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Sydney NSW 2000

28 May 2004

3503L001.doc
QH43503

Dear Matthew

SPI PowerNet Service Standards Reporting Audit – Final Report

Please find enclosed one (1) copy of the Final Report for the service standards audit of SPI PowerNet.

On behalf of Sinclair Knight Merz, I wish to express our appreciation for the opportunity to assist you with this critical assignment. We trust that you have found the work done by SKM to be of a high professional standard, and we look forward to the opportunity of working with you on future assignments.

Yours sincerely

Jeff Butler
Snr Consultant Power Delivery

Australian Competition and Consumer Commission (ACCC)

Audit of SPI PowerNet Service Standards Performance Reporting

Australian Competition
and Consumer Commission

Audit of SPI PowerNet Service Standards Performance Reporting

- Final Report
- 28/04/2004

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Contents

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1. Executive Summary

Sinclair Knight Merz (SKM) was engaged by the Australian Competition and Consumer Commission (ACCC) to conduct an audit of the first year performance report of SPI PowerNet under the ACCC Performance Incentive (PI) Scheme.

The audit concentrated on a review of the performance results submitted by SPI PowerNet, in particular:

- the adequacy and accuracy of the recording system used to measure performance
- the accuracy of the calculations of the final performance; and
- the force majeure events and other exclusions to ensure compliance with the revenue caps and ACCC service standards guidelines.

As the auditor, SKM met with SPI PowerNet staff in Melbourne on Wednesday 31 March 2004, to review their data, systems and processes for gathering and processing outage information. The integrity of the system established by SPI PowerNet for retrieving data from the MAXIMO maintenance system for reporting under both the ACCC PI Scheme and the VENCorp Availability Incentive Scheme (AIS) was audited. In addition, specific events were reviewed to examine any particular issues associated with the claim for exclusion.

As a result of audit activities undertaken, Sinclair Knight Merz has formed an opinion that:

- the performance reporting by SPI PowerNet was free from material errors and in accordance with the requirements of the ACCC service standards guidelines, subject to clarification of the definition of some exclusions noted;
- SPI PowerNet has correctly applied the PI Scheme formulas and coefficients to calculate the potential performance bonus / penalty amounts using the S-factor equations contained in the revenue determination;
- the recording system used by SPI PowerNet to capture the relevant details for outages is accurate and reliable;
- the categorisation of assets within the MAXIMO maintenance system is appropriate and consistent with the categorisation under the ACCC PI Scheme for critical and non-critical assets;
- the audit of the interface programs between MAXIMO and the performance reporting files found the transfer of data to be accurate and complete;
- the application of exclusions was generally in accordance with historical calculation of performance and with the definitions historically applied, though there appears to be some ambiguity in some of the definitions;

- the exclusions for the specified events relating to shunt reactors and connection transformers appear to be in accordance with historical performance reporting; and
- the application of the force majeure to the Newport Power Station and Fisherman Bend Terminal Station events was consistent with the agreed definition.

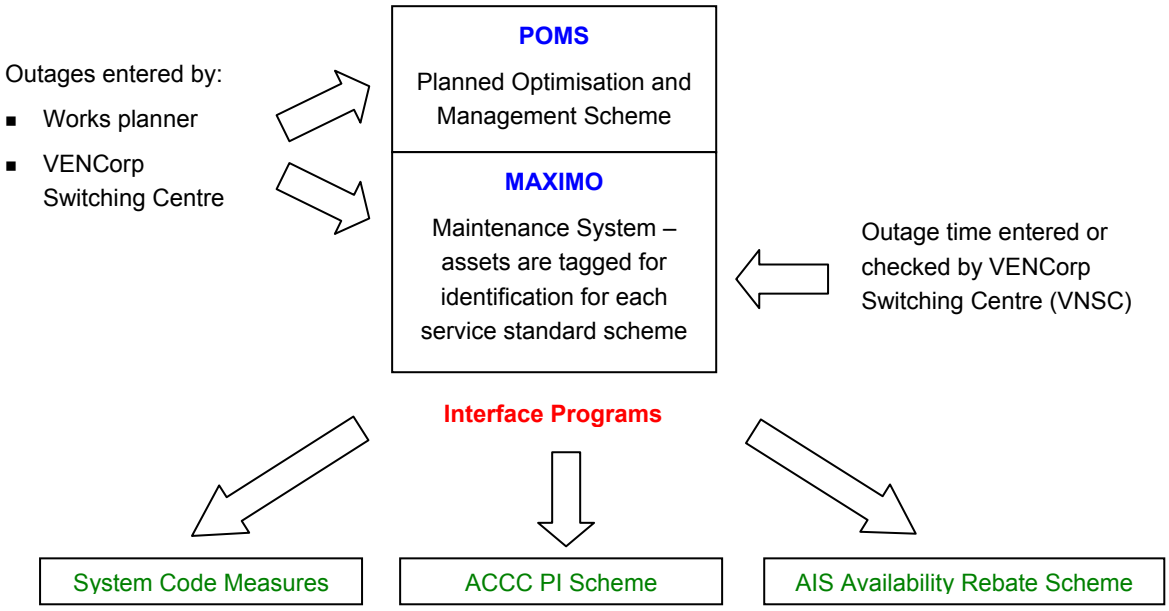
SKM recommends:

- SPI PowerNet's calculation of its S factor and performance incentive be accepted as free from material errors, subject to the Commission's acceptance of the exclusions sought by SPI PowerNet;
- The Commission accept SPI PowerNet's exclusion of the Kerang Terminal Station Shunt Reactors, on the basis that the outage was conducted in accordance with good practice, and the PI Scheme contains a perverse incentive in the case of shunt reactors;
- The Commission accept SPI PowerNet's exclusion of outages associated with connection asset outages at Morwell and Hazelwood Terminal Stations; and
- The Commission accept SPI PowerNet's force majeure exclusion relating to a fire in the battery room of a 3rd party, noting that SPI PowerNet has only sought to exclude the period by which the outage was extended due to force majeure, and has included the remaining portion of this outage as being under its control; and
- The penalty for SPI PowerNet under the ACCC PI Scheme for 2003 is **($75,037).**

2. Recording System

An overview of the SPI PowerNet outage management systems is shown in Figure 2-1.

- **Figure 2-1 Outage Management Systems**



The POMS module became fully operational in November / December 2003, and is a planned / unplanned maintenance support package which is intended to ensure that maintenance is arranged to meet the goals of the service standards schemes.

For each planned or unplanned outage, a Works Order is initiated through POMS, detailing the known details of any fault and the nature of work required. A mandatory field has been added to the Works Order so that the reason for the outage is coded (refer section 3.1). This field offers a drop down selection of coding options from which the planner makes a selection. The coding for Works Orders is reviewed daily by the Works Planning Manager to ensure it is appropriate.

In the MAXIMO maintenance system, each system element has been tagged with identification codes to identify whether it is critical or non-critical to facilitate for reliable data processing. The outage details from POMS are combined with the asset tags to provide a single source of data for reporting to the different performance schemes and statistics as required by the Victorian System Code and Network Agreement with VENCorp.

2.1 Outage Details

For each system outage, there is a System Outage Request form accompanied by a Switching Log and Permits form. The switching times are recorded by the controller and transferred to the relevant Works Order in MAXIMO.

2.2 Categorisation and Exclusions

Dependent upon the outage reason code applied to the Works Order, the event may be excluded from consideration under either the ACCC PI Scheme or the VENCorp AIS scheme. These exclusions are historically based on those that have been previously agreed with VENCorp, and relate to impacts on network element availability that SPI PowerNet is unable to manage.

Maintenance staff through the POMS system enter the categorisation for an outage at the time of signing off the Work Order. The coding of the event is mandatory, and Works Orders cannot be closed without this information being supplied. The Works Planning Manager and other senior staff review the coding to ensure that the reason for each event has been correctly categorised.

2.3 Processing of Outage Data

SPI PowerNet has developed an interface that extracts relevant data from MAXIMO into an Excel spreadsheet for processing performance result information under the ACCC PI Scheme. This interface was developed during 2003/04, and therefore most of the data used for the 2003 performance measure report was entered manually.

MAXIMO is the single source of data for reporting performance to both service standards schemes. The Excel file for the ACCC PI Scheme results imports data from MAXIMO into a spreadsheet, and then processes the data using Visual Basic to filter only those events that have not been excluded for one reason or another. Within the Excel file, there is a spreadsheet where peak and off-peak times are determined, dependent upon the time of year. The information is summarised on a separate spreadsheet where the times in peak / off-peak periods are calculated for each event, together with the contribution of each event towards the results of measures 1 and 3.

2.4 Calculation of Performance Measure Results

The performance measure results are calculated using the S-factor equations defined in the ACCC revenue determination. The final stage is a collation of the results into a graph illustrating the annual performance against the pre-agreed target for each measure and sub-measure.

2.5 System Audit Findings

During 2003, there were 1387 events[1] that were subject to the ACCC PI Scheme. SKM conducted sample testing of thirty (30) random System Outage Requests from control room paper records to ensure that these were correctly recorded in MAXIMO and correctly transferred to the Excel file for processing. In general, the events, reasons, and switching times events were found to have been correctly recorded, accurately transferred to the Excel file and correctly processed for peak / off-peak hours.

SKM reviewed a sample of thirty (30) entries in the event list, and was satisfied that for each event, a code had been entered for the outage, and the reason was in accordance with historical reporting practices.

A minor error was identified where a Works Order, which had been originally intended to cover work over a three-day period, was only used for the first two days and then cancelled. This had the unwanted effect of masking the events of the first two days as the status of the Works Order in MAXIMO was "Cancelled" and the times for the first two days' events were not transferred to the Excel file for processing as a consequence. SPI PowerNet has recognised this potential issue in MAXIMO, and has instructed staff to record cancelled events in such a manner as to avoid errors. SKM was able to identify only one instance where this is likely to have occurred during 2003, and had little or no effect on the calculated performance result. SKM does not believe this issue represents a systemic reporting failure, and it is unlikely to result in material reporting errors.

The functionality of the Excel file and the associated Visual Basic code has been subjected to exhaustive testing by both internal SPI PowerNet staff and contractors. SKM reviewed the operation of some of the Visual Basic modules, and was satisfied that they appeared to function correctly. The arithmetic functions on the Excel spreadsheets was checked and found to be have been correctly applied.

SKM noted that the integrity of the performance statistics published both internally and externally is enhanced by the MAXIMO / POMS system as a single source of performance data, and the total integration of the ACCC PI Scheme into MAXIMO should ensure that the events are properly and completely accounted for. The allocation of exclusion coding appears to have been done in accordance with SPI PowerNet's interpretation of the prescribed list of exclusions, and the crosschecking of coding should ensure that all outages are properly categorised.

It was noted that where exclusion events contain components both within and beyond the control of SPI PowerNet, the event has been split into a number of related events to allow for any part of the

[1] This figure includes some double counting, as the SPI PowerNet tracking systems create multiple events where an outage crosses a calendar month boundary. SKM estimates there are 1,339 individual events.

event that may be within SPI PowerNet's ability to manage to be included in the performance calculations. In this regard, SPI PowerNet are applying exclusions conservatively, and in a manner SKM considers reasonable and in accordance with the PI Scheme.

SKM is satisfied that the recording and data processing systems that have been put in place by SPI PowerNet appear to accurately log and calculate performance.

3. Exclusions

Both the ACCC and VENCorp reliability incentive schemes contain provision for certain defined events to be excluded from calculated outage figures, on the basis that they are beyond the control of TNSPs.

Appendix G of the ACCC Victorian Transmission Network revenue caps decision (2002) contains a number of specified exclusions. In addition, Section 3 of the VENCorp AIS rebate scheme outlines provisions for simultaneous outages of lines and transformers, and in particular interdependencies. In addition, the network agreement[2] with VENCorp notes thirteen (13) circumstances under which an event could be categorised as an "Excluded Outage".

Historical data used in developing the targets under the ACCC PI Scheme was also based on a number of excluded events, and though not well defined or documented, are considered to be closely aligned to the VENCorp exclusions.

3.1 Exclusions defined under the ACCC PI and VENCorp Rebate Schemes

In the case of SPI PowerNet, the defined exclusions are [3]:

Table 3-1 Comparison of exclusion definitions

ACCC PI Scheme	VENCorp AIS rebate scheme[4]
Any outage caused by a fault, outage request or other event on a 3rd party system connected to the TNSP's Network	An outage requested by a person whose electrical system is connected to the high voltage grid or is directly or indirectly connected to a system for the supply of electricity which in turn is connected to the high voltage grid;
An outage which occurs within a period a connected person (high voltage customer) does not require the Supply of electricity directly or indirectly from the High Voltage Grid, where that Outage does not affect the Supply of electricity to any other person.	An outage which is co-ordinated with the shutdown of a connected person's (high voltage customer) equipment such that the customer does not require system normal network reliability or transfer capability through the high voltage grid and the outage does not affect the supply of any other person who is connected to the high voltage grid;

[2] Amendment Agreement to the Network Agreement with VENCorp, 23 December 2002

[3] These exclusions are those that have applied to SPI PowerNet over recent years, and underpin the historical data used in establishing targets under the ACCC PI Scheme. This list is based on an extract from the Amendment Agreement with VENCorp relating to the Network Availability Incentive Scheme (AIS).

[4] This list is based on an extract from the Amendment Agreement with VENCorp relating to the Network Availability Incentive Scheme (AIS).

ACCC PI Scheme	VENCorp AIS rebate scheme[4]
An outage which is requested by VENCorp or a 3rd party to enable VENCorp or a 3rd party to augment the High Voltage Grid, or conduct tests on the High Voltage Grid, either itself or though a contractor	An outage that is required to enable any person, including SPI PowerNet to perform augmentation works to the shared network, or to conduct tests on the shared network pursuant to an agreement with VENCorp. The parties may by agreement in writing vary this sub-clause for any augmentation works to the shared network;
Any outage requested by a 3rd party for construction or demolition activities on land over which the TNSP has an easement	An outage requested by a person other than SPI PowerNet or VENCorp for construction or demolition activities on an easement provided it is not during a Peak Period without prior permission of VENCorp;
	Failure of shunt capacitor bank reactor;
	Failure of one circuit of a double circuit tower immediately following the successful restoration into service of the other circuit;
An outage requested by NEMMCO exept where the reason for that request is an act or omission of SPI PowerNet	An outage requested by NEMMCO except if SPI PowerNet causes the outage through an act or omission;
A full or partial failure of Brusnwick Terminal Station to Richmond Terminal Station 220 kV Cable system that is caused by damage to a part of the cable that is not on SPI PowerNet site and is caused by someone other than SPI PowerNet	Failure of Brunswick Terminal Station to Richmond Terminal Station cable from a part of the cable that is not on SPI PowerNet property and it is caused by someone other than SPI PowerNet or a contractor of SPI PowerNet;
In relation to a loss of a double circuit tower, exclude the outage of one circuit following the restoration into service of the other circuit	An outage of a transmission element where the outage is to isolate another component of the high voltage grid, except where that other component is a busbar or transmission element;
	An outage that is restored by automatic re-close equipment;
	An outage which is energised by single ended auto re-close equipment, and the other end is manually switched within ten (10) minutes of its opening;
	A line outage which occurs within sixty (60) minutes of a previous outage on that circuit and where the auto re-close is in a lock-out state following its operation during the preceding outage; and
Force majeure events (refer Appendix B)	Force majeure events (refer Appendix B)

3.2 Categorisation of 2003 events

Each event is categorised on the Work Order to summarise the reason for the outage. These categories are shown in Table 3-3 together with an exclusion designation. Those categories marked for exclusion are considered as either Third Party events (and therefore outside of SPI PowerNet's control) or force majeure events. Categories that are marked as "excluded" with an "x" are ignored for the purpose of calculating the performance measure data results.

Table 3-2 summarises the overall results by included and excluded events. This shows that approximately 60% of total outages, and 70% of peak period outages, are effectively not covered by the PI scheme. Approximately 80-90% of all exclusions relate to third party requested outages.

The reasons for outages shown in Table 3-3 are consistent with the categories that have been previously used in reporting performance results under the VENCorp rebate scheme, and in the development of the performance targets in the ACCC PI Scheme.

Table 3-2 Summary of total hours for included and excluded events

Categorisation	Total hours	Peak hours	Intermediate hours	Off-peak hours
All Included events	17,658 (39%)	1,033 (28%)	2,253 (42%)	14,373 (40%)
All Excluded events	27,150 (61%)	2,683 (72%)	3,082 (58%)	21,385 (60%)

It appears, however, there may be some discrepancy between historical reporting practices, and the definition of the excluded outages under the VENCorp agreement and Appendix G of the ACCC Revenue Cap decision as they relate to 3rd party outages.

Discussions with SPI PowerNet highlighted two instances where this may be the case. The first is the classification of a contractor (equipment supplier) to SPI PowerNet as a third party. The second example given by SPI PowerNet was the classification of outages requested by telecommunications companies in order to install communications equipment on transmission towers. While these outages were requested by "third parties" and are in line with the (largely undocumented) historical reporting procedures, they do not appear to fall within the more limited definitions of the current VENCorp / ACCC PI schemes.

This apparent mismatch creates a potential for misalignment between reported and historical (baseline) data. It appears SPI PowerNet has categorised some events in line with historical reporting protocols rather than strictly in adherence with the PI Scheme definitions.

Table 3-3 Breakdown of results by Outage Reasons

Outage Code	Description	Excluded	No of events	Total hours
SPIMAINT	Outage due to SPI PowerNet operational maintenance	-	713	10,959
SPICAPX	Outage due to SPI PowerNet capital works	-	333	5,472
VEN_AUG	Augmentation works funded by VENCorp and carried out by SPI PowerNet or its agents	x	41	372
DB_AUG	Augmentation works funded by distribution company and carried out by SPI PowerNet or its agents	x	7	64
GEN_AUG	Augmentation works funded by generation company and carried out by SPI PowerNet or its agents	x	-	-
FAULT	Fault on SPI PowerNet network - not caused by distribution company	-	80	1,164
FORCED	Forced outage on SPI PowerNet network	-	32	58
INTERCON	Interconnector constrained by SPI PowerNet or its agents	x	-	-
3RDPARTY	Outage due to actions of third party	x	44	24,211
TPPROX	Outage due to work by third party in proximity	x	2	18
DBPROX	Outage due to work by, or requested by, distribution company in proximity	x	10	79
LANDOWN	Outage due to private landowners to work in proximity to lines over their land	x	-	-
VICROADS	Outage due to actions of / requested by Vic Roads	x	-	-
APDALCOA	Work by Alcoa or work by SPI PowerNet during outage initiated by Alcoa	x	48	709
HVCUST	Work by SPI PowerNet during HV customer plant shutdown	x	4	28
ELECTRAN *	Work during outage initiated by ElectraNet SA	x	2	11
GENCO	Outage requested by generator to carry out own works	x	12	178
STHHYDRO	Work during outage initiated by Southern Hydro on their assets	x	3	223
SNOWY	Outage requested by Snowy Mountains Control Room	x	-	-
TRANSGRD	Outage requested by TransGrid for work on their assets	x	18	150
RECOVER	Outage where AIS rebate is recoverable from third party	-	1	6
BUSHFIRE	Outage requested during bushfire for safety of fire fighters from flashover as fire crosses transmission line	x	8	644
SW_NEM	Switching of network requested / directed by NEMMCO	x	9	114
SW_VEN	Switching for VENCorp load shedding – power restrictions	x	7	52
CONSCON	Element stranded by system design by outage of another element due to capital works by SPI PowerNet	-	2	20
CONSMAIN	Element stranded by system design by outage of another element due to maintenance works by SPI PowerNet	-	8	107
FORCMAJ	Force majeure event	x	2	171
EXCLUDE	Excluded from AIS and ACCC PI Scheme	-	-	-
Total			**1,386**	**44,809**

* Note there were two (2) applications of the ELECTRAN code during 2003 – on 23 October, the Heywood interconnector had an outage which SPI PowerNet excluded as being the result of actions by ElectraNet SA. The outage was recorded as 5.30 hours, commencing at 11:25am for both the M2 transformer at Heywood Terminal Station and the interconnector. As SPI PowerNet recorded the outages for the transformer and interconnector as separate events, it is counted as 2 events totalling 2 * 5.30 hours = 10.60 hours. An audit of ElectraNet SA transmission line outages showed that on 23 October a total of 7.62 hours were included in the calculation for transmission line circuit outages. The transformer at Heywood Terminal Station is not recorded by ElectraNet SA as it is an asset of SPI PowerNet. There was a minor discrepancy between the restoration times recorded by the two TNSPs, allowing for the time difference between Victoria and South Australia.

3.3 Event Based Exclusions Sought by SPI PowerNet

In the submission provided by SPI PowerNet, four (4) events were specifically identified as events that were considered outside of their control, and therefore should be excluded from their performance measure calculations.

In each instance, SPI PowerNet provided additional documentation to support their assertions.

3.3.1 Dederang Terminal Station (DDTS) Transformer

On 3 December 2002, Alstom staff noted oil leaks on a 22kV tertiary bushing on a new 330/220kV transformer that was being installed at Dederang substation as part of capital works associated with the SNOVIC interconnector. The bushing was replaced during the installation phase, and the transformer was put into service and under light load on 21 December 2003.

Subsequently on 6 January 2003, Alstom staff noted major oil leaks from the two original 22kV tertiary bushings that were not replaced during the installation phase. Due to the significant risk of fire and to avoid voiding the manufacturer warranty, the transformer was switched out of the network. There was no disruption to any customers due to the light loads during the holiday period.

Following internal investigations by Alstom, the fault was identified as a warranty repair. Bushings were returned to the supplier and tested for leaks. A failure was found in the manufacture of a number of the bushings that was not apparent during initial testing, but was likely to manifest under pressure and normal temperature cycling.

Alstom replaced the leaking bushings and returned the transformer to service on 10 January 2003. The total duration of the outage was 101.6 hours, and potentially affected the results for the following performance measures:

- Measure 1 Circuit Availability (total)
- Measure 1a Circuit Availability (critical)(peak)
- Measure 3b Average Outage Duration (transformers)

3.3.1.1 Audit Findings

Whilst SKM recognises that the all of the actions by all of the parties involved in this incident were in accordance with good engineering practice, there does not appear to be any specific exclusion under either the VENCorp AIS scheme (refer Appendix C) or the ACCC PI Scheme which would provide for this exclusion.

SPI PowerNet advised that this event should be considered as a once-off general exclusion as the transformer was ordered under commercial arrangements which predated the development and introduction of the ACCC PI Scheme, and SPI PowerNet was not in the best position to manage this event.

In discussions regarding this event, SPI PowerNet acknowledged that for future events of this type it is in the best position to control such risks, and that it intended that future contracts will include provisions to mitigate against the risks either through additional testing or damages clauses, or a choice for SPI PowerNet to accept the additional risk and possible penalties. It was acknowledged that, given the intent of the ACCC PI Scheme, future instances of this type would be best managed by the TNSP, and SPI PowerNet stated that there would be no claim for exclusion for similar events where the contract between SPI PowerNet and their supplier was entered into after the service standards incentive scheme came into effect (or was at least known to SPI PowerNet).

3.3.1.2 Recommendation

Given the requirements and list of exclusions defined for the ACCC PI Scheme, the DDTS Transformer outage does not qualify as an excluded event, and therefore SKM recommends that this event is not considered as an exclusion.

3.3.2 Kerang Terminal Station (KGTS) Shunt Reactors

Unlike other reactive plant such as capacitor banks and Static Var Compensators (SVCs), shunt reactors are used to balance the network when the demand for electricity is low (ie. off peak). Whilst the switching off of these shunt reactors has a detrimental effect on the performance result for *Measure 1b - Circuit Availability (non-critical)(peak),* it is considered good engineering practice and beneficial to the operation of the network.

Unlike conventional circuits, where their operation provides additional capacity and is desirable during peak periods, shunt reactors act to limit circuit capacity and are only required for network balancing at times of low load.

SPI PowerNet has received written instructions from VENCorp to de-energise these reactors during peak periods, and the AIS scheme provides for no rebate during peak periods, and high rebates during off-peak periods.

3.3.2.1 Audit Findings

SKM acknowledges SPI PowerNet's contention that the intention of the PI Scheme was not to encourage poor operating practices to improve performance results, nor was it to establish performance drivers that provided contrary signals to the previously established AIS rebate scheme. SPI PowerNet has been given written instructions by VENCorp to remove these shunt reactors from service during peak periods rather than off peak periods.

The work that is currently being undertaken at Kerang is capital works. The historical data used in establishing the targets would not have included these types of outages, as the replacement program for these reactors is based on a long cycle (approximately 45 years).

It appears the PI Scheme does not adequately recognise or adequately allow for the fundamentally different nature of shunt reactors from other transmission equipment, and taken literally would provide an incentive for SPI PowerNet to operate its network contrary to good engineering practice.

3.3.2.2 Recommendation

Based on the current definitions contained in the PI Scheme, it appears this event is not eligible for an exclusion.

However, given the fact that in this case SPI PowerNet has operated in accordance with good engineering and operating practice, in a manner that enhances the reliability of the network, and in accordance with the AIS scheme, SKM recommends that this event be allowed as an exclusion. Further, SKM recommends the PI Scheme be reviewed or clarified to allow for similar operation of shunt reactors in the future.

3.3.3 Morwell Terminal Station (MWTS) Connection Transformers

This outage was due to planned maintenance work on the connection assets at Morwell Terminal Station. Access to these connection transformers and the associated transmission line is very difficult to obtain, and is subject to agreement with the generator (Morwell Power Station).

3.3.3.1 Audit Findings

SKM reviewed the network system diagram and agrees that the design of the network does not allow for these transformers to be switched out without affecting the shared network feeders as well.

In its Victorian Transmission Network revenue caps decision (2002), the ACCC states "… *there was widespread agreement that the performance of connection assets was better addressed by connection agreements… Hence SKM excluded connection assets when it collected data from TNSPs. The draft decision for SPI PowerNet did not include connection assets in its service*

standard scheme. ... the Commission also considers ... it is not practicable to include connection assets in the availability measure."

Further, the VENCorp network agreement [5] provides for *"... an outage of a transmission element where that outage is the result of the transmission element being switched so as to isolate another component of the high voltage grid, except where that other component is a busbar or a transmission element"* to be considered as an "Excluded Outage" [6].

The basic principle applied by the network agreement stipulates that a rebate be paid for the required outage, and not based on any consequence due to interdependency.

In addition, SKM noted that these events were excluded from the historical data used in the establishment of the targets under the ACCC PI Scheme.

3.3.3.2 Recommendation

While connection assets are excluded from the PI Scheme, there is some ambiguity regarding transmission circuits outages resulting from direct connection to connection assets taken out of service.

SKM recommends this exclusion be allowed.

3.3.4 Hazelwood Terminal Station (HWTS) Transformers

Similarly for the connection transformers at Morwell (refer section 3.3.3), the outage in this instance was for routine cyclic maintenance on the 500kV air blast circuit breakers, which resulted in the unavailability of the shared network transformers. There is no advantage to either the network or customers by energising the transformers with the circuit breakers out of service due to the configuration of the network.

3.3.4.1 Audit Findings

Applying the principle of interdependency outlined in the VENCorp AIS scheme, these outages were excluded from the determination of the rebate under the AIS scheme.

3.3.4.2 Recommendation

Exclusion of this event from the performance results under the ACCC PI Scheme is consistent with both past recording practices, and ensures that there is no double counting of outages or inconsistent drivers between the two schemes that apply to SPI PowerNet.

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[5] Amendment Agreement to the Network Agreement with VENCorp, 23 December 2002

[6] pp 11, section 3.2, clause (i)

4. Force Majeure

In the Service Standards Guidelines published by the Commission[7], there are four (4) considerations listed for determining what force majeure events should be "excluded force majeure events". These are:

- Was the event unforeseeable and its impact extraordinary, uncontrollable and not manageable?;
- Does the event occur frequently – if so, how did the impact of the particular event differ?;
- Could the TNSP, in practice, have prevented the impact (not necessarily the event itself)?; and
- Could the TNSP have effectively reduced the impact of the event by adopting better practices?

The definition of force majeure applied to SPI PowerNet is consistent with that used in gathering the historical data and developing the performance targets within the ACCC PI Scheme.

4.1 Definition

The definition used by SPI PowerNet in the determination of performance under the ACCC PI Scheme reflects the definition provided in the AIS rebate scheme [8], and which was used historically in processing performance data (refer Appendix B for details).

The application of force majeure is more precise than for most TNSPs, owing to the nature of the AIS scheme that is based on individual system elements.

4.2 Event

For the year 2003, there was one (1) event defined by SPI PowerNet to be the result of force majeure and excluded from PI Scheme calculations.

During normal switching on 4 September 2003, a fault occurred on a 220kV VT at Newport Power Station. A Works Order was raised for a planned outage between 4 September 2003 and 23 September 2003. On 13 September 2003, work was interrupted by a fire in the 250VDC battery room owned by a third party (AES Newport (Ecogen)) whilst they were switching for their annual overhaul. This fire forced SPI PowerNet to vacate the power station for seven (7) days. Work recommenced on the VT on 20 September, and was completed on 23 September 2003.

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[7] Schedule 2, Statement of principles for the regulation of transmission revenues – Service standards guidelines, ACCC, 12 November 2003

[8] pp 32, Appendix 4

An outage of approximately 3¼ hours also occurred at Fisherman Bend Terminal Station as a direct result of the fire at Newport Power Station.

4.3 Audit Findings

The primary outage at the Newport Power Station was broken into three (3) Works Orders:

WO10090955	04/09 18:30 – 13/09 12:35	SPI PowerNet work to replace 220kV Blue Phase VT
WO10090956	13/09 12:35 – 20/09 12:00	SPI PowerNet work suspended by fire in 3rd party battery room
WO10090958	20/09 12:00 – 23/09 15:26	Completion of work on 220kV Blue Phase VT

The outage at Fisherman Bend Terminal Station was recorded in the following Works Order:

WO10090953	13/09 12:35 – 13/09 15:43

The definitions of exclusions under Force Majeure provide for exclusion due to fire, which is not due to actions or omissions by SPI PowerNet [9].

SKM noted that VENCorp accepted the WO10090956 outage at Newport Power Station between 13 and 20 September and the WO10090953 outage at Fisherman Bend Terminal Station were both covered by provisions of the Force Majeure definition, and granted exemption from the rebates that may have otherwise applied under the AIS scheme. This was reflected in the performance data results calculated for the ACCC PI Scheme.

SKM reviewed the outages list for September 2003, and noted that the event was listed in three parts, with the period between 13 and 20 September categorised as a forced outage due to a third party. The System Incident Report for the event at Fisherman Bend Terminal Station was viewed, and the outage found in the September 2003 listed as a forced outage due to a fire at Newport Power Station.

4.4 Recommendation

SKM is of the view that the events covered by Works Orders WO10090956 and WO10090953 satisfy the provisions under the Force Majeure definition (clause (a)(i)) for exclusion for the calculation of performance under the ACCC PI Scheme, and that SPI PowerNet's requested exclusion for this event be allowed.

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[9] Appendix B

5. Calculation of Bonus / Penalty

The results provided by SPI PowerNet were entered into the PI Scheme model provided to the ACCC. The bonus calculated varied marginally from the value calculated using the S-factors outlined by the Commission in the revenue determination[10] of 11 December 2002 due to some rounding off of coefficients.

The bonus incentive calculated by SPI PowerNet was based on approximated annual revenue, due to the financial year for SPI PowerNet being April – March. The differences between the two calculations are shown in Table 5-1.

Table 5-1 Calculated Bonus

No	Performance Measure	Calculated bonus / (penalty)		% variation to SKM values
		ACCC S-factors	SKM	
1	Circuit Availability (total)	$110,594	$111,204	(0.55%)
1a	Circuit Availability (critical)(peak)	($47,035)	($45,973)	2.31%
1b	Circuit Availability (non-critical)(peak)	($2,509)	($1,907)	31.57% *
1c	Circuit Availability (critical)(intermediate)	($68,043)	($67,808)	0.35%
1d	Circuit Availability (non-critical)(intermediate)	($68,043)	($67,808)	0.35%
3a	Average Outage Duration (lines)	$0	$0	0.00%
3b	Average Outage Duration (transformers)	$0	$0	0.00%
	TOTAL	**($75,037)**	**($72,291)**	**3.80%**

These calculations have been done for comparative purposes only, as the final calculation of the bonus or penalty is based on the S-factor equations defined in the ACCC determination[11], and are based on the acceptance of the recommended exclusions outlined in Section 3.

The profiles for each of the applicable measures are shown in Appendix A to illustrate the performance in graphical terms.

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[10] Victorian Transmission Network Revenue Caps 2003-08, ACCC, 11 December 2002

∗ This apparently significant "error" is due to rounding off of coefficients in the calculation of the S-factor in the SPI PowerNet determination. The coefficient shown in the determination is 0.07801 whilst the SKM model (which does not round off) calculates the equivalent coefficient as approximately 0.078007813. Whilst there appears to be a minor difference between these two values, the net effect of rounding as shown in the ACCC determination is to produce the % variation shown. If the S-factor calculation had used 0.078007813 instead of the rounded off figure of 0.07801, the calculated penalty would have been ($1,914).

[11] Appendix E

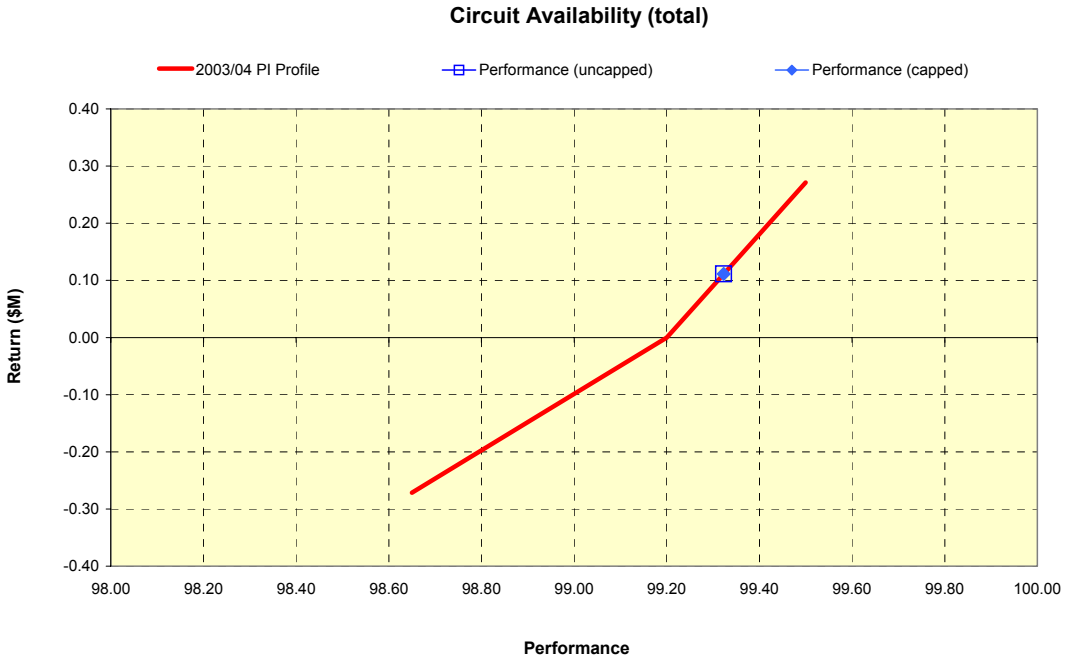
Based on these results, SKM considers SPI PowerNet's calculation of its S factor and performance incentive to be free of material errors, subject to ACCC agreeing to the exclusions sought by SPI PowerNet and recommended by SKM. The penalty for SPI PowerNet under the ACCC PI Scheme for 2003 is **($75,037)**.

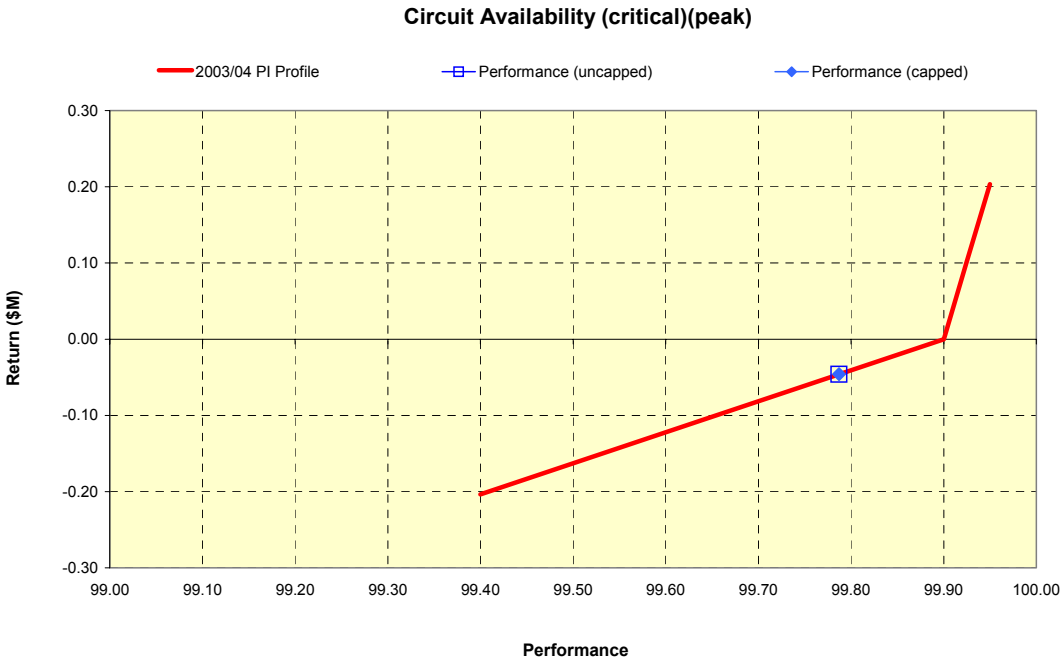
Appendix A Performance Measure Profiles

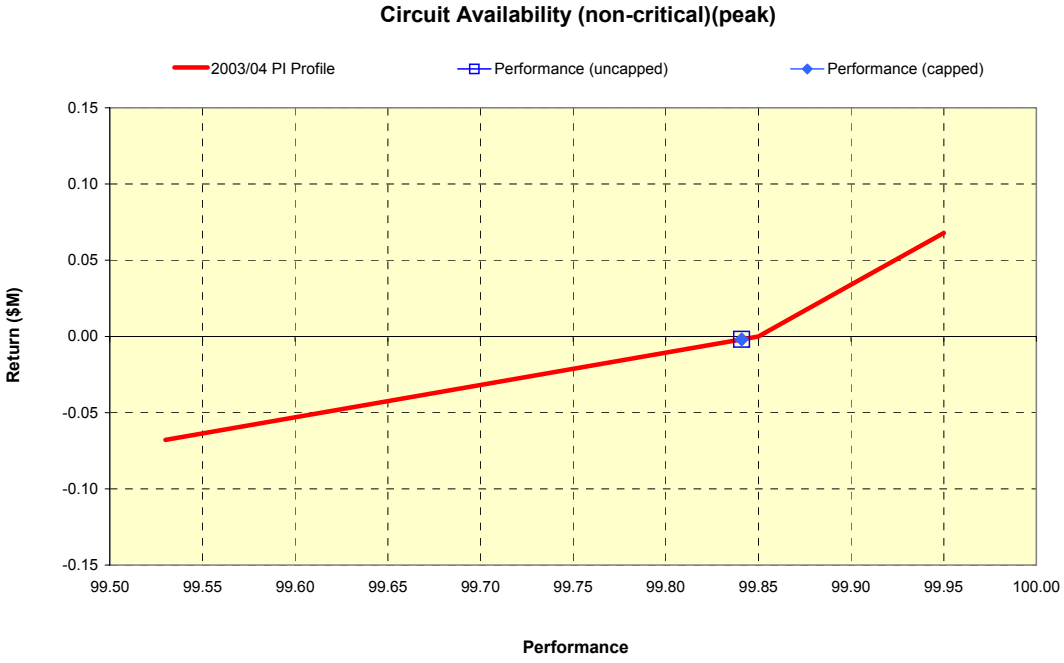
The Performance Measure profiles graphically illustrate the 2003 performance against the targets for Circuit Availability and Average Outage Duration, based on the acceptance of the recommended exclusions.

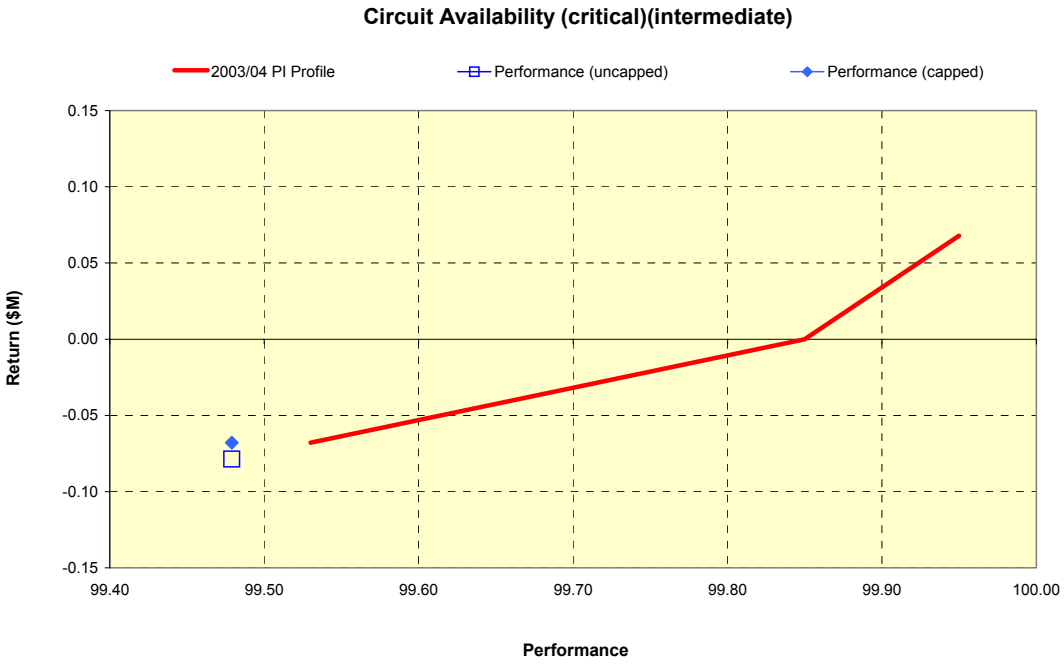
The profiles shown are:

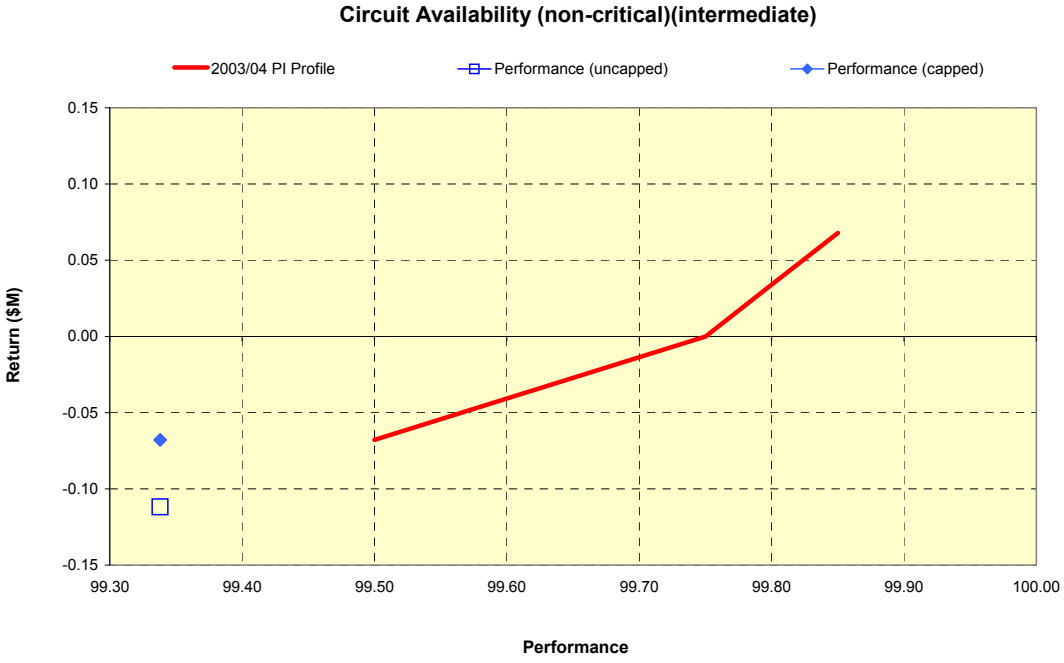
- Measure 1 Circuit Availability (total)
- Measure 1a Circuit Availability (critical)(peak)
- Measure 1b Circuit Availability (non-critical)(peak)
- Measure 1c Circuit Availability (critical)(intermediate)
- Measure 1d Circuit Availability (non-critical)(intermediate)
- Measure 3a Average Outage Duration (lines)
- Measure 3b Average Outage Duration (transformers)

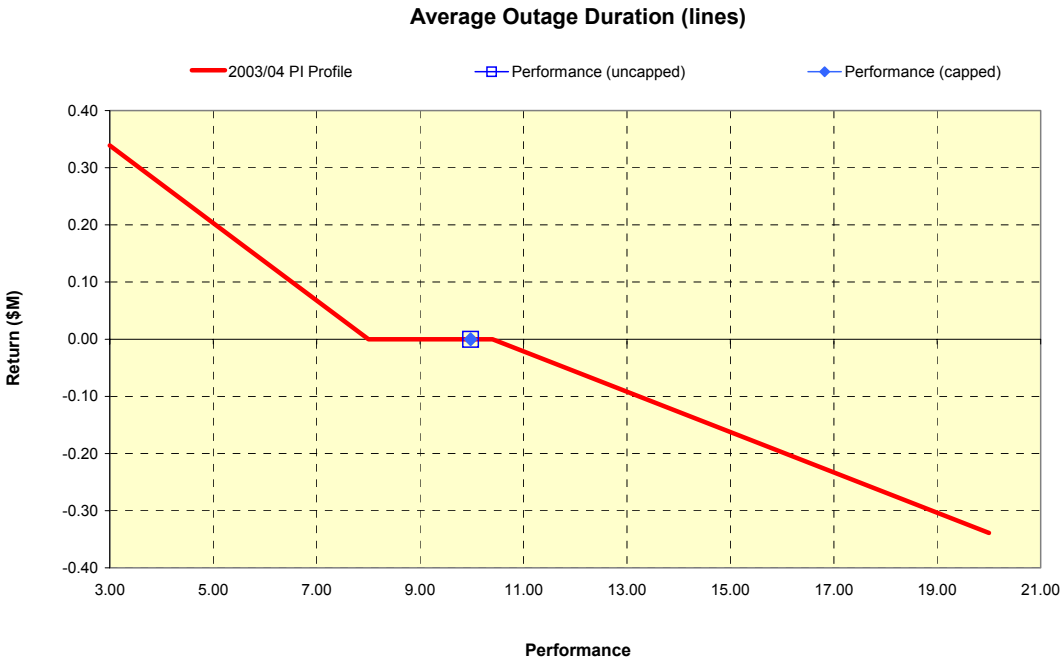


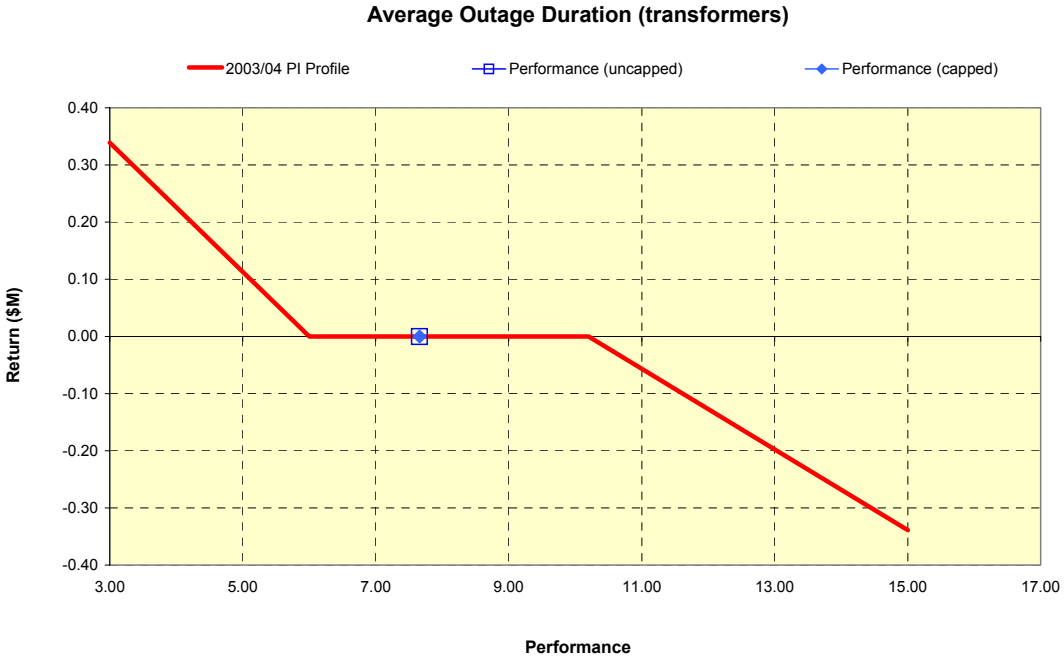

Circuit Availability (critical)(peak)
2003/04 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
99.00
99.10
99.20
99.30
99.40
99.50
99.60
99.70
99.80
99.90
100.00
Performance


Circuit Availability (non-critical)(peak)
2003/04 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
99.50
99.55
99.60
99.65
99.70
99.75
99.80
99.85
99.90
99.95
100.00
Performance


Circuit Availability (critical)(intermediate)
2003/04 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
99.40
99.50
99.60
99.70
99.80
99.90
100.00
Performance


Circuit Availability (non-critical)(intermediate)
2003/04 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.15
0.10
0.05
0.00
-0.05
-0.10
-0.15
99.30
99.40
99.50
99.60
99.70
99.80
99.90
100.00
Performance


Average Outage Duration (lines)
2003/04 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.40
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
-0.40
3.00
5.00
7.00
9.00
11.00
13.00
15.00
17.00
19.00
21.00
Performance


Average Outage Duration (transformers)
2003/04 PI Profile
Performance (uncapped)
Performance (capped)
Return ($M)
0.40
0.30
0.20
0.10
0.00
-0.10
-0.20
-0.30
-0.40
3.00
5.00
7.00
9.00
11.00
13.00
15.00
17.00
Performance

Appendix B Definition of Force Majeure

This definition is:

a) A force majeure event in this agreement is determined to be an occurrence beyond the control of SPI PowerNet, which is not:

- an intentional act;
- an act of neglect; or
- an omission by SPI PowerNet;

and that results in an outage and possibly an extended or lengthy restoration of a network element due to one or more of the following:

i) acts of God, earthquakes, floods, droughts, storms, tempests, mud slides, washaways, explosions, fires and any natural disaster;

ii) acts of war, acts of public enemies, riots, civil commotions, malicious damage, sabotage, blockade and revolution;

iii) acts or omissions (whether legislative, executive or administrative) of any Authority;

iv) inability to obtain or delay in obtaining any necessary Licence (other than due to the acts or omissions of SPI PowerNet); or

v) acts or omissions (other than a failure to pay money) of a person other than SPI PowerNet where:

- that person either uses the high voltage grid or uses a system for the supply of electricity which in turn is connected to the high voltage grid; or
- that person's electrical system is connected to the high voltage grid or is directly or indirectly connected to a system for the supply of electricity which in turn is connected to the high voltage grid, and those acts or omissions affect the ability of SPI PowerNet to perform its obligations under this agreement by virtue of that direct or indirect connection to, or use of the high voltage grid; or

b) a labour dispute that results in SPI PowerNet being unable to perform on time and as required, any obligation (not being an obligation to pay money) under this agreement where SPI PowerNet, in its involvement (if any) in the labour dispute, has acted reasonably in accordance with good industrial relations practice,

but **not** if the relevant circumstance is:

a) the collapse of a single intermediate tower or the collapse of two or three (but no more) consecutive intermediate towers;

b) the loss of, or damage to, a single switchbay in a terminal station;

c) the loss of, or damage to, up to ten (but no more) control cables;

d) the loss of, or damage to:

   i) a 3 phase transformer contained within a single tank;

   ii) a single phase of a 3 phase transformer consisting of three single phase tanks; or

   iii) a capacitor bank, where the capacitor bank is individually switched to the bus, where all such loss or damage is repairable on site in accordance with Good Electricity Industry Practice;

e) the loss of, or damage to, any reactors, static var compensators or synchronous condensors where that loss or damage is repairable on site in accordance with Good Electricity Industry Practice; or

f) an outage requested by NEMMCO where the reason for that request is a breach of the NEMMCO Operational Guidelines that is caused by a full or partial failure of any equipment that is used by SPI PowerNet.

Appendix C VENCorp Network Availability Scheme (AIS)

The VENCorp Network Availability Incentive Scheme (AIS) is incorporated into the agreement [12] into which SPI PowerNet has entered with VENCorp. This scheme defines the availability rebate for outages of individual transmission network elements on the High Voltage (HV) network.

The objective of this scheme is to encourage asset management practices that deliver high network reliability and to seek outages at times when the expected cost of an outage to the network users is minimal. The VENCorp AIS pre-dates the ACCC Service Standards Scheme, with significant overlaps in application and intent.

Each system element is allocated a rebate dependent upon how critical the asset is to the operation of the network, and the time of day. The rebate costs are broken up into three (3) distinct periods that reflect a seasonalised value that VENCorp places on having all network elements in service. For each outage, the rebate that will apply can be calculated prior to the commencement of work.

Compatibility with ACCC Service Standards

Whilst the VENCorp AIS scheme is both asset and time specific, the ACCC PI Scheme is more targeted at the total system level, and is consistently applied across all TNSPs. However, the measures developed for SPI PowerNet under the ACCC PI Scheme were refined so as to minimise any potential perverse drivers between the two schemes.

The same definitions for peak/intermediate/off-peak time periods are used for both schemes, in addition to the nomination of critical and non-critical system elements. This ensures that there are no inconsistencies between the drivers for improving overall performance between the ACCC PI Scheme and the VENCorp AIS scheme.

Both schemes have encouraged SPI PowerNet to plan no work during peak periods, as the incentives are clearly for off-peak work. The primary difference between the two schemes is that the AIS scheme identifies different outage costs for each asset, whilst the ACCC PI Scheme has only two types of plant or transmission line (critical/non-critical).

The focus on the cost of outages, particularly those that occur outside normal business hours, has changed as a result of the ACCC PI Scheme. Previously, SPI PowerNet would consider the costs of restoring a non-critical outage against any potential overtime labour costs that may be incurred before proceeding with work that occurred outside normal business hours. This was done by

[12] Amendment Agreement to the Network Agreement with VENCorp, 23 December 2002

calculating the AIS scheme rebate that would be incurred for the particular asset. The incentive from the ACCC PI Scheme is to encourage restoration of any outage quickly, requiring the TNSP to more carefully assess the effect of each outage.