not appear to have been determined. As it did not appear to be a case of user error, it appears that Post Office wrote off the discrepancy in POLSAP at no cost to the Subpostmaster to bring that system's figures into line with those in Horizon.

Branch impact

15. This issue was not a bug in Horizon nor an issue which could have impacted branch accounts; it created what was essentially a cash flow problem for the branch, but the branch accounts were unaffected. It appears that Post Office took the decision to write off the discrepancy in POLSAP.

Conclusion

16. For the reasons set out above, these are two distinct issues. A fix was implemented for the first issue and all SPMs were made good. The second issue was not a bug in Horizon.

Bug 15: Phantom Transactions

1. The key documents:

    1.1 Peaks: PC0052025;[1843] PC0062561;[1844] PC0065021[1845] and PC0068327.[1846]

[1843] {F/48}.

[1844] {F/88/2}.

[1845] {F/97}.

[1846] {F/100/1}.

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1.2 Coyne 2, paras 3.148 – 3.153.[1847]

1.3 JS2.[1848]

Summary

2. Mr Coyne states that Bug 15: Phantom Transactions is a bug with non-lasting financial impact. Post Office submits that this is not a bug at all. Manifestations of this alleged bugs are either design features of Horizon or user error.

Nature of this issue

3. Mr Coyne has drawn together three distinct issues under the heading of "*phantom transactions*":

3.1 Paras 3.148 - 3.149[1849] relate to issue 1 (PC0065021)[1850] ("Issue 1").

3.2 Paras 3.150 to 3.151[1851] relate to issue 2 (PC0052025)[1852] ("Issue 2").

3.3 Para 3.152[1853] relate to issue 3 (PC0052025)[1854] ("Issue 3").

4. Phantom transactions were reported early on in the life of Horizon. Mr Coyne confirmed during cross-examination that have been no relevant Peaks in 18 years:

> *Q. So would I be right in thinking that whatever problems there were in 2000 and 2001 regarding phantom transactions, the PEAKs indicate that such transactions have not raised their ugly head for the last 18 years?*
>
> *A. Yes.*[1855]

[1847] {D2/4.1/56} to {D2/4.1/57}.

[1848] {D1/2/13}.

[1849] {D2/4.1/56}.

[1850] {F/97}.

[1851] {D2/4.1/56}.

[1852] {F/48}.

[1853] {D2/4.1/57}.

[1854] {F/48}.

[1855] {Day17/16:19} to {Day17/16:23}.

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Issue 1

5. Peak PC0065021,[1856] refers to multiple branches and SPMs (note the different branch names and changes in pronoun throughout the Peak). The Peak constituted a master Peak for recording user complaints that there may have been a phantom transaction. A number of clear conclusions can nevertheless be drawn from this Peak: see below.

6. The Peak indicates the lengths that Fujitsu went to in order to resolve issues raised by SPMs. It records that the issues reported by the Old Isleworth SPM were investigated by Romec engineers and specialist Field Service Managers on site.[1857] Indeed, on 19 June 2001, Fujitsu suspected that phantom transactions were being created by input peripherals (eg. touchscreen, keyboard, etc.) and put in place monitoring software to identify this.[1858]

7. Mr Coyne agreed that Fujitsu undertook a very thorough investigation of this incident:

> *Q. It is fair to say from reading the PEAK as a whole -- we don't have time to go through it all -- that the investigations that Fujitsu carried out were very thorough, weren't they?*
>
> *A. Yes. I think they ultimately determined they could not decide what the fault was but the process seemed to be a reasonable process to go through.*[1859]

8. On the basis of these hardware investigations Mr Coyne appears to have concluded that the main branch (Old Isleworth, FAD111025) may have been experiencing phantom transactions as a result of hardware issues. Mr Coyne fails to refer in his analysis at all to Peaks PC0062561[1860] and PC0068327,[1861] both of which state that the issues at Old Isleworth branch were attributable to user error.

9. Mr Coyne only quotes one extract from Peak PC0065021, which is a record of a Romec engineer on site seeing a phantom transaction.

[1856] {F/97}.

[1857] {F/97/3}.

[1858] {F/97/7}.

[1859] {Day17/29:24} to {Day17/30:5}.

[1860] {F/88.2}.

[1861] {F/100.1}.

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10. With regard to ROMEC's expertise Mr Coyne stated that although familiar with the hardware, they may not be familiar with the Horizon software:

> *Q. And they sent engineers from Romec. Do you know what Romec's familiarity with the system is?*
>
> *A. I would suspect that they know the hardware and the communication equipment very well. I don't know if they will know how Horizon as a software product would work.*
>
> *Q. That is a very fair answer. You saw where I was going and that is a very fair answer, Mr Coyne. They might very well know how to set the system up, make sure everything is connected and see that everything is logged on properly, but when it comes to the internal workings of the system itself they may well not be familiar, yes?*
>
> *A. Yes.*[1862]

11. It is not possible from the Peak to know what the ROMEC engineer saw. Indeed there are a host of possible explanations, some of which were put to Mr Coyne:

> *Q. Maybe, Mr Coyne, another counter hadn't been used for 59 minutes, it had uncompleted transactions on it, and it automatically completed them and printed a receipt. That is possible, isn't it?*
>
> *A. That is possible.*
>
> *Q. And it is possible that an engineer with his familiarity of the hardware would not know that feature of the operating system of Horizon, so he might be surprised by that, correct?*
>
> *A. He might be surprised by that. But I think we have got to read this in context, that the subpostmaster had already explained that they perceived that there were problems with what they said was phantom transactions. So Post Office and/or Fujitsu would have gone through, I would presume, their support process, would have looked at various logs and things like that before dispatching a hardware engineer to site. So if they suspected that it was just the simple case of a counter coming to the end of its 59 minutes of suspension and doing something automatically, I think they would have dealt with that before dispatching an engineer.*
>
> *Q. We can agree, Mr Coyne, that the SSC had experience of these things and they had access to information that we don't have. We can agree on that. But just focusing on the Romec engineer visit, would you not accept that it is quite possible*

[1862] {Day17/30:6} to {Day17/30:18}.

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that the engineer saw something which was an example of Horizon operating as it should and was not in fact a phantom transaction at all, and he misinterpreted it because he didn't have the familiarity with the system that someone at Fujitsu might have? Would you accept that that was at least possible?

A. I accept that it was possible if you look at that visit in isolation, yes.[1863]

12. As evident from the Peak, Mr Patrick Carroll undertook the investigation for the SSC. Mr Parker confirmed during cross-examination that Mr Carroll "*was one of the senior technicians within the SSC.*"[1864] Mr Coyne agreed that Mr Carroll was in a good position, given the information available to him and his experience, to identify the likely cause of the issues:

Q. And it is fair to assume, isn't it, that he is in a good place, with the information and the experience that he has, to form a judgment as to what the likely cause of these problems are, yes?

A. Yes.[1865]

13. Mr Carroll ultimately determined that there was not a fault in Horizon. Mr Coyne agreed that he was not in a position to say that Mr Carroll was wrong:

Q. ...My question was do you think you now, with the information you have, are in a position to say that Mr Carroll was wrong?

A. No.[1866]

14. Peak PC0062561 shows that the issues continued at the Old Isleworth branch until 17 August 2001.[1867] Although there are references to equipment being swapped out, the 17 August entry states that Fujitsu had "*exhaust[ed]" every possible course of action in trying to solve [the reported phantom transactions]*" and suggests that the issues were caused by user error.[1868] As is apparent from that Peak numerous routes had been exhausted including: a limited visual observation and attendance at the counter; collecting information on transactions and observing for possible trends; replacement of all kit and cables; installation of a new screen and sending off screen for testing; and the

[1863] {Day17/32:6} to {Day17/33:13}.

[1864] {Day12/65:6} to {Day12/65:7}.

[1865] {Day17/34:8} to {Day17/34:12}.

[1866] {Day17/37:22} to {Day17/37:25}.

[1867] {F/88.2}.

[1868] {F/88.2/2}.

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offer of a longer observation.[1869]

15. Peak PC0065021[1870] was closed on 12 November 2001 on the basis that "*[i]n all cases where these have occurred a user error related cause can be attributed to the phenomenon*".[1871]

16. Mr Coyne gives a misleading impression of what the Peak actually says and ignores the later content of Peak PC0062561 and indeed the conclusions of the Peak. Mr Coyne fails to mention at all the conclusion to Peak PC0065021 that all reported cases are attributable to user error.

Issue 2

17. Peak PC0052025[1872] relates to a report by an SPM that a receipt containing three transactions printed by itself. Mr Coyne fails to note that this is a manifestation of a designed system process which is to benefit SPMs.

18. Horizon automatically logs off a user after a period of inactivity - a standard security measure of many IT systems. If the user has recorded, but not completed, some transactions in the stack, then when the systems automatically logs off, it will complete these transactions and assume payment was made by cash. This was a PO requirement for Horizon. A receipt is printed so that the SPM knows what has happened.

19. This reason is clearly set out in the Peak:

> "*Messages in the messagestore confirm that the 'phantom' transactions were due to them being in a suspended session that was later forcefully committed. Explained this to PM who was happy with explanation but she says she is sure she never pressed the suspend icon. Nevertheless she agrees closure for this problem. Can only assume that she hit the suspend icon by accident.*"[1873]

20. Mr Coyne fails to note in his reports that issue 2 is not a bug at all. It is a manifestation of a designed system process.

[1869] {F/88.2/2}.

[1870] {F/97}.

[1871] {F/97/9}.

[1872] {F/48}.

[1873] {F/48/2}.

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21. As set out above, the SPM accidentally touched "suspend" with her hand with the result that the session was suspended for that period of time. Mr Coyne stated that this was the system doing something "wrong":

> *Q. Well, that's what you say, Mr Coyne, but isn't a fair reading of what's in that box that the postmaster accidentally must have touched "suspend" with her hand or something with the result that the session was suspended for that period of time?*
>
> *A. Yes, that's possible, but it isn't that that was the reference that I was making to without user interaction. It is the later event, the automatic commit that would appear to have been done automatically without a user being involved.*
>
> *Q. I see. So what you are suggesting is that if the system automatically commits an uncommitted basket after a period of time that's evidence of phantom transactions, that's evidence of a bug in Horizon that needs to be corrected, is that what you are suggesting?*
>
> *A. Well, it is evidence of the system doing something without the user choosing to do it.*
>
> *Q. Are you suggesting it is something -- it is evidence of the system doing something wrong? I think you are, aren't you?*
>
> *A. Yes.*[1874]

22. Mr Coyne's attention was then drawn to Ms Van Den Bogerd's second witness statement.[1875] Mr Coyne agreed the following:

> *Q. That's what the system is designed to do. The system has to decide whether just to delete the entire session from the system or to commit it. Either way a design choice has to be made, and either way what's important is that the subpostmaster knows what happens, and this system is designed to give the postmaster that information by printing out a receipt, correct?*
>
> *A. Yes.*[1876]

23. It was put to Mr Coyne that he knew about this design feature when he referred to this Peak, which he denied:

> *Q. Right. And you knew that, didn't you, when you included this PEAK as a phantom transaction bug in your second report?*

[1874] {Day17/19:18} to {Day17/20:13}.

[1875] {E2/5/4} para 14.2.

[1876] {Day17/21:18} to {Day17/21:25}.

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A. No, I don't believe I did. No.[1877]

24. In fact, Mr Coyne referred to Ms Van Den Bogerd's witness statement when he raised this Peak in his own report:

Q. Well, let's have a quick look at that just to see. It is at {D2/4.1/114}. Do you have the page? Under the heading "Angela Margaret Van Den Bogard [sic]" it says, 4.69: "Mrs Van Den Bogard [sic] has provided a witness statement commenting on individual cases and various disparate factual matters, which I do not attempt to comment on in detail here. I note the following discrete points." Then under the heading "Phantom Transactions", you say {D2/4.1/115}: "I have seen evidence of phantom sales recorded in the disclosed documents. PEAKs PC0065021 216 and PC0052025 ..." Which is the one we are just looking at?

A. Yes.

Q. "... (documented in further detail at section 3, 'Phantom Transactions (Horizon Issue 4)' above) refer to phantom transactions in branches, the former which was observed by an engineer on site at the branch and the latter which refers to discrepancy arising from them."

A. Yes.

Q. So you did know what Mrs Van Den Bogard [sic] was saying because you identified this very PEAK when you were responding to that very evidence?

A. Yes.[1878]

25. Mr Coyne was evasive in acknowledging that he must have been aware that this was a design feature of Horizon:

Q. It is completely wrong, isn't it, Mr Coyne?

A. My understanding is now that it would appear that it is a design feature, that that happens.

Q. If you don't mind my saying so, Mr Coyne, you appear to be rather evasive. What I have just shown you is that Mrs Van Den Bogard [sic] set out quite clearly in a witness statement how the system was designed to operate, and it was designed to operate in a way that committed transactions that were left on the machine for a certain amount of time and a receipt was printed so the postmaster knew what had happened?

A. Yes.

[1877] {Day17/22:1} to {Day17/22:4}.

[1878] {Day17/22:5} to {Day17/23:3}.

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Q. And you responded to that by saying, well, I have got some evidence of phantom transactions and half of the evidence, one of the two PEAKs you rely on for that purpose, is a PEAK which actually demonstrates the truth of what Mrs Van Den Bogard [sic] is actually saying, doesn't it?

A. Certainly one of the two examples it would appear that it is operating in line with the design, but I can certainly understand how a user would perceive that that would be a phantom transaction because they didn't complete it –

Q. Mr Coyne, if we were looking at a table which was a table of areas where users might get confused, then we wouldn't be having this conversation.

A. Mm.

Q. We are having this conversation because you have added this piece of evidence as evidence in support of the proposition, firstly, that there are bugs in Horizon and, secondly, that they cause losses, lasting losses to postmasters. That is right, isn't it?

A. Yes.[1879]

26. Mr Coyne ultimately agreed that this Peak was not an example of a bug in Horizon:

Q. And you agree now, do you, that this PEAK is not evidence either of a bug or of the causing of a lasting loss to a postmaster?

A. I do agree.[1880]

Issue 3

27. Peak PC0052025 relates to a report by an SPM that certain icons differed on his two counters.[1881] This was diagnosed as the second counter not having received the latest Riposte release (which changed the button text) so the two counters were one version apart. The second counter would have been automatically upgraded as part of a software rollout and tail management, but Fujitsu explicitly upgraded it early to bring it in line with counter one. As with Issue 2, Mr Coyne again fails to note that this was not a bug.

28. Although included in Mr Coyne's analysis of branch affecting bugs, Issue 3 had no financial or operational impact on a branch accounts.

[1879] {Day17/23:4} to {Day17/24:11}.

[1880] {Day17/24:12} to {Day17/24:15}.

[1881] {F/48}.

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Conclusion on Bug 15: Phantom Transactions

29. Mr Coyne has failed to analyse, or even mention, important Peaks and sections of those Peaks in his analysis. It is misleading for Mr Coyne to draw these three distinct issues together to support his conclusion at paragraph 3.153 that they "*illustrate potential for errors in data recorded within Horizon arising for Hardware failure and accepted design features*".[1882]

30. For the reasons set out above, there is no indication that phantom transactions had a cause other than user error, as indicated in the Peaks. Further Mr Coyne has included Peaks in his analysis which do not indicate bugs in Horizon on or a financial impact on branch accounts.

Bug 16: Reconciliation Issues

1. The key documents:

    1.1. PC0039832;[1883] PC0075240;[1884] PC0075415[1885] and PC0077508.[1886]

    1.2. Coyne 2: 3.154 – 3.173.[1887]

    1.3. JS2.[1888]

Summary

2. Mr Coyne now states that this bug does not have lasting financial impact on branch accounts. Post Office submits that this is not a bug at all.

0[1882] {D2/4.1/57}.

[1883] {F/23}.

[1884] {F/113}.

[1885] {F/115}.

[1886] {F/116}.

[1887] {D2/4.1/57} to {D2/4.1/61}.

[1888] {D1/2/13} to {D1/2/14}.

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Nature of this issue

3. Mr Coyne refers to six issues under the heading "*Reconciliation Issues*":

    3.1. Paras 3.154 – 3.157 (PC0639832)[1889] ("Issue 1").

    3.2. Paras 3.158 – 3.162 (PC0075240[1890], PC0075415[1891] and PC0077508)[1892] ("Issue 2").

    3.3. Para 3.163 (PC0049578)[1893] ("Issue 3").

    3.4. Paras 3.165 – 3.167 (PC0045847)[1894] ("Issue 4").

    3.5. Paras 3.170 – 3.171 (PC0236246)[1895] ("Issue 5").

    3.6. Paras 3.172 – 3.173 (PC0204872)[1896] ("Issue 6").

4. While giving evidence Mr Coyne acknowledged that the process of reconciliation was the process of comparing two sets of data and that it was carried out electronically[1897]. While he suggested that he did not know what process Post Office uses for dealing with reconciliation issues, Mr Coyne acknowledged that it was likely that Post Office did something about accountancy discrepancies and that that explains why he felt able to judge Horizon as relatively robust.[1898]

5. Mr Coyne also acknowledged that a report is generated on a regular basis which identifies reconciliation exceptions and that is where there is a manual element involved[1899]. He conceded that the fact that there are large numbers of reconciliation reports "*suggest[ed]*

[1889] {F/23}.

[1890] {F/113}.

[1891] {F/115}.

[1892] {F/116}.

[1893] {F/33}.

[1894] {F/27}.

[1895] {F/1245}.

[1896] {F/719}.

[1897] {Day14/76:15} to {Day14/6:16}.

[1898] {Day14/55:5} to {Day14/55:22}.

[1899] {Day14/76:25} to {Day14/77:1}.

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rather than confirm[ed]" that there are bugs in Horizon which have an impact on branch accounts.[1900] He acknowledged that "*it is certainly more likely*" that a Transaction Correction will correct an error that's occurred, rather than create one[1901].

6. On day 17, Mr Coyne agreed that "Reconciliation Issues" were unlikely to have lasting financial impact.[1902]

Issue 1

7. Peak PC0039832[1903] is an example of an issue affecting a Subpostmaster's Cash Account Period (**CAP**).[1904] Mr Coyne states that *"reconciliation discrepancies have appeared but did not feature on the expected reconciliation exception reports."*[1905]

8. By way of background, at the end of each working day, the counter calculated information for the Cash Account in two independent ways to ensure that they matched and a report was generated if they did not match.

9. In this case, the reconciliation software detected discrepancies relating to two low value transactions (£8.06 and £0.08, totalling £8.14). It appears from the Peak that there was a bug in the reconciliation software, although the Peak is not fully conclusive. If that was the case, a false reconciliation report would have been generated but there would have been no financial impact on the branch.

10. There are several misunderstandings in paragraph 3.154 of Coyne 2[1906]. First, Mr Coyne alleges that the bug *"did not feature on the expected reconciliation exception reports"*[1907]. Mr Coyne has confused (i) the information captured by Horizon with (ii) the information

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[1900] {Day14/79:16} to {Day/79:23}.

[1901] {Day14/80:1} to {Day14/80:17}.

[1902] {Day 17/124:19} to {Day17/124:21}.

[1903] {F/23}.

[1904] A CAP is "a period (usually a week) of office accounting as defined by the Post Office" – {F/40/11}. A Cash Account is a "statement of cash, stock and transactions produced by the Horizon system at the end of the accounting period" – {F/40/11}. in 2005 the Cash Account system was replaced with the Branch Trading system. Branches must balance their accounts and produce a Branch Trading Statement at the end of each 4-5 week Trading Period – {E2/5/38}.

[1905] {D2/4.1/57}.

[1906] {D2/4.1/57}.

[1907] {D2/4.1/57}.

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that was provided to SSC during its investigation. The reconciliation error was clearly captured, as that is what triggered an investigation. Second, at paragraph 3.156 Mr Coyne seems to suggest that this bug had a financial impact on a branch, but this is not evident from the Peak. Coyne 2, paras seems to assume the word "discrepancy" means something that was impacting the branch, rather than a reconciliation issue "behind the scenes".

11. Mr Coyne refers to Peak PC0039832 being fixed *"five months after the original PEAK was raised"*. This amount of time is consistent with this being an issue that did not affect branch accounts. The fix is documented in PC0047955[1908].

Issue 2

12. Mr Coyne alleges that Peaks PC0075240, PC0075415 and PC0077508[1909] all relate to a Horizon reconciliation report that shows a discrepancy for the branches documented. The Peaks relate to an issue where a branch counter total differed from the amount on the TPS host.

13. Whilst Mr Coyne's summary of events is accurate, the suggestion that there was a discrepancy in branch accounts is incorrect. In these cases, the counter calculated a value of 1p and the calculations carried out at the host gave a value of £0.0099. However as the first three digits were 000 it took this to be 0p and so reported a false discrepancy.

14. This is an example of a check and balance raising a false alert. Fujitsu spent time investigating a false report of a non-existent discrepancy. The issue was automatically detected by Fujitsu and a fix was rolled out.

Issue 3

15. Peak PC0049578[1910] was raised in testing and fixed before the software went live. This may not have been apparent to Mr Coyne, as he fails to mention it in his analysis.

16. The Peak describes a problem with producing a report used to confirm that all data has been passed to TIP. In short, the underlying data transferred to TIP was correct, however, the number of files transferred did not match.

[1908] {F/30}.

[1909] {F/113}; {F/115} and {F/116}.

[1910] {F/33}

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17. There is also a report to confirm what files were transferred, and that report was incorrect in the count of files transmitted. If this had gone to Live then it could have caused confusion, but there would have been no impact at all on branch accounts. This is because the issue is isolated to the data centre and is entirely separate to transaction data, meaning it is not possible for this issue to impact branch accounts.

18. This concerns getting data from Riposte Message store out to TPS so it can be sent to POL SAP (the TIP system).

19. The report showed a difference between the number of files recorded as being transferred to TIP and the number of files transferred.

20. The Peak investigations confirm that the root cause arises from the following:

    20.1. The report was run and the number of files counted after the sort by org-unit and trading date.

    20.2. When the report was run, it was not accounting for the files already counted, i.e. it appears that a count was being done in the wrong place.

21. As previously indicated, the issue is isolated to the data centre and is entirely separate to transaction data, meaning it is not possible for this issue to impact branch accounts, contrary to Mr Coyne's suggestion in the Joint Statement.[1911] It also occurred in testing, not the live environment.

[1911] {D1/2/14}.

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Bug 17: Branch Customer Discrepancies

1. The key documents:

   1.1 Peaks: PC0156174[1912] and PC0156246.[1913]

   1.2 KEL: cardc226K.[1914]

   1.3 Coyne 2, paras 3.174 – 3.177.[1915]

   1.4 JS2.[1916]

Summary

2. Mr Coyne now states that this bug does not have lasting financial impact on branch accounts. Post Office submits that this is not a bug at all. There is no evidence of a bug in Horizon and in any event instances of any issue, not bugs, were caught by automatic reporting.

Nature of this issue

3. Mr Coyne only references Peak PC0156246[1917] in his report. This is the second of two Peaks that relate to an issue that affected one branch, the other being PC0156174.[1918]

4. These Peaks relate to a discrepancy between Post Office's records (from Horizon) and a Financial Institution's records after a counter crashed while a transaction was being processed. There was no bug in Horizon.

[1912] {F/446.1}.

[1913] {F446}.

[1914] {F/418.01}.

[1915] {D2/4.1/61} to {D2/4.1/62}.

[1916] {D1/2/16}.

[1917] {F446}.

[1918] {F/446,1}.

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5. When the counter was restarted, the branch will have been presented with a recovery process. If there was a discrepancy in the branch's accounts after this event, that will be because the branch failed to follow the recovery process correctly.

Detection and Resolution

6. As shown in Peaks PC0156174[1919] and PC0156246[1920]:

6.1 The issue was identified by Fujitsu's automatic reporting using the NB102: Exception Summary.[1921] These are a series of reports that are run daily which show discrepancies between Financial Institutions' view of what has happened and Horizon's record of the same transaction.[1922] The first Peak (PC0156174) was raised for Fujitsu to investigate in response to the NB102: Exception Summary. This is an example of Fujitsu's reporting picking up issues that arise automatically.

6.2 When Fujitsu investigated the issue, they saw that there had been no subsequent log on to the affected counter and this meant the branch had not been presented with the recovery process.[1923]

6.3 Fujitsu telephoned the branch and asked the SPM log in to the counter and follow the recovery messages in Horizon to resolve the issue.[1924]

6.4 Fujitsu issued a BIMS Incident Report to Post Office[1925] which advised that the SPM had now logged in to the counter and as such Fujtisu were able to see that the recovery messages were in the branch messagestore.

6.5 However, the branch appeared in the NB102: Exception Summary reports again and the second Peak (PC0156246[1926]) was raised for Fujitsu to investigate.

[1919] {F/446.1}.

[1920] {F/446}.

[1921] {F/446.1}.

[1922] {F/1687/9}.

[1923] {F/446.1/1}.

[1924] {F/446.1/1}.

[1925] {F/444.2}.

[1926] {F446}.

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6.6 Fujitsu issued a second BIMS Incident Report to Post Office[1927] which advised that while the recovery messages were received by the SPM, the SPM had declined them. This indicates that no money changed hands during the transaction (i.e. the SPM elected not to recover the transaction because no money had changed hands; if money had changed hands, the SPM should have elected to recover the transaction). As can be seen in the BIMS report, Fujitsu asked Post Office to:

(a) check with the SPM whether any money changed hands; and

(b) if money had not changed hands, ensure that the discrepancy between Post Office's records and the Financial Institution, here Citybank, was resolved.

7. Mr Coyne only references the second Peak (PC0156246[1928]) in his report, which means that his analysis and explanation is incomplete. Mr Coyne criticises Fujitsu for not reaching a clear diagnosis, but the following points can be made in response:

7.1 While there was a possibility that the Financial Institution registered a withdrawal from the customer's account (depending on how the Financial Institution's IT system is configured), this would have caused a loss for the customer, not the branch (assuming that the customer received no cash from the branch). If the customer did receive cash from the branch, the resultant discrepancy would have been caused by the branch not following the recovery procedure correctly.

7.2 In this case, Fujitsu's automatic reporting detected the difference between Horizon and the Financial Institution's records. In response to this, Fujitsu raised a Peak to investigate and issued a BIMS Incident Report to Post Office to enable Post Office to further investigate what happened with the SPM and reconcile any discrepancies with the Financial Institution to ensure there was no loss to the end customer.

7.3 During Mr Coyne's cross examination, he confirmed that he did not consider this issue to have lasting financial impact.[1929]

[1927] {F/446.2}.

[1928] {F446}.

[1929] {Day17/122:12}.

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Conclusion

8. There was no bug in Horizon.

9. If there was a discrepancy in the branch's accounts due to this issue, it will be because the branch did not follow the recovery procedure correctly.

Bug 18: Concurrent Logins

1. The key documents:

212.1 PC0027581[1930]; PC0051327[1931]; PC0050974[1932]

212.2 Coyne 2, paras 3.179 – 3.183.[1933]

212.3 JS2.[1934]

Summary

2. Post Office accepts that Bug 18: Concurrent Logins had a potentially lasting financial impact. There is no evidence of any discrepancy in the Peaks referred to by the experts.

Nature of this issue

3. This issue is known as "Concurrent Logins".

4. Mr Coyne has referred to two issues under the heading of "Concurrent Logins" :

214.1 Para 3.180 relates to issue 1 (PC0027581)[1935] ("Issue 1").

214.2 Para 3.181 relates to issue 2 (PC0051327)[1936] ("Issue 2").

[1930] {F/15}.

[1931] {F/43}.

[1932] {F/38.1}.

[1933] {D2/4.1/62} to {D2/4.1/63}.

[1934] {D1/2/16}.

[1935] {F/15}.

[1936] {F/43}.

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5. These issues occurred very early on in Horizon (1999/2000).

Coyne's change in position

6. Mr Coyne repeatedly confirmed during cross-examination that where a bug was listed as Horizon Issue 4 this meant that there was no lasting impact on branch accounts.[1937]

7. Mr Coyne maintained during cross-examination that Bug 18 is an example of a bug with lasting financial impact. This is inconsistent with the approach he took in his second report. He stated not only that it was relevant to Horizon Issue 4 but also stated that there was no financial impact at all, lasting or otherwise.[1938]

8. When asked about this Mr Coyne stated the following:

> *Q. 18, do you say there's evidence of lasting impact with 18, concurrent logins?*
>
> *A. Yes.*
>
> *Q. I'm interested that you should say that, Mr Coyne, because if we could go back to your second report at {D2/4.1/18}.*
>
> *A. Yes.*
>
> *Q. Look at the table and look at concurrent logins, for "Evidence of Branch Impact" you say "No" there. Did you change your mind?*
>
> *A. After discussion with Dr Worden, yes.*[1939]

9. Mr Coyne failed to identify how his discussions with Dr Worden changed his view so dramatically. Dr Worden is of the opinion that this bug is not a bug at all. It is therefore difficult to conceive how discussions with Dr Worden would have resulted in Mr Coyne departing from his view that there was no financial impact at all of this bug.

10. Although the experts agreed that there may be impact on branch accounts, Dr Worden's comments (both in his reports and JS2) do not indicate any lasting impact.

11. Mr Coyne failed to identify or justify this change of position. In addition, such a view in inconsistent not only with Dr Worden's reasoned analysis of this bug but also Mr Coyne's own evidence.

[1937] See for example {Day17/123:4} to {Day17/123:18}.

[1938] {D2/4.1/18}.

[1939] {Day17/132:12} to {Day17/132:22}.

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Issue 1

12. Peak PC0027581 refers to an issue where a counter froze whilst printing a final cash account. This counter was still showing 'printing report' when the Subpostmaster was able to log onto a different counter and print the same report.[1940]

13. In Legacy Horizon, one counter was the Gateway counter that connected to the data centre. The other counters were slave counters that connected to the Gateway counter. In this specific issue, the Subpostmaster was printing a final cash account on counter 2 when the counter froze. The Subpostmaster logged onto the Gateway counter to try and print out the final cash account on a different counter, and this printed off. The slave (counter 2) was still showing 'printing report' whilst the Subpostmaster was logging onto the Gateway and printing the same report.

14. The issue arose because counter 2 had frozen and could not respond to a login request on the Gateway counter. When logging onto a counter, the counter checks that the user is not logged into any other counter. It does this by sending a message to the other counters and waiting for a response. In this case, counter 2 was frozen and therefore unable to respond to the Gateway counter to say that the Subpostmaster was already logged in. The Gateway counter therefore assumed that the Subpostmaster was not logged in and allowed him to log into the Gateway counter.

15. Mr Coyne has alleged in his Supplemental Report that Concurrent Logins can "*cause transactions to be abandoned and risk discrepancies*".[1941] There was no discrepancy in this case - this issue related to a frozen transaction that was the printing of a report rather than the processing of a transaction.

16. Mr Coyne has suggested that Fujitsu did not follow this issue up properly with Esher.[1942] Mr Coyne has failed to take into account the entry dated 15 September 2000 timed at 08:07 where Fujitsu, in believing this was a problem with the underlying Riposte software, passed the issue to Esher and the issue was thought to be "*Now formally fixed*

[1940] {F/15}.

[1941] {D2/4.1/62}.

[1942] {D2/4.1/63}.

[1943] {F/15/7}.

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in Build 223 update 19 which was released overnight."[1943] The new release from Esher did not however, as it was expected to, fix the problem.

17. Peak PC0027581 was "*Closed at management request.... Mr Lui is no longer employed by the Post Office and has not been for some years. Should the problem reoccur then please reopen this call.*"[1944] The call was not re-opened after this which suggests that few or no other branches were affected.

Issue 2

18. PC0051327 refers to an issue whereby the Subpostmaster logged onto two terminals concurrently, resulting in receipts and payments mismatches over three Cash Accounting Periods. The problem was caused by the Subpostmaster rolling counter 3 whilst logging in and processing a transfer out on counter 4.

19. The net difference of these receipts and payments mismatches amounted to zero, meaning there was no overall impact on the branch. This would have been clear to Mr Coyne as the very nature of this issue is not that it causes money to be lost, but money to be accounted for in the incorrect time period. The Peak shows that there are offsetting receipts and payments gains and losses and therefore it is possible to ascertain from the Peak whether the branch suffered a discrepancy.

20. The issue was fixed through a planned software roll out that changed the code in the area that caused the bug (release CI45) and the call was closed on 30 November 2000.[1945]

Conclusion

21. For the reasons set out above, there are two distinct issues. No discrepancies are set out in the Peaks referred to by the experts. However, if a discrepancy had occurred, that discrepancy would manifest itself as a receipts/payments mismatch.

[1943] {F/15/7}.

[1944] {F/15/12}.

[1945] {F/43/4}

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Bug 19: Post & Go

1. The key documents:

   1.1 Peaks: PC0218702;[1946] PC0219432;[1947] PC0220393[1948] and PC0221150.[1949]

   1.2 Coyne Supplemental Report 3.185 – 3.190.[1950]

   1.3 JS2.[1951]

Summary

2. Mr Coyne states that Bug 19: Post & Go/TA Discrepancies is a bug with lasting financial impact. Post Office submits that any discrepancy would be transient. Any issues were picked up automatically by Fujitsu's automatic reporting.

Nature of the issue

3. Peak PC0220393 relates to an issue that stopped data being transferred from Horizon to POLSAP for reconciliation purposes.[1952]

4. The issue relates to "Post & Go" ("P&G"). These are self-service terminals. These terminals are now only held in Crown and WH Smith main branches. (There were a few P&G machines piloted in a few main branches but this was for a short period only.) This issue does not relate to branches that are the focus of this trial. The issue is therefore irrelevant.

5. In terms of the specific issue that arose, P&G transactions were being accurately recorded by the P&G terminal and then transferred to Horizon. Horizon creates a TA of all the transactions on the P&G machine and, when accepted by the branch, these

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[1946] {F/945}.

[1947] {F/962}.

[1948] {F/974}.

[1949] {F/996.1}.

[1950] {D2/4.1/64} to {D2/4.1/65}.

[1951] {D1/2/18}.

[1952] {F/974}.

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transactions are added to the branch accounts. The data is also passed from Horizon to various other systems, including POLSAP.

6. There was no difficulty with the transfer of data from the P&G terminals to Horizon, or with the production and acceptance of TAs in branch. Further, branch accounts were not impacted. The issue was at the reconciliation step within POLSAP. Fujitsu transfers the relevant data to POLSAP via BLE files. When POLSAP was comparing the Horizon data to the Wincor data, discrepancies were found as data for two P&G terminals in the branch were not being sent to POLSAP. There were six P&G terminals at the branch. Data from four terminals only were being transferred to POLSAP because the two other terminals were not associated with conducting P&G transactions.

7. Mr Coyne has labelled this section as relevant to Horizon Issue 4 – data processing in Horizon. However, there was no error of data processing in Horizon itself. The problem concerned the transfer of data from Horizon to POLSAP.

Detection and resolution

8. This issue was identified by Fujitsu automatic reporting using the "*Subfiles_on_hold*" report and as such is an example of Fujitsu's automatic reporting picking up issues that arise. Mr Coyne suggests that if Post Office had been monitoring the report they would have noticed the issue faster.[1953] There are two points to note in response:

    8.1 The first relates to the assumption that there was a 43 day period of impact.[1954] Mr Coyne alleges that the fault would not have impacted for the length of time, 43 days, had Post Office been monitoring the report. However, this is based on a false assumption on the length of the issue and/or a mistake on the part of Mr Coyne. The duration of the problem appears from the Peak to have been from 29 August 2012 to 17 September 2012 – 19 days not 43 days as Mr Coyne suggests. The figure of 43 days appears to relate to the 43 days of data that was stuck in Horizon and not transferred to POLSAP.

    8.2 Secondly, the final comment from Anne Chambers states *"We strongly recommend that POL monitor the SubfilesOnHold report which is sent to them*

[1953] {D2/4.1/65}.

[1954] {D2/4.1/65}.

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daily".[1955] This does not imply that Post Office should have been monitoring that report for that purpose beforehand. There is no other reference which suggest that Post Office should have been monitoring it for this purpose prior to this later comment.

9. The issue was resolved quickly. Despite the Peak not being high priority (as there was no financial impact on branch accounts) the issue was identified and a fix developed and deployed in a short period of time. As indicated in the Peak it was opened on 29 August 2012 and closed less than a month later on 17 September 2012.

10. A work-around, MSC 043J0355958, was developed to create a zero value transaction for the two P&G terminals that were missing one and this forced the branch to create the stock unit association. Once the associations were created the withheld transactions were posted to POLSAP successfully. A permanent fix was released, Release Peak PC0221150, that automatically generated a zero value TA to force the association.[1956]

Conclusion on Bug 19: Post & Go/TA discrepancies in POLSAP

11. Despite this bug appearing in Mr Coyne's analysis of branch affecting bugs, the branches suffered no discrepancies. The issue was identified through Fujitsu's automatic reporting and was quickly resolved.

[1955] {F/974/5}.

[1956] {F/996.1}.

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Bug 20: Recovery Failures

1. The key documents:

   1.1 PC0220532;[1957] PC0241242[1958] and PC0197643[1959]

   1.2 Coyne 2, paras 3.191 – 3.196[1960]

   1.3 JS2.[1961]

Summary

2. Mr Coyne states that Bug 20: Recovery Failures is a bug with non-lasting financial impact. Post Office submits that this is not a bug at all. There is no evidence of a bug in Horizon and in any event instances of any issue, not bugs, were caught by automatic reporting.

Nature of this issue

3. Mr Coyne has referred to three issues under the heading of "recovery failures" :

   3.1 Paras 3.191 and 3.192 relates to issue 1 (PC0220532)[1962] ("Issue 1").

   3.2 Para 3.193 relates to issue 2 (PC0241242)[1963] ("Issue 2").

   3.3 Paras 3.194 and 3.195 relate to issue 3 (PC0197643)[1964] ("Issue 3").

4. Mr Coyne has accepted during cross-examination that this bug did not have lasting financial impact and therefore should be removed from table 1 of his Bugs, Errors or

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[1957] {F/978}.

[1958] {F/1315}.

[1959] {F/613}.

[1960] {D2/4.1/66} to {D2/4.1/67}.

[1961] {D1/2/19} to {D1/2/20}.

[1962] {F/978 }.

[1963] {F/1315}.

[1964] {F/613}.

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Defects located in the Peaks reviewed.[1965]

Issue 1

5. Peak PC0220532 relates to a cash discrepancy that was only raised by the Subpostmaster with Post Office and Fujitsu nine months after the issue occurred. Mr Coyne criticises Fujitsu for not reaching a full resolution in paragraph 3.192 of his Supplemental Report[1966], however he fails to mention the nine month gap that made retrospective analysis impossible, nor does he mention the reference in the Peak to this issue appearing to be an accounting issue, rather than an IT problem, as per the earlier analysis that they had undertaken (entry dated 6 September 2012 timed at 10:40).[1967] Mr Coyne does, however, agree in JS2 that this Peak "*may not indicate a Horizon bug/error or defect*".[1968]

6. Mr Coyne does not explain at paragraphs 3.191 and 3.192 that the memory dump and base unit swap occurred after the loss arose, nor that nothing in the Peak raises any recovery issues.

7. As is evident from the Peak, Fujitsu's investigation is detailed given the lack of explanation or information from the Subpostmaster.

8. The call was closed on 6 September 2002 following advice being given following Fujitsu's investigation.[1969]

9. Mr Coyne alleges at paragraph 3.192 of his Supplemental Report that *"[i]t is unclear […] what the full resolution or conclusion of the issue was since Post Office have not disclosed in detail full Transaction Correction information for all reported discrepancies"*.[1970] This gives a misleading impression, particularly given this Peak does not relate to a Horizon issue but an accounting issue and there are circa 100,000 Transaction Corrections each year.

[1965] {D2/4.1/18} and {Day17/126:2}.

[1966] {D2/4/1/66}.

[1967] {F/978/1} to {F/978/2}.

[1968] {D1/2/19}.

[1969] {F/978/2}.

[1970] {D2/4.1/66}.

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Issue 2

10. Peak PC0241242 concerned a Subpostmaster who reportedly was unable to complete a recovery on node (counter) 4. The root cause of the issue was ultimately the failure of the ap-adc recovery script (Automated Payment Advanced Data Capture script, which is written by Atos). The workaround to get the counter through recovery so that it was operational again was to remove the Recovery data relating to the Lottery Transaction.

11. The final solution was actually to mark the Recovery Data for the lottery transaction as complete (update) rather than deleting. This required Privileged User access which was authorised using MSC:043J0428695 which also contains the SQL (Structured Query Language) statement used. As the recovery failure on the Health lottery also caused the banking transaction to fail to recover a Transaction Correction was needed for the banking transaction because otherwise it left a cash shortage of £70.66.

12. There was no long term loss caused by this issue as reconciliation was done for the banking transaction and a Transaction Correction done for the cash shortage.

Issue 3

13. Peak PC0197643 has been cited by Mr Coyne as a recovery failure with a financial impact on branch accounts.[1971] However, recoveries sometimes fail and Mr Coyne accepted during his cross-examination that it is inevitable with any system that there will be a small proportion of cases where the automatic recovery processes do not work and that PC0197643 is an example of this.

14. Recovery failures are detected by Fujitsu, as evidenced by failures are reported to is supported by the two KELs listed in the Peak, KEL acha959T and KEL dsed2640M.[1972]

15. Mr Coyne was asked questions regarding KEL dsed2640M.[1973] Mr Coyne replied on what would be visible to an SPM in branch:

> *Q. Then it says: "The print problem should be evident by 0607 errors being displayed to the PM and the same error being recorded in the*

[1971] {D2/4.1/66}.

[1972] {F/1700}; {F/587}.

[1973] {F/587}.

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PostOfficeCounter.log at the time. There will also be Warnings logged to this log with the words "Received second print request, before completing first print request." So would it be right to infer from what that KEL says that this problem, as well as going through to the MSU and being pushed through to the SSC in the normal way, the problem would also be evident to the postmaster who was undertaking the transaction at the branch, would you agree with that?

A. Yes. It is said there will be a 0607 error displayed. So if the screen is working as a result of whatever this failure is, then they would probably see that. The other two things there, PostOfficeCounter.log and warnings in the log, they won't be visible to the subpostmaster.

Q. So one way or another, both the postmaster and Fujitsu independently will know that there's a problem when this arises, yes?

A. Yes, and at this stage the counter probably hasn't yet booted back up yet. It is in a failed state obviously.[1974]

16. Therefore, both the SPM would be aware (given the information visible in branch) and Fujitisu would be aware give the reports they had available.

17. Mr Coyne stated during cross-examination that KEL acha959T addressed workarounds for bugs, errors or defects in Horizon. Mr Coyne's reasoning appeared to focus on the following:

Q. Mr Coyne, we will have to agree to differ on that. My suggestion to you is that this is just an explanatory KEL which explains how the system works. It is actually describing how the system should work, it is not describing what should happen when the system fails, but I can see that we are not going to agree about that.

A. It is inconsistent that users should be expected to go through to Fujitsu third line report to deal with a problem that almost should happen. That can't be right.[1975]

18. Mr Coyne has conflated the need for a manual process with the existence of a bug, error or defect in Horizon. There are many reasons why manual assistance may be required.

19. Mr Coyne agreed that it is inevitable that any system, however well designed, will require a manual recovery process too:

Q. I didn't ask the question properly, and it is my fault not yours. What I meant to ask was it is inevitable with any system, however well designed, that there will be a

[1974] {Day17/81:1} to {Day17/81:24}.

[1975] {Day16/151:19} to {Day16/152:3}.

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small proportion of cases where the automatic recovery processes don't work. That's just inevitable, isn't it?

A. Yes.[1976]

20. Mr Coyne went on to add to this:

Q. We have agreed that there will always be cases, a small proportion of cases, where the recovery process that one would like to operate automatically for one reason or another doesn't, and in that small proportion of cases some form of manual assistance is required, isn't it?

A. Yes.

Q. And the system for example isn't designed -- the recovery system isn't required to require the counter to keep trying to log on and log on perpetually, it is designed to log on only twice?

A. Yes.

Q. That is a design feature, because if it is perpetual you can't use the machine?

A. Yes.

Q. That is very helpful. So the fact that you have recovery failures is not of itself a threat to robustness unless the proportion of the recovery failures you have is too high?

A. Yes.

Q. Here the system that's operated by Horizon is that where you have a recovery failure it is always reported both to Fujitsu and, by error warnings, also to the subpostmaster, yes?

A. Yes.

Q. So both Fujitsu and the postmaster, where there is a failed recovery, know there is a problem and they know they need to deal with it by communicating with each other, do you agree with that?

A. Yes.

Q. And that's the way that the Horizon system is constructed, correct?

A. Yes.

Q. One other aspect of the recovery process that's very important is to know when money changes hands?

[1976] {Day17/89:5} to {Day17/89:11}.

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A. Yes.

Q. And let me just expand on why that's important. You have a transaction, ex hypothesi it is a transaction involving a financial institution making or receiving a payment, and let's say it is a bank deposit. The customer hands in £100 at the branch, the branch presses the buttons so that the customer's bank account goes up by £100, and the problem that arises with recoverable transactions is that the bank may have been told to increase the balance by £100 before the transaction has actually been committed to the accounts of the branch.

A. Yes.[1977]

21. Therefore, Mr Coyne agreed that there are reasons why a system needs to be designed to have a manual recovery element.

22. This Peak is good evidence of countermeasures working as they should. The issue was detected and Fujitsu sent Post Office a BIMS report to enable Post Office to resolve the issue.

23. No fix was required because there was no software bug.

Conclusion

24. For the reasons set out above, this is not a bug at all. There are three distinct issues under this heading. There is no evidence of a bug in Horizon and in any event, instances of any issue were caught by automatic reporting.

[1977] {Day17/89:25} to {Day17/91:20}.

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Bug 21: Transaction Correction Issue

1. The key documents:

   1.1 Peaks: PC0114154[1978]; PC0118562[1979]; PC0120459[1980]; PC0121331[1981]; PC0129587[1982]; PC0129774[1983]; PC0130056[1984]; PC0130057[1985]; PC0204350[1986] and PC0205567.[1987]

   1.2 Coyne 2, paras 3.197-3.210.[1988]

   1.3 JS2.[1989]

   1.4 LKiang2837P.[1990]

   1.5 KEL obengc2336R.[1991]

Summary

2. During cross-examination Mr Coyne clarified that he does not consider Bug 21: Transaction Correction Issue to be a bug with lasting financial impact.[1992] Post Office submits that there is no evidence of any financial impact on branch accounts.

[1978] {F/245}.

[1979] {F/261}.

[1980] {F/268}.

[1981] {F/274}.

[1982] {F/314}.

[1983] {F/318}.

[1984] {F/321}.

[1985] {F/322}.

[1986] {F/710}.

[1987] {F/734.1}.

[1988] {D2/4.1/67} to {D2/4.1/70}.

[1989] {D1/2/13}.

[1990] {F/324.2}.

[1991] {F/736.2}.

[1992] {Day17/122:6} to {Day17/122:8}.

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Nature of this issue

3. Mr Coyne has drawn together three distinct issues under the heading of "*transaction correction issue*":

   3.1 Paras 3.201 - 3.202[1993] relate to issue 1 (PC0120459)[1994]; (PC0118562)[1995]; (PC0114154)[1996]; and (PC0121331)[1997] ("Issue 1").

   3.2 Paras 3.198 – 3.203[1998] relate to issue 2 (PC0129587)[1999]; (PC0130056)[2000]; (PC0130057)[2001]; (PC0129774)[2002]; and (KEL LKiang2837P)[2003] ("Issue 2").

   3.3 Paras 3.204 - 3.210[2004] relate to issue 3 (PC0204350)[2005]; (PC0205567)[2006]; and (KEL obengc2336R)[2007] ("Issue 3").

Issue 1

4. Peak PC0120459,[2008] Peak PC0118562,[2009] Peak PC0114154[2010] and Peak PC0121331[2011] refer to issues with the TC button on screen.

[1993] {D2/4.1/68}.

[1994] {F/268}.

[1995] {F/261}.

[1996] {F/245}.

[1997] {F/274}.

[1998] {D2/4.1/67} to {D2/4.1/68}.

[1999] {F/314}.

[2000] {F/321} This was an internal Peak raised by FJ to ensure the fix is carried forward to the next release.

[2001] {F/322}.

[2002] {F/318}.

[2003] {F/324.2}

[2004] {D2/4.1/69} to {D2/4.1/70}.

[2005] {F/710}.

[2006] {F/734.1}.

[2007] {F/736.2}.

[2008] {F/268}.

[2009] {F/261}.

[2010] {F/245}.

[2011] {F/274}.

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5. Each of these Peaks was logged by Fujitsu's Solution Validation and Integration team, known as the 'SV&I' team, which is responsible for completing Solution Validation Testing.[2012] As such, these Peaks all relate to issues raised by users during testing prior to the TC functionality going live in September 2005 (when it replaced error notices).

6. Mr Coyne did not explain how these Peaks support the suggestion at paragraph 3.197 of his report that they provide "*an insight in relation to the technical flaws surrounding the processing of transaction corrections*".[2013]

7. In fact, this issue is an example of Fujitsu's testing processes picking up issues before TC functionality went live.

8. Although included in Mr Coyne's analysis of branch affecting bugs, Issue 1 was not a bug at all and it had no financial impact on branch accounts.

Issue 2

9. Peak PC0129587[2014] and Peak PC0130056[2015] refer to the Petersfield branch. Peak PC0130056[2016] is a clone of Peak PC0129587.[2017]

10. Peak PC0129587[2018] relates to a report by a SPM on 1 December 2005 that each time she went to select a TC for a £9,000 debit, which arose from an incorrect entry for Premium Bonds, her screen froze and she was unable to accept it.

11. Peak PC0129774[2019] and Peak PC0130057[2020] refer to the Bosham branch. These Peaks relate to a report by a SPM on 6 December 2005 that each time she went to select a TC, a £22,500 debit for an incorrect entry for Premium Bonds, her screen froze and she was unable to accept it.

[2012] {F/1211/6} to {F/1211/7}.

[2013] {D2/4.1/67}.

[2014] {F/314}.

[2015] {F/321}.

[2016] {F/321}.

[2017] {F/314}.

[2018] {F/314}.

[2019] {F/318}.

[2020] {F/322}.

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12. Mr Coyne's analysis proceeds on the basis that this issue was only experienced by these two branches. Mr Coyne fails to refer to KEL LKiang2837P,[2021] which demonstrates that: 50 other branches reported an issue with their screen freezing to Fujitsu during December 2005; 48 branches reported that this prevented them selecting an outstanding Camelot Lottery TC and rolling over into the next trading period; and 4 branches reported that this prevented them selecting an outstanding Premium Bond Sale TC and rolling over into the next trading period, including the two branches referred to in the 4 Peaks mentioned by Mr Coyne.

13. The diagnosis of the issue was that the text drafted into the TCs contained a string of 35 characters without a space. The code to put each TC on a screen was attempting to split the text at a space (as is normal for a word processor), but the code was unable to process a string of this length.

14. The issue was resolved quickly. Having first been reported on 1 December 2005, a work-around was developed whereby the affected branches were instructed to roll over all stock units except one (the one relating to the unprocessed TC). This enabled them to roll over into the new trading period. A software fix[2022] was then released on 22 December 2005 which enabled the branches to select and process the outstanding TC, and roll over the last stock unit. To avoid the issue reoccurring in future, Post Office confirmed that strings of this length without spaces would no longer be included in the text of TCs.

15. Although included in Mr Coyne's analysis of branch affecting bugs, the impact of Issue 2 was limited to the affected branches being unable to roll over to the new trading period for a short period of time. It had no financial impact on branch accounts.

Issue 3

16. Peak PC0204350[2023] refers to a report by an SPM on 14 September 2010 that he had suffered an £80 cash loss which he believed was due to a "*system error*".[2024] In support of this he referred the Fujitsu representative on the call to a TC report he had generated

[2021] {F/324.2}.

[2022] COUNTER_EPOSS25_9.

[2023] {F/710}.

[2024] {F/710/1}.

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on 10 September 2010, which had allowed him to request a date range of 60 days, but which did not provide him with data on TCs which were more than 40 days old.

17. The Peak indicates that on 14 September 2010, Fujitsu requested detail of the specific transactions relating to the £80 loss from the SPM in order that it could carry out an investigation into the issue. No information was provided by the SPM. Given the absence of evidence, the matter was thereafter closed by Fujitsu.

18. On 20 October 2010 Fujitsu noted that when a TC report was generated, data was not available for TCs older than 40 days due to the occurrence of an issue following the introduction of Horizon Next Generation. When generating a TC report however, the option to select a date range of 60 days was still available to SPMs.

19. Peak PC0205567[2025] is a clone of Peak PC0204350[2026] with additional detail added. This Peak refers to the fix created by Fujitsu, which ensured that the retention period for TC data was changed from 40 to 60 days.

20. Although included in Mr Coyne's analysis of branch affecting bugs, Issue 3 had no financial impact on branch accounts.

Conclusion on Bug 21: Transaction Correction Issues

21. Mr Coyne has failed to analyse, or even mention, important documents such as KEL LKiang2837P[2027] in his analysis.

22. For the reasons set out above, it is misleading for Mr Coyne to draw these three distinct Issues together to support his conclusion at paragraph 3.197 that the Peaks cited "*provide an insight in relation to the technical flaws surrounding the processing of transaction corrections*".[2028] Mr Coyne has included Peaks in his analysis of Issue 1 which do not indicate bugs in Horizon. Further, despite the bug referenced in Issues 2 and 3 appearing in Mr Coyne's analysis of branch affecting bugs, no financial impact

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[2025] {F/734.1}.

[2026] {F/710}.

[2027] {F/342.2}.

[2028] {D2/4.1/67}.

[2029] {Day17/122:6} to {Day17/122:8}.

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was suffered by the branches, as acknowledged by Mr Coyne during cross-examination.[2029]

[2029] {Day17/122:6} to {Day17/122:8}.

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Bug 22: Bugs/Errors/Defects introduced by previous applied Peak fixes

1. The key documents:

   1.1 Peaks: PC0053160[2030]; PC0098230[2031]; PC0052776[2032]; and PC0049702.[2033]

   1.2 Coyne 2, paras 3.211 – 3.219.[2034]

   1.3 JS2.[2035]

   1.4 JR3.[2036]

Summary

2. Mr Coyne states that Bug 11: Girobank is a bug with lasting financial impact. Post Office submits that there is no evidence of any financial impact on branch accounts. A number of the Peaks arose in testing. The Peaks that arose in the live environment do not indicate evidence of branch impact.

Nature of this issue

3. Mr Coyne has drawn together three distinct issues under the heading of "*Bugs/Errors/Defects introduced by previous applied PEAK fixes*":

   3.1 Para 3.212[2037] relate to issue 1 (PC0053160[2038]) ("Issue 1").

   3.2 Paras 3.213 – 3.216[2039] relate to issue 2 (PC0098230[2040]) and (PC0097081

[2030] {F/57}.

[2031] {F/184}.

[2032] {F/53}.

[2033] {F/35}.

[2034] {D2/4.1/70} to {D2/4.1/72}.

[2035] {D1/2/21}.

[2036] {D1/4}.

[2037] {D2/4.1/70}.

[2038] {F/57}.

[2039] {D2/4.1/70} to {D2/4.1/71}.

[2040] {F/184}.

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3.3 [2041]) ("Issue 2").

3.4 Paras 3.217 – 3.219[2042] relate to issue 3 (PC0052776[2043]); (PC0049702[2044]); and (PC0047518[2045]) ("Issue 3").

4. Mr Coyne states that this bug had lasting impact on branch accounts.

Issue 1

5. Peak PC0053160[2046] refers to a report by a Fujitsu test team member on 29 August 2000 which concerns an issue with the Training Counter which was freezing when a delegate mis-heard or miskeyed a keying sequence when completing a transaction log report. Further testing by Fujitsu demonstrated that the issue could also be present in the live environment, but that there was no evidence that it was. A software fix was deployed on 6 September 2000.

6. On the basis of Peak PC0053160,[2047] Mr Coyne has concluded that the fix implemented caused regression bugs. Although there are references to regression bugs in Peak PC PC0053160,[2048] further investigations by Fujitsu have concluded that rather than a regression, this was an error in the way that the test rig was setup; an approved combination of work packages was not being used.

7. Despite this bug appearing in Mr Coyne's analysis of branch affecting bugs, there is no evidence that Issue 1 had an operational or financial impact on branch accounts.

Issue 2

8. Peak PC0098230[2049] refers to an issue reported by a SPM on 13 January 2004 relating to a discrepancy with his cash account. Fujitsu called the SPM to obtain further details and

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[2041] {F/164}.

[2042] {D2/4.1/71} to {D2/4.1/72}.

[2043] {F/53}.

[2044] {F/35}.

[2045] {F/29.1}.

[2046] {F/57}.

[2047] {F/57}.

[2048] {F/57}.

[2049] {F/184}.

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ascertained that when the SPM was declaring his cheques, the value of cheques declared as stock doubled.

9. The issue was diagnosed as a code regression relating to the fix implemented in Peak PC0097081.[2050] A work-around was proposed two days later to the SPM, on 15 January 2004, that the SPM should follow a different procedure when declaring his cheques. A software fix was thereafter released for the code regression.

Issue 3

10. Peak PC0049702[2051] and Peak PC0052776[2052] refer to issues discovered by Fujitsu in its standard development testing.

11. Peak PC0049702[2053] refers to an issue raised on 7 July 2000 with a payments discrepancy that was discovered during Fujitsu testing at the Danby House branch, which was used as a pilot site. This was a regression issue as it arose following the fix being implemented in Peak PC0047518.[2054] Peak PC0047518[2055] refers to an issue also raised during Fujitsu testing on 13 June 2000 that the C/A reconciliation at the counter was not totalling the payments and receipts fields correctly.

12. Peak PC0052776[2056] was raised on 21 August 2000 and refers to the same discrepancy issue reported in Peak PC0049702.[2057] This issue arose during further testing by Fujitsu. Peak PC0049702[2058] was closed on 21 August 2000 and Peak PC0052776[2059] was closed on 31 August 2000 following a software fix being implemented.

[2050] {F/164}.

[2051] {F/35}.

[2052] {F/53}.

[2053] {F/35}.

[2054] {F/29.1}.

[2055] {F/29.1}.

[2056] {F/53}.

[2057] {F/35}.

[2058] {F/35}.

[2059] {F/53}.

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13. Although included in Mr Coyne's analysis of branch affecting bugs, it is clear from the two Peaks that they relate to issues raised during Fujitsu testing. Given this, Issue 3 had no financial or operational impact on branch accounts.

Conclusion on Bug 22: Bugs/Errors/Defects introduced by previous applied PEAK fixes

14. Despite this bug appearing in Mr Coyne's analysis of branch affecting bugs, a work-around for the SPM who reported Issue 2 was implemented within 2 days, and a software fix was implemented thereafter. The financial and operational impact on their branch accounts was therefore limited. Issues 1 and 3 had no financial or operational impact on branch accounts.

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Bug 23: Bureau de Change

1. The key documents:

   1.1 PC0129767[2060]; PC0151787[2061]; PC0137437[2062]; PC0200042[2063]; PC0200090[2064]; PC0200435[2065]; PC0201340[2066]; PC0209240[2067]; PC0226573[2068]; PC0254447[2069]; PC0260834[2070].

   1.2 JS2.[2071]

   1.3 KEL AChambers2252R[2072]; AgnihotriV917N[2073]; Agnihotriv245L[2074]

Summary

2. Mr Coyne states that Bug 23: Bureau de Change discrepancies is a bug with lasting financial impact. There are three issues identified within this heading. There is no evidence of a bug in Horizon. Each issue is an example of user error in Horizon.

3. The experts agree that bugs that involve reference once discovered, they could be quickly fixed (by a change to the reference data) once the bug is correctly identified.2075

[2060] {F/318.1}.

[2061] {F/430.1}.

[2062] {F/346.1}.

[2063] {F/662.1}.

[2064] {F/663}.

[2065] {F/665.1}.

[2066] {F/678.1}.

[2067] {F/785.1}.

[2068] {F/1092.1}.

[2069] {F/1549.1}.

[2070] {F/1667.1}.

[2071] {D1/2/21} to {D1/2/22}.

[2072] {F/316}.

[2073] {F/668}.

[2074] {F/667}.

[2075] {D1/4/7} para 4.4.

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However, in this case although bureau de change is a particular product, the Peaks cited by Mr Coyne do not indicate a bug in Horizon but rather user error.

Nature of this issue

4. In JS2 Mr Coyne mentions three Peaks under the heading of "*Bureau de Change*":

   (1) PC0129767[2076] ("Issue 1").

   (2) PC0137437[2077] ("Issue 2").

   (3) PC0151787[2078] ("Issue 3").

5. These Peaks relate to reversals and declarations concerning foreign currency. They are described further below.

6. Mr Coyne confirmed during his cross-examination that he believes that these issues had a lasting financial impact.[2079] However, as noted below there is no evidence to support this.

Issue 1

7. In JS2 Mr Coyne stated that Peak PC0129767 was an example of Horizon allowing the reversal of the same transaction twice, impacting branch accounts.[2080] While this incident did have an impact on branch accounts, it was caused by the Subpostmaster carrying out a reversal incorrectly rather than a bug, error or defect in Horizon.[2081]

8. The Subpostmaster attempted to reverse a transaction for the sale of 1,000 euros. However, the Subpostmaster entered the transaction ID for the cash settlement entry rather than the transaction ID for the currency/margin entry, which meant that only the cash settlement of the transaction was reversed. The Subpostmaster then adjusted their

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[2076] {F/318/1}.

[2077] {F/346.1}.

[2078] {F/430.1}.

[2079] {Day17/133:3} to {Day17/133:4}.

[2080] {D1/2/21}.

[2081] {F/318.1/4}.

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stock to remove the currency they had failed to reverse and this left the margin for the transaction as a loss. This represents user error.

9. A reversal receipt would have been generated by Horizon and this would have shown that the Subpostmaster had reversed the incorrect entry. Indeed, the Peak shows that the Subpostmaster raised the issue with Post Office leading to the Peak being created.

10. There is no evidence to suggest that the discrepancy was not rectified, either by the Subpostmaster reversing the transaction correctly or by a transaction correction being issued.

Issue 2

11. In Peak PC0137437 the Subpostmaster reversed the cash settlement part of the original bureau transaction rather than the currency and margin part of the original bureau transaction.[2082] This is the same thing that happened in Issue 1, although Mr Coyne has correctly identified that Issue 2 represents user error in JS2.[2083]

12. The Peak concludes by stating that the Subpostmaster needed "*to reverse the currency and margin part of the original bureau transaction*". This would have removed the discrepancy in the branch accounts.

Issue 3

13. In Peak PC0151787 the Subpostmaster reported a discrepancy on his main stock unit that he believed was related to currency transactions he had undertaken. However, the Peak shows that Fujitsu investigated the matter and concluded that the Subpostmaster had been making incorrect cash declarations, declaring his cash at one value and then performing a rem in or transfer which would effect this value, but subsequently declaring his cash at the original value.

14. Post Office has subsequently reviewed ARQ data for the branch and there is nothing to suggest that the branch's remming in /out of foreign currency caused a loss in the branch.

[2082] {F/346.1/3}.

[2083] {D1/2/21}.

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15. This is another example of user error.

Other Peaks referred to in JS2

16. None of the remaining Peaks referred to in JS2 (PC0200042[2084]; PC0200090[2085]; PC0200435[2086]; PC0201340[2087]; PC0209240[2088]; PC0226573[2089]; PC0254447[2090]; PC0260834[2091]) had an impact on branch accounts.

Conclusion on Bug 23: Bureau de Change

17. These three issues are all examples of user error.

18. Issues 1 and 2 (incorrect reversals) could be rectified by the Subpostmaster performing the reversal again correctly or via a transaction correction. Because Issue 3 relates to the Subpostmaster declaring their cash incorrectly, it is not clear whether declaring the cash correctly would have resolved the matter or if there would have been a discrepancy caused by another issue or issues in the branch.

[2084] {F/662.1}.

[2085] {F/663}.

[2086] {F/665.1}.

[2087] {F/678.1}.

[2088] {F/785.1}.

[2089] {F/1092.1}.

[2090] {F/1549.1}.

[2091] {F/1667.1}.

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Bug 24: Wrong Branch Customer Change

1. The key documents:

   1.1 Peaks: PC0128264[2092] and PC0129791[2093].

   1.2 JS2[2094].

Summary

2. Bug 24: Wrong Branch Customer Change is a bug with the potential for lasting financial impact. This is a reference data bug. The experts have agreed that that while reference data bugs may be a significant proportion of the bugs with financial impact, once discovered, they could be quickly fixed (by a change to the reference data) once the bug is correctly identified.[2095] This was the case with Bug 24. The issue would have visible to the SPM as the incorrect quantity would have displayed on the screen. Fujitsu identified the root cause and developed a fix within two weeks of the issue being reported by the SPM.

Nature of this issue

3. This issue relates to quantities of stamps and postage labels (**Smartpost Transactions**) not correctly resetting to 1.

4. When a quantity of greater than 1 was entered for a Smartpost Transaction, the quantity was not reset to 1 when the clerk moved on to the settlement screen[2096]. This could result in subsequent items in the session being multiplied by whatever quantity remained and could affect further items being sold or the amount being tendered towards settlement.

5. Peak PC0128264 was opened on 4 November 2005 as a result of a SPM reporting the issue on 4 November 2005. The matter was passed to Fujitsu's development team for a

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[2092] {F/310}.

[2093] {F/317}.

[2094] {D1/2/22}.

[2095] {D1/4/7} para 4.4.

[2096] Symptoms outlined in KEL AChambers4134R {F/319}.

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software fix on around on 10 November 2005 and a fix was implemented on 18 November 2005. The Peak shows that Fujitsu suspected that the problem was introduced by changes to the Smartpost Transactions that had been implemented from 24 October 2005.

6. On 6 December 2005, a further instance was reported (Peak PC0129791[2097]). The root cause was identified and it was found that this issue related to Peak PC0128264 which documented the fix that had been put in place. On 7 December 2005, Fujitsu found that the fix had not been applied to a group of branches and the reference change data fix was then implemented overnight to the remaining branches.

7. The first fix and change to the reference data was applied to the active group of branches, group 111111113. It was live and effective on 18 November 2005[2098]. However, after the further instance of the issue was reported, that led Fujitsu to investigate further and realise that there was an active group of branches, group 111111112, that hadn't received the fix[2099]. As explained above, the fix and change to the reference data was applied to group 111111112 overnight on 7 December and was effective from 8 December 2005[2100].

Impact

8. This issue could have only been active for a small period of time, from when the changes to the Smartpost Transactions were made on 24 October 2005 to 7 December 2005 when the second tranche of branches received the fix.

9. The issue would have been visible to the SPM as the incorrect quantity would have displayed on the screen. If the SPM did not notice the quantity had changed then they could have:

    9.1 Charged the customer for item(s) the customer did not receive which would likely cause a gain for the branch; or

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[2097] {F/317}.

[2098] {F/310/4}.

[2099] {F/317/2}.

[2100] {F/317/3}.

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9.2 Potentially hand too much change to the customer which would likely cause a loss for the branch.

10. Mr Coyne correctly categorises the bug in JS2[2101] as being caused by an issue in the reference data. His assertion that this would "*lead to the operator*" providing the branch customer with the wrong amount of money is not strictly accurate.

11. As explained above, the incorrect value displayed on the screen would have been visible to the user and relatively easily identified by the user because if the incorrect quantity was carried through as this would affect the basket total and therefore change the total amount of cash and stock shown to the SPM on the Counter. This therefore means that the SPM had two opportunities to spot an occurrence of this issue: (1) by spotting the quantity error; and (2) by spotting that the basket total had changed.

12. As long as the issue was identified by the user and the correct value/amounts calculated by the user, there should have been no discrepancy in the branch accounts.

13. Notwithstanding the above, if the user did not notice the issue, it is possible that this could lead the SPM to give more change back to the customer than they should have, resulting in a loss and/or gain to the branch accounts.

Fix applied

14. Fujitsu identified the root cause and developed a fix within two weeks of the issue being reported by the SPM. While there was an issue with the fix being rolled out, PC0129791[2102] confirms that Fujitsu looked into the problem of the fix not being applied fully to an active group of branches and how this could be avoided in the future. This is a good example of Fujitsu acknowledging what had gone wrong and adopting a lessons-learned approach moving forward regarding the deployment of fixes.

[2101] {D1/2/22}.

[2102] {F/317/2} to {F/317/3}.

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Bug 25: Lyca top up

1. The key documents:

   1.1 Peaks: PC0202925[2103]; PC0203108[2104]; PC0203137[2105]; PC0203284[2106]; PC0202894[2107]; and PC0203215.[2108]

   1.2 KEL: ballantj020J.[2109]

   1.3 JS2[2110] and JR4.[2111]

Summary

2. Bug 25: Lyca Top Up is a bug with the potential for lasting financial impact. This is also reference data bug. As set out above, the experts have agreed that that while reference data bugs may be a significant proportion of the bugs with financial impact, once discovered, they could be quickly fixed (by a change to the reference data) once the bug is correctly identified.[2112] This was the case with Bug 25. This issue was identified through Fujitsu's automatic reporting – the NB102 report.[2113]

Nature of this issue

3. Peak PC0203108[2114] related to incorrect reference data, rather than a fault in the Horizon software. This is a point that the experts agree on.[2115]

[2103] {F/692}.

[2104] {F/694}.

[2105] {F/696.1}.

[2106] {F/699.1}.

[2107] {F/691.2}.

[2108] {F/697.1}.

[2109] {F/698}.

[2110] {D1/2/23}.

[2111] {D1/4/7}.

[2112] {D1/4/7} para 4.4.

[2113] PC0203215 {F/697.1} and PC0203284 {F/691.2}.

[2114] {F/694}.

[2115] {D1/4/7}.

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4. The issue relates to Lyca top up transactions for mobile phones. These transactions are entered on the Horizon counter by the SPM and, once the transaction is processed by Horizon and authorised by E-Pay (the financial institution), a receipt is printed which the SPM should provide to the customer. It is this receipt that contains the customer's voucher to apply the top up to their mobile phone.

5. As shown in the Peak, Lyca top up transactions were being accurately recorded by Horizon, but the counter was unable to process the authorisation response returned from E-Pay which resulted in an error message being displayed on the counter and the SPM being logged off before the Lyca top-up receipt was printed.[2116] What happened next was dependent upon the action taken by the SPM when they logged back into the counter:

   5.1 As shown in Peak PC0203108,[2117] if the SPM recovered the transaction and incorrectly confirmed on Horizon that the top up had been successful, despite no top up receipt having been printed, the transaction would be recorded in the branch's accounts, meaning the branch would likely have experienced a shortfall to the value of the top-up as no money would have been taken from the customer.[2118]

   5.2 If the SPM logged back into the counter and correctly confirmed that the transaction had not been successful, a zero value transaction would be recorded in the branch accounts and a reversal generated for the top up. This should have resulted in the affected branch accounts being correct, but due to the reference data issues the reversal being sent to E-Pay caused E-Pay to treat the top-up incorrectly as a successful transaction. This is shown in Peak PC0203284.[2119]

Detection and resolution

6. The first known occurrence of the issue was recorded in Peak PC0202925 and reported to Fujitsu on 13 August 2010.[2120]

[2116] {F/694/1}.

[2117] {F/694/2}.

[2118] We can reasonably assume no money would have been taken from the customer as no receipt would have been printed with the top-up voucher.

[2119] {F/699.1/2}.

[2120] {F/692/1}.

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7. The issue would have been visible to the SPM in branch as they would have been logged out of the counter and gone through the recovery process. It would have also been possible to identify whether or not a transaction had been reversed from the reports available in branch. This is supported by Peaks PC0203108[2121] and PC0202925[2122] which were both raised in response to SPMs reporting the issue to the NBSC.

8. As shown by Peaks PC0203215[2123] and PC0203284,[2124] this issue was also identified by Fujitsu's automatic reporting using the NB102 report and as such is an example of Fujitsu's automatic reporting picking up issues that arise.

9. In terms of resolving any financial discrepancies with the affected branches:

   9.1 As can be shown in Peak PC0203108,[2125] once the issue had been reported, Fujitsu would in turn refer the SPM to the NBSC for reconciliation with Post Office.

   9.2 Where the issue was identified as a result of Fujitsu's automatic reporting, Fujitsu would issue a BIMS Incident Report to Post Office. As shown by BIMS Incident Reports BE/0203215[2126] and BE/0203284,[2127] these reports would summarise the particular occurrence and explain the potential discrepancy to enable Post Office to reconcile the position with the branch.

10. A permanent reference data fix was released on 20 August 2010, Release Peak PC0202925.[2128]

Conclusion on Bug 25: Lyca top up

11. This issue was identified through Fujitsu's automatic reporting and by SPMs reporting it. It was quickly resolved, with the reference data fix being issued in 7

[2121] {F/694}.

[2122] {F/692}.

[2123] {F/697.1}.

[2124] {F/691.2}.

[2125] {F/694}.

[2126] {F/700.2}.

[2127] {F/700.3}.

[2128] {F/692/5}.

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days of the issue being reported to Fujitsu.

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Bug 26: TPSC250 report bug

1. The experts have drawn together five distinct issues under the heading of "*TPSC250 report*" in JS2:

   1.1 KEL: AChambers253L[2129] and 13 Peaks[2130] relate to issue 1[2131] ("Issue 1").

   1.2 Peaks: PC0122630;[2132] PC0122631;[2133] and PC0122544[2134] relate to issue 2 ("Issue 2").

   1.3 PC0122664[2135] and JAnscomb1935Q[2136] relate to issue 3 ("Issue 3").

   1.4 PC0122766 relates to issue 4 ("Issue 4").

   1.5 KEL Ballantj2547K[2137] and PC0156718 relate to issue 5 ("Issue 5").

Summary

2. This was a backend reporting problem and so the chances of branch impact are small.[2138] Of the five issues: issue 1 resulted in incorrectly flagged exceptions but no reconciliation was required; issue 2 resulted in no financial or operational impact on a branch accounts and was limited solely to the process of copying/ harvesting transactions to Post Office's back-end systems; issue 3 did not result in a mismatch between the files sent to Post Office and the branch data; issue 4 was flagged by automatic reporting and issue 5 could result in a receipts and payments mismatch thus needing reconciliation.

[2129] {F/449}.

[2130] PC0115804 {F/251}, PC0118350 {F/259.1}, PC0117659 {F/255.1}, PC0118677 {F/261.1}, PC0119978 {F/262.1}, PC0120063 {F/263.1}, PC0122147 {F/276.1}, PC0122304 {F278.1}, PC0122354 {F278.2}, PC0123056 {F287.1}, PC0123058 {F287.2}, PC0189625 {F540.1} and PC0115456 {F/249.1}.

[2131] {F/97}.

[2132] {F/278.4}.

[2133] {F/278.5}.

[2134] {F/278.3.1}.

[2135] {F/279.1}.

[2136] {F/279.2}.

[2137] {F/633}.

[2138] {D1/2/24}.

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Issue 1

3. As can be seen from KEL AChambers253L,[2139] this was a reconciliation reporting issue which involved Peaks being automatically raised as a result of Fujtisu' s reconciliation reports incorrectly raising exceptions.

4. Despite the Peak[2140] not being high priority (as there was no financial impact on branch accounts), the issue was identified and a fix developed and deployed in a short period of time. As indicated in the Peak it was opened on 10 February 2005 and, following Fujitsu's investigations, the KEL[2141] was raised on 14 February 2005 to address any future occurrences of the problem and provide Fujitsu with a workaround to check that the reconciliation reports were incorrectly flagging exceptions.

5. A permanent fix involving a code change was released to all branches in 2005 as part of the s80 software upgrade.

Conclusion Issue 1

6. Mr Coyne states that the KEL explains the branch account impact.[2142] Mr Coyne fails to note the following which can be clearly seen from the Peak[2143]:

   6.1 On this occasion the relevant report, referred to in the Peak as the "*check*" has simply not worked, resulting in the exception being incorrectly raised.

   6.2 Fujitsu conducted a thorough investigation into the issue and concluded that no reconciliation was required.

[2139] {F/449}.

[2140] {F/251}.

[2141] {F/449}.

[2142] {D1/2/24}.

[2143] {F/251/1} to {F/251/2}.

[2144] {F/278.4}.

[2145] {F/278.5}.

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Issue 2

7. The experts reference Peaks PC0122630[2144] and PC0122631[2145] alongside the Peaks relevant to Issue 1 above.[2146]

8. These Peaks were raised as a result of Fujitsu's automatic reporting using the TPSC250 report. As can be seen in the EPOSS/TIP Reconciliation Controls – Procedures for Errors and Exception Handling,[2147] the TPSC250 Report shows a list of exceptions where the totals for the transactions sent from the Host BRDB to Post Office's back-end systems do not match the Daily Transaction Totals calculated by the counters in branch. The TPSC250 Report therefore raises alerts during the process of copying/ harvesting transactions to back-end systems.

9. The experts do not identify the Master Peak PC0122544,[2148] which references 5 known instances of the issue and details Fujitsu's investigations into the issue and the release of the fix. As can be seen in the Master Peak:

    9.1 This issue relates to the 'Virtual PO'. 'Virtual PO' is a term used by Fujitsu for a collection of messages against the group ID '999998', which contained entries for all 'open' branches in Legacy Horizon. It was therefore not a real branch. Data held in the Virtual PO was held on the correspondence server and was not available to individual branches.

    9.2 The immediate impact of the issue was that the affected branch counters would not be harvested to Post Office's back-end systems.

    9.3 There was no suggestion that the issue would be able to impact branch accounts directly.

10. In terms of resolving the issue, the Master Peak shows the following:

    10.1 Fujitsu investigated the 5 different instances of the problem and identified that there was an incorrectly formed field in the Virtual PO, specifically there was an

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[2146] {D1/2/24}.

[2144] {F/278.4}.

[2145] {F/278.5}.

[2147] {F/100.2/15}.

[2148] {F/278.3.1}.

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additional EOD 'Date' field, which caused the exceptions in the TPSC250 Report as the report was unable to access the relevant EOD messages.

10.2 Fujitsu identified that the program responsible for writing the relevant EOD messages had been amended as part of the s80 software upgrade which had taken place the previous weekend.

10.3 A workaround fix was introduced for the 5 affected branches, which involved the EOD messages that would be sent to Post Office's back-end systems (not the data in branch) being rewritten by Fujitsu without the additional EOD Date field.[2149]

10.4 A permanent code fix was released to all branches as part of the s80R software release, which would result in the EOD Date field being populated correctly, with the date in dd-Mon-yyyy format.[2150]

Conclusion on Issue 2

11. Issue 2 had no financial or operational impact on a branch accounts and was limited solely to the process of copying/ harvesting transactions to Post Office's back-end systems.

12. Despite the Master Peak[2151] not being high priority (as there was no financial impact on branch accounts), the issue was identified by Fujitsu's automatic reporting and a fix developed and deployed in a short period of time.

Issue 3

13. This involves an issue in the reconciliation between the counter reported totals in branch and the TPS host generated totals.

14. Peak PC0122664[2152] was raised as a result of Fujitsu's automatic reporting (specifically the TPSC250 report described above) to investigate why the TPS total was showing as being higher than the counter total in branch.

[2149] {F/278.3.1/2}.

[2150] {F/278.3.4}.

[2151] {F/251}.

[2152] {F/279.1/1}.

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15. As can be seen from KEL JAnscomb1935Q:[2153]

    15.1 The difference in totals in the TPSC250 report was caused by the same problem identified in Issue 2 above involving the additional EOD Date field.

    15.2 The additional EOD Date field resulted in the TPSC250 report adding the totals for day 0 and day 1 together, meaning that the counter total was correct for day 1, but did not match the TPS total in the TPSC250 report.

    15.3 This issue would be resolved as part of the fix identified in Issue 2.

16. As can be clearly seen from the ent4 ry in the Peak on 5 July 2005 at 06:51,[2154] Fujitsu's investigations confirmed that there was "*no impact on the files sent to POL*". This means that while the TPSC250 report totals were incorrect, the actual files sent to Post Office matched the data in branch. Consequently, no fix was required for this particular instance in PC0122664.[2155]

Issue 4

17. Peak PC0122766[2156] relates to a single issue involving Riposte errors that affected a counter in branch.

18. As shown in the Peak:

    18.1 The Peak was raised on 4 July 2005 in response to the branch appearing in Fujitsu's TPSC250 report.

    18.2 The route cause was identified as being Riposte errors on counter 1 in branch.[2157]

    18.3 By 7 July 2005, counter 1 had been replaced in the branch.

    18.4 Fujitsu were able to run a check that confirmed, as transactions had only been performed on counter 2, the number, quantity and value of the counter 2

[2153] {F/279.2}.

[2154] {F/279.1/2}.

[2155] {F/279.1/1}.

[2156] {F/281.1}.

[2157] {F/281.1/2}.

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transactions matched the TPS totals in the TPSC250 report, meaning there was no need for reconciliation.

19. This is a good example of Fujitsu's automatic reporting swiftly alerting Fujitsu to an issue in the branch, here arising from an issue with one of the branch's counters. Fujitsu clearly identified the origin of the problem and had rectified the issue within 3 days' of the Peak being raised.

Issue 5

20. The experts referenced Peak PC0156718[2158] alongside the Peaks relevant to Issue 1 above.[2159]

21. While this was originally suspected to be an instance of KEL AChambers253L,[2160] Fujitsu later confirmed that this was an instance of KEL Ballantj2547K.[2161]

22. As can be seen from the KEL:[2162]

    22.1 The issue resulted in the branch appearing in the TPSC250 report showing a mismatch between the TPS 'Absolute Value' and the branch counter 'Absolute Value', specifically:

        (a) The TPS total and counter total values for the 'Number' and 'Absolute Quality' columns were the same; and

        (b) There was a difference in the 'Absolute Value' at the counter, which was greater than the TPS value.

    22.2 While Fujitsu was not able to reproduce the issue, Fujitsu was able to determine that where the session nets to zero, this would have no impact on branches and no reconciliation would be needed.

    22.3 In the event that the session did not net to zero, the branch would experience a receipts and payments mismatch in branch and reconciliation would be required.

[2158] {F/448.1}.

[2159] {D1/2/24}.

[2160] {F/449}.

[2161] {F/633/3}.

[2162] {F/633/3}.

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23. As shown in the Peak: Fujitsu investigated and diagnosed the issue within 6 days of the branch showing in the TPSC250 report. Fujitsu were able to confirm that no reconciliation was required because the branch did not appear in the incomplete summaries report – i.e. the session did net to zero and there was no receipts and payments mismatch.

Bug 27: TPS Bug

1. The key documents:

   1.1 Peaks: PC0141145[2163]; PC0157357[2164]; PC0159273[2165]; PC0196893[2166]; PC0174587[2167]; and PC0156718.[2168]

   1.2 KEL: ballantj2547K.[2169]

   1.3 JS2.[2170]

Summary

2. Bug 27: TPS is a bug with the potential for lasting impact. Dr Worden is of the view that this was a backend reporting problem and so the chances of branch impact are small.[2171]

Nature of this issue

3. This is a reconciliation reporting issue that affected SmartPost transactions. The SmartPost application was supplied by Escher and was designed to help users to calculate the postage required for any item and print labels to attach to the relevant items.

[2163] {F/364}.

[2164] {F/452.1}.

[2165] {F/454.1}.

[2166] {F/604.1}.

[2167] {F/480.1}.

[2168] {F/448.1}.

[2169] {F/633}.

[2170] {D1/2/24} to {D1/2/25}.

[2171] {D1/2/24}.

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4. Peak PC0141145[2172] related to a problem with SmartPost which wrote slightly corrupt transactions.

5. In terms of the specific issue that arose:

   5.1 The affected SmartPost transactions were either:

      (a) Missing a grammar attribute and/ or had a corrupted grammar attribute. The grammar attribute is used to calculate the value for the reconciliation reporting, meaning that, as the attribute was either missing or corrupted, reconciliation reporting errors were produced;[2173] or

      (b) Complete and not corrupted as far as the branch accounting was concerned. Fujitsu were able to determine this by checking the session nets to zero, as per the guidance in KEL ballantj2547K.[2174]

   5.2 The grammar attribute involved was used to calculate the 'EPOSSDailyRecon' absolute values, which in turn is what triggers the TPSC250 and TPSC257 exceptions where these is a mismatch between the counter and the TPS host generated totals.

Detection and resolution

6. The issue was identified through Fujitsu's automatic reporting using the Incomplete Summaries Report and TPSC250 report and as such is an example of Fujitsu's automatic reporting picking up issues that arise.

7. Mr Coyne states that this issue does impact branch accounts.[2175] Mr Coyne only quotes one extract from Peaks PC0196893 and PC0174587, which is a note from Fujitsu that this issue "*may also have caused a receipts and payments error*". This gives a misleading impression of both the issue generally and extent of Fujitsu's investigations and furthermore ignores the later content of these Peaks. There are two points to note in response:

[2172] {F/364}.

[2173] {F/364/4}.

[2174] {F/633}.

[2175] {D1/2/24}.

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7.1 As clearly shown in the relevant Peaks:[2176] Fujtisu investigated each incident raised. In order to determine whether any reconciliation is required, following the guidance in KEL ballantj2547K,[2177] Fujitsu ran a check to confirm that the session for the affected transaction net to zero, meaning there would be no receipts and payments mismatch and consequently no impact on the affected branches' branch accounts.

7.2 While it is acknowledged that this issue could have resulted in a receipts and payments error, Fujitsu's automatic reporting would have picked any such issue up separately and it would have been dealt with through business as usual processes.

Conclusion

8. It is clear from all of the Peaks referenced by the experts in JS2 that Fujitsu fully investigated each of these instances and checked to see whether there had been any impact on the affected branches.

9. The guidance in KEL ballantj2547K[2178] enables Fujitsu to identify any further instances of the issue and ensure there is no impact on branch accounts.

[2176] {F/452.1}, {F/454.1}, {F/604.1}, {F/480.1} and {F/448.1}.

[2177] {F/633}.

[2178] {F/633}.

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Bug 28: Drop and Go Bug

1. The key documents:

   1.1 Peaks: PC0260269[2179] (initial instance); and PC0273234[2180] (further instance).

   1.2 KELs: cardc235Q[2181]

   1.3 JS2.[2182]

Summary

2. Bug 28: Drop and Go is a bug with the potential for lasting financial impact. This is also reference data bug. As set out above, the experts have agreed that that while reference data bugs may be a significant proportion of the bugs with financial impact, once discovered, they could be quickly fixed (by a change to the reference data) once the bug is correctly identified.[2183] This was the case with Bug 28.

Nature of this issue

3. Peak PC0260269[2184] relates to an issue involving a Drop and Go transaction (a £100 mobile phone top up) that timed out on Horizon. The transaction did not appear to complete from the SPM's perspective, but it was recorded in the branch accounts. The branch then processed the transaction again. While the customer was credited with £100, the branch was debited £200 and this created a discrepancy of £100 in the branch accounts which was resolved by a Transaction Correction being issued on 29 June 2017.

4. As explained below, the issue which led to Peak PC0260269 (a bug in the reference data/ script provided by ATOS rather than a fault in the Horizon software) was fixed by ATOS. A similar issue arose subsequently (PC0273234) and was again fixed by ATOS.

[2179] {F/1660.1}.

[2180] {F/1848.8.2}.

[2181] {F/1660}.

[2182] {D1/2/25}.

[2183] {D1/4/7} para 4.4.

[2184] {F/1660.1}.

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Detection and resolution

5. On 29 June 0217 the SPM contacted the NBSC and reported that there was a duplicate transaction in their branch accounts.[2185] This led to Peak PC0260269 being raised. The Peak shows that Fujitsu:

   5.1 Investigated the issue;

   5.2 Identified that the potential root cause could be the relevant script failing on 5 July 2015;

   5.3 Raised KEL cardc235Q[2186] on 5 July 2017 to enable any future occurrences to be identified; and

   5.4 Passed the issue to ATOS to investigate further as ATOS supply and maintain the affected script.

6. Once the issue had been passed to ATOS, as per the Test Summary Report,[2187] ATOS identified issues with two scripts:

   6.1 Balance & Top Up script. This is a transaction script that captures and transmits data when a customer wants to Top Up the balance of their Drop and Go account. As per the Test Summary Report, ATOS identified a bug in the script, referred to as 'Issue 1' that incorrectly allowed the transaction to progress after an irrecoverable timeout had been produced.[2188]

   6.2 Open Account script. This is a transaction script that captures and transmits data when a customer wants to open a Drop and Go Account. As per the Test Summary Report, ATOS referred to this as 'Issue 2' and confirmed that there was the same issue as with the Balance & Top Up Script in that the transaction was able to progress after an irrecoverable timeout had been produced.[2189]

   These script issues caused the Drop and Go transaction to be committed to the branch

[2185] {F/1659.1}

[2186] {F/1660}.

[2187] {F/1787}.

[2188] {F/1787.1/3}.

[2189] {F/1787.1/3}.

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accounts, despite the counter having crashed.

7. As can be seen from the Test Summary Report, these script issues were fixed by 6 April 2018 following the release of updated versions of the script, specifically version 6.12 of the Balance & Top Up Script and version 6.11 of the Open Account Script.[2190]

8. A similar incident led to Peak PC0273234[2191] being raised on 21 August 2018.

9. As can be seen from the Peak,[2192] Fujitsu identified that this was a further instance of the Drop and Go issue and swiftly connected this issue to the KEL[2193] and passed the matter to ATOS.

10. This further instance was investigated by ATOS who identified issues with a different Drop and Go script, specifically the Count Mails transaction script. This can be seen from ATOS' internal email chain from August – September 2018 which confirms an updated script had been produced and that the script fix had been tested.[2194] The reference data/ script fix was released to live overnight on 25 September 2018, meaning the change would have been effective in all branches on 26 September 2018.

11. In terms of the Count Mails script functionality:

    11.1 The Count Mails script was intended to provide the functionality for SPMs to accept a number of Drop and Go transactions at the same time, registering the number of items received and issuing a receipt to the customer for the number of Drop and Go items purchased. The primary functionality of the Count Mails script was therefore to capture the number of Drop and Go items purchased.

    11.2 Once these additional items were purchased, the SPM would then perform a separate transaction on Horizon to process the items individually after the customer had left the branch. The purpose of this was to enable the customer to purchase several Drop and Go items at the same time and enable the SPM to process these on Horizon at a later stage – i.e. at a quiet moment in the branch

[2190] {F/1787.1/3}.

[2191] {F/1848.8.2}.

[2192] {F/1848.8.2/3}.

[2193] {F/1660}.

[2194] {F/1825.01}.

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when no other customers were present. It is only at this second stage that the SPM is able to identify whether there is a sufficient balance on the customer's account to process the items.

11.3 As a result of ATOS' investigations into this further issue, they determined that the Count Mails script has a secondary functionality that enables customers to top up also. This is a particularly unusual transaction as it would require the customer to have prior knowledge of their account balancing prior to performing the transaction.

12. On this occasion the customer topped up their account at the same time as performing several Drop and Go items, which would have triggered the Count Mails script. ATOS were, at the time of the original script fixes in April 2018, unaware that the Count Mails script had this secondary functionality, meaning it had not been addressed at the same time as the April 2018 fix and had the same issues in that it allowed the relevant transaction to complete after the counter had timed out.

Conclusion

13. These issues were caused by bugs in the reference data/ script provided by ATOS, rather than a fault in the Horizon software.

14. In his report Mr Coyne correctly notes that the first issue resulted in the customer being credited with £100 but the branch being debited with £200, meaning the branch would have experienced a discrepancy to the value of £100 and during his cross-examination Mr Coyne opined that there is evidence of this issue having lasting financial impact.[2195] However, a Transaction Correction was issued for £100 to correct the discrepancy on 29 June 2017, as shown in the Spreadsheet of TCs for this particular branch[2196]. There was therefore no lasting financial impact to the branch.

15. During Dr Worden's cross-examination, Mr Green QC took Dr Worden to this Peak and suggested that the original fix was insufficient as the same problem had subsequently emerged.[2197] As explained above, the similar issue related to a secondary functionality of

[2195] {Day17/133:19} to {Day17/133:21}.

[2196] {F/1645.1}.

[2197] {Day20/55} to {Day20/56}.

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a completely separate Drop and Go script. As such, it is incorrect to suggest that the original script/ reference data fix simply did not work. Once the similar issue arose, it was swiftly passed to ATOS to investigate, who identified the issue with the separate Count Mails script and implemented a reference data/ script fix. There has been no further known instances of the issue.

Bug 29: Network Banking Bug

1. The key documents:

   1.1 Peaks: PC0109020[2198]; PC0109642[2199] and PC0142872[2200].

   1.2 KEL CHawkes1745L.[2201]

   1.3 Coyne 2, para 3.184.[2202]

   1.4 Second Joint Statement.[2203]

Summary

1. Mr Coyne now states that this bug does not have lasting financial impact on branch accounts. Post Office submits that there is no evidence of a bug in Horizon. Neither of the primary Peaks referred to above can properly be described as instances of a "*Network Banking Bug*"; both issues stem from intermittent communications failures emanating from outside Horizon (most likely from systems/kit operated by BT).
2. This bug was under one of the sub-headings that Mr Coyne asserted fell under bug 22 –"*Bugs/Errors Defects introduced by previously applied Peak Fixes*". As set out above, given that Mr Coyne subsequently included this bug in his list of non-lasting impact bugs it is difficult to understand how Mr Coyne went from 13 to 22 bugs on the basis of including this bug as a subcategory of bug 22 in JS2.

[2198] {F/223}.

[2199] {F/223.1}.

[2200] {F/379.1}.

[2201] {F/272.1}.

[2202] {D2/4.1/63}.

[2203] {D1/2/25} to {D2/1/26}.

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3. Further, this bug is distinct from bug 22 in JS2 and is not a sub-category as Mr Coyne suggests.

4. Two Peaks are referred to in the Second Joint Statement under the heading *"Network Banking Bug."* These Peaks represent two instances of intermittent communications issues and are not indicative of a "bug" in Horizon.

5. **Issue 1**

6. In PC0109020, a Subpostmaster (branch FAD 286207) reported that her ISDN line was down and that two customers' pensions transactions had been declined. The transactions were for £90 and £50 and the customers returned to the branch the next day saying that the money had been taken from their accounts, even though the transactions had been declined.

7. The Peak notes that the Subpostmaster advised that the £90 transaction had been refunded and that therefore there was no need for it to be investigated. The Subpostmaster requested that the £50 transaction be investigated; when the customer complained, the Subpostmaster had refunded the £50 herself.

8. This Peak is described as an example of a "*Network Banking Bug*".[2204] However, the Peak demonstrates that the issue was ultimately an issue in BT's communications line (i.e. the cause of the issue was not part of Horizon). Two possible causes were investigated in the Peak:

    8.1 Various possible causes of the communications issue were considered and investigated, including possible causes from within and outside of Horizon. Various tests were undertaken to narrow down the potential cause. Ultimately, an intermittent fault was discovered with BT's communications line. This is not an issue within Horizon and so it was passed to BT for investigation.

    8.2 A possible issue with errors being wrongly reported by CNIM was considered. PC0109020 was cloned to PC0109642 to investigate this potential issue. PC0109642 concluded that CNIM was working correctly and that, in any event, since the branch migrated to the ADSL service, there had been no further issues. The Peak notes that "*The rest of the estate is also migrating towards one or other*

[2204] {D1/2/25}.

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of the "always connected" services, so again this particular issue will have a reducing (to nothing) impact on the service".[2205]

9. PC0109020 refers to KEL CHawkes1745L, which is a generic KEL relating to online services failures that covers a wide range of services and possible reasons for failure. The purpose of the KEL is to ensure that Fujitsu's 1st and 2nd line teams capture as much relevant information as possible to aid investigation, and to provide further pointers as to areas to investigate. The KEL is not specific to the issue in PC0109020 and does not provide a specific fix or workaround for PC0109020.

10. The BT communications issue was outside of Horizon and was referred to BT to investigate; there was therefore no specific fix for Fujitsu to implement. In any event, as noted in PC0109642, the branch had experienced no further issues after migrating to ADSL.

11. A BT communications failure of this kind does not constitute an issue within Horizon. The communications issues created a brief window (of approximately one day) in which money had been electronically debited from the customer's account despite the customer not physically receiving the money, but before the counter had completed an automatic reversal of the debit. The delay caused by the communications issue meant that the customer had time to notice that the money had been debited, complain to the Subpostmaster and receive a refund, before the reversal took effect. Had the Subpostmaster not provided the refund at that point, on the basis that there was no completed transaction and that the system would shortly reverse the debit, then there would have been no loss incurred in the branch.

Issue 2

12. In PC0142872 (branch FAD 123025), the Subpostmaster reported intermittent issues with online services being unavailable. No discrepancies in branch accounts were reported.

13. The Peak demonstrates that Fujitsu diligently applied KEL CHawkes1745L in seeking to obtain as much information as possible from the Subpostmaster in order to diagnose the issue. After a week, with the branch experiencing no further issues, the Peak is closed.

[2205] {F/223.1/6}.

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The intermittent communications issues are thought most likely to be as a result of adverse weather; in any event, they are not found to be caused by anything within Horizon.

14. The Peak notes that, should the office experience similar issues in the future, the issue will need to be referred to BT/Post Office in order for the communications line to be fixed. However, at the time of the Peak, there was no specific fix that Fujitsu could implement.

15. As noted in the Second Joint Statement[2206], no financial impact is recorded in PC0142872; there is no reference in the Peak to any discrepancy arising as a result of the communications issues.

Conclusion

16. Neither of the primary Peaks referred to above can properly be described as instances of a "*Network Banking Bug*"; both issues stem from intermittent communications failures emanating from outside Horizon (most likely from systems/kit operated by BT).

17. There was demonstrably no impact on branch accounts in PC0142872.

18. The £50 loss experienced by the branch in PC0109020 was caused by user error.

19. In cross-examination, Mr Coyne accepted that the Peaks collectively referred to as the "*Network Banking Bug*" provided no evidence of lasting financial impact.[2207]

[2206] {D1/2/26}.

[2207] {Day17/133} to {Day17/134}.

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APPENDIX 3: AUTOMATIC REPORTS

Introduction

1. A number of automatic reports are regularly run in Horizon that enable Post Office and Fujitsu to identify and investigate potential discrepancies in branch accounts across the networks. Both parties' experts acknowledge that these reports are run and improve Horizon's robustness.

2. The contemporaneous documents show that, in response to exceptions appearing in these reports, Fujitsu would raise Peaks to investigate, identify and resolve both potential and actual discrepancies in branch accounts across the network.

3. Both parties' experts gave evidence about Fujitsu's automatic reporting during their cross-examinations. Mr Coyne gave evidence during cross-examination that this automatic reporting consisted of a "*suite of reports that is handed over between Fujitsu and Post Office automatically each morning*".[2208] Dr Worden referenced routine monitoring[2209] and automatic detection involving Post Office's back-end reconciliation.[2210]

4. The reports summarised within this appendix are:

    4.1 NB102 Exception Summary;

    4.2 The TPS Report Set;

    4.3 TPSC256 Host Detected Cash Account Lines Comparison Report/ Program.

[2208] {Day15/63:5-6}.

[2209] {Day20/178:19-20}.

[2210] {Day20/179:1-2}.

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NB102 Exception Summary

5. This report contains twelve sub-reports which show discrepancies between financial institutions' view of what has happened and Horizon's record of the same transaction.[2211]

6. As can be seen from the End to End Reconciliation Reporting document,[2212] these reports:

   6.1 Provide the details of the transaction, including the transaction type, the receipt date and type and the type of discrepancy reported;[2213] and

   6.2 Are produced daily and delivered to Post Office and Fujitsu at 08:00, the day following the report being run – i.e. the report run and received by Post Office on Tuesday morning will contain any exceptions that appeared from transactions performed during the Monday before.[2214]

7. Mr Coyne gave evidence in cross-examination that he was aware of the above reconciliation process between Post Office's information relating to transactions and the information held by financial institutions. Specifically, Mr Coyne agreed that automatic reconciliation would take place[2215] and where there was a discrepancy between Post Office's information and the relevant financial institution's information, an exception would appear in the appropriate report.[2216] (Furthermore, in Mr Coyne's first report he also makes reference to exceptions or error states appearing in the NB102 report, where there are incomplete, corrupt or duplicate components within a transaction.[2217])

8. Peak PC0156174[2218] shows Fujitsu responding to an exception in the NB102 Exception Summary report. This can be seen from the second entry in this Peak dated 25 March

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[2211] {F/1678/9 - 16}.

[2212] {F/1678}.

[2213] {F/1687.21}.

[2214] {F/1678/9}.

[2215] {Day14/74:19}.

[2216] {Day14/74:23-75:3}.

[2217] Para 6.35 {D2/1/117}.

[2218] {F/446.1}.

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2008 at 10:33,[2219] which indicates that the Peak was raised in response to the exception raised for this particular branch in the report from the previous day. In terms of Fujitsu's investigations into the exception, the Peak shows the following sequence of events:

8.1 Fujitsu identified that the discrepancy in the NB102 report was as a result of the counter crashing part way through the recovery of the relevant transaction. As no one had logged back into the counter since it crashed, the transaction has not yet been recovered, meaning there was a difference between the branch's records and the financial institution's records.

8.2 Andy Keil of Fujitsu telephoned the branch to explain that they would need to log back into the counter and follow the recovery messages on screen to rectify the discrepancy.

8.3 The Peak was then closed later that day.

9. Further to the above, a second Peak, PC0156246,[2220] was raised the following day, which related to a connected issue with the same branch. As can be seen from the Peak:

9.1 The Peak was raised in response to the branch showing a new exception in the NB102 Exception Summary Report.[2221]

9.2 The new exception was connected to the previous day's Peak. Specifically, the relevant steps taken by Fujitsu the day before were summarised in the second Peak, including that the branch was contacted and the SPM was told how to recover the messages by logging back into the counter.

9.3 Fujitsu confirmed that, while the relevant transaction messages had been recovered by the SPM, it appeared that these had been declined in the branch. Fujitsu deduced that the likely reason for the recovery messages being declined was that no money changed hands in branch during this transaction. Consequently, this would mean the financial institution's view of the transaction would be

[2219] {F/446.1/1}.

[2220] {F/446}.

[2221] {F/446/1}.

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incorrect, as their reports would show that the transaction was authorised and the end-customer's account debited in error. [2222]

9.4 Post Office was asked to contact the SPM to "*double check that no money changed hands for certain*". After checking no money had changed hands, the BIMS was issued to Post Office.[2223]

9.5 Fujitsu left the Peak open for a further 24 hours to allow for any further enquires relating to the exceptions. The Peak was then closed the following day.

10. Mr Coyne only refers to the second Peak - PC0156246[2224] - in his report and says that this Peak "*emphasises the need for sufficient process adherence and clarity between Post Office and the support teams in order to appropriately identify and correct discrepancies*".[2225] These Peaks are in fact a very good example of the processes in place working to enable Fujitsu and Post Office to identify, investigate and resolve discrepancies.

11. Mr Coyne continues to state that the wording in the Peak 'It is likely the branch balanced' is not a "*clear diagnosis*".[2226] This is an unfair observation in circumstances where the Peaks make it clear that Fujitsu asked Post Office to contact the SPM to check what happened in branch, before taking steps to resolve the financial discrepancy.

The Transaction Processing System ("TPS") Report Set[2227]

12. The TPS Report Set consists of three reports: TPSC250; TPSC254; and TPSC257. The TPS Report Set concerns issues that arise during the process of copying/ harvesting transactions to Post Office's back-end systems, namely POLSAP and POLMIS.[2228]

[2222] {F/446/1}.

[2223] {F/446/2}

[2224] {F446}.

[2225] {D2/4.1/62}

[2226] {D2/4.1/62}

[2227] Note that Mr Coyne refers to all 3 of the TPS Report set in JS1 at D2/1/201

[2228] {F/976.1/37}

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13. Both experts in their first reports discuss the TPS Report and agree that the reports contained information that would allow Post Office to identify errors and consistencies which could lead to shortfalls in branch accounts.[2229]

TPSC250 Host Detected Transaction errors report

14. This report shows a list of exceptions where the totals for the transactions sent from the Host BRDB to Post Office's back-end systems do not match the Daily Transaction Totals calculated by the Counters in branch.[2230]

15. An example TPSC250 Report is at {F/1687/63}, where it can be seen that there is a difference between the 'TPS' Total and the 'Counter' Total, generating the discrepancy, meaning something has gone wrong during the copying process to Post Office's back-end systems.

16. Peak PC0109772[2231] shows Fujitsu responding to an exception in the TPSC250 Report. This can be seen from the first entry in this Peak dated 18 October 2004 at 14:10, which indicates that the Peak was raised as a result of this branch appearing in the TPSC250 Report from the previous day. In terms of Fujitsu's investigations into the exception, the Peak shows the following sequence of events:

    16.1 Fujitsu identified that there was a missing attribute for a particular transaction, here being a £4.78 'mails' transaction.

    16.2 As a result of this missing attribute, Post Office's back-end systems rejected the transaction, causing the difference in totals between the branch account total and the TPS total.[2232]

    16.3 Fujitsu resubmitted the transaction with the missing attribute to Post Office's back-end systems. As per the Peak entry on 19 October 2004 at 16:01, Fujtisu raised

[2229] {D2/1/201} and {D3/1/43}

[2230] {F/976.1/37}.

[2231] {F/228}.

[2232] {F/228/1}.

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an OCR in accordance with its change procedure, evidencing that proper authorisation was obtained by Fujitsu prior to repairing the transaction.[2233]

17. This is a good example of Fujitsu's automatic reporting detecting issues with data that is copied to Post Office's back-end systems.

TPSC254 Harvester Exceptions

18. This report shows a list of exceptions generated during the copying process from the Host BRDB where there has been a failure to process one or more messages to Post Office's back-end systems.[2234]

19. An example TPSC254 Report appears at {F/896/66}. The 'Exception Detail' contains the details of the message and reason for the branch appearing in the report.

20. KEL GCSimpson5834N[2235] is associated with the TPSC254 Report. As can be seen from this KEL, this particular instance:

    20.1 Involved an exception that occurred during the branch's usual rolling over, while revaluing foreign currency, specifically Estonian Kroon.[2236]

    20.2 Related to an issue where there was a missing attribute in the message, namely the exchange rate. The exchange rate was no longer available in branch for the foreign currency. The reason for this was that this currency was 'unwanted' and as such should already have been remmed out by the branch.[2237]

21. In response to the branch appearing in the TPSC254 Report, as shown in the KEL, Fujitsu informed Post Office of the issue to ensure that the SPM took steps to "*remove the unwanted currency at the branch by remming it out, so that they can avoid future problems each time the SU is rolled over*". [2238]

[2233] {F/228/2}.

[2234] {F/896/66}.

[2235] {F/1707}.

[2236] {F/1707/1}.

[2237] {F/1707/1}.

[2238] {F/1707/2}.

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22. As such, this is a good example of the TPS Report Set alerting Fujitsu to a problem caused by the SPM failing to correctly Rem Out withdrawn currency.

TPSC257 POLFS Incomplete Summaries Report

23. This report is run on a daily basis and shows those branches where the net total of the transactions in branch (i.e. the value of credits less debits) does not net to the value of zero, as expected.[2239]

24. An example TPSC257 Report appears at {F/896/67}. This shows those branches where the net total of the transactions performed that day did not net to zero. During cross-examination, Mr Coyne agreed that this report picks up receipts and payments mismatches in branches[2240] and furthermore confirmed that he had seen Peaks that discussed Fujitsu's investigations in response to exceptions being raised in the TPSC257 Report.[2241]

25. This would plainly be an enormously useful way of spotting any bugs that were somehow causing transactions to be incomplete.

TPSC256 Host Detected Cash Account Lines Comparison Report/ Program

26. This report generates a list of discrepancies, where receipts and payments do not match in individual cash account lines in branch.[2242] An example TPSC256 Report appears at {F/31.1/39}. This shows the details of the FAD code, trading date, receipts total and payments total for the branch on that particular day.

27. Peak PC0120064[2243] shows Fujitsu responding to an exception in the TPSC256 Report. This can be seen from the entry in this Peak dated 22 April 2005 at 10:00.

[2239] {F/896/67}.

[2240] {Day15/65:20-22}.

[2241] {Day15/65:7-9}.

[2242] {F30.1.1/33}.

[2243] {F/263}.

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28. In terms of Fujitsu's investigations into the exception, the Peak shows that Anne Chambers of Fujitsu was able to review the report and investigate the relevant transactions. Following Anne Chambers' review, she was able to determine that there had been no loss or gain in branch on this occasion, but raised a KEL in case the issue re-occurred in future.[2244]

[2244] {F/263/2}.