CAPE BRIDGEWATER HOLIDAY CAMP

REVIEW OF DOCUMENTATION

27th July 2007

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1. INTRODUCTION

I Brian Hodge having over forty years experience in telecommunications as a technician, Tech Office, Engineer & Manager (refer appendix 1), has been requested to examine a quantity of documentation relating to the services delivering to the Cape Bridgewater Holiday Camp (CBHC) at Cape Bridgewater.

In addition, to examine documentation that relate to the testing of services to the CBHC undertaken by Telstra/Telecom Australia and Bell Canada International (BCI).

I have been requested, based on the personal experience in the field, to comment on the reports, testing technique utilised, and other aspects relating to services delivery to CBHC.

A variety of testing techniques and call reporting systems were employed as the basis for the reports & documents prepared by Telstra/Telecom Australia.

2. TESTING SYSTEMS & RECORDING

A quantity of testing system were employed & consisted of the following:

2.1. TCARS/TRT

The TEST CALL ANSWER RELAY SET is utilised for remotely testing the transmission performance of a telephone circuit in both directions, where the operator controls the tests from one end.

The TCAR set is fitted in the automatic exchange & permanently connected to a subscriber number (ie. Fixed test number). The TCAR can therefore be called automatically from an outgoing testing facility (eg Traffic Route Tester – TRT) in any exchange.

The TRT tests are made by dialling a distant exchange (TCAR) number & performing a number of tests. The TRT operate in either of two modes.

a. Observed service performance runs;
b. Fault hold & trace runs

The TRT causes the TCAR to respond in a predetermined manner, and appropriate measurements of network performance can be determined.

One purpose of the TCAR is to ensure that the planned transmission losses are within specified limits.

To enable the fully testing cycle to be achieved, the period between seizure & release of the TCAR is a fixed 24 seconds.

2.2. PTARS

The portable equivalent to TCARS is the Portable Tone Answer Relay Set (PTARS).

The PTAR is a "Portable" testbox attached to a line location at a "terminating" exchange to provide answer supervision for test calls (refer BCI Addendum Report – Glossary).

As to the PTARs carries out the same functions as TCARS, the seizure – release time is equivalent.

2.3. NEAT Testing

Network Evaluation and Test System (NEAT) is an Ericsson designed & built testing system.

The system conducts transmissions & continuity tests between dedicated network test units.

"Each test call is held for 100 seconds to conduct transmission test & to detect drop outs" (ref. Telstra doc K35002).

The dedicated Network test unit is connected to the selected test number in the selected exchange line appearance.

Each test call takes 100 seconds to complete (refer K35002).

2.4. Call Event Monitoring

Dedicated test equipment (eg. ELMI event recorder) is provided at the customer's premises.

Hence, this device records all activities relating to the customer telephone handset such as;

a. Handset lift off
b. Outgoing call
c. No. dialled
d. Incoming ring
e. Answer time
f. Call/handset off duration
g. Call time

As this device is located at the customers premises, no exchange call data can be recorded.

2.5. Call Charge Analysis System

The Call Charge Analysis System (CCAS) is not a testing system but a call recording system. It is primarily used to provide information to enable billing to occur.

The system records & analyses the incoming & outgoing calls specifically:

a. Incoming call time
b. Incoming call status (eg. answer or non-answer)
c. Outgoing call time
d. Outgoing call dialling
e. Termination time

This system is associated with the main NODE or switching exchange (eg. Warrnambool - WBOX for Portland & Cape Bridgewater Service area).

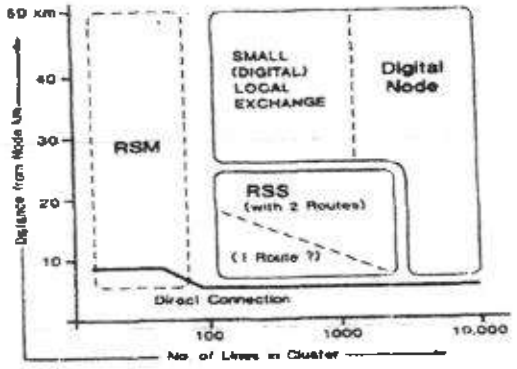
However, to prevent unnecessary data capture, short system seizure are not recorded unless three or more digits are dialled.

This can result in discrepancies between exchanged based (CCAS) data & customer end data (eg. ELMI).

Therefore, "Phantom calls" to the customer services may not be detected or recorded by the CSAS. (Phantom calls are calls generated by the network equipment usually resulting from a fault condition. The call causes an individual customer/subscriber or maybe a group of customers telephone to ring. When answered no calling party exists and maybe dial tone is received or no tone at all)

3. NETWORK TOPOLOGY

3.1. The network is made up of a hierarchy of exchanges. However, the type and selection of the specific connecting equipment depends on the number of customers in a cluster, and the distance of this cluster from the node or terminal exchange.



(Refer Telecom Aust, Engineer Development Program, Technical Publication TPH 1176, FIG.13)

Customers near the node can be directly connected. Small group of greater distances can be connected by "Remote Subscriber Multiplexer" (RSM) (the term RSM was later changed by Telstra to RCM – Remote Customer Multiplexing when the term Subscriber was replaced by Customer. The term RSM has been used in this report as it was the term utilised at the time in question) over a primary digital line system. Large clusters are best served by "remote switching stage" (RSS).

The RSS equipment being used extensively to make digital SWITCHING available in remote areas.

The RSM being used to make digital SERVICES available in remote areas.

The RSM, as the name implies, is a multiplexer connected to a distant termination exchange via a primary* PCM transmission system. The RSM is NOT an exchange but is a "concentrator" of services. The primary function of the RSM is to:-

a. Provide current feed to subscriber line
b. Detection of telephone hook state
c. Sending tones & ringing signal
d. Ring tripping
e. 2/4 wire conversion
f. Analogue to Digital conversion
g. Reception of dial pulses

The RSM DOES NOT

a. Undertake any analysis of the call
b. Carry out network switching
c. Carry out call charging
d. Carry out local call switching
e. Provide service numbers

All of these activities are undertaken in the terminal or network node.

Local calls between subscribers on a RSM result in "trombone trunking" of the call from and to the RSM AFTER switching has occurred.
(trombone trunking is a term used to describe the switching of local call traffic generated by equipment that has no analysis capabilities locally. All calls are immediately trunked to the main or higher exchange for analysis and all local calls are then sent back to the originating system for termination of the call. The path of the call therefore resembles the musical instrument the trombone)

The RSM is a true multiplexer extending a small number of subscriber appearance via a digital 30 channel PCM Link from the terminal switching

exchange to the remote subscriber cluster. (a multiplexer is a means of combining a number of services or circuits typically in multiples of 30, over one operational trunk or circuit. The multiplexer concentrates or condenses the circuits or services into a bearer trunk that enables simplified transmission of the service)

3.2. Primary Digital System

Digital Transmission Systems are arranged into a hierarchy of digital application based on equivalent channel capacity. The base application being the primary systems with the equivalent channel capacity of 30 channels.

The input being "voice frequency" (voice frequency is and analogue waveform typically 200hz – 3,000hz) & output 2.048 kbits/sec.

This application operating over typical standard pair cable or radio links.

4. NETWORK SIGNALLING

4.1. Common Channel Signalling (CCS 7)

Common Channel Signalling based on CCITT signalling system No. 7 (CCS 7) is used for inter-exchange telephone call signalling within the network.

The CCS network is a packet switch data network designed to provide reliable & speedy transfer of call control and other messages for the telecommunication network.

CCS is also used for non-telephony applications & advanced telephony services, such as network management & services that require translation of the called/calling party identity at centralised databases (eg. billing database). Users of the CCS network are connected at locations known as Signalling Points (SP).

The CCS network is composed of links connecting the nodes known as Signal Transfer Points (STP). Each SP is connected to at least two STP. The STP is also a SP.

Therefore digital exchanges are connected to the CCS via a SP and STP depending on it over hierarchy status.

However only digital systems (eg. switching exchanges & digital nodes) are connected & controlled by the CCS network.

4.2. Analogue Signalling

Signalling within the analogue network is/was via Multi-Frequency Code & T&G signalling system.

The analogue system & the signalling system utilised are/were not connected to the CCS network.

Both the signalling systems had the primary function to transfer called number data through the network to enable SWITCHING of the telephone call. (Switching is the functional carried out by the telephone network, based on the calling data or numbers dialled, to direct the call over trunks and circuits to the determined end destination. This switching action can take place through a single or multiple exchanges depending on the number dialled and the network infrastructure).

Where no call switching occurs CCS7 system is NOT provided.

5. DOCUMENTATION REVIEW

A quantity of documentation relating the testing of the service to and from the Cape Bridgewater area was examined. The documents related to the specifics of the test reported to have been undertaken as well as the Call Charge reports associated with services at Cape Bridgewater Holiday Camp.

A quantity of Telstra, Austel, Bell Canada International Reports were examined during the process. However the examination was by no means limited to the documents mentioned. Other Telecom Australia/Telstra documents were also examined as necessary to assist in the process.

5.1. Cape Bridgewater

The system located at Cape Bridgewater is a Remote Subscriber Multiplexer (RSM). This is NOT an exchange and as such DOES NOT:

a. Switch call traffic
b. Analyse call data (eg numbers)
c. Carry out call metering
d. Provide any network intelligence
e. Provide any subscriber monitoring.

As such the "number range" allocated to Cape Bridgewater resides at the Portland exchange. Numbers are therefore allocated at Portland & "extended" to Cape Bridgewater. Multiplexing a number of services over single transmission bearer using PCM technology, is the method of delivery of services to Cape Bridgewater RSM.

Therefore TCARS/PTAR connected to the test number 055 267 211 are within the Cape Bridgewater number range BUT this is physically located as part of the Portland exchange. The RSM has NO number range, this being allocated at the "parent" exchange (ie. Portland). (This is verified in document N00005 (A63152) paragraph 2+6.)

5.2. Common Channel Signalling (CCS7)

Common Channel Signalling No.7 DOES NOT appear or function at Cape Bridgewater RSM. As no switching, analysis, or billing take place CCS7 is not required.

However a similar signalling system operates on the PCM multiplexing transmission system between Portland & Cape Bridgewater BUT is NOT connected to or forms any part of the CCS network.

The purpose of this signalling link to maintain a functional transmission & multiplexing system.

Document K04555 paragraph 4 indicate that CCS 7 was only used to monitor calls to Portland via the Warrnambool node (agin 1993/94).

During the CCS7 network monitoring process, no calls within the Portland area were observed (refer Telstra document K04555 – CCS7 at time 1994, was only utilised on calls from Warrnambool AXE to Portland Axe, NOT during locals within the Portland area) . Indicating that the CCS7 network monitoring undertaken DID NOT take place in Portland, nor Cape Bridgewater systems or equipment.

As the CCS network transists the call through the network no CCS7 link existed from Warrnambool to Portland at this time (eg. 1993/4).

During the early 1990's (eg. 1993), the rollout of AXE & the CCS network was still expanding. NOT all links to within Portland utilised the CCS network for signalling purposes. MFC signalling was utilised in Portland (as CCS7 was not utilised in Portland at this time as mentioned previously, MFC was the signalling system still operational having bee n utilised as part of the ARF system that was the major component of the network at that time).

Therefore collection of CCS7 data & the associated reporting of the network performance when related to services connected to Cape Bridgewater RSM. was inconclusive & flawed, as it only enable parts of the network hierarchy to be monitored at this time. Where network upgrading had not been completed or implemented the old signalling system were still operational and required for network operation. The monitoring techniques utilised for CCS7 were not applicable or relevant to the existing and obsolete systems and technologies.

5.3. Test Calls

The documentation indicated that in the region of 13,000* test calls were placed to the test numbers nominated (eg. Portland number range).

These test calls were undertaken by Bell Canada International (BCI) and by Telstra Network Operations (NEAT testing).

5.3.1. BCI Testing

The BCI tests were primarily from Traffic Route Test located across the network to TCARS/PTARS connected to 055 267 211. As indicated previously, the testing time for such calls is typically 24* seconds (minimum). The actual time being 43.9 seconds (ref doc. N00006).

The analysis of times indicated for ALL tests reported from all TRT's listed, reveals major conflict in call traffic to the test numbers. Test times allocated from specific originating exchanges were in conflict with other simultaneous calls made from other locations. As the same test terminating number was also allocated to multiple originating testing (TRT) units, serious levels of call conflict would naturally occur.

Such significant (this is significant as the level of simultaneous call generation as documented could and would result in call conflict generating a HIGH level of fault reports during the testing regime) overlap of testing time & testing period WOULD result in high levels of call failures due to congestion, & busy number. (simultaneous calls to the same number where only 1 call can be successful MUST and WILL result in a large number of call failures being recorded – the test call is not successful – CALL FAILURE)

No such failures were reported. Hence the only realistic technical conclusions that can be derived are that the indicated tests were:

a. Not undertaken
b. Incorrected recorded and documented –fraudently or accidental it is not possible to tell as replication of the tests is not possible nor that the original test notes are not available for analysis
c. Testing periods flawed and were not undertaken as specified
d. Testing processes flawed and calls to different terminating numbers were undertaken
e. Testing processes incomplete – when call conflict was noted the tests were abandoned and results incorrectly documented

5.3.2. NEAT Testing

As indicated, the NEAT test requires:

a. Installation of NEAT test units to a dedicated test number.

b. Test calls held for minimum of 100 seconds.

The test numbers being located in the Portland exchange (number range allocated for Cape Bridgewater subscribers).

The allocated test number being 055 267 211, being the same number allocated for test calls as part of the Bell Canada International testing regime.

Discrepancies associated with the NEAT testing include:

a. Timing of recorded test are in conflict with the TRT test from numerous exchange – utilising same test numbers over same test period. (as mentioned in section 5.3.1 high levels of call failure would have been recorded with such call conflict – this was NOT recorded therefore major discrepancies in the testing and reporting process has been identified)

b. NEAT testing unit does not utilise the TCAR/PTAR terminating set (as NEAT test is a Ericsson designed system it utilises a dedicated terminating set. This set is not the same unit as the TCARS/PTAR. The TCARS/PTAR is not compatible with the NEAT testing system

The results of the test do NOT record any level of "busy connection" (calls failing due to simultaneous calls to the test answering unit) as would be expected (eg encountering busy number) from the high level of duplicated calls to the test number.

Similarly, the call terminating set utilised is not the same unit specified for the two different test regimes occurring at identical time period. Hence for simultaneous calls to be made to the same terminating number from two different testing systems the terminating set would have to be change for calls from both system to be successful. The time period for all calls from both originating systems makes this impossible to achieve

The results from both testing regimes are therefore:

a. Flawed – as simultaneous calls by two disparate systems to the same number is impossible to achieve
b. Lack creditability – results cannot be replicated nor can the raw data be examined
c. Dishonestly reported - to achieve the results as document significant fabrication of the document and report would be necessary.

and as such fail to meet the stated operational standard & quality contrary to the claims stated in the reports to Austel dated 10 November 1993 (Telstra doc K35002), BCI Report of 10 November 1993, and others.

5.3.3. 008/1800 Testing

Under the Service Verification Testing (SVT) testing of the 008 Service, terminating on service number 055 267 267, a number of calls were made via the new 1800 service terminating on service number 055 267 298.

During the early 1990's when the 008 service was being replaced by 1800, two separate and completely different networks were in operation. Both calls through the 008 & 1800 networks would translate to the customers end service.

The 1800 used the IN Network (Intelligent Network), and is via digital network. Concurrently, the 008, which was superseded by the 1800 was via the analogue (plus digital as necessary) network. Hence dual trunking of calls was occurring (that is calls via the 008 and 1800 service both terminated at the same destination BUT the route take by both calls were via two entirely different paths and equipment-hence no comparisons of call processes were accurate or possible.

Similarly separate billing systems were operating.

Therefore calls via the 008 & 1800 network were completely separate & different. To claim that a 1800 call is equivalent to a 008 call & translating to a different number is completely false & erroneous.

All tests carried out on the 1800 network are rejected as being irrelevant to the issue. Telstra was aware of the changes as the old obsolete 008 network was to be removed under Telstra network replacement plans & the fact that the calls were via old (008) and new (1800) technologies. Hence dual trunking of the calls was occurring, and did so for approximately 18 months to ensure that the amount of 008 calls could be rduced by advertising and documentation change by the customers.

5.4 Call Event Monitoring

Monitoring of services at the subscribers premises is obtained only when specialised equipment is provided such as call detail recording systems or ELMI event recorders.

Calls being made to the service number are recorded. Any activity (eg ringing, handset lift off, dialling etc) is recorded in real time as it occurs. All activity associated with the handset (event) is recorded

All activity at the subscribers premises is recorded, including short derivation incoming calls to the service number – eg. phantom calls (refer section 2.5).

Although acknowledge in the report no formal investigation appears to have been undertaken as no testing of services or data error rate testing of the multiplexing equipment was mentioned or recommended.

As the RSM equipment is a multiplexing of services via a PCM system from Portland, the failure of Telstra to carry out suitable & professional testing (eg. bit error rate tests of multiplexing system & link etc) is a serious concern as this is a basic system check and only this level of testing on such digital equipment will verify if the system is operating correctly. If such test are not undertaken the correct operation of that system and all related equipment cannot be guaranteed.

High or abnormal error rate can & will impact on the operation of the RSM equipment for both incoming & outgoing calls but generating or losing vital operational data. Such data loss can manifest in a numerous number of ways from generating fictitious (phantom) calls or more serious loss of call and call data

As the function of the RSM is to signal the service telephone & convert analogue (voice) to digital code, inferior performance of the equipment (including transmission system) would have detrimental impact on the overall operation & service delivery on both incoming & outgoing calls.

It is my opinion the failure of Telstra to undertake such tests (no evidence exists to confirm any such tests take place), is an indication of their failure to delivery/confirm the "service quality" to Cape Bridgewater.

5.5. Call Charge Analysis (CCAS)

Incoming & outgoing call traffic is recorded at the node (eg. Warrnambool) to allow billing of successful calls to take place.

Extensive examination of the available reports (Call Charge Analysis reports) was undertaken. These reports are produced for all incoming and outgoing calls and forms the basis of the Telstra billing system data for each customer

Areas of interest were the "Service Verification Tests" (SVT) reported to have taken place from the following services:

055 267 267
055 267 60
055 267 230

Twenty calls from each service number listed above were reported to have taken place.

Austel (Austel doc 94/0268 of 11 October 1994, 16 November 1994 and 9 November 1994) had specified the test calls (all 20/service) had to be "held" for a minimum of 120 seconds to ensure adequate testing time elapsed, and hence transmission quality is confirmed or measured.

Examination of the CCAS printout for the day specified (29 Sept 1994):

20 calls from each service number DID NOT take place;
The calls attempted WERE NOT held for the prescribed 120 seconds;
NO incoming test calls were made to the services in question. The CCAS printout for the period DO NOT indicate any calls to or from the service numbers in question. As this data is used for billing purposes ALL such call activity must be recorded

It is my opinion that the reports submitted to Austel on this testing program was flawed, erroneous, fictitious, fraudulent & fabricated, as it is clear that not such testing has taken place as Telstra's own call charge system DOES NOT record any such activities. Therefore the results are flawed or did not occur.

From these conclusions the statutory declarations by Gamble & others must be considered to be questionable and may be considered to be incorrect to say the least.

6. CONCLUSION

The regime of test calls established to verify the quality of the services at Cape Bridgewater must be considered to flawed and erroneous.

The fact that overlap of test calls from numerous locations & types of tests to specific test numbers indicates a serious flaw in the testing process, or simply that the tests were not carried completed successfully as stated.

As the Cape Bridgewater RSM is not a telephone exchange, no replicable tests were carried out to verify the conditions being experienced by the subscribers.

The so called tests reported to have taken place at Cape Bridgewater RSM cannot be verified by examination of the normal exchange based call data, neither incoming or outgoing. In addition, the failure to carry out the number & duration of the prescribed tests (eg. 20 calls per service, each held for 120 seconds), indicate the erroneous & fraudulent nature of the report to Austel.

The failure of Telstra to carry out standard performance tests (eg. bit error rate etc), at the multiplexer (RSM) at Cape Bridgewater is alarming & of concern. CCAS data over recent times (eg. 2004-2006), indicate a continuing & worsening level of "Outgoing Released During Setup" calls (ORDS). These reports on the CCAS data indicate that the calls are not successful in the call set up stage of the connection or is lost in the network

Such reports would indicate that the service was operating in a very unsatisfactory manner. The common factor being the multiplexer system & digital link, Portland exchange or subscriber usage.

However, the continuing report of phantom calls, lost faxes & missed calls ALL point to the network including the RSM at Cape Bridgewater being the source of the problem. As a significantly bit error rate in the data network can present it self to the end user in many different ways. Unfortunately all being a degradation of services

Telstra's failure to carry out detailed technical testing of the system, or to fabricated TRT calls to services not located at the source of the problem (eg, RSM) is negligent.

As the test cannot be reproduced or verified by an independent body, Telstra has failed to meet basic Professional Standards. As such, the results are flawed, erroneous & fraudulent.

Yours faithfully

BRIAN HODGE, B. Tech, MBA
(B.C. Telecommunication)

7.0 Appendix 1

Mr. Brian Hodge Btech. (Electronics), MBA (Uof A).

- Mr. Hodge has been involved in all facets of the telecommunications industry for over 40 years.
- Mr. Hodge commenced with the PMG in Adelaide in 1961 as a technician in training. This was a 5-year specialist industry based training scheme at the time recognized as the leading course of it type in Australia.
- After completion of the training Mr. Hodge, experienced all fields of technical work including system installation and maintenance.
- In the late 1960s Mr. Hodge moved to what was then classified as the sub/para professional ranks as a technical officer and draftsman. Then able to gain experience in medium to large design and installation projects. This included total project control and management.
- From 1970 Mr. Hodge commenced and completed tertiary studies at the University of South Australia (formerly the Institute of Technology) initially in the degree (Bachelor of Technology) specialising in electronic engineering.
- The last three years of this course was completed under a trainee engineer position awarded to Mr. Hodge.
- From the mid 1970 to the mid 1980s Mr. Hodge held various engineering positions in Telecom Australia (now Telstra) covering all disciplines within the organisation.
- With changes in the market place especially in the terminal products field, Telecom Australia introduced to the Australian market new generation products that are now accepted as the minimum requirements for business.
- Mr. Hodge was selected to lead and operate a division to introduce the new range of products to the market place and re-educate the technical, sales and support staff in use and support of the products(s). This was a major change in director not only for Telecom Australia (Telstra) but also the market place and the customers.
- During this time Mr. Hodge commenced and completed, on a part time basis (after hours only) a Master of Business Administration (MBA) at the University of Adelaide. The Masters Degree being awarded in 1986.

- From 1986 Mr. Hodge was appointed in to senior management in Telecom Australia directly and indirectly responsible for more the 500 staff through out South Australia and Northern Territory.
- In December 1990 Mr. Hodge left Telecom Australia and started Beta-Com Pty Ltd as a consultancy and facilities management company. Beta-Com has recently diversed into Audio Visual and Video Conferencing systems.
- Since deregulation of the telecommunications market in Australia Mr. Hodge has been involved in a number of companies covering both carrier service and terminal products. All companies have successfully traded for minimum of 8 years and have been or are in the process of being purchased by larger and more diverse organisations.
- Mr. Hodge commenced Digital Communication Systems in 1999 and selected and marketed a range of products and services to the Adelaide market.
- Digital Communication Systems in 2007 merged with a national company based in Sydney
- Mr. Hodge is now the Adelaide based Business Development Executive for this group.