



Critical Contingency Operator

Critical Contingency Incident Report

Pohokura Production Station Outage 03 March 2012

Date of Report: 09 March 2012

1. Introduction

This report has been prepared in accordance with the requirements contained in Regulation 64 of the Gas Governance (Critical Contingency Management) Regulations 2008 (the Regulations). Regulation 64 requires the Critical Contingency Operator (CCO) to prepare and publish an incident report as soon as reasonably practicable, but no later than 5 business days after making a determination to terminate a Critical Contingency. This report has been prepared in consultation with the Transmission System Owners (TSOs) namely Maui Developments Limited (MDL) and Vector Gas Limited (Vector).

2. Cause Of Critical Contingency

At 03:40¹ on Saturday 03 March 2012 an unplanned outage of the Pohokura Production Station (PPS) occurred causing a complete loss of supply to the Ngatimaru Road and Tikorangi 2 receipt points. The outage also caused reductions of supply to the Tikorangi receipt point due to gas from PPS no longer being available for processing at the McKee/Mangahewa Production Station.

Shell Exploration New Zealand Limited, Todd Pohokura Limited and Todd Taranaki Limited initiated curtailments at their respective Welded Points in accordance with section 15.2 of the Maui Pipeline Operating Code (MPOC). The MDL system operator then proceeded to notify corresponding Delivery Points of the curtailment to demand (with accompanying Operational Flow Orders) and affected Shippers.

The resulting reduction in demand was insufficient to prevent pressure in the Maui pipeline approaching the critical contingency threshold specified in the MDL Critical Contingency Management Plan of 3 hours to 32 barg at the inlet to Rotowaro Compressor Station (RCS).

At 12:01 information was received from PPS that due to the difficulties being encountered they were unsure when PPS could be restarted. At this time the rate of pressure decline at RCS indicated it would take 4 hours to reach 32 barg. Under r48 (1) (b) (ii) the CCO determined at 12:20 that there was a critical contingency due to a reasonable expectation that a breach of the critical contingency threshold specified in the MDL Critical Contingency Management Plan at the inlet to RCS was otherwise unavoidable and necessary to achieve the purpose of the Regulations.

¹ All times given in this report are NZDT using ISO 8601 24-hour format.



3. Duration Of Critical Contingency

A critical contingency was declared at 12:48 on 03 March 2012 and was terminated at 23:39 on 03 March 2012. The duration of the critical contingency was 10 hours and 51 minutes.

4. Log of Actions Taken by CCO and TSOs Immediately Before and During Critical Contingency

Note: The full contents of OATIS² notices issued can be referred to on www.oatis.co.nz by using the notice numbers quoted.

Time	Action
06:20	Vector Gas Operations Control (GOC) phoned the CCO duty manager and gave a brief overview of the outage and prevailing system conditions.
06:50	The CCO duty manager arrived at GOC at Bell Block and discussed the situation with the Gas Operations Controller. Pressure at RCS was 41.54 barg and line pack in the Maui pipeline was 259,132 GJ. The flow deficit was 7,560 GJ/hour and the calculated time to 32 barg at RCS was 7 hours. At 03:40 (time outage occurred) the pressure at RCS was 43.71 barg and line pack in the Maui pipeline was 276,676 GJ
07:32	PPS provided information indicating that a restart of PPS was being attempted and if successful it was estimated full production would be resumed by 11:00.
07:41	CCO contacted the Transpower Security Desk to brief them of the situation and requested them to join teleconference meeting with the Generators at 08:30.
07:45 – 08:00	CCO contacted Contact, Genesis and Mighty River Power to brief them about the situation and requested them to join teleconference with Transpower at 08:30.
08:30	Pressure at RCS was 39.46 barg and line pack in the Maui pipeline was 246,334 GJ. The calculated time to 32 barg at RCS was 5.5 hours. Maui pipeline off take rate 12,800 GJ/hour and supply rate 5,300 GJ/hour. Demand to large consumer group is 10,600 GJ/hour. To re-balance system supply and demand the large consumer group demand would need to be reduced to 3,100 GJ/hour i.e. one third of current demand level.
08:30	CCO held a teleconference with Transpower and the Generators to discuss situation and plan for any required curtailment. CCO informed parties that the worst case would be that demand would need to be reduced to one third of current levels but this may improve dependent on increase in supply from other producers. A provisional plan to maintain satisfactory electricity generation capacity was agreed and parties advised to prepare for curtailment if situation does not improve. Further teleconference scheduled for 11:00.
09:11	CCO issued notice of potential critical contingency (Notice #12237).
09:17	MDL issued notice of potential critical contingency (Notice #12231).
09:17	Vector issued notice of potential critical contingency (Notice #12232)

² OATIS (Open Access Transmission Information System) is the online, interactive software system developed to support operations on both the Maui and Vector pipelines.



09:20	PPS provided further information now indicating it was estimated that full production would be resumed by 13:00.
09:45	CCO contacted Methanex to brief them about the situation.
09:50	The CCO requested a download of SCADA data from GOC to feed demand modelling calculations.
10:00	Kupe Production Station increased rate from 1,900 GJ/hour at 09:00 to 2,600 GJ/hour.
10:00	The CCO demand modelling indicated that the combination of residual line pack in the Maui pipeline combined with the deficit between input and demand would be sufficient to supply existing demand for approximately 5 hours before the 32 barg critical contingency threshold at Rotowaro would be breached.
10:01	PPS provided further information now indicating it was estimated that full production would be resumed by 16:00.
11:00	Oaonui Production Station increased rate from 4,600 GJ/hour at 10:00 to 5,700 GJ/hour.
11:00	Pressure at RCS was 36.24 barg and line pack in the Maui pipeline was 229,008 GJ. The calculated time to 32 barg at RCS was 4 hours.
11:00	CCO held a further teleconference with Transpower and the Generators to discuss situation and confirm plans for any required curtailment. CCO informed parties that demand would now need to be reduced to one half of current levels due an improvement in supply rates from other producers. This plan included reductions to 1,700 GJ/hour for Huntly PS and Otahuhu PS, 300 GJ/hour to Te Rapa Cogeneration Plant, 62 GJ/hour to Southdown PS and 0 GJ/hour to TCC based on use of storage gas from Ahuroa. Generators confirmed preparations were in progress to reduce to these demand levels. A further teleconference was scheduled for 14:00.
12:00	Pressure at RCS was 34.93 barg and line pack in the Maui pipeline was 223,642 GJ. The calculated time to 32 barg at RCS was 4 hours.
12:01	PPS provided further information now indicating that they were unsure when full production would be resumed.
12:20	The CCO determined that a critical contingency situation had occurred due to a reasonable expectation that a breach of the critical contingency on the Maui pipeline at the inlet to RCS was otherwise unavoidable and necessary to achieve the purpose of the Regulations.
12:30	CCO held a further teleconference with Transpower and the Generators to discuss situation and confirm plans for curtailment previously discussed (this was originally scheduled for 14:00 but brought forward due to declaration of critical contingency). Generators confirmed preparations were in progress to reduce to these demand levels by an agreed time of 14:00. A further teleconference was scheduled for 18:00.
12:48	The CCO issued a notice declaring a critical contingency (Notice #12262).
13:00	Pressure at RCS was 34.93 barg and line pack in the Maui pipeline was 223,642 GJ. The calculated time to 32 barg at RCS was 4 hours.
13:02	MDL issued a notice of declaration of critical contingency (Notice #12256).
13:05	Vector issued a notice of declaration of critical contingency (Notice #12257).



13:10	CCO contacted Methanex to discuss the situation and curtailment plans. Methanex indicated that they had already substantially reduced demand throughout the morning. The CCO proposed curtailment to 1,700 GJ/hour aggregate demand to Methanex from the transmission system which was consistent with curtailing demand by half to the power generators from pre-contingency levels.
13:20	Turangi Production Station increased rate from 390 GJ/hour at 13:00 to 1000 GJ/hour.
13:20	The CCO issued a notice directing demand to be curtailed at band 0, 1a and 1b large consumers by 14:00 to the levels previously agreed (Notice #12264).
13:31	MDL issued a notice directing demand to be curtailed at band 0, 1a and 1b large consumers by 14:00 to the levels previously agreed (Notice #12265).
13:34	Vector issued a notice directing demand to be curtailed at band 0, 1a and 1b large consumers by 14:00 to the levels previously agreed (Notice #12266).
14:00	Demand curtailment now implemented. Pressure at RCS was 34.84 barg and line pack in the Maui pipeline was 221,663 GJ. Pressure and linepack now starting to stabilise.
15:00	Pressure at RCS was 34.75 barg and line pack in the Maui pipeline was 220,922 GJ. Pressure and line pack continue to stabilise.
15:45	<p>Shell provided the following information for media response.</p> <ul style="list-style-type: none"> • A power outage at 3.40am today caused a complete production shutdown of the Pohokura field. • The Power supply to the Pohokura Production station has been re-established, however a fault has been encountered with the plant heating system which is preventing a production restart. • A fault has been identified with the flame sensors on the hot oil heater which is preventing a hot oil heater restart. The flame sensors are a safety device which ensures the heater firing system operates safely. • It is too early to say if the problem is related to the power supply problem earlier in the morning. A full investigation will be carried out. • Technicians are working on the fault and working toward a production restart. The heater was restarted at 3pm, it is currently progressing through its warm up sequence and if successful, we will restart gas production and expect to be at full gas rates between 6pm and 7pm tonight.
16:00	Pressure at RCS was 34.75 barg and line pack in the Maui pipeline was 220,582 GJ. Pressure and line pack continue to stabilise.
17:00	Pohokura production station now at start-up rates. Pressure at RCS increased to 34.80 barg and line pack in the Maui pipeline increased to 221,475 GJ.
18:00	Pohokura production station now supplying at 4,100 GJ/hour. Pressure at RCS increased to 35.32 barg and line pack in the Maui pipeline increased to 227,381 GJ.
18:00	CCO held a further teleconference with Transpower and the Generators to discuss situation. CCO indicated that pressure and line pack in the Maui



	pipeline were now recovering and that demand restoration to normal levels would be expected at 22:00 if Pohokura production station remained stable and no other events occurred.
19:00	Pohokura production station now supplying at 8,800 GJ/hour. Pressure at RCS increased to 36.35 barg and line pack in the Maui pipeline increased to 234,256 GJ.
20:00	Pohokura production at stable supply rate of 9,400 GJ/hour. Pressure at RCS increased to 37.62 barg and line pack in the Maui pipeline increased to 245,259 GJ.
21:00	Pohokura production at stable supply rate of 9,400 GJ/hour. Pressure at RCS increased to 39.22 barg and line pack in the Maui pipeline increased to 257,036 GJ. The CCO planned to restore demands at 22:00 as satisfied that the system had now stabilised.
21:28	CCO issued demand restoration notice for all band 0, 1a and 1b demand to be available at normal rates from 22:00 (Notice #12271).
21:47	MDL issued demand restoration notice for all band 0, 1a and 1b demand to be available at normal rates from 22:00 (Notice #12273).
22:00	Vector issued demand restoration notice for all band 0, 1a and 1b demand to be available at normal rates from 22:00 (Notice #12274).
22:00	Pohokura production at stable supply rate of 9,400 GJ/hour. Pressure at RCS increased to 41.03 barg and line pack in the Maui pipeline increased to 268,034 GJ.
22:00	The CCO contacted Methanex to inform them of the demand restoration notice.
23:00	Pohokura production at stable supply rate of 9,400 GJ/hour. Pressure at RCS increased to 43.03 barg and line pack in the Maui pipeline increased to 278,306 GJ.
23:30	The CCO determined that the critical contingency could be terminated as the system was now capable of supplying demand at the level at which gas was being supplied immediately before the event that gave rise to the critical contingency.
23:39	The CCO issued a notice declaring the termination of the critical contingency at 23:30 on 03 March 2012 (Notice #12272).
04:30 04 March	MDL issued a notice declaring the termination of the critical contingency (notice #12275).
04:35 04 March	Vector issued a notice declaring the termination of the critical contingency (notice #12276).



5. Level Of General Compliance By Large Consumers And Retailers With TSO Directions

Compliance with demand curtailment direction by large consumers was good. Demand levels observed in SCADA during the critical contingency corresponded with the CCO directions issued.

6. Level Of General Compliance By Consumers With Retailers Directions

As curtailment bands 2-6 were not affected by the critical contingency Retailers and band 2-6 consumers were not required to take any actions.

7. Other Observations

The demand side response to the various code (MPOC and VTC) curtailments and operational flow orders issued by the TSOs prior to the critical contingency were not sufficient enough to prevent a critical contingency being declared. This may imply that there are not sufficient incentives to encourage participants to act properly. It would be prudent for the TSOs to review the application of the code rules to ensure adequate incentives exist for market participants to act quickly and consistently with any notices issued.