



Witness Statement

(CJ Act 1967, s9; MC Act 1980, ss
5A(3)(a)
and 5B, MC Rules 1981, r 70)

Statement of GARETH IDRIS JENKINS

Age if under 18 Over 18 (If over 18 insert 'over 18')

This statement (consisting of 14 pages each signed by me) is true to the best of my knowledge and belief and I make it knowing that, if it is tendered in evidence, I shall be liable to prosecution if I have wilfully stated in it anything which I know to be false or do not believe true.

Dated the 2 day of February 2010

Signature

GRO

I have been employed by Fujitsu Services, working on the Post Office Account, formally ICL Pathway Ltd, since 1996 as a Customer Solutions architect, involved in many aspects of design and implementation of the computer system known as Horizon. This is a computerised accounting system used by Post Office Ltd.

I have been asked to make comments on the 2nd Interim Technical expert's report to the Court prepared by Charles Alastair McLachlan, a Director of Amsphere Consulting Ltd.

I have listed below the statement contained within the above mentioned report in *italics* and recorded my comment beneath in **bold**. For ease I have retained the original number reference.

2.1.3.3

There are consistently discrepancies arising from the use of debit cards or post office cash account cards.

Not sure I understand what is meant by a "discrepancy" in this context. My understanding is a discrepancy is where the system derived value for an item differs

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from that physically in the Stock unit and so this only applies to Cash or Stock. The Value of Debit (and Credit) Cards and POCA Cards is handled as a "Payment" and should balance with the corresponding "Receipt" recorded for the goods or Service that they are used for.

2.1.3.5

If an "Account Payable" or counter credit is entered the Horizon system assumes that there is a corresponding receipt (either physical cash, debit card transaction, Post Office Cash Account card transaction or cleared cheque).

True, and this is checked during the Settlement process. Note also that unlike a normal retail environment there may be "outpay" items (eg a cashed giro) that need to be taken into account. However the basic principle of the sum total of all transactions within a Customer session adding up to zero is maintained.

2.1.3.6

The post mistress used to receive discrepancy reports generated by the Post Office identifying when there was a mismatch between the counter credit recorded at the counter and the cleared cheque or debit card amounts reported to them by their correspondent banks or card merchant provider. She no longer receives these and concludes that the Post Office function that provided this service is non-operational or insufficiently staffed to properly reconcile all of the discrepancies. These discrepancies, if left unresolved, could create a liability for the sub postmistress.

This question is for Post Office Ltd to answer. I am aware of a function known as Transaction Corrections which is available for Post Office Ltd central functions to resolve any issues that are found.

2.1.3.7

If stock is sold, the Horizon system assumes that there is a corresponding receipt (either physical cash, debit card transaction, Post Office Cash Account card transaction).

And it requests the User to specify how it is settled for and accounts for it accordingly.

2.1.3.8

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If at the end of the monthly period there is a discrepancy between the cash on hand and the credit balance expected by the Horizon system then the only way to close the period and start a new period is to "make good" the cash discrepancy and declare that the cash on hand has been brought up to the expected credit balance. There is no mechanism to record the discrepancy in a suspense account for subsequent investigation and resolution. The system imposes a declaration as part of the operating procedure that the cash is on hand. If the actual reason for the discrepancy is due to a problem with a non-cash credit (e.g. incorrectly processed card payment, incorrectly recorded cheque payment) then there is no opportunity for the sub post mistress to note her concerns on the system.

**This was the requirement made by Post Office Ltd of the system. There
Ltd need to address this comment.**

2.1.3.9

The sub post mistress demonstrated the following transactions in which the could result in a discrepancy in the cash account (physical + debit card/POC sub post office:

*No
mechanism
to record
discrepancy
in
suspense
account*

Cash and Plastic (ie Credit / Debit Cards) and Banking (eg POCA) are handled separately in the accounts.

2.1.3.10

Account Payable using a Debit Card / POCA card: the customer is seeking to make a bill payment of council tax using a debit card. The card is apparently authorised at the PIN terminal for the required amount. The card receipt is apparently credited to the sub post office account. The council tax payment is debited from the sub post office account. However, during the end to end electronic fund transfer process the fund transfer fails. The central Post Office account never receives the expected electronic funds. It is supposed that the end of day process identifies that there is no credit corresponding to the bill payment and therefore there must be a cash discrepancy.

This observation needs to be explained more carefully. What exactly was observed to happen here? The back end settlement between the Merchant Acquirer (MA) and Post

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If at the end of the monthly period there is a discrepancy between the cash on hand and the credit balance expected by the Horizon system then the only way to close the period and start a new period is to "make good" the cash discrepancy and declare that the cash on hand has been brought up to the expected credit balance. There is no mechanism to record the discrepancy in a suspense account for subsequent investigation and resolution. The system imposes a declaration as part of the operating procedure that the cash is on hand. If the actual reason for the discrepancy is due to a problem with a non-cash credit (e.g. incorrectly processed card payment, incorrectly recorded cheque payment) then there is no opportunity for the sub post mistress to note her concerns on the system.

This was the requirement made by Post Office Ltd of the system. Therefore Post Office Ltd need to address this comment.

2.1.3.9

The sub post mistress demonstrated the following transactions in which the use of a debit card could result in a discrepancy in the cash account (physical + debit card/POCA amounts) at the sub post office:

Cash and Plastic (ie Credit / Debit Cards) and Banking (eg POCA) are handled separately in the accounts.

2.1.3.10

Account Payable using a Debit Card / POCA card: the customer is seeking to make a bill payment of council tax using a debit card. The card is apparently authorised at the PIN terminal for the required amount. The card receipt is apparently credited to the sub post office account. The council tax payment is debited from the sub post office account. However, during the end to end electronic fund transfer process the fund transfer fails. The central Post Office account never receives the expected electronic funds. It is supposed that the end of day process identifies that there is no credit corresponding to the bill payment and therefore there must be a cash discrepancy.

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Office Ltd is totally separate from the accounting done in the Local Branch. Provided the Debit Card transaction is Authorised by the MA, then the Branch Accounts will record the Debit Card payment as the Method of Payment (MoP). However if the MA doesn't authorise the transaction then an alternative MoP is required. What action is taken should the MA fail to honour the authorised payment and whether that results in a Transaction Correction (TC) being sent to the branch to reclaim the funds is a separate issue outside my knowledge, but Post Office Ltd should be able to clarify that. Note that such rejections are rare. It is the responsibility of the clerk to ensure that the Debit Card payment was successfully authorised by the MA and to check the response received. Should they not do so and assume it was processed and touch "Fast Cash" to clear the basket without looking at the screen, then indeed the system might record a Cash transaction.

In summary, if the Debit Card payment says that it works at the time, then it is recorded as such in the branch accounts. There is no automatic feedback into the branch accounts from any subsequent MA rejections.

2.1.3.11

Debit Card/POCA withdrawal: the customer is seeking to receive an over the counter payment of cash from their debit card or POCA facility. As above [2.1.3.10] the card is apparently authorised but in fact the fund transfer fails at some point and the sub post office account is debited with the cash at the counter terminal but this is not recorded centrally against a debit card fund transfer. There is therefore an apparent cash shortfall in the till. The Horizon system only prints a receipt for the customer; there is no debit voucher for the counter staff to place in their till. At the end of the day or the end of the week it is not possible to physically reconcile the cash payments with debit vouchers.

There are clear messages to the clerk indicating whether or not any Banking or Debit Card transactions was authorised. As above there is no subsequent automatic correction due to any subsequent failures. I accept that there is no Branch Receipt produced for paper reconciliation purposes. We were specifically requested not to produce one by Post Office Ltd.

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2.1.3.12

In either of the two cases above [2.1.3.10], [2.1.3.11] the electronic funds transfer mechanism duplicates the fund transfer. This could result in the expected credit balance at the sub post office being higher than it actually is. The sub post mistress will be expected to make good this discrepancy with cash.

Sorry, but I don't understand the point being made.

2.1.4.3

She also demonstrated the weaknesses of the system in relation to the use of the debit card/POCA terminal:

- the lack of counter vouchers,*

This was a specific Post Office Ltd request

- the requirement to record some debit terminal transactions as cash receipts,*

This may need to be explored further. I'm not aware of any such requirement other than in the area of Refunds.

- the delays in the system at busy periods,*

Again I'm not sure what the relevance of this is. My understanding is that the response time for online transactions is very good

- the lack of certainty as to whether a transaction completes when there is a break in network connectivity*

There should be clear messages in all cases as to whether the clerk should assume the transaction was successful or not. In the case of a comms failure the assumptions should always be that the transaction has failed. Recovery processes will allow this to be confirmed afterwards.

2.1.5.3

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All of the facilities of Horizon are available in off-line mode except debit/POCA transactions and access to information from the DVLC required to issue vehicle licences.

There are other exceptions now.

2.1.5.4

The Horizon system sells postal services, provides foreign exchange, supports receipts of cash, cheque and debit card/POCA for Accounts Payable services and supports payment of cash from debit card/POCA accounts.

Also other banking online services for A&L and via Link

2.2.1.2

It was clear that there is no standard operating procedure to reconcile counter credits with the actual amounts recorded. This could give rise to a range of discrepancies which the sub post mistress would rely on the Post Office to identify and reconcile. If the Post Office failed to do so then overstated amounts could give rise to a deficit at the sub post office which the sub post mistress would be required to make good with cash.

Again I'm not sure what is meant here. Post Office Ltd should comment on their processes.

2.2.2.1

The West Byfleet sub post office is set up to operate with each counter having a separate stock. Although this assists with stock control and ensures that stock discrepancies can be localised, it does not provide any assistance in management of discrepancies in debit/POCA receipts (no vouchers are automatically printed) or Accounts Payable and counter credit discrepancies (standard operating procedures do not reconcile these on a daily basis).

Again for Post Office Ltd to respond.

2.2.3.3.

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He agreed that the Horizon system provided no paper record of debit/POCA vouchers and therefore that a sub postmaster/mistress would not be able to produce any evidence that a customer had received a receipt for a debit/POCA transaction.

This information is available in the Audit data which could be supplied as evidence

2.2.3.4

He accepted that the Horizon system, as supplied, which the sub post master/mistress was required to use under contract, did not provide the facility for the sub post master/mistress to reconcile discrepancies that might arise in the operation of the system.

This is down to Post Office Ltd requirements.

3.1.1

Accounting systems are usually designed around a 'double entry' booking keeping principle. The double entry book keeping principle means that for every entry into the system there is an equal and opposite entry that should maintain the 'balance' between the accounts.

Horizon follows this principle.

3.1.2.

So, for example, if somebody at the till sells a stamp for £1 paid in cash then the stock account would be reduced by £1 value of stock and the cash on hand account would be increased by £1 – overall the balance between the accounts would be unchanged.

Horizon does this.

3.1.3

As part of the process of financial control, it would be normal for the value of stamps to be physically counted and recorded (stock value) and the value of cash on hand physically counted and recorded (cash value) and these two values compared ('reconciled') to what is recorded in the accounting system.

This is required as part of the Stock Unit Balancing process which should happen at least once per month and can be done as often as required. In particular Cash should be

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Declared (and variances checked) daily.

3.2.1

The User Interface gives rise to incorrect data entry: poor user experience design and inadequately user experience testing can give rise to poor data entry quality. In cases that users are working under pressure, insufficiently trained or are using a system presented in a language different from their first language the problems of data entry can be exacerbated.

I'm not sure what is meant by "The User Interface gives rise to incorrect data entry".

Training matters are down to Post Office Ltd.

3.2.2

The Horizon system fails to properly process transactions: accounting systems are usually carefully designed to ensure that accounts balance after each "double entry" transaction. In particular, a database technology referred to as 'two-phase' commit is used to ensure that either both entries or neither entry is recorded on the system.

Horizon does properly process transactions and does ensure that double entries are always both committed atomically. There is no need for a 2 phase commit as such in the branch accounts, but the design of the interfaces to both the MA and POCA ensure that the view of the transaction as recorded in the Branch is the "correct" view and other systems are adjusted (if necessary) to match this view through various reconciliation processes.

3.3.1

There are opportunities for incorrect data entry (e.g. entry of £2,000 for a cash credit rather than £200) to give rise to discrepancies in cash recorded on Horizon versus cash held at the till. The sub post office relies on the consistent, accurate and timely resolution of these discrepancies by the Post Office and the operators of the Horizon system. The sub post master/mistress has no standard operating procedure or local record that protects them from the failure of the Post Office or the operators of the Horizon system to deal with the

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discrepancies. Perversely, the Post Office and the operators of the Horizon system have no incentive to resolve discrepancies that appear as cash losses at the post office counter because the sub post office contract makes the sub post master/mistress personally liable.

I agree that the system just records what the user enters, but there is little that can be done to resolve that. However when cash is deposited messages are displayed requiring the Clerk to check the amount deposited which should minimise such errors.

3.3.2

The Horizon system does not appear to be a single monolithic mainframe based system with computer terminals with no independent processing capability. Rather the architecture relies on a number of inter dependent units: the individuals nodes (counter terminals) at the sub post office each with its own processing unit with an attached keyboard, touch screen, barcode scanner, debit card authorisation PIN terminal and printer and a network router to the wider Horizon system. Each of these components could give rise to faults that result in discrepancies: either due to problems within the components or due to problems from interaction between the components.

I accept that currently Horizon does depend on data recorded and held on the local system which is then replicated to other counters and the central system. However I am unclear why this is considered to be a fault.

3.3.3

Within the central Horizon system that is not directly visible to the counter operators I would expect there to be a set of inter-operating components that could give rise to malfunctions and discrepancies. In particular, the end to end dialogue between the counter terminal, the card authorisation terminal, the network, the core Horizon system, the electronic funds transfer component, the authorising merchant service and the central post office branch accounting system is a long running transaction with multiple points of possible failure.

Agreed that this is complex. However the key point is that the end result as seen at the counter is what is displayed to the clerk and what goes into the accounts. Any hypothetical corruption (and I'm not aware of any issues in that way) in other systems

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should not result in any discrepancies at the Branch. In particular should no response be received, then the clerk will be advised of this and that it must be assumed that the transaction failed.

3.3.4

Complex systems of this nature rarely have sufficient capability built in to deal with all possible failure points and discrepancies are very likely to arise which require manual intervention based on the reconciliation of paper and electronic logs at different points in the system. When the end to end system does not provide the counter staff with access to paper or electronic logs at the point of use then it is impossible for them to identify whether there is a system fault or operator problem.

There are full logs, but I agree that they are not all made directly available to the end user. I suspect that this is true in any complex system. There are mechanisms by which details of individual transactions can be printed off from the system if there is some uncertainty via the "Transaction Log" Reports.

4.1.1

The first problem with the provision of evidence is that the Horizon system does not automatically provide a paper voucher for retention at the post office counter when funds are withdrawn using a debit card or Post Office Cash Account card. Therefore the sub post office has no mechanism for reconciling the result of downstream processing by the Horizon system and the Post Office with what occurred at the sub post office counter either at the time or when discrepancies are identified at the end of the weekly trading period. In effect, the Horizon system makes it impossible for the sub post office to demonstrate an error occurred in the downstream processing.

This is for Post Office Ltd comment.

4.1.2

The second problem with the provision of evidence is that the Horizon system does not automatically provide a paper voucher for retention at the post office counter when funds are

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credited to the sub post office account as part of a bill payment (Accounts Payable) as a result of a withdrawal using a debit card or Post Office Cash Account card. Therefore the sub post office has no mechanism for reconciling the result of downstream processing by the Horizon system and the Post Office with what occurred at the sub post office counter either at the time or when discrepancies are identified at the end of the weekly trading period. In effect, the Horizon system makes it impossible for the sub post office to demonstrate an error occurred in the downstream processing.

Again this is for Post Office Ltd comment.**4.1.3**

The third problem with the provision of evidence is that the standard operating procedure for post office counter clerks does not include the reconciliation of bill payment or counter credit slips with the individual amounts recorded by the counter clerk onto Horizon. In effect, this standard operation procedure makes it impossible for the sub post office to identify any failures by the Post Office or the Horizon system in identifying or dealing with discrepancies arising from incorrect data entry.

Again for Post Office Ltd comment.**4.2.1**

There are two elements to this possible cause

- The sub post office staff and, in particular, the sub post master/mistress is not trained in the proper operating procedures to deal with maintaining an auditable contemporaneous record that would protect their reputations in the event that faults in the Horizon system or operator error resulted in discrepancies between the actual cash position and the centrally recorded cash position.*

Horizon does maintain a full audit of what is recorded which can be made available to Post Office Ltd. I am also aware of at least one case where this information has been made available directly to a Defence Accountant.

- The sub post office staff are not properly trained in the use of the Horizon system.*

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This is for Post Office Ltd comment.

4.2.2

In order to understand to what extent sub post office staff are trained in the necessary operating procedures, it would be necessary to review the course material provided for counter staff and sub post masters/mistresses and to review the training and assessment processes implemented by the Post Office. Finally, it would be necessary to review to what extent the necessary operating procedures could feasibly be adopted and were in fact adopted in general operating practice and in the case of Seema Misra in particular.

For Post Office Ltd to respond.

4.2.3

In order to identify whether Horizon system training is a possible cause, it would be necessary in the first instance to sit alongside a user operating in normal Post Office conditions that had only recently completed the standard systems training and who represented the kind of user engaged by the Defendant.

For Post Office Ltd to respond.

4.2.4

If there is a pattern of incorrect data entry then it would be necessary to conduct a detailed examination of the kinds of incorrect data entry that occur and the implications for failure of accounting.

I'm not sure exactly what is meant here. I'm aware of work within Post Office Ltd to explore errors in data entry and to come up with ways to reduce them.

4.2.5

There are two available technologies that could assist in examining cases of incorrect data entry:

- Screen capture technology installed on the user terminal that keeps a record of every key press/screen press and the associated screen shot.*

This is not practical. However the Audit trail that Horizon maintains does provide a

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fairly comprehensive record of what has happened.

- *Digital camera recording equipment positioned to have a clear view of the screen continuously recording the screen as it responds to operator entry*

This is clearly possible. A similar technique has also been used to benchmark system response times.

4.3.2

Further, if there is prima facie evidence of incorrect transaction processing, it would be necessary to review the technical documentation of the Horizon system and interview key individuals responsible for the system within the Fujitsu team in order to understand the potential source of the incorrect transaction processing. From my understanding of comparable retail systems architectures there are a large number of potential points of failure which could give rise to the kind of discrepancies reported by Seema Misra and the sub post mistress in the Midlands. In particular, I have reviewed the architecture for a national retailer and identified a series of possible failure points which are currently addressed by testing, review of error logs and reconciliation of discrepancy reports. See Exhibit "Point of Sale – Electronic Funds Transfer architecture".

I don't see the relevance of this diagram. It is nothing like what Horizon does. We could if necessary provide some documentation and information on Horizon. However I am confident that there is not a system problem and the issues are due to incorrect actions (whether deliberately or accidentally) by the user.

4.3.3

Based on the review of the technical documentation, it should be possible to identify and examine the various electronic log files maintained by different components of the systems architecture that are required by the Electronic Mastercard Visa (EMV) standard or for Payment Card Industry (PCI) compliance.

These are probably available. (I'm not sure how long they are held and they will probably have had details of Cards Obfuscated for Security reasons as required by PCI.)

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4.3.4

If the potential source of the incorrect transaction processing can be identified then it would be helpful to be able to reproduce the problems under controlled test conditions in a consistent and reproducible manner. This would require the assistance of Fujitsu in providing access to the test environments maintained in support of the Horizon system.

Again this is technically possible.

There is no reason to believe that the information in this statement is inaccurate because of the improper use of the computer. To the best of my knowledge and belief at all material times the computer was operating properly, or if not, any respect in which it was not operating properly, or was out of operation was not such as to effect the information held on it. I hold a responsible position in relation to the working of the computer.

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