

INDEPENDENT AUDIT:
AUTOMATIC TICKETING SYSTEM
(ATS)

REPORT

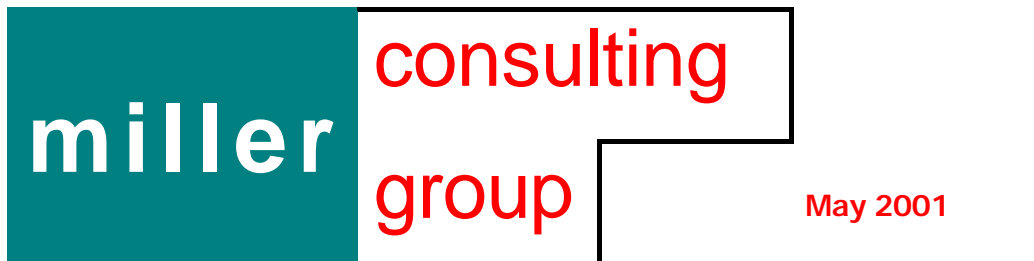


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EXECUTIVE SUMMARY

The Miller Network Group was contracted by the Department of Infrastructure to undertake an independent audit of the Automatic Ticketing System (ATS) in March 2001.

The audit involved two major elements: (1) the collection and analysis of data on the operational state of ticketing equipment, and (2) a review of the ATS contracts, including discussions with stakeholders.

Contractual material was analysed to identify the obligations of the parties and the performance measures included to measure performance against those obligations. The analysis was carried out as a functional and operational review. The review was not in any way intended as a legal or accounting review.

For the purposes of simplification, in this report, OneLink Transit Systems P/L is presented by the acronym OLT.

1. Customer perceptions of ticketing system performance

An intensive field survey was undertaken of ticket machines and validators. This identified the status of equipment across the transport system at the time of inspection. The results of the survey represent what a typical customer would perceive as the performance of the ticketing system.

In addition, data was also collected at two stations over 3 days to compare the actual operational state of the equipment and how this was being registered on the OLT data system. This allowed us to compare the alert system of OLT with the actual problems the public were experiencing with the equipment.

The system wide audit found the following - at the time of inspection:

- Only 72.8% of ticket selling machines on stations (334 of the 459 inspected) were “fully operational” – this means the public could buy a ticket with no major problems.
- 18.7% or 86 machines on stations were “non operational” - unable to provide a ticket, while 8.5% or 39 machines on stations, could provide a ticket, but had other major problems – were partially operational”.
- Unstaffed stations had a significantly lower proportion of fully operational ticket selling machines (69.9%) than staffed stations (78.1%).
- Cash holding equipment is more likely to have faults/defects than the validators.
- 88.5% of ticket machines on trams (285 of 322 inspected) and 87.6% of ticket machines on buses (234 of 267 inspected) were “fully operational”. On trams and buses, only a small proportion of machines were “non operational”; 4% on trams (13 machines) and 2.2% on buses (6 machines).
- On average, across all modes, 95.6% of validators tested were fully operational.
- “incorrect change” was the most common defect when a machine was able to deliver a ticket, but was not fully operational (15 machines at stations and 20 on trams).

- “coin slot blocked” was the major defect recorded when machines were unable to provide a ticket. 7.8% (36 machines) of all machines on the rail system were recorded as having a blocked coin slot. 27 of those machines were on unstaffed stations. This is about double the rate of coin blocks on staffed stations.

Where two stations were systematically monitored over 3 days and on site machines problems compared to OLT fault reporting, the following was identified:

- At the unmanned station, only 4 of the 13 actual machine problems were automatically reported. Total time for which the 2 machines were not ‘fully operational’ over the three days was 16 hours and 15 minutes – 33% of available time.
- On the manned station, 3 incidents occurred of which one was automatically notified. This involved a loss of 3 hours 15 minutes when machines were not fully operational (4.5% of available time).

The results of the field surveys show that public frustration with the performance of the Automatic Ticketing System is understandable. The major problems arise from vandalism of ticket dispensing machines on unstaffed and staffed railway stations.

2. Contracted performance requirements

The 1994 ATS contract is the base document identifying the range of responsibilities of the parties. The ATS contract was initially established between the OneLink Consortium (OLT) and the PTC. Following privatisation of the transport operations, a private company, the Revenue Clearing House (RCH) was set up. The RCH is owned by the franchisees and DOI (on behalf of the private bus contracts).

The ATS contract is between OLT and the PTC. We are advised that the PTC have allocated management of the contract to the RCH. At the time of writing, full assignment of the contract to the RCH had not occurred.

The ATS contract is complex, dense and prescriptive:

(The reviewers are aware that several aspects of the contract are the subject of long standing dispute between the PTC and OLT – and we are sensitive not to prejudice any party’s position in the disputes. However, as we commented in our recommendations, the sooner these matters are resolved, the sooner the parties can single mindedly concentrate on delivering quality services to the public.)

- The contract predominantly focuses on equipment standards and compliances, rather than service standards.
- Compliances emphasise what the system “should do” – supported by potential penalties of up to \$6.7m per annum. The system does not encourage innovation, adaptation and development – with maximum incentives of only \$400k per annum. Since June 1999, OLT has reported performance against their assessment of the contract criteria, effectively meeting the contract definition of “equipment availability”. This is reflected in OLT being penalised only \$244k during the 21 months from February 1999 to November 2000.

- Compliance requirements are not able to ensure a high quality customer service for the travelling public. Under the contract, ticketing equipment is required to be 99.85% “available”. The definition of “availability” excludes equipment with faults or malfunctions caused by “vandalism” and “non-relevant failure” (defined on page 28). Notwithstanding the data OLT can capture, our audit identified that a significant number of incidents and some equipment features (incorrect change) are not able to be automatically captured on the OLT system, as it is currently programmed.
3. Summary of issues inhibiting ATS performance problems being solved:

The auditors formed the view that:

- The OLT contract does not foster solutions to problems, rather the KPIs focus OLT on limited equipment requirements rather than the needs of public transport operators and users.
- The current ticketing system is not making efficient use of possible management data and is not collecting key data that will assist in improving the operational standards of the system. Decisions on what data is required should be made in conjunction with the current operators, and other stakeholders with an interest in the future of the system and its continued integration.
- There are no effective incentives in the ATS contract to encourage innovation and strategic thinking between OLT, the operators and other interested parties.
- There is currently no focus or priority given to resolving and reducing equipment defects created by vandalism, or equipment malfunctions (other than where it impacts on the OLT contract).
- The OLT system collects a significant amount of data, however, faults and alarms that are not defined as affecting “availability” are not currently reported.
- The presence of active commercial disputes between OLT and the PTC/RCH over contractual issues (including repairs for vandalism) has inhibited parties from developing practical solutions to the problems being experienced by the travelling public; and
- Delays in assigning the OLT contract from the PTC to the RCH (and the Franchisees) is effectively inhibiting the operators from properly addressing the problems their customers are experiencing.

4. Recommended actions to improve customer satisfaction with the ticketing system

Following on from the audit process, the auditors developed the view that the main parties to the future successful performance of the ATS (One Link, Franchisees and RCH) have the technical capabilities, skills, will and commitment to improve the ATS to meet customer expectations. However a range of contractual agreements, disputes and issues have created a ‘log jam’ inhibiting effective cooperative action. It is also clear that cooperative action by these main parties is the only way that improvements will be achieved. Accordingly the auditors recommend to the Minister for Transport that;

1. A forum be convened by Government, facilitating One Link, Franchisees and the RCH to address customer needs and improvements to existing ATS arrangements.
2. All parties involved in the forum agree that the forum, any information or data submitted to the forum, or action plans and outcomes determined by the forum, will not be used in any existing contractual disputes between the parties.
3. Initial tasks of the forum should be :
 - to identify how best to ensure integrated management of continuous improvement actions by Franchisees, One Link and RCH, and
 - to agree meaningful customer oriented performance reporting for the travelling public.
4. As a parallel but separate activity, resolution of the existing PTC/RCH – OLT dispute be progressed as a matter of “responsible commercial urgency”, and
5. RCH, Franchisees and the PTC be encouraged to finalise assignment of the OLT contract as a priority, to enable improved system management.

INTRODUCTION

The Miller Network Group was contracted by the Department of Infrastructure to undertake an independent audit of the ATS in March 2001. The Miller Group assigned Mr Michael Wright and Ms Liz Maddison to undertake the audit and prepare the analysis required.

The audit had four terms of reference. These are outlined below.

1. Analyse contractual documentation and arrangements with OneLink Transit Systems P/L (OneLink or OLT) and identify
 - System performance standards and compliance requirements.
 - Equipment faults/malfunctions not covered for contract compliance.
 - Provisions which ensure availability of fully functioning ticket vending and validating machines.
 - Contractual arrangements for bonuses and penalty payments to or by the contractor.

2. Report on performance by the contractor against those standards and contractual requirements including arrangements in place to:
 - Manage, monitor and report on the performance of the ATS.
 - Identify causes of ATS equipment failure and the incidence of failure by type including vandalism.
 - Identify if any, machine malfunctions that are not electronically relayed to OLT including how they are reported and programmed for rectification.
 - Rectify all faults to return equipment to full functionality in the earliest possible time; and
 - Respond to public complaints about the ATS.

3. Make recommendations on actions required to:
 - Correct any shortcomings in equipment availability; and
 - How performance should be monitored and processes required to cost-effectively report on the on-going performance of ATS to Government.

4. Identify current obligations on train and tram franchise operators, the Revenue Clearing House (RCH), the Public Transport Corporation (PTC), the Director of Public Transport (DPT) and Department of Infrastructure (in relation to buses) to ensure that the APS is effective; report on changes which will occur when the contract with OneLink is assigned from the PTC to RCH.

Note:

On-site surveys of ATS equipment functioning will be conducted on all public transport modes and real-time reconciliation of results with fault reporting and rectification systems will be carried out.

SCOPE OF WORK

In accordance with the terms of reference, the Miller Team developed a five stage process.

1. An analysis of contracts.
2. Data collection – creating original survey data and accessing system performance data collected by OneLink (OLT).
3. Interviews with key stakeholders.
4. An analysis of strategic options.
5. Draft Report preparation.

BACKGROUND

The Victorian Public Transport system is a network of train, tram and bus services, which carries around 240-250m passengers per year.

The ticketing system is multi-modal – the same ticket can be used on all forms of public transport in the Metropolitan area. The transport system is “open” – a ticket is not required to access the transport facilities - although efforts have been made by the Rail operators to “close” the rail sections of the system.

Prior to the introduction of the automated ticketing system, tickets were sold by staff at railway stations, off-system through a small network of agencies, through Metshops and by bus and tram drivers.

SERVICE RECONFIGURATION

The current transport system and the role of Automatic Ticketing System (ATS) has been the subject of a two stage privatisation process. This two stage process has had a significant impact on the operationalisation of the ATS.

1. In 1993, the previous Government endorsed a PTC recommendation to implement an automated ticketing system (ATS). In May 1994 as the sole operator of Metropolitan rail services, the PTC entered into a Service Contract (Build Own Operate) with a consortium represented by OneLink Transit Systems Pty Ltd (OLT) at an estimated total cost of \$332 million.

The system requirements for the ATS were initially specified by the PTC. Subsequent to the acceptance of the bid, further detailed functional specifications were developed by the successful bidder.

System requirements, from the deployment of equipment, to the definitions of responsibility for vandalism, through data requirements and reporting formats were specified on the basis that the PTC was the client and transport service operator. At that stage the PTC was responsible for the commercial viability of the service, as well as its planning, integration and future development.

2. In mid 1997 the Metropolitan rail divisions were restructured with the creation of two metro train business units (Bayside Trains and Hillside Trains) and two tram businesses (Yarra Trams and Swanston Trams). In July 1998, these were established as stand alone statutory corporations. In January 1999, the Office of the Director of Public Transport was established to monitor the performance of the franchised system.

In August 1999, the four statutory companies were franchised for 10 to 15 years. The franchises will be re-tendered at the end of their terms. PTC no longer retains any core business.

Coincident with franchising, the Revenue Clearing House (RCH) was established as a commercial enterprise, to manage the OneLink contract and distribute system revenue. The RCH is owned by the four Metropolitan Public Transport Franchisees and the Department of Infrastructure (DOI), representing the Private Bus Operators.

Notwithstanding its establishment and its agreement with the PTC to manage the OLT contract, at the time of writing this Report, the RCH had not accepted full assignment of the OLT contract from the PTC. As a result the PTC and RCH both have an interest in the OLT contract.

The following are the core contractual relationship and commercial interdependencies which must be in alignment for the ticketing system to operate consistent with the public transport services and vice versa.

| KEY CONTRACTUAL RELATIONSHIPS | | | |
|--------------------------------------|---------------------------------|--|--|
| Issue | Contractual Relationship | Stakeholders | Comment |
| Overall Ticket System | OLT/PTC service contract | <ul style="list-style-type: none"> Franchisee OneLink Transit RCH Director of Public Transport | The system managed in accordance with the PTC/RCH Interim Agreement. The PTC is in the process of assigning the contract to the Revenue Clearing House (RCH) as the representative of all operators. Assignment is not fully resolved. |
| Ticketing Equipment Availability | OLT/PTC* | <ul style="list-style-type: none"> Franchisees OLT/PTC/RCH Consumer | KPIs relating to equipment availability is a proxy for ticket availability. |
| Agency (off-system sales network) | OLT/PTC* | <ul style="list-style-type: none"> Franchisees OLT/PTC/RCH Retail Agency | Very basic KPIs: Franchisee marketing interest through the RCH marketing committee |
| Ticket types | OLT/PTC* | <ul style="list-style-type: none"> Franchisees PTC/RCH OLT Director of P. T. | Franchisees have a significant interest in ticket durability and ticket consistency as it affects staffing and operating systems. The Director of Public Transport has an interest in ticket types. |
| Ticket standardisation | OLT/PTC* | <ul style="list-style-type: none"> Franchisees PTC/RCH OLT | Franchisees have a significant interest in the universality and readability of tickets as it affects attempts to “close” the Rail network and assist validation. |
| Revenue collection | OLT/PTC* RCH/Franchisees | <ul style="list-style-type: none"> Franchisees RCH OLT Director of Public Transport | The Franchisees depend on farebox revenue. Franchisee incentives to increase fare revenue is not reflected in the OLT contract. |
| Revenue Maintenance | OLT/PTC* | <ul style="list-style-type: none"> OLT RCH Franchisees | Compensation payable due to failure to meet performance standards not directly related to revenue. |
| Revenue distribution | RCH | <ul style="list-style-type: none"> RCH Individual Franchisees DPT (private buses) | Subject to ongoing negotiations. |
| Revenue growth | No contractual requirement | <ul style="list-style-type: none"> Franchisees RCH Director of Public Transport | Contractual targets (containing incentives to increase revenue)- Department of Infrastructure/Franchisee |
| Customer complaints | OLT/PTC* | <ul style="list-style-type: none"> Franchisees OneLink PTC/RCH Director of Public Transport | KPI's – minimal . Franchisees need to deal with customer complaints or ensure that customer complaints are dealt with. Director of Public Transport has a public interest role. |
| Management data | OLT/PTC* | <ul style="list-style-type: none"> Franchisees OLT RCH | Some 5,000 weekly reports are required under the contract. Franchisees have significant doubts about the value of many of the reports and identify a need for other ticket system data. |

(*) Where PTC is the contractor, the PTC and RCH have agreed for this role to be managed by the RCH. It will transfer fully to the RCH with assignment.

METHODOLOGY

The five stage process was undertaken in the following manner:

Stage 1: Contract Analysis

Contractual material was analysed to identify the obligations of the parties and the performance measures included to measure performance against those obligations. The analysis was carried out as a functional and operational review and was not in any way intended as a legal or accounting review.

The material examined was:

- Consolidated Service Contract Deed- 30th Jan 1998 which details the obligations of OLT and the performance measures which determine the extent to which OLT has satisfied those obligations in order to receive payment under the Agreement. There have been amendments to this Agreement not reviewed by the team – we are advised that they are not relevant to this review.
- Metcard Management Agreement - 31st May 1999 which requires the transport operators to honor Metcards and acknowledges that OLT P/L is contracted to provide a comprehensive ticketing service in relation to Metcard.
- PTC/RCH Interim Agreement –31st May 1999 which provides for the Revenue Clearing House to manage the One Link Contract on behalf of the PTC pending the assignment of the Consolidated Service Contract to the RCH.

Stage 2: ATS Performance Audit - Data Collection and Analysis

Data was collected in order to better understand how the ATS is working and how the travelling public are experiencing the ticketing system. The Objectives of the data collection and analysis were fourfold:

1. To assess the performance of the system as contractually required.
2. To assess the equipment performance from the public's perspective.
3. To clarify any differences between equipment performance from the public perspective and the requirements of the contract for machine availability.
4. To assess how equipment performance data is captured by the ATS and hence, independent of what any contract requires, "can the ATS generate a data set that allows equipment availability to be monitored and management systems be developed to maximise its availability to the public?"

Stage 3: System Understanding

This was a two part assessment

- Part 1: Discussions with Stakeholders:

Consultations with the key parties with an interest in the ATS : namely

OLT Transit P/L (OLT)

Revenue Clearing House (RCH)

Office of the Director of Public Transport

Public Transport Corporation (PTC) and its legal advisers

Rail and Tram Franchisee operators

- Part 2: Review previous reports - Reviews of the system, generally those undertaken since commissioning

Stage 4: Analysis of Strategic Options

Review of congruence between the obligations and requirements of the OLT contract and the expectations of the other interested parties.

Stage 5: Development of a Draft Preliminary Report

Production of a preliminary report in accordance with the contract requirements

Qualifications on the Methodology

- The audit is not a legal or financial review of any of these arrangements.
- Given the need to review and report promptly, the analysis was at a broad level only. However, the need to review data format and presentation delayed final presentation.
- The interim nature of the arrangements between PTC and RCH and the short time franchisees have been in place makes assessments of operator issues preliminary.
- Many staff with detailed historical knowledge of objectives and expectations of contracts, etc, have left the PTC and the TRU (Transport Reform Unit of Treasury).
- The PTC and OLT are in dispute over pre and post commissioning matters. This audit has not investigated any of the specific issues relating to these disputes except to note their general impact on the incentive for the parties to develop any new or innovative strategies.

PART 1: ATS CONTRACT ANALYSIS

CONSOLIDATED SERVICE CONTRACT DEED

At the time of signing of the original ATS contract in 1994, the PTC was the integrated provider of public transport for Metropolitan Melbourne. There appeared to be no serious intent at that time to move to privatised operators.

The ticket selling component of the Public Transport System was intended to be an out-sourced service: this is contrasted to the then more usual supply/lease agreement (with or without integrated maintenance agreements). All ticket production, distribution, sales and payments services were bundled into the single ATS service contract.

The Consolidated Service Deed refers to the Services Contract of 24th May 1994. In the consolidated deed, PTC and OLT Transit agree that the version of the Service Contract annexed to the Deed incorporates and consolidates all amendments made to the Service Contract as at that date. The Deed notes that a number of schedules were altered or amended. This document details the obligations of OLT and the performance measures which determine the extent to which OLT has satisfied those obligations in order to receive payment under the Agreement.

The form of the service contract is:

Part A General Provisions for the whole term

Part B Commercial provisions for the whole term

Part C Supply to final commissioning

Part D Maintenance Conditions apply from commissioning for the balance of the contract

Part E Operations and management conditions that apply throughout the project term

General requirements of the contract and obligations of OLT

OLT is required to design deliver, install, test, commission, operate, manage, maintain, market and promote the automated fare collection system for Melbourne's public transport system in exchange for payments by the Public Transport Corporation as defined.

Phase 1 of the system, was an initial trial stage and was commissioned in November 1997.

Phase 2 of the system, the "Remainder", was commissioned in December 1998.

The obligations on OLT include (but are not limited to)

- Using its best endeavors to ensure the Objectives listed in Part A of schedule 3 are met, and having regard to the Objectives listed in Part B of schedule 3; (see Attachment 1).
- Compliance with Approved Performance Standards;
- Compliance with the Requirement Specifications and the Functional Specifications;
- Provision of management information and Reports to the PTC;
- Revenue management and collection and payment to PTC;
- Ticket Administration;

- Retail Agent administration; and
- Making of all Payments to PTC in accordance with the Service Contract.

Comment

Based on the contract analysis and the consultations with stakeholders, the following comments are made about the contract and its role in progressing the public transport systems in the interests of the public of Victoria.

1. The contract framework and supporting materials are extensive, dense and complicated. Whilst the contract is titled Service Contract its focus is on specifically defining accountabilities for components of the system and does not focus on overall service outcomes and customer service.
2. The contract framework is cautious and restrictive. It emphasises penalties and has few incentives to foster innovation and problem solving in the interests of the service. The contract leads OLT and the PTC to focus on compliances and definitions. Under the Franchise arrangements, this contractual focus transfers to RCH.
3. The nature of the contract between OLT and the PTC - as an integrated service provider – appeared predicated on the PTC effectively taking responsibility for service planning, integration and coordination. The PTC implicitly accepted the residual system obligations that were not specified for OLT in the contract the ‘public interest’. With private ownership, these PTC responsibilities became Franchisee responsibilities. We ask whether the contract logic easily translates into arrangements between OLT and the Franchisees, where Franchise interests are commercial, and not necessarily ‘ the public interest’.
4. The compliances built into the contract, when the ATS was being envisaged in 1994, can now be seen as inflexible. They are not necessarily consistent with customer and system priorities in 2001, or for 2005. The PTC’s 1994 requirements, that are now the ‘drivers’ of the OLT contract, are not necessarily the needs of the private operators. The RCH was established as a mechanism for Franchisees to jointly manage the OneLink contract but its capacity to do so effectively is untested. However, it is probably too early in the franchise arrangements to know what the Franchisees require. In this context, the operators need to be encouraged to develop clear statement of requirements on a range of ATS related matters – data, maintenance strategies, off-system sales, joint OLT/operator ‘uptime’ strategies.

SPECIFIC ISSUES FOR ATS

The auditors identify six key areas for assessment:

1. Equipment Deployment and Agency Network

Equipment:

The specification of equipment quantities and types to be deployed to trains trams and buses and the computer systems relevant to each system component are attached to the main contract.

The schedule notes that the quantities to be utilised in the Automated Fare Collection System (known as ATS in this Report) were compiled using the data, policies and information supplied by PTC. The equipment numbers were to be confirmed following the completion of tests carried out in Phase 1.

Equipment redundancy was not built into the numbers, with one minor exception. The supply section of the contract notes that OLT must ensure that the ATS is designed with a view to deploying the equipment with as little wastage of capital as may be reasonably practicable whilst complying with the Approved Performance Standards.

Payment to OLT is in two parts. Part 1 is the capital and financing component of the contract and Part B the operating and maintenance cost.

Performance requirements/assumptions are noted in the schedule. For example, requirements were calculated on the basis of specifications/assumptions relating to passenger flow rates (eg through barriers of up to 680 passengers per 30 minute period across the system); maximum waiting time at exit barriers (estimated at 1.2 minutes); demand of ticketing machines (future sales will be 75% of current sales observed during the 30 minute peak), average transaction time and customer waiting times at ATM's (25 seconds and 0.7 minutes respectively).

The contract is very prescriptive : in addition to the equipment performance requirements, the location of equipment was determined (assuming that the location of machines on 1994 projections would be valid to the end of the contract). Variations to the contract are possible, but the process is complex and potentially costly. A lack of flexibility in the contract is detrimental to efficiently meeting passenger needs and, in the context of private operators, being flexible to the evolving requirements of customers.

Underlying the specification of quantities, is a requirement that there will be a significant shift of ticket sales off the system to retail agencies

Agency Network:

OLT is responsible for monitoring the adequacy of the number of retail agencies established. A services committee is expected to overview the process. OLT is to monitor performance (including payments and customer service including complaints) and is responsible for any retail outlets bad debts. The performance specification envisages an expansion of retail outlets from 580 to more than 1000. To date, we are advised that there are 800 agencies selling only around 16% of tickets compared to a target of 26%.

Underpinning the original commitment to the development of an expanded retail outlet was a requirement in the contract for an extensive and on-going marketing plan.

A Marketing Committee was to have been established to oversee and approve marketing strategies and the plan appended to the contract provides for specific objectives including the establishment of a large efficient retail network, in particular supporting the purchase of tickets off-tram. Reasons for the reduced marketing effort is not clear. However, we are advised, that following the initial implementation stage, responsibility for marketing has now been taken over by the operators and assigned to the Marketing Committee of the Transport Operators.

The failure to develop a customer attractive off-system retail network may be due to a number of factors, such as:

- a strong, traditional cultural preference for on-system ticket purchasing
- insufficient awareness of, or incentives for, off-system customers,
- inadequate distribution of retailers, or
- a KPI mix that focussed OLT on equipment structure, not access to tickets

The link between off-system sales targets and the minimal equipment provision was a critical aspect of the system balance. The slow performance of the off-system sales network has had the effect of increasing the sensitivity to the on-system equipment problems.

2. Equipment Maintenance and Repair

OLT is obliged to provide the Preventive and Repair Maintenance Service on every part of the equipment and software. OLT must remove or remedy any defect when given notice by a member of the public, PTC, or an operator or anyone in accordance with the response times specified in the Approved Performance Standards in Schedule 1, attached to the service contract.

In so doing, OLT shall use its best endeavors to ensure that the ATS will operate:

- in accordance with the contract during the whole term,
- so that the incidence of defects in the equipment and software is reduced to a minimum,
- so that all steps are taken to prevent recurring defects (the definition of defects excludes vandalism), and
- that all equipment that interfaces with the public or PTC employees is kept clean.

The maintenance obligations are a key component in the assessment of the overall contract performance.

Maintenance and repair work can be divided into two categories.

- work which is the responsibility of OLT to undertake at its cost.
- work which OLT must undertake but for which it will recover the costs.

The latter category includes vandalism repairs and works categorized as non-relevant failures in the contract. Such work is called “billable maintenance” by OLT and the term has also been used in this Report to denote the maintenance and repair work the cost of which is chargeable by OLT to the PTC under the contract. This is on-charged by the PTC to Franchisees, from the date of franchise. It should be noted that the quantum of billable maintenance is under dispute between PTC/RCH and OLT and is an issue affecting the speed with which RCH is moving to accept contract assignment.

OLT has responsibility for all maintenance and repair, however, there is no requirements that the maintenance strategies be understood by operators, or be consistent with the overall interests of the service and the travelling public.

OLT as a commercially responsible organisation recognises the impact its maintenance activities have on the system, however, there is no contractual requirement for OLT to prioritise, or adapt its maintenance systems, other than to ensure they comply with its average performance standards.

Issues of interest in the maintenance strategy are:

- (a) what is the service logic (does maintenance of high usage machines get preference over low usage, are more maintenance crews available before, and during peak periods – so as to minimise the extent/impact of disruptions on the travelling public, etc)
- (b) are priorities agreed with the Operators
- (c) can priorities change in response to changing circumstances
- (d) how are faults classified by maintenance staff, consistent with contract requirements for the two key categories of “faults relevant to contractual availability” and “billable maintenance (vandalism and non relevant failure).
- (e) how are maintenance fees set for fault type.

All these issues have a bearing on the overall operation of the transport system, while they are only marginal in the direct management of the ATS.

3. Billable Maintenance -Vandalism and Non-Relevant Failure Repair

OLT must effect all Vandalism Repairs to the equipment and software in accordance with this service contract with the cost of vandalism repairs paid in accordance with section 90.6. This section states that if the annual cost of vandalism repairs is greater than or equal to \$2 million, PTC will pay the cost in excess of \$2million, and if the cost is less than \$2 million, PTC will receive a rebate of \$.50 for every dollar that the cost is less than \$2 million.

OLT must keep a file of all Vandalism Repairs (including costs) that relates to vandalism and OLT must provide PTC with reasonable access to that file.

OLT must also affect all billable maintenance arising from a non-relevant failure (this is a specific contract element – defined in the context of ‘faults’ on page 27 of this review).

The contract specifies that the PTC will reimburse OLT for maintenance expenditure incurred due to non relevant failure.

This is one of the key areas of dispute between the PTC and OLT. Data provided to the review show that the cost of both types of billable maintenance have increased considerably above the contract predicted levels. The following Table presents data provided by OLT of charges billed to PTC in respect of ‘billable maintenance’ it has undertaken (we are advised that these costs are not agreed by the PTC).

| Claims by One Link on PTC to December 2000 | | | | |
|--|--------------------|--------------------|--------------------|-------------------|
| | To Nov 1998 | Nov 1998-99 | Nov 1999-00 | Total |
| Non-relevant failure charges | 1,072,622 | 905,317 | 764,011 | 2,741,950 |
| Interest claimed for NRF | 215,222 | 116,262 | 34,807 | 366,291 |
| Total Non relevant failure claims | 1,287,844 | 1,021,579 | 798,818 | 3,108,241 |
| Vandalism repair charges | 2,182,559 | 5,902,887 | 4,972,452 | 13,057,898 |
| Less threshold S90.6 | -2,000,000 | -2,000,000 | -2,000,000 | -6,000,000 |
| Net vandalism claims | 182,559 | 3,902,887 | 2,972,452 | 7,057,898 |
| Interest claimed for non payment | 36,630 | 501,215 | | 537,845 |
| Total vandalism claim | 219,189 | 4,404,102 | 2,972,452 | 7,595,743 |
| Grand total non relevant failures and vandalism | 1,507,033 | 5,425,681 | 3,771,270 | 10,703,984 |

Source: OLT correspondence to PTC, 27 Feb 2000

NOTE- As of 29th August 1999, the RCH is responsible for the cost of billable maintenance for vandalism and non-relevant failures.

Reduction of Vandalism:

The contract requires, PTC (and the RCH, as its agent, and in its own right following assignment) to work with OLT - using their best endeavours - to ensure that the incidence of vandalism is reduced to a minimum.

Similar to the dispute over liability for vandalism and non relevant failure, how to combat vandalism remains in contract limbo. The auditors question whether the parties are likely to be actively cooperating in developing comprehensive and integrated strategies to combat the problems, while they are in a commercial dispute over the cost of vandalism repairs.

Based on the data seen by the auditors, a large number of ‘non relevant failure’ matters are reported as calls about machine failure, which are not identified as an availability issue or vandalism. The auditors suspect these inquiries may be related to machines not giving correct change which may in turn be related to cash collection routines. However, we were unable to consider this link as there is no requirement that data on NRF, or any other data be analysed for innovative management solutions.

4. Customer Service and Maintenance Control Centre

OLT is required to operate certain facilities. It must establish and maintain a maintenance control centre including and equipment help desk, customer help desk and call handling centre.

The maintenance control center must be linked to the central control centre and all maintenance activities are coordinated through it. The Control Centre receives notification of equipment alerts and alarms through an automated notification system and through telephoned advice from operators, the public or service contractors. All calls and alerts are required to be logged and the distribution of maintenance and repairs services is coordinated on the basis of this information.

The contract provides for an agreed data base and formula to be used to calculate the performance of OLT against its required performance standards. Issues relating to the adequacy of the automatic alarms systems are discussed later in this paper.

Customer Service/Liaison:

Schedule 1 of the contract provides for a description of a customer service centre (CSC) to handle off system ticket sales bulk sales, Commuter Club, telephone sales travel passes and shop front sales. The CSC will receive all ATS ticketing and equipment enquiries from all points of sale as well as being a focal point for customers to make ticket enquires, purchases, refunds and distribution.

There is a Requirement Specification dealing with the functions of the CSC. In this the PTC stated that it regarded this customer service as being closely identified with the PTC – at that time it was still the transport operator. Accordingly, the contract required that the service should offer efficient, courteous, friendly and polite service to customers in a manner similar to that previously provided by the PTC. As a result, hours of operation are specified, as are service standards including:

- telephone abandonment rate
- time to answer calls
- speed of dispatch for ticket orders
- speed of processing of applications for refunds
- distribution of updated ticket and price information
- prompt courteous treatment of disabled customers
- Efficient operation of the commuter club and bulk purchase of tickets by corporate clients
- Provision of a customer service counter with minimal customer waiting times
- Have available a full range of customer information.

The first three service standards are measured for approved Service Standards and failure to meet standards result in the payment of compensation from OLT to the PTC. The latter standards are relevant to the withholding of share bonuses if earned.

Customer Information:

The schedule recognises that the introduction of the ATS equipment will impact on staffing levels on the network. OLT is therefor required to provide information at all ticket selling points, at barriers and validators to assist in ticket selection and equipment operation. The standard requires certain information on equipment use, and static displays and brochures.

The impact of vandalism on displays is noted and instructions on timeliness of replacement included. In particular OLT must provide clear instructions on the refund procedures of tickets

There is some confusion over the customer service systems.

- the Operators have indicated their commercial dissatisfaction with the OLT service and have set up small customer service centres.
- OLT has also expressed concern that the detailed contractual requirements, which are modelled on the 1994 PTC procedures, no longer meet customer needs.

The auditors question whether the Franchisees are duplicating OLT services or whether they are fully utilising the OLT service and whether OLT is not distracted by the contractual disputes from seeking to renegotiate the contractual requirements to better meet customer needs.

Duplication points to two key problems.

- (a) the current service is not meeting the requirements of the system operators
- (b) the contract structure and the lack of assignment is inhibiting the parties from taking sound commercial decisions, to provide better customer service and avoid the cost of duplication.

5. Management Information and Data

From the general obligations on OLT and throughout the contract and the attachments there is a requirement on OLT to provide management information and reports. As the Contract Manager pre assignment, these are provided to the RCH, which substitutes for the PTC.

Under the contract, OLT shall receive, collect, collate, maintain, analyze and retain all accounting, banking, financial, operational and management, maintenance and other data generated by or contained in the ATS system or any part thereof. OLT must provide all information and documents reasonably required by the PTC/RCH.

In discussion, the parties seem to agree that a vast number of reports are generated by the system in accordance with specifications agreed between PTC and OLT. The number of weekly reports anecdotally ranges between 3,000 and 5,000 reports per week. The view obtained by the auditors was that many of these reports are probably redundant and that a rescheduling of reporting to align with the management requirements of the business(es) would be appropriate. (The reports, their destination and frequency are detailed in a document made available to the audit by the RCH.)

OLT must maintain (Section 86) a file of all maintenance services provided to each unit of equipment and soft ware. Included are details of preventative maintenance, log of phone calls and response times, repair times, replacements and any other relevant maintenance service information, including location.

OLT must provide PTC/RCH access to and the right to take copies of the files and records. However there appears to be little or no useful management information which would routinely assist in the development of rectification strategies for the problems identified by this audit.

It is our impression that since commissioning, the data has been made available to the PTC and RCH in accordance with previously agreed schedules, and that there has been little flexibility between the contracting parties in the identification of what would be more useful information.

6. System Performance Standards and Compliance Requirements

To assess the quality of services delivered by OLT the contract contains a range of performance standards. With the exception of the Customer Service Centre the performance of ticket media, and Retail Agents, performance measures relate to equipment and computer systems availability.

If OLT fails to meet the standards they are liable to pay compensation payments to PTC/RCH. Where specified standards are exceeded, bonus payments may be made.

Performance standards have a “floor” at Essential Services Obligations (ESO) where the component would not be operating viably. Bonus payments are only payable when all system components are performing above the Essential Services Obligation level.

Approved System Performance Standard:

The following are specified in Schedule 1 of the Service Contract:

- (a) Availability of Vending and Validating Equipment.- bonuses are paid when performance exceeds 99.85%. Compensation payments are payable if performance drops below 99.76% until at 95% availability the ESO is breached.
- (b) The reliability target for ticket media is 99.99% with the ESO level at 99.5% reliability. If the ticket media performance exceeds 99.99% bonuses will be applied.
- (c) Management Information and Communications Systems. The frequency and time periods for measurement of availability for 6 systems are specified.
- (d) Business Scenario response Time Commitments – require response times in relation to customer enquiries, reporting, finance, access to raw data and system log-on times.
- (e) Data accuracy requiring 100% completeness and accuracy of all financial data and 99.99% completeness and accuracy for all other data.
- (f) Retail Agent Network development and support is measured on the basis of ticket stock range and geographic distribution of agents
- (g) Customer Liaison performance standards relate to call abandonment rate not to exceed 6.5%, 75% of calls to be answered within 20 seconds, and 95% of ticket orders to be dispatched within 24 hours of order. Revenue share bonuses may be withheld if additional performance standards are not met.

The maximum compensation payment for failure to achieve Approved Performance Standards but not less than Essential Service Obligations is \$6.7 million per annum.

Bonus Payments:

There are three types of bonus payments:

- General bonus based on revenue growth
- Vending and validating equipment bonuses
- Ticket performance bonuses.

A 5% bonus will be paid as a percentage of the real growth in revenue (subject to some additional criteria). Bonuses may be payable for exceeding the equipment availability criteria up to a maximum of \$240,000, and for ticket media performance in excess of the Approved Performance standard is up to \$65,000.

The maximum annual bonus payment to OLT is \$0.4 million (indexed).

Breach of Essential Service Obligations:

Where the performance of OLT falls below the Essential Service Obligation 100% of the component payments will be withheld until the performance is restored. 100% of payment will be forfeited at the Deemed Non Service Delivery Standard (DNSD).

Documentation:

OLT shall receive, collect, collate, maintain, analyze and retain all accounting, banking, financial, operational and management, maintenance and other data generated by or contained in the ATS or any part thereof in accordance with the Requirements Specification in accordance with section 13 of the contract which says – must provide reports in accordance with schedule 7.

CONTRACTUAL IMPLICATIONS

The auditors identify some significant themes where the contractual obligations affect the ability to meet ‘common sense’ public expectations of the ATS.

The reviewers are aware that several aspects of the contract are the subject of long standing dispute between the PTC and OLT – and we are sensitive not to prejudice any parties position in the disputes. However, as we commented in our recommendations, the sooner these matters are resolved, the sooner :

- a) the parties can single mindedly concentrate on delivering quality services to the public, and
 - b) the Franchisees can unambiguously work with OneLink on delivering effective services within the contract structure.
1. The structure of the contract focuses OLT on equipment availability, not on the availability of tickets to the public. As such, alternative sources of tickets have not been developed sufficiently and the extent of reliance on ticket equipment has been considerably greater than expected. This has in turn increased sensitivity to equipment up time and seems to have contributed to the sense of public frustration with the ticketing system.

2. A number of key system elements are undervalued. The stakeholders, while independent commercial or administrative entities are joint parties in providing an integrated public transport system. Issues that fall between contracts, or that are weighed inappropriately by one contractor for its impact on another need to be addressed by the parties specifically in a problem-solving rather than contractual manner.
3. The contractual obligations for equipment “availability” as defined are of limited value as an indicator of practical access to tickets by the public.
 - (a) machines unavailable due to vandalism and non relevant failure are excluded from any formal measure of availability.
 - (b) no weighting is used when “unavailability” occurs at high usage times (ie during a peak period, where its impact a large number of customers), and
 - (c) no weighting is given for the duration of “unavailability” other than in the repairs and maintenance KPIs.

Public perceptions of ATS are determined by availability regardless of cause.

Simultaneously, there is no attention to the actual level of equipment available to the public and no incentive for the parties to use the system generated data to address the management of emerging patterns of vandalism or customer complaints.

Indeed, in our assessment of the contract, it is theoretically possible for OLT to be performing satisfactorily under the contract with one machine operating in the system, while all others are not operational due either to vandalism or non relevant failure. This highlights that from a customer perspective, there are clear deficiencies in the service contract.

4. The maintenance strategies of OLT are linked to its contract requirements to manage billable maintenance. OLT conducts discussions with operators over maintenance priorities, but developing an integrated maintenance strategy to maximise customer satisfaction and system functionality is not required. This is notwithstanding that all stakeholders are aware that a strategy involving data analysis, trend assessment, targeted corrective action strategies, strategy evaluation and modification is needed.
5. Quality data is the core of management. As we have identified and will develop in Part 2, data available through the ATS is contractually driven, not functionally driven. As a result, OLT provides volumes of reports as required under the contract, but these are not necessarily the reports required by the current operators, nor is the data on matters such as access to tickets available in a form that assists efficient management.
6. The performance standards of the Customer service centre generally relate to the speed with which a call is answered or a ticket order filled. There is no standard specified by which the impact of the ticketing system on the customer is measured. Hypothetically, the number of complaints about the system could be huge and steadily increasing and so long as each telephone call was met within the specified number of seconds by a service centre staffed so as to ensure the maximum call drop out rate was not exceeded, the service standard would be met.

PART 2: ATS PERFORMANCE

To assess ATS performance, data collection and analysis was undertaken. The data was collected with three Objectives in mind:

Objective 1: To assess the performance of the system as contractually required.

Objective 2: To assess the equipment performance from the public’s perspective.

Objective 3: (a) To identify differences between equipment performance from the public perspective and the requirements of the contract for machine availability; and
(b) To assess whether the ATS can generate a data set that allows this difference to be monitored and managed.

Objective 1: Performance of Service Contract

Objective 1 involves assessing OLT performance against agreed indicators.

The reviewers appreciate OneLink providing access to material from the performance reporting system (PRS). This data is the basis for compensation and bonus payments.

Based on this data, OLT have performed well against the performance indicators outlined for equipment availability. Its level of performance, in terms of its contractual requirements for equipment availability is outlined below. This suggests that OLT is operating on average just below the required contract availability standard.

(In wishing not to be drawn into the disputes between PTC and OLT, the reviewers feel compelled to comment that classification and contract performance are matters in dispute and we cannot comment on the potential differences between the parties)

Availability has a direct contractual meaning. This is outlined below.

The following table entitled *OLT’s Equipment and Service Performance per Quarter* indicates the contractual penalties imposed on OLT in relation to a range of contractual requirements, including “availability” of equipment since June 1999. It should be noted that using this data, OLT is performing only marginally below contractual requirements in some areas and in others at or above the standards set by the contract.

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OLT's Equipment & Service Performance per Quarter

From 28/02/99 to 02/12/00

Compensation Calculated as per CSC Schedule 1, Appendices 1 and 4

Performance Percentages supplied by OneLink Transit

| 21-03-2001 Equipment/Service | Jun-99 Quarter | | Sep-99 Quarter | | Dec-99 Quarter | | Mar-00 Quarter | | Jun-00 Quarter | | Sep-00 Quarter | | Dec-00 Quarter | | Total Compens. Per Equipment Service Type |
|---|------------------------|---------------------|------------------------|---------------------|------------------------|---------------------|------------------------|---------------------|------------------------|---------------------|------------------------|---------------------|------------------------|---------------------|--|
| | Average Performance | Compens. Payable | Average Performance | Compens. Payable | Average Performance | Compens. Payable | Average Performance | Compens. Payable | Average Performance | Compens. Payable | Average Performance | Compens. Payable | Average Performance | Compens. Payable | |
| Stationary | | | | | | | | | | | | | | | |
| BAR | | | | | | | | | | | | | | | |
| BOM | 99.64% | \$13,423 | 99.84% | \$0 | 99.79% | \$2,897 | 99.87% | \$0 | 99.84% | \$0 | 99.85% | \$0 | 99.79% | \$1,932 | \$18,252 |
| TVM 1 | 99.91% | \$572 | 99.95% | \$286 | 99.99% | \$0 | 99.97% | \$0 | 99.99% | \$0 | 99.96% | \$0 | 99.98% | \$0 | \$858 |
| TVM 2 | 99.56% | \$8,027 | 99.78% | \$2,253 | 99.80% | \$1,690 | 99.71% | \$5,070 | 99.58% | \$9,012 | 99.38% | \$11,829 | 99.47% | \$11,266 | \$49,147 |
| VAL 1 | 99.25% | \$29,712 | 99.60% | \$14,647 | 99.65% | \$13,600 | 99.55% | \$16,739 | 99.68% | \$9,937 | 99.53% | \$15,691 | 99.60% | \$15,690 | \$116,015 |
| Mobile | 98.88% | \$10,475 | 99.19% | \$7,779 | 99.36% | \$6,840 | 99.62% | \$2,951 | 99.70% | \$2,144 | 99.83% | \$0 | 99.82% | \$268 | \$30,458 |
| PTR | | | | | | | | | | | | | | | |
| TDKP | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 99.99% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | \$0 |
| TIM | 99.05% | \$0 | 98.58% | \$0 | 96.98% | \$0 | 98.90% | \$0 | 99.93% | \$0 | 99.94% | \$0 | 99.92% | \$0 | \$0 |
| TVM3 | 99.95% | \$0 | 99.98% | \$0 | 99.98% | \$0 | 99.99% | \$0 | 99.98% | \$0 | 99.96% | \$0 | 99.98% | \$0 | \$0 |
| VAL2 | 99.21% | \$10,030 | 99.52% | \$7,042 | 99.69% | \$5,007 | 99.81% | \$1,565 | 99.82% | \$1,252 | 99.84% | \$939 | 99.85% | \$939 | \$26,774 |
| VAL3 | 99.90% | \$1,091 | 99.91% | \$0 | 99.94% | \$0 | 99.95% | \$0 | 99.96% | \$0 | 99.97% | \$0 | 100.00% | \$0 | \$1,091 |
| Ticket Media | 99.93% | \$1,352 | 99.99% | \$0 | 99.96% | \$676 | 99.95% | \$0 | 99.96% | \$0 | 99.95% | \$0 | 99.94% | \$0 | \$2,028 |
| Depot Computer System | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | \$0 |
| Station Control System | 100.00% | \$0 | 99.99% | \$0 | 99.99% | \$0 | 99.99% | \$0 | 100.00% | \$0 | 99.99% | \$0 | 99.98% | \$0 | \$0 |
| AFC Reporting System – Monthly | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 99.99% | \$0 | 99.99% | \$0 | \$0 |
| Equipment Monitoring - Monthly | 99.96% | \$0 | 99.97% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | \$0 |
| EFTPOS Measurement – Monthly | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | \$0 |
| Telephone Call Abandonment Rate – Quarterly | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | \$0 |
| Answered Within 20 Seconds – Quarterly | 4.48% | \$0 | 4.52% | \$0 | 3.80% | \$0 | 4.60% | \$0 | 5.10% | \$0 | 3.20% | \$0 | 4.50% | \$0 | \$0 |
| % of Ticket Orders Dispatched Within 24 hours – Quarterly* | 81.47% | \$0 | 81.88% | \$0 | 86.10% | \$0 | 92.00% | \$0 | 94.80% | \$0 | 87.20% | \$0 | 85.10% | \$0 | \$0 |
| Percentage of Agents Provided | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | 100.00% | \$0 | \$0 |
| Agents Inadequately Stocked | | | | | 100.00% | \$0 | 100.00% | \$0 | 98.37% | \$0 | 100.00% | \$0 | 100.00% | \$0 | \$0 |
| Total | | | | | 99.33% | \$0 | 98.64% | \$0 | 98.75% | \$0 | 99.25% | \$0 | 98.87% | \$0 | \$0 |
| | | \$74,683 | | \$32,007 | | \$30,711 | | \$26,324 | | \$22,345 | | \$28,459 | | \$30,095 | \$244,624 |

PRS Compensation per Quarter
Source : Revenue Clearing House

Equipment faults/malfunctions not covered for contract compliance

(a) *Equipment down time excluded from the calculation of availability.*

Availability is reported as net of “downtime”. This is stipulated in the contract as:

- Preventive maintenance, upgrades, reconfigurations or back-ups when conducted at times acceptable to the PTC
- Vandalism
- Cash collection
- Non-relevant failure
- Un-assessed downtime: where there is a likelihood of risk to public safety or impairment of operation of adjacent ATS equipment then (where directed by PTC) the contractor will not undertake repair work until further directed – e.g. barrier failure during peak time where an adjacent barrier would be affected by the repair work.

As a consequence the total time that machines are available for ticket purchases by customers is significantly less than reported for contract purposes. The contract does not require that “total” available time or its converse, total downtime, is required to be either calculated or reported under the contract. However, as Objective 3 shows, this data is collected by OLT.

(b) *Technical aspects of equipment availability calculations*

(i) Automatic Fault Reporting Process

In July 1999 – PricewaterhouseCoopers conducted a review of the alert (automatic) recording process for fixed equipment within the ATS System. The scope of the review was to:

- assess the process by which faults are categorised into various classes (e.g. information, service) critical or non critical and as failure/downtime
- review the process in place to capture alerts relating to outages e.g. vandalism and make recommendations where relevant
- perform limited sample testing to confirm the adequacy of the controls for each type of equipment defined as “fixed equipment.”

The review found that following a limited number of sample tests all alerts deliberately triggered were able to be traced though to the usage data. Whilst this review has no reason to doubt that alarms triggered in the vending and validating equipment will alert the PRS system, as described below, there are machine malfunctions which do not trigger an automatic alarm, and consequently remain unscheduled for repair until manual notification to the maintenance centre. There also remains some definitional issue(s) of fault between PTC and OLT which are (we understand) part of the larger dispute.

(ii) *Accuracy of system calculations for reporting purposes*

Reporting by OLT against the Approved Performance Measures is essentially self-reporting of information generated through the performance reporting system (PRS) of the ATS. The process by which the PRS compiles the relevant reporting data was specified and agreed with the PTC. In October 1999, PricewaterhouseCoopers reviewed the accuracy of the machine availability information as presented in the Performance Reporting System (PRS), and appears to have detected operator error which resulted in OLT reporting a higher error rate than necessary. However, the level of this was not such that it would skew overall performance results.

We were advised that a least one review of the PRS had been undertaken recently by PTC/RCH although no formal report was available to us.

The Russell Audit Review in to contracting, privatisation, probity and disclosure in Victoria 1992-1999 (May 2000), commented that the performance requirements under the contract were extremely high and that similar systems overseas were not able to meet lesser standards. This raised further questions about the operational logic underpinning the performance requirements. With performance requirements met, but public and operator satisfaction low while equipment performance standards are higher than overseas requirements, the management value of the KPIs must be questioned.

Disputed aspects of OLT performance : vandalism and non relevant failures

As already stated, the extent and cost of repairs for vandalism and non-relevant failures are currently being disputed between OLT and PTC.

Non relevant failure: *is defined under the contract as a failure of any Equipment or Software arising from any unreasonable or negligent act or omission or operation outside specification or Vandalism by PTC, or a Private Bus Operator or one of their respective Subordinates, but does not include a failure arising from other Vandalism or from inadequate instruction, training or information from OneLink Transit on the use or Operation of any of those parts of the Equipment or Software which OneLink Transit has authorised PTC or a Private Bus Operator to operate for OneLink Transit in accordance with the Service Contract or from any breach of the Service Contract by OneLink Transit.*

Based on the information we have seen, this covers reports found not to relate to the contractual availability criteria or vandalism.

Vandalism: *Vandalism" means any failure of any part of the Equipment or Software comprising the AFC System, any defacing (by paint, scratching of any item or substance, burning, glass breaking or the like) of any part of that Equipment or any third party damage to any part of that Equipment or Software but does not include*

1. *any failure or fault in the Equipment comprising the AFC System related to mechanical or electronic breakdown of a component or part that results from normal operation of the Equipment to specification*
2. *any defect, failure, fault, defacing or damage caused by normal usage of the Equipment or Software*
3. *any defect, failure, fault, defacing or damage caused to the Equipment or Software by OneLink Transit or its Subordinates*
4. *any Non Relevant Failure*

but does include:

1. *any damage, erasure or inability of the Software to perform in accordance with the Service Contract by reason of unauthorised access to the Software; or*
2. *any defect, failure, fault, defacing or damage to the Equipment or Software by a Private Bus Operator or its Subordinates and which is deemed to constitute Vandalism pursuant to clause 4.3 of a PTC/Private Bus Operator Agreement or clause 3.5(b) of a Deed of Access*

Under the terms of the contract PTC/RCH and OLT must use their best endeavours to ensure that the incidence of vandalism is reduced to a minimum.

We were advised that during the tender process, bidders identified their estimated “insurance cost” to assume the risk of vandalism. It is our understanding that on the basis of that cost estimates, the then Government decided to “self insure” to the extent specified in the contract.

As a result of this decision and the subsequent decision to transfer this risk to the Franchisees under the contract assignment, there is neither a mechanism, nor the incentive for OLT to manage and reduce either category of equipment downtime (other than the PTC in disputing the extent and cost of the OLT vandalism claims).

Whilst OLT has an obligation to design equipment that is fit-for-purpose, and must use its best endeavours to minimise vandalism, there is no incentive in the contract for it to manage vandalism.

Notwithstanding the lack of any incentive to reduce vandalism, it has been argued to the auditors that one reading of the contract places a positive incentive on ensuring that as large a proportion of malfunctions as possible are classified as third party intervention or non relevant failure:

- (a) so as to exclude that time from the performance measure, and
- (b) to receive piece rate payments for repairs.

This interpretation needs to be viewed in the context of the ongoing dispute between PTC and OLT over billable maintenance costs, but incentives that are not aligned with overall system availability will distort the contract objectives and targeted improvement in the public transport system. Properly structured KPIs will avoid such distortions.

ATS Equipment Performance Not Measured

- (i) Equipment availability as a measure of system performance or service standards
- Performance standards are supposed to measure how well the contractor is delivering its contractual obligations relating to service. In the current OLT contract, a limited view of machine availability (time) is the only measure of performance and this does not include many of the reasons why a machine is not fully operational.
- (ii) The performance standards are set on a system wide basis.
- As indicated in the Auditor General's Special Report Number 59, 1998, the measure which is important to the traveller is the reliability with which he/she can acquire a ticket at an expected delivery point. This will be of greater importance at peak times when more travellers require access and should be capable of being assessed by station or vehicle rather than system wide which values each hour and each station as having equal value to the travelling public.
- (iii) Equipment reliability
- The performance measurement system fails to address the issue of equipment reliability in terms of particular types of equipment operating in both high and low transaction environments.
- (iv) System effectiveness
- The "availability of equipment" performance measures fail to address the issues relating to whether the ticketing system as a whole is achieving the majority of the objectives contained in the contract

This analysis highlights that a major contradiction can exist between the contractual assessment of performance and the public's perceptions of system performance.

Objective 2: Public Perception

To assess the public's perception of the equipment performance an intensive survey was undertaken of equipment across the whole transport system. This study was commissioned for the Audit and undertaken by Steer Davis Gleave. A large amount of data was collected. Because of the complexity of the data, delays have occurred in meeting the review's requirements for a data structure of most value to the review.

In the following, we have attempted to present the data in a manner that best supports OLT and the Franchisees in considering management strategies to address the problems identified in the field.

Definition

As "availability" has a specific meaning in the contract, we use the term "operational" in the following sections to describe a ticket machine's functionality.

- "Fully operational" means the machine performed all required tasks,

- “Partially operational” identifies a machine able to undertake its primary task – provide tickets or validate - but has faults in several functions
- “Non operational” is a machine unable to undertake its primary task - deliver a ticket or validate. (Credit card ticket purchase was not tested.)

The objective of the audit was to understand the “public’s experience” with the system.

Accordingly, the report identifies the functional status of the equipment and the source of any defect or fault. It should be noted that several machines had multiple faults, but an attempt has been made to identify the major fault as experienced by the public.

This audit tool advises whether the equipment was working at the time, reports on third party contribution to equipment problems, and importantly provides a measure of public interface with the ticketing system.

A detailed report on the field survey is attached as Attachment 4 of this report.

The following table presents the major finding of the field survey. The survey does not allow contract compliance to be compared to public experiences. As we have indicated, the requirements of the OLT contract are consistent with OLT meeting its contractual obligations for ‘availability’ at the same time as the public are experiencing the operational state of equipment outlined below.

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| TICKET SELLING MACHINES | | Train Stations | Trams | Buses |
|--|--|-----------------------|--------------|--------------|
| Total Machines In System ⁽¹⁾ | | 473 | 424 | 1420 |
| Unique Machines Tested | Total No. | 459 | 322 | 267 |
| | % of Total | 97.0% | 75.9% | 18.8% |
| Fully Operational⁽²⁾ | Total No. | 334 | 285 | 234 |
| | % of Tested | 72.8% | 88.5% | 87.6% |
| | Staffed Stations | 78.1% | n/a | n/a |
| | Unstaffed Stations | 69.9% | n/a | n/a |
| Partially Operational⁽³⁾ | Total | 39 | 24 | 27 |
| | % of tested | 8.5% | 7.5% | 10.1% |
| | Major Defects' Identified⁽⁴⁾ | | | |
| | Incorrect Change | 15 | 20 | n/a |
| | Coins Rejected | 2 | 1 | n/a |
| | New \$5 note rejected | 6 | n/a | n/a |
| | Other notes rejected | 2 | n/a | n/a |
| | 'Out of Order' on the display screen | 0 | 2 | n/a |
| | 'Out of Order' sign placed on the machine | 1 | 0 | n/a |
| | Buttons Were Unreadable | 5 | 0 | n/a |
| | Had 'correct change only' signs | 2 | 1 | n/a |
| | No change when cancel button pushed | 1 | 0 | n/a |
| | Scratched screen (major) | 10 | 0 | n/a |
| Non Operational⁽⁵⁾ | Total | 86 | 13 | 6 |
| | % of tested | 18.7% | 4.0% | 2.2% |
| | Major Defects' Identified⁽⁴⁾ | | | |
| | Incorrect Change | 3 | 13 | n/a |
| | Coins Rejected | 15 | 3 | n/a |
| | New \$5 note rejected | 5 | n/a | n/a |
| | Other notes rejected | 8 | n/a | n/a |
| | Machine Was Off | 5 | 1 | n/a |
| | 'Out of Order' on the display screen | 3 | 3 | n/a |
| | 'Out of Order' sign placed on the machine | 11 | 0 | n/a |
| | Buttons Were Not Working | 3 | 1 | n/a |
| | Had 'correct change only' signs | 4 | 0 | n/a |
| | No change when cancel button pushed | 19 | 0 | n/a |
| Coin slot blocked | 36 | 2 | n/a | |
| Scratched screen (major) | 3 | 0 | n/a | |
| VALIDATORS | | Train Stations | Trams | Buses |
| Unique Machines Tested | | 494 | 1453 | 277 |
| Fully Operational⁽²⁾ | Total No. | 466 | 1393 | 267 |
| | % of Tested | 94.3% | 95.9% | 96.4% |
| Non Operational⁽⁵⁾ | Total No. | 28 | 60 | 10 |
| | % of tested | 5.7% | 4.1% | 4% |
| | machine was off | 1 | 20 | 1 |
| | manually tagged | 0 | 0 | 1 |
| | Vandalised | 24 | 4 | 0 |
| | other text displays reason not recorded | 3 | 14 | 0 |
| | | 0 | 22 | 9 |

(1) Total ticket machines for trams excludes those in the W class trams, as they were not in the system at the time of the survey.

(2) Fully Operational indicates that a ticket was obtained and there were no 'defects' or only minor 'defects' observed with the machine.

(3) Partially Operational indicates that a ticket was obtained, and major 'defects' were observed with the machine. For buses the 'defect' is that the Metcard had to be inserted more than once into the Ticket Issuing Machine (TIM).

(4) 'Defects' Identified are not necessarily the cause of non-operation of the machine. A number of major 'defect' types have not been included where no observations of these 'defect' types were made in the field for either train or tram. For partially operational ticket machines these include: machine was off, buttons were not working, and coin slot blocked. For non-operational ticket machines these include: buttons were unreadable.

(5) Non Operational indicates that a ticket was unable to be obtained

Findings

As we have indicated, the field study does not allow contract compliance to be compared to public experiences.

The audit deliberately focussed on the perspective of a ‘member of the travelling public’ and, in its presentation, sought to identify areas where the stakeholders need to direct their management attention.

In identifying the operational status of equipment we do not imply any contractual responsibility to improve the operational status of available equipment. However, common sense would suggest that if the current contracts, or the state of contract negotiations, are unable to ensure services to levels required by the travelling public, the stakeholders need to consider what they are going to do to improve the functionality of the system.

The survey identifies the pattern of equipment functionality that was facing the travelling public at the time the machines were inspected. Some of the key findings are :

- (a) only 72.8% of ticket selling machines on stations were fully operational (the public could buy a ticket with no major problems) when inspected by the field staff
- (b) unstaffed stations had a significantly lower proportion of fully operational ticket selling machines (69.9%) than staffed stations (78.1%).
- (c) train stations have a dramatically higher proportion of ticket machines with major faults/defects than trams.
- (d) Trams and buses have similar proportions of fully operational machines (88.5% and 87.6% respectively)
- (e) 19 of the 86 non operational ticket machines on stations were identified as ‘off’ or ‘out of order’. This means a quarter of the non operational machines on stations were known to be unusable. However for 67 machines, the public became aware they couldn’t buy a ticket when they tried to use it.
- (f) that cash holding equipment is more likely to have faults/defects than validators. On average, across all modes, 95.6% of validators tested were fully operational.
- (g) “incorrect change” was the most common defect when a machine was able to deliver a ticket, but was not fully operational (38% for stations and 83% of trams).
- (h) ‘Coin slot blocked’ was the major defect recorded when machines were unable to provide a ticket. 7.8% (36 machines) of all machines on the rail system were recorded as having a blocked coin slot. 27 of those machines were on unstaffed stations. This is about double the rate of coin blocks on staffed stations.
- (i) there was little difference in the proportion of validators with major faults across the travel modes (rail stations (5.7%), tram (4.1%) and bus (3.6%)), although vandalism was major cause on the train stations, with machines ‘turned off’ the major reason on trams.

It is interesting to note in Attachment 4 (Table 2.1.3A) that 25% (117 machines) of all ticket machines on stations were identified by field staff as having a major defect. Of these, 33, or 7% of all machines had more than one major defect.

On the tram system, 11% of machines (37 machines) had a major defect, with only 8 machines with more than one defect.

Data was collected on vandalism separately from equipment functionality.

While vandalism may affect machine functionality, it also reflects on the ‘state of the system’ and the public perceptions about the care taken to get the system right.

On the rail network, some 197 machines, (43% of all machines) were identified as having been vandalised (screen scratched, graffiti, coin slot blocked, or other). Of the incidents, the majority (80% of vandalised machines, or 157 machines) were identified by field staff as affected by “minor” vandalism.

Both staffed and unstaffed stations had similar incidents of vandalism – 41% on staffed stations and 44% on unstaffed stations showed vandalism. However, the proportion of vandalism identified as ‘major’ was higher on unstaffed stations.

As discussed above, the definition of vandalism used in the study did not match that contained in the contract. It is difficult to match the definition of vandalism with the contractual definitions: field staff tried to identify what the public experience.

This data suggests that vandalism and equipment functionality are not synonymous and may require different strategies to address.

Qualifications of the Data

While the survey data shows a ‘snap shot’ of the state of the equipment, it is only a partial understanding of the effect on the public and the commercial standing of public transport.

For instance:

- (a) the data does not show how long machines were unable to deliver a ticket, or have had a fault.
- (b) the data does not show the number of travellers inconvenienced – ie whether the ‘fault’ occurred during peak travelling times and how many travellers use the mode of travel and access to the system.
- (c) The data does not show the regularity of ‘faults’ and whether travellers have changed their ticket purchase patterns in response to any pattern of faults.
- (d) The data does not show whether the fault affected all or just one of the available ticket sources for passengers.

These and many other factors need to be better understood if we are to quantify the effect that equipment failure will have on the attitude and actions of travellers.

As it stands, the data shows that public frustration with the system is understandable. The data also shows that the results are not unique, with both the March survey and the DOI pilot survey conducted in February showing consistent results.

Comparing Recent Surveys

The data collected in the March survey of ticket machines on train stations was compared to a smaller pilot survey undertaken in February 2001 by DOI. This provided an opportunity to look at some broad trend issues. The following Table is presented for Stations only.

| Item | Pilot Survey | March survey |
|--|---|---|
| Train machines tested | 216 | 459 |
| Machines “fully operational” (able to buy ticket with no major faults/defects) | 88.4% | 72.8% |
| Giving incorrect change | 3.6% | 3.2% |
| Percentage unable to buy a ticket at all | 8.3% | 18.7% |
| Line with the highest proportion of machines fully operational | 100% : Werribee, Williamstown 95.8% St Albans/Melton | City Loop : 96.2% Alamein : 93.9% |
| Line with the lowest proportion of fully operational machines | Sandringham : 68.8% Belgrave : 76.7% Lilydale : 78.1% | Sandringham : 54.3% St Albans/Melton : 54.3% Werribee : 58.6% |
| Train Validators tested | 352 | 466 |
| Percentage assessed as non operational | 3% | 5.7% |

Findings

In the absence of any other data, the two studies provide a basis for some longitudinal analyses.

Persistence of problems can be a sign of poor or inadequate management. Hence, it is interesting to see what, if any, changes have occurred between the two studies in the operational status of equipment.

The following Table shows line by line changes in performance between the two studies. What is interesting is that along with the confirmation that some bad lines have stayed bad or got worse (for instance Sandringham was at the bottom of the list in both studies), other lines have shown wide variations in the extent of machine functionality (Werribee going from top to near the bottom between studies).

Were the system functioning in an integrated fashion, with ticket system and operators working together to address problem areas, or striving to maintain high standards, some pattern of improvement could be discerned.

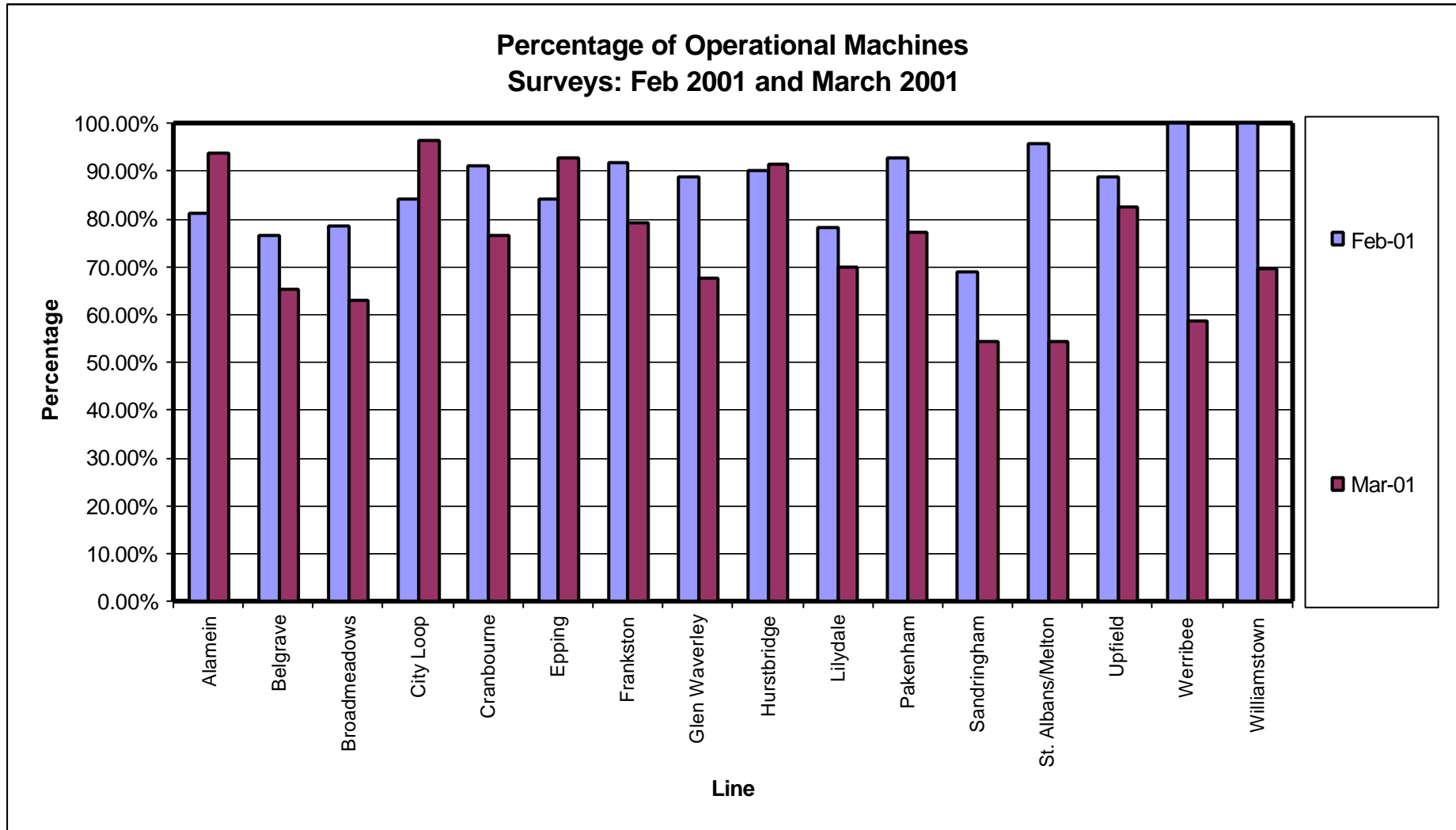
Overall, the data highlights that the public can be justifiably angry and frustrated with the ATS, as it would appear that the managers of the transport service are not using knowledge available on the system and its performance to plan effective corrective action strategies.

The auditors recognise that the data provided through this study is helpful in confirming the reported public dissatisfaction with the performance of ATS. However, it does not help in identifying solutions.

Studies of this type can identify areas for future action by the stakeholders to improve public access and perceptions. These studies in turn raise a question about whether such surveys can be a useful ongoing mechanism for reviewing performance, in the absence of OLT accessing better data.

| PERCENTAGE OF OPERATIONAL MACHINES AT TIME OF INSPECTION : FEB AND MAR 2001 SURVEYS | | |
|--|---------------|---------------|
| LINE | Feb-01 | Mar-01 |
| Alamein | 81.2% | 93.9% |
| Belgrave | 76.7% | 65.2% |
| Broadmeadows | 78.6% | 62.9% |
| City Loop | 84.0% | 96.2% |
| Cranbourne | 91.3% | 76.5% |
| Epping | 84.2% | 92.7% |
| Frankston | 91.7% | 79.1% |
| Glen Waverley | 88.9% | 67.6% |
| Hurstbridge | 90.0% | 91.5% |
| Lilydale | 78.1% | 69.8% |
| Pakenham | 92.6% | 77.2% |
| Sandringham | 68.8% | 54.3% |
| St. Albans/Melton | 95.8% | 54.3% |
| Upfield | 88.9% | 82.6% |
| Werribee | 100.0% | 58.6% |
| Williamstown | 100.0% | 69.6% |

This material is presented graphically in the following, unnumbered page, as a frequency distribution entitled “*Percentage of Operational Machines at time of Inspections : Feb and March 2001 surveys*”.



Objective 3: ATS Data Availability

Objective 1 involved an assessment of how ATS is performing relative to its contractual obligations.

Objective 2 used a ‘snap shot’ of system performance to gauge the public’s perception of ticket machines and validators.

In Objective 3, we sought to test the ability of ATS to register what the public were experiencing in terms of machine availability. By using a structured data collection of what is actually happening to the system, we can assess whether ATS can generate a data set that can be a management data base for use in optimising the performance of the ATS : this is independent of any current contractual responsibilities.

OLT collects data on what is ‘happening’ with the ATS. It then assembles the data in order to show how it is performing against contractual requirements. The central data collection facility of OLT links each piece of equipment to the centrally managed fault identification system and maintenance management system – the Performance Reporting System (PRS).

As a result of the contractual obligations accepted by OLT, the PRS is structured so it will:

- (a) Recognise an “incident”,
- (b) Depending on the signal, this will produce a ‘fault’ definition, and/or activate a collection, a servicing or a maintenance request.
- (c) Following the maintenance visit, the contractor will confirm or amend the definition of the fault.
- (d) This will determine whether the fault is identified as a contractual ‘availability’ issue (ie intrinsic machine fault), or will generate a item for contracted ‘billable maintenance’ – incidents of vandalism or non relevant failure.
- (e) Based on its definition, OLT will report the incident in the context of its availability compliance, or as a billable item.

Following discussions with OLT, the auditors were able to identify that the PRS has the capacity to identify a trail for all ‘incidents’ recorded on the system. Under its current format, data is only classified consistent with OLT’s contractual obligations (availability and maintenance), but the data is rich.

Recognising that OLT has the capacity to format the data as required, a data exercise was set up by the Auditors to test whether the data collection systems under PRS reflected the incidents experienced by the travelling public and hence, how comprehensive the PRS data is as a stand alone management tool.

The data sought by the auditors had two sources – one using historical data already held by OLT and secondly the collection of real time data. In both exercises the auditors wish to acknowledge and express their appreciation for the full and open cooperation of OLT management and staff.

Findings:

Historical data

OLT collect and archive data on all ‘identified’ incidents, regardless of contractual category.

With the cooperation of OLT, data was reloaded on the OLT system to revisit OLT records of equipment ‘up time’ over the first two months of 2001.

Data presented by OLT on incidents – recorded using the contractual ‘availability’ calculation methodology – showed the level of equipment ‘up time’, (billable maintenance incidents and availability incidents) from 13th January 2001 – 24th February 2001 as recorded by PRS. This data is presented in Attachment 2.

The data indicates by machine type the extent of availability less all sources of ‘fault’ including billable maintenance (vandalism and non relevant failure): the total operational time of the machine type across the system.

The equipment most prone to vandalism attack, the station based TVM2 are shown to have levels of operational time ranging from 91% through to 96% across the subject weeks.

This level of operational time, or ‘uptime’ can be compared to contractual “availability” performance and placed into context with the field survey results.

| TVM 2 Week ending | OLT data | | Survey data | |
|--|-------------------------|--|--|----------|
| | Contractual requirement | Contract, including ‘billable maintenance’ | Fully operational (successfully bought ticket) | |
| | Availability | ‘Up time’ | Feb 2001 | Mar 2001 |
| 03/02/01 | 99.0% | 94.5% | | |
| 10/02/01 | 98.7% | 91.0% | | |
| 17/02/01 | 99.1% | 93.7% | | |
| 24/02/01 | 99.0% | 94.7% | | |
| Combined TVM1 and TVM2 station ticket machines | | | 88.4% | 72.8% |

It appears that there is a gap in the capacity of the ATS to identify a number of the ‘faults’ that are experienced by the travelling public. This suggestion of non automatic reporting of malfunctions we develop later in this section.

Nevertheless, the data does show that a “core data set” of greater relevance to the public than contractual “availability” is available through PRS. It shows that data captured on ‘incidents’ is capable of being re-configured and presented in a more policy relevant format.

Simultaneous Data Collection Project

The auditors, accessing support from DOI and their contractors, set up a small longitudinal study. It was to be an intensive two level audit at 2 sites over 3 days of machine performance in real time (incidents as they happened). This involved a parallel physical audit and PRS system audit undertaken simultaneously. The study was a joint audit and OLT project.

Details of performance are provided in Attachment 3.

South Yarra and Prahran stations were studied in detail. On the 22nd, 23rd and 26th of March teams of staff composed of OLT and a DOI contractor regularly tested the operational status of the ticket equipment from around 8.30 to 17.00. Simultaneous with this field inspection, OLT was recording and monitoring its fault signals for the same equipment.

The objective was to test whether all incidents identified by staff at the station as affecting the equipment were being registered by the PRS. This would assist in understanding whether the data set compiled by OLT was capable of registering, and hence reporting and thereby providing a tool for managing responses to equipment incidents. (Definitions of “fault” or “vandalism”, etc for Prahran and Sth. Yarra Station below, are as identified by the OLT systems, automatic or manual.)

Prahran Station

| | Machine 18-1050 | Machine 17-1065 |
|---|---|--|
| Faults not identified by system – manually identified | 1) 22/03 9.50 Incorrect change – ticket purchased 2) 22/03 10.45 Note unit faulty – vandalism 3) 23/03 8.44 Incorrect change – no fault found 4) 23/03 10.48 Incorrect change – equipment failure | 1) 22/03 9.55 Incorrect change given – vandalism 2) 22/03 11.00 coin jam – assessed as vandalism 3) 22/03 15.07 coin jam – assessed as vandalism 4) 26/03 10.24 Coin jam (vandalism) 5) 26/03 14.41 Coin jam (vandalism) |
| Faults automatically identified | 1) 22/03 10.15 Note Jam (16625175) unable to purchase – assessed as Vandalism 2) 26/03 10.30 Note jam 3) 26/03 same fault as above 11.03 coin jam (vandalism) 4) 26/03 13.59 Note jam (no fault found) | |
| Period equipment is non operational | 22/03 : maximum 1 hour (vandalism assessed by maintenance staff) 23/03 : 1hour 30 mins (equipment failure) 26/03 2 hours (vandalism) 30 mins (no fault found) | 22/03 : 2 hours 15 minutes incident 1 and 1 hour incident 2 (vandalism) 26/03 : 8 hours vandalism |
| Effectiveness of maintenance | 22/03 20 min delay, resolved one visit 23/3 20 min and 45 min delay resolved second visit no fault found first visit 26/03 2 calls, 2 hour delay resolved 26/03 45 min delay resolved | 22/03 30 min delay, 10 min delay two incidents or resolved second visit 22/03 50 min delay resolved 26/03 2 hour delay , 1 hour 30 min delay two incidents or not resolved first visit. |

Equipment, especially Machine 17-1065 was unusable for significant periods after 10.41 on 26th March. Also, for 17-1065 no incident was automatically recorded despite significant down time.

In terms of reports, only 4 of the 13 incidents were reported automatically by the ATS systems. Incorrect change and coin jams were identified in only one case (supplementary to a ‘note jam’ alert). What is of more concern is:

- the ‘equipment failure fault’ registered on machine 18 1050 on 23/3/01 was not automatically identified
- the system identified a note jam with 18 1050 on 26/3/01, but the maintenance crew identified no fault.

Weaknesses in the reporting of incidents and either the speed of vandalism or concerns about the effectiveness of maintenance was indicated by the need for return visits by maintenance staff in a number of circumstances before machines were returned to fully operational.

South Yarra Station

| | Machine 17-1259 | Machine 17-1269 | Machine 18-1228 |
|---|------------------------|--|---|
| Faults not identified by system – manually identified | | 26/03 9.32 rejecting coins – vandalism | 26/03 14.30 Hopper full – fault (exact fare only) |
| Faults automatically identified | | 26/03 11.29 out of service – fault equipment failure | |
| Period equipment is non operational | | 26/03 1.15 maximum-vandalism | 26/03 2 hours – routine maintenance |
| Effectiveness of maintenance | | 26/03 45 min delay 26/03 4 hours 45 mins delay equipment failure | 26/03 2 hours : Routine maintenance |

The variety of incidents is significantly less on the staffed South Yarra station than Prahran. The lower level of vandalism shows that the operational machine (‘up time’) – except for the major delay in repairing the machine failure – is considerable higher and the success rate of automatic incident reporting was better.

The simple comparison between the two stations suggest the following :

1. that as currently programmed, the PRS is not sensitive enough to automatically identify incorrect change problems. We know from the system wide audit that this can affect around 3.2% of machines at rail stations.
2. that as currently programmed for alarms, the machines are not able to automatically signal the control centre to identify coin jams, with the effect that significant down time occurs. In the case of Prahran **Machine 17-1065** 11 of the available 24 hours (46%) of monitored time (8 hour per day of survey monitoring) it was unable to sell tickets due to this problem.
3. we cannot tell how long the machine problems would have gone on before the problem would be reported, had the survey team not been present.

The simultaneous data collection study suggests that two areas of improvement would be valuable if the operators wanted to use OLT data as a system management tool to better manage machine up time:

1. more development work on equipment sensors capable of signalling “coin jams” to the control centre.

2. more work on the possible correlation between incorrect change, coin collection and non relevant failure. This would allow the stakeholders to assess whether this source of malfunction, or error, could be addressed by changes to coin collection procedures, or whether other causes are involved.
3. (if coin collection is not linked to incorrect change) more development work needs to be done on the sensitivity of the PRS to coin stocks and correct change only signals.

PART 3: ACTIONS REQUIRED

Context

The auditors have been requested to consider required action in three specific areas relevant to the ticketing system

1. any short comings in equipment availability
2. accurately measure performance
3. how performance should be monitored.

Equipment Availability

Availability has a contractual meaning.

Although this is an issue of legal dispute - with the PTC disagreeing about some fault classifications - on the basis of data available from OneLink, it appears that OLT is performing at or only marginally below the highest standards required for them under the availability requirements of the contract.

Increasing the proportions of fully operational equipment, or uptime, is how we have described the task. From our analysis we identify four sources of ‘downtime’ that need to be converted to ‘uptime’.

Downtime 1: contractually defined ‘vandalism’ or non relevant failure as identified by OLT and alarmed and registered with the control centre.

Downtime 2: non recorded machine faults – these may arise from vandalism, theft, incorrect change, etc – that means the equipment is not meeting customer needs. This can occur in two forms –

- (a) defects that do not cause an alarm and is not registered and recorded by OLT .
- (b) machine features, such as inability to give change or coin tray filled that are not classified as a fault.

The survey data suggests that the number of such incidents could be high.

Downtime 3: any machine fault at peak times has more impact on revenue and hence effective down time on more travellers than at off peak time or night peak periods when ticket sales are small.

Downtime 4: the industry’s sensitivity to downtime as a result of the travelling public being overly reliant on on-system sales and not utilising alternative sales options. As passenger growth and other projections were based on 26% off-system sales, assess to incentives are affected by the extent to which the operators are reliant on on-system sales to create the growth.

Actions/interventions to improve equipment availability strategies will vary according to the cause of downtime.

Downtime 1:

OLT has a contractual obligation to maintain and repair all notified faults. Uptime can be improved by:

- (i) reducing response times to minimise time between fault and repair
- (ii) improving coin collection protocols to increase collections and reduce incorrect change faults
- (iii) better access data available on vandalism and NRF patterns to enable OLT and operators to improve management and rectification strategies – ie evaluate and assess strategies : target unstaffed stations, train station staff to undertake basic maintenance, etc.

To shorten response times or increase collections in excess of contractual requirements is likely to have a cost unless there are offsets for OLT.

Downtime 2:

These items are not fully addressed in the contract.

- (a) Under the current alert programming of the machines these incidents are not registered by alarms at OLT central control.
- (b) Until they are registered (probably manually by the public or stakeholder staff) with OLT, they do not appear in ATS maintenance programs. However, responsibility for rectification is clear once they are recorded.
- (c) There is a view that under the contract (where there is a recurring incident), OLT may have a responsibility to program alarms for such incidents, or modify the equipment, under ‘fit for use’ requirements, to prevent regular acts such as paper loops to coin slots disabling the equipment.
- (d) As some are not machine malfunctions and hence a matter of contract “machine availability” they may be categorised as vandalism.

Two strains of strategy arise for dealing with such incidents. They are different in focus, but not mutually exclusive.

1. *Collect better data, and manage it consistent with current OLT practice.*

Improve the OLT data systems, sensors, or reprogram the equipment where possible to identify faults not currently registering. This process would bring more issues into OLT surveillance. This initiative may require the dispute over billable maintenance costs and levels to be resolved for OLT to consider such an investment. The costs of software modification would need to be considered.

2. *Better analyse the current data.*

Analyse the pattern of faults to better understand non relevant failure and vandalism issues emerging. Develop preventative strategies to minimise the impact. OLT could then work with the operators to reduce their incidence, or modify equipment to prevent their recurrence.

Downtime 3:

Maintenance protocols are within the responsibility of OLT. Providing the contractual requirements are met, OLT has responsibility to run its maintenance priorities as it judges appropriate. However, there is capacity for the operators and OLT to renegotiate aspects of the contract which would be mutually beneficial. Whether there are costs associated with this is unclear.

In this context, it is important that maintenance decisions be taken in terms of net cost not just to OLT, but to the Transport System.

Decisions as suggested above, to link all maintenance strategies to minimising the impact on the travelling public (ie faster response times) at peak periods (public benefit) and when revenue volumes are greater (operator benefit) deserve consideration. In this sense while the maintenance costs may be greater – say 30 minute availability at designated stations requires greater staffing – but the returns in public support for the system and revenue may compensate. This is a commercial decision OLT and the operators should be encouraged to consider.

Data would need to be provided to monitor the effectiveness and the return from the investment. This data is available, but may require software programming and work process changes at OLT.

A change in vandalism repair and maintenance strategies can have a significant impact on effective uptime and it may also have an effect similar to that registered with fast turnaround vandalism cleaning, namely a reduction in incidents. This in turn may have a long term effect of reducing incidents and hence costs.

Downtime 4:

The Operators have already taken independent action to improve the off-system sales service through the Marketing Committee of RCH. This splits the off-system management function between OLT and operators, with OLT managing and servicing the system and the operators driving the strategy.

In dealing with Downtime, piecemeal changes to individual elements of the ticketing system are neither strategic, nor likely to be cost efficient.

The Stakeholders need to be encouraged to create both the atmosphere and the forum for such matters to be discussed, for changes to be considered and system's performance monitored and adapted.

Improve the accuracy of measurement if the existing systems are inadequate

As discussed above, the main areas of weakness in measuring equipment performance are two fold:

1. the management action taken based on the current data, currently separated into “availability” – where performance is assessed in great detail - and billable maintenance obligations - where the focus is on repairs not equipment performance.
2. the equipment malfunctions that are not recorded by the current systems

The two studies commissioned by the audit showed that manual audits identify considerably more system problems than the ATS.

Some of this information is collected by ATS, but is not required to be reported. However it is available within the current system. In addition, a significant amount of fault information is not collected by the system as currently programmed and hence unable to be considered in any management strategy.

An alternative approach is for the users to respecify the data required and renegotiate a conversion from the current contracted data requirements to the new data requirements. While some software costs may be required, the net conversion costs in savings on collecting current data and redirecting efforts to new data is likely to be less than a series of individual, piecemeal variations.

Given that the current operators had no say in the data initially specified by the PTC, it is likely that major new measurement and analysis systems will be sought.

Cost effective reporting to Government

As we understand it, new reports to Government are outside the existing contract. As such they would be additional to current reports. The interim agreement indicates that RCH and the Director of Public Transport are possible sources of access to data.

Given that the ATS does not capture all incidents, reports to Government on recorded incidents would still be a subset of the public’s experiences with the system.

As discussed in the body of the report, OLT have a detailed system of data capture. Coding of an ‘incident’ is discretionary, but is currently structured around OLT’s contract obligations. OLT is however able to report each recorded incident in other ways, as is shown by Attachment 2. OLT worked very cooperatively with this review to provide data on incidents not reported on under the contract. Making such data available to Government is feasible. The cost of providing the data on an ongoing basis could only be assessed by OLT.

On-going performance issues not captured by OLT systems remain a problem, discussed above as Downtime 2. This requires a data and service management strategy.