

DWGM EVENT – INTERVENTION – 1, 5, 12, DECEMBER 2016

PREPARED BY: Gas Market Monitoring

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IMPORTANT NOTICE

Purpose

AEMO has prepared this report pursuant to rule 351 of the National Gas Rules using information available as at 22 December 2016, unless otherwise specified.

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1 Introduction

The Australian Energy Market Operator (AEMO) declared a threat to system security in the Victorian Declared Wholesale Gas Market (DWGM) for gas days 1 December 2016, 5 December 2016, and 12 December 2016 during the planned inline inspection maintenance program of the South West Pipeline.

Clause 351(1)(b) of the National Gas Rules (NGR) requires that AEMO investigate and prepare a report following declaration of a threat to system security. Clause 351 also requires that AEMO assess and advise on:

- the adequacy of the provisions of the NGR relevant to the event or events;
- the appropriateness of actions taken by AEMO in relation to the event or events; and
- the costs incurred by AEMO and Registered participants as a consequence of responding to the event or events.

This report addresses each of these requirements and is published in accordance with clause 351(2) of the NGR.

2 Background

APA, the asset owner of the Victorian Declared Transmission System (DTS), informed AEMO it would perform an inline inspection ('pigging') program of the South West Pipeline (SWP) and Brooklyn to Lara Pipeline (BLP), from Iona to Brooklyn. Pigging is a critical maintenance activity required under APA's Pipeline Integrity Management Plan.

The pigging program is a planned maintenance activity under NGR 326. Its successful completion ensures the potential future threats to system security arising from pipeline failure are minimised.

AEMO initially advised the market of the pigging program at the Gas Wholesale Consultative Forum held on 14 June 2016. The paper outlining the program may be found at this [link](#). AEMO also held an industry conference on 24 August and again on 17 November 2016 after the program, originally scheduled to take place from September 2016, was subsequently rescheduled to December due to delays in equipment delivery. There was further refinement of the dates due to changes to the Longford Gas Plant maintenance program, as well as to allow at least two days between pigging runs to reduce the impact on Longford operations.

At these various meetings, AEMO advised that to maintain the pig's velocity at an appropriate level, and thus ensure the success of the pigging activity, the net injection rate at the Iona Close Proximity Point (CPP) must be between certain bounds. To facilitate the pigging activity, AEMO advised it would (in the scheduling process):

- Reduce the Iona CPP net injections if the injection rate is too high for the pigging to occur. This will result in out of merit order gas injections other locations, or
- Increase the Iona CPP net injections with out of merit order quantities if the injection rate is too low for the pigging to occur.

Both of these actions would result in ancillary payments and associated uplift charges.

The final pigging program dates as scheduled became:

1. 1 December - cleaning pig run
2. 5 December – calliper pig run
3. 12 December – intelligent pig run

For each of the three days, AEMO notified participants of a threat to system security due to a supply shortfall in the DTS. This was due to insufficient net injections at the Iona close proximity

points (CPP) to support the inline inspection tool's required velocity of 1.5 to 4 meters per second (m/s) from Iona to Brooklyn. The tool was chosen to minimise the risk of it getting stuck in the pipeline, which could cause a supply shortfall. The threat to system security was likely to impact the Geelong and Western withdrawal zones.

Each event required AEMO to alleviate the threat by increasing supply and scheduling out-of-merit-order injections at the Iona CPP.

The expected quantities of out-of-merit-order injections at Iona CPP initially communicated to participants were as follows:

Date	Required Net Iona CPP Injection
Thursday 01/12/2016	120 TJ/d
Monday 05/12/2016	120 TJ/d
Monday 12/12/2016	150 TJ/d

3 Appropriateness of actions taken by AEMO

AEMO's objectives during this event were to:

- Operate in accordance with the NGR and the Wholesale Market Procedures,
- Limit the risk of involuntary curtailment to customers,
- Alleviate the threat to system security and return the DTS to normal operating conditions.

3.1 Operational Response to Pigging Events

In response to the threats to system security, AEMO scheduled the minimum required net injection at the Iona CPP, which included some out-of-merit-order injections (above market price bids).

The table below lists the out-of-merit-order injections (in GJ) at the Iona CPP in the operating schedules for each gas day the pigging occurred. In total, 185.6 TJ was scheduled out of merit order at the start of the gas day at 6am.

Gas Day	6AM Schedule	10AM Schedule	2PM Schedule	6PM Schedule	10PM Schedule
1-Dec-2016	47,650	22,653	19,931	14,931	9,931
5-Dec-2016	94,997	29,755	23,790	17,824	11,859
12-Dec-2016	42,997	51,666	41,745	26,026	16,075

The changes in the out-of-merit-order injection quantities between scheduling horizons were mainly due to past hourly scheduled injections in the previous operating schedule being carried over into the subsequent pricing schedule.

In addition, AEMO also restricted the controllable withdrawal to 0 GJ/hr between 10pm and 6am the day before each pig run to help establish the necessary pipeline conditions to support the pigging operations. However, the impact on the lost opportunity to withdraw gas in the OS for the applicable gas days is negligible.

The table below lists the de-scheduled withdrawal quantities (in GJ) at the Iona CPP in the operating schedules for the gas days 30 November, 4 December and 11 December 2016.

Gas Day	6AM Schedule	10AM Schedule	2PM Schedule	6PM Schedule	10PM Schedule
30-Nov-2016	0	0	0	0	0
04-Dec-2016	0	0	0	0	90

Gas Day	6AM Schedule	10AM Schedule	2PM Schedule	6PM Schedule	10PM Schedule
11-Dec-2016	0	0	0	0	0

4 Market Impact

4.1 Lost opportunity to withdraw gas at Iona CPP

To schedule the required net injections at Iona CPP during the pigging program, AEMO de-scheduled a total of 37.5TJ of controllable withdrawals in the 6AM operating schedules during the period, on 5 and 12 December.

The table below lists the de-scheduled withdrawal quantities (in GJ) at the Iona CPP in the operating schedules for the gas days 1 December, 5 December and 12 December 2016.

Gas Day	6AM Schedule	10AM Schedule	2PM Schedule	6PM Schedule	10PM Schedule
1-Dec-2016	0	0	0	0	0
5-Dec-016	12,500	45,000	36,589	26,657	6,791
12-Dec-2016	25,000	16,516	35,000	39,997	26,085

The changes in withdrawal quantities between scheduling horizons were mainly due to intra-day re-bidding, which resulted in changes to the market price and therefore controllable withdrawal quantities in the pricing schedules.

4.2 Total Ancillary Payments and Uplift Payments

The market impact resulting from the threats to system security are in the form of additional Ancillary Payments (AP) and corresponding Uplift Payments (UP).

The table below lists these payments by type for each gas day on 1 December, 5 December and 12 December 2016.

Gas Day	Ancillary Payments (\$)	Congestion Uplift Payments (\$)	Surprise Uplift Payments (\$)	Common Uplift Payments (\$)
1-Dec-2016	-\$41.64	-\$9.61	-\$32.03	0
5-Dec-2016	\$39,425.07	\$35,903.58	\$3,521.49	0
12-Dec-2016	-\$270.13	-\$8.59	-\$261.69	0

The results can be summarised as follows:

- The majority of the AP's associated with the out-of-merit order injections at Iona CPP occurred on 5 December.
- The negative AP's were mainly due to participant rebidding.
- Uplift payments were categorised as approximately 91% congestion uplift, 9% surprise uplift, and 0% common uplift. The categories are applied as follows.
 - Congestion uplift is allocated to participants when their daily profiled demand forecasts and scheduled controllable withdrawals exceed their AMIQ (profiled uplift hedge).
 - Surprise uplift is allocated to participants who were deemed to have worsened the constraint at reschedules. For example, this can occur when participants under-inject or over-withdraw in the preceding schedule (for positive APs).

- Common uplift is any remaining uplift that cannot be allocated as congestion or surprise uplift, and is applied across participants in proportion to their actual withdrawal quantities over a gas day.

5 Adequacy of Part 19 of the NGR

In respect of this event, AEMO has assessed the application and adequacy of NGR provisions relating to maintenance approval, market notices, and this intervention report.

5.1 Maintenance approval

NGR 326(1) requires that AEMO coordinate maintenance to ensure that system security is not threatened, while NGR 326(4) requires AEMO and service providers to cooperate to minimise any threat to system security.

The pigging operation is a critical maintenance activity required under APA's pipeline integrity management plan. In this case, AEMO determined that completing this maintenance would result in a potential threat to system security due to the risk of a supply shortfall if the pig were to get stuck in the pipeline, and could not be resolved through coordination. In addition, AEMO worked collaboratively with APA and industry participants to schedule this work at a time that minimised market impact, threats to system security, and the impact on refilling the Iona Underground Gas Storage facility.

AEMO finds that these NGR provisions were applied correctly in this case, though NGR 326(1) could be better clarified to acknowledge that coordination may not be sufficient to remove all threats to system security associated with planned maintenance activities.

5.2 Market notices

NGR 342 requires that when AEMO identifies a potential threat to system security, it must notify registered participants as soon as practicable – including details of the nature and location of potential threat, and AEMO's estimate about whether intervention will be required.

AEMO tabled a paper at GWCF in June 2016 that explained the scope of pigging program, the proposed AEMO scheduling process, and the market notification protocol. Industry conferences were held in August and November, after APA postponed the pigging program from September to early December 2016. At these conferences AEMO confirmed the revised pigging dates and recapped the proposed scheduling process and associated market notification protocol.

On 28 November 2016, AEMO issued a market notice seeking a market response to the threat to system security for the scheduled pigging operations.

In this case, after seeking a market response and assessing the response provided, AEMO determined that it was necessary to schedule net injections at Iona CPP to balance system demand – by both restricting controllable withdrawals, and then scheduling out-of-merit-order injections.

AEMO subsequently issued a series of market notices seeking market responses when the out-of-merit-order injections were scheduled at the Iona CPP, when such injections were used due to the declared threat on the current gas day, and when the threat had subsided after publication of the final 10PM operating schedule each day.

AEMO finds that these NGR provisions are adequate, and were applied correctly in this case.

6 Conclusion

AEMO declared a threat to system security in the Victorian DWGM for the gas days 1 December, 5 December and 12 December 2016 to support scheduled inline inspections (“pigging”) of the SWP and the BLP.

Over the three pigging runs, AEMO de-scheduled 37.5 TJ of controllable withdrawals and scheduled a total of 185.6 TJ of out-of-merit-order injections in the 6AM schedules. This resulted in approximately \$39,000 total market ancillary and uplift payments. This uplift was categorised as approximately 91% congestion uplift, 9% surprise uplift, and 0% common uplift.

Following this event, AEMO has assessed the application and adequacy of associated NGR provisions, and finds that these provisions were applied correctly.

Please direct any feedback or questions regarding this report to marketmonitoring.change@aemo.com.au.