



# FM Global Risk Report

## Location Findings

### APA Group

Victorian Transmission System Pipeline - Gooding  
519 Moe-Walhalla Rd  
Tanjil South, Victoria 3825  
Australia

### Fire & Natural Hazards Regular Risk Evaluation

Visit by: Flor Araceli Manriquez  
Visit date: 23 March 2015  
Conference with: Mr. Brian Reynolds, Senior E & I Engineer

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## Account Engineer Comments

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Please find attached a loss prevention report following the visit to this compressor station by Ms Flor Araceli Manriquez on the 23rd of March.

We would like to thank APA staff who hosted this visit.

We also appreciate that the recommendation 13-12-003 expanding the permit to work to cover cutting, grinding and welding will form part of the national program fire prevention and control and will be rolled out to this site shortly.

If you have any questions on this report please feel free to contact either Ms Flor Araceli Manriquez (FM Global Melbourne) or Rick Stowe (FM Global Sydney)

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## Principal Site Activity

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This is a gas compressor station utilising four gas turbine driven compressors that boost natural gas delivered from Longford to the Melbourne supply network at Dandenong.

## Understanding the Risk at this Facility

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This is an important gas compressor station for APA on which the Melbourne gas network depends for meeting peak demands.

All of the gas compressor units are located adjacently in an open hall which in the event of a fire would likely expose all of the units to a common exposure. Gas safeguards and monitoring provide adequate controls to minimise a gas fire or explosion. However, the most likely cause of a fire would be a mechanical failure involving the release of lubricating oil onto a hot surface and extending to a pool fire at floor level. The resulting fire could seriously damage most equipment in the area without any form of automatic fire protection to control and contain it. Replacement of the station and major equipment may take up to a year to fully reinstate, in which time the capability to boost the supply of gas would be impaired.

Sprinkler protection has been recommended as a primary means of protecting against such a loss; however, it is recognised this would also require an on-site water supply.

Target Recommendations are those that the Account Engineer has selected as part of the account risk improvement priorities.

## Location Overview

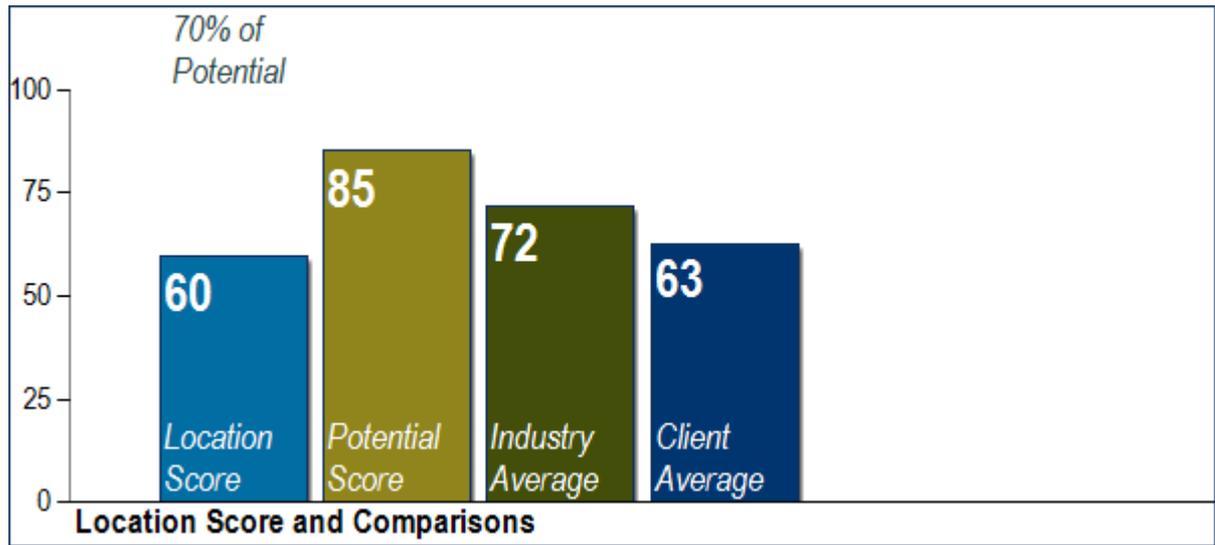
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The following display(s) show RiskMark information for this location. Note that the RiskMark scores and displays are different than in the past. RiskMark was recalibrated and enhanced to now include Equipment Hazards and an emphasis on Human Element programs. RiskMark will now provide additional points for risk improvement in these and other areas. Your contacts at FM Global can help you to see the advantages of this more comprehensive benchmarking tool.

Location Overview continued

RiskMark Comparisons

This display shows a comparison of your RiskMark to the average scores of other groups as noted in the display. Note that your potential score and percent of potential scores are also included.



The Industry used in the above chart is Gas Compressor Station.

Management of Exposures

Certain potential hazards and conditions were evaluated at this facility. Completion of the following items will help lower both the frequency and severity of losses and minimize the possibility of costly interruptions to your business.

Target Recommendations

Experience shows that the majority of all losses in this type of facility can be prevented or minimized by addressing the Target Recommendations, which are flagged below.

**13-12-001**

**Provide automatic sprinkler protection for the compressor house.**

Sprinkler protection should be provided throughout the compressor building in accordance with FM Global standards.

13-12-001 continued

<p><b>The Hazard</b></p>	<p>There is an intrinsic fire hazard associated with the lubrication systems and the vicinity of hot surfaces on the gas turbine compressors. In the event of a failure in the supply hoses, or other elements of the lubrication system, the oil could be ignited. There would also be a release onto the floor around the compressor unit and a pool fire could extend to involve adjacent units and equipment. Prompt manual intervention would not occur and the fire would continue until the fuel was consumed. Significant damage could occur to several units resulting in a shutdown to the plant for major repairs and replacement of equipment.</p>  <p style="text-align: center;"><b>Centaur T4002</b></p>
<p><b>Loss Expectancies (USD)</b></p>	<p>Exposure to Loss is approximately: <span style="float: right;">84,250,000 PD About 365 Days BI</span></p> <p>Exposure to Loss if Completed is approximately: <span style="float: right;">1,000,000 PD About 5 Days BI</span></p>
<p><b>Status</b></p>	<p>The recommendation will be studied for possible completion.</p>

13-12-002

**Provide a fire pump and tank to supply the recommended sprinklers.**

A fire pump and tank designed to meet the necessary flow and pressure for the recommended sprinkler system should be installed on-site.

<p><b>The Hazard</b></p>	<p>There is no public or other local water source capable of supplying an adequate supply for firefighting.</p>
<p><b>Loss Expectancies (USD)</b></p>	<p>Exposure to Loss is approximately: <span style="float: right;">84,250,000 PD About 365 Days BI</span></p> <p>Exposure to Loss if Completed is approximately: <span style="float: right;">1,000,000 PD About 5 Days BI</span></p>
<p><b>Status</b></p>	<p>The recommendation will be studied for possible completion.</p>

**13-12-003**  
**Target**

**Expand the Permit to Work to cover hot work in areas additional to those in gas atmosphere areas.**

The existing permit system should include a list of precautions and requirements, in general adopting the FM Global Hot Work Permit system for all areas.

<b>The Hazard</b>	Whilst the precautions and regulations for hot work in gas hazard areas are controlled, areas outside of these may present risk of a fire in ordinary combustibles. A fire external to the compressor and gas equipment areas may expose and transmit to important buildings or property.	
<b>Loss Expectancies</b>	Acting on this item would reduce the probability or severity of loss. Exposure to Loss if Completed is approximately:	Minimal PD Minimal BI
<b>Status</b>	The recommendation will be studied for possible completion.	

**13-12-004**  
**Target**

**Conduct annual fire drills with conjunction of the Fire Brigade (Last Revised 23 March 2015)**

FM Global recommends conducting annual training for all personnel designated to perform emergency shutdown functions using different fire scenarios, specially shutting down the post lube function if there is a fire. The following methods are recommended:

- Simulator training, inviting the fire brigade to ensure they have some awareness of the fire scenario.
- Unannounced drills where a scenario is given to the operators and they are asked to proceed without actually pushing buttons. Flaws may be apparent in this that would not show up in a written test.
- A written and/or oral test in which a problem is described and questions are asked regarding proper actions to take.

<b>The Hazard</b>	Without knowledge of the site, the fire brigade may not take the best actions and may be less effective in controlling a fire. Uninformed decisions at the time of an emergency can also exacerbate a worse outcome. Knowing what and what not to do are key factors that will help will ensure they minimise the loss.	
<b>Loss Expectancies</b>	Acting on this item would reduce the probability or severity of loss. Exposure to Loss if Completed is approximately:	Minimal PD Minimal BI
<b>Status</b>	According to Mr. Brian Reynolds, the recommendation will be studied for possible completion.	

**13-12-005**

**Provide containment for oil spillage around each gas turbine compressor unit.**

The base frame of each unit should be either sealed or sufficient bunding should be provided and sized to contain the full contents of any oil discharged from the oil reservoir and retain it within the area of the unit.

**13-12-005 continued**

<b>The Hazard</b>	In the event of a failure in the lubrication system and release of oil, it would flow across the floor exposing the adjacent units to a common pool fire. Retaining this within the area of the failure will localise the fire, limiting the damage to one rather than several units.	
<b>Loss Expectancies (USD)</b>	Exposure to Loss is approximately:	84,250,000 PD About 365 Days BI
	Exposure to Loss if Completed is approximately:	1,000,000 PD About 5 Days BI
<b>Status</b>	The recommendation will be studied for possible completion.	

**15-03-001**

**Install FM Approved flange shields around oil piping flanges operating over 340 kPa.**

This specifically applies to lube oil piping operating above 340 kPa.

<b>The Hazard</b>	A spray fire involving ignitable oil can result in major damage to the equipment. Shields can capture sprays and redirect the oil, reducing the likelihood of it igniting.	
<b>Loss Expectancies (USD)</b>	Exposure to Loss is approximately:	2,000,000 PD Minimal BI
	Exposure to Loss if Completed is approximately:	1,000,000 PD About 5 Days BI
<b>Status</b>	According to Mr. Brian Reynolds, the recommendation will be studied for possible completion.	

**Risk Reduction**

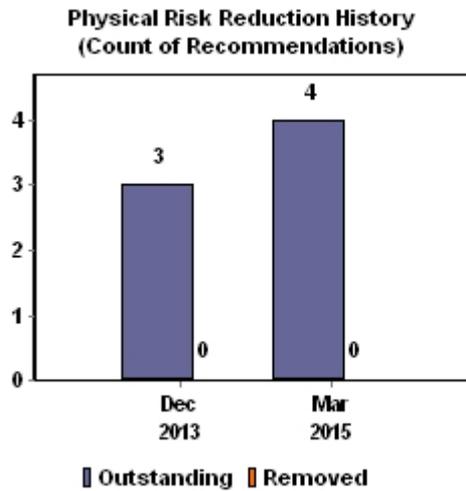
Recommendations that have been completed or otherwise removed are summarized in this section.

The "Counts" of recommendations referenced in this section include each part of multi-part recommendations except in cases where each part represents options to address a single deficiency. In such cases, the recommendation is only counted once.

*These charts illustrate current risk reduction status since the last inspection visit, and also include an historical account of previous risk reduction activity on a cumulative basis. Focus and special visits are not tracked separately, but the total outstanding recommendation counts reflect the full history since December 2013.*

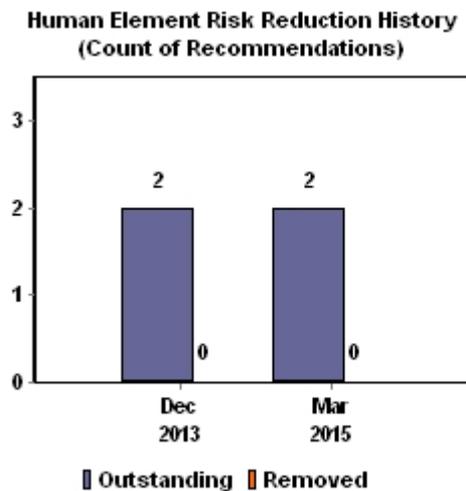
### Physical Recommendations

No **Physical** recommendations have been completed or removed since our last evaluation.



### Human Element Recommendations

No **Human Element** recommendations have been completed or removed since our last evaluation.



### Comments

#### Filters

It is our best advice to place "No Hot Work" signs at the filters area to avoid any sparks that can ignite the combustible filters.

Ongoing Services

FM Global is available to provide support in all areas of property loss prevention. These services include:

- Development of specifications for projects such as new construction, automatic protection systems and process safeguards
- Review of related project plans
- Assistance in implementing and managing loss prevention programs
- On site review and acceptance of completed projects
- Assistance in managing impaired protection systems

Depending on your organization's insurance program, you may also have access to the FM Global MyRisk website. If so, you will find additional risk management tools that can help with your risk improvement strategy at:

<https://myrisk.fmglobal.com>

For access to these services, contact one of the following:

**Australia Operations:**  
 FM Global  
 Level 37  
 140 William Street  
 Melbourne, Victoria 3000  
 Australia  
 [61] (3) 9609 1300

**Richard T. Stowe, Account Engineer:**  
 FM Global  
 1 Macquarie Place  
 Level 15  
 Sydney, New South Wales 2000  
 Australia

Reference Information

**Location Findings**

APA Group  
 Victorian Transmission System Pipeline - Gooding  
 519 Moe-Walhalla Rd  
 Tanjil South, Victoria 3825  
 Australia

Fire & Natural Hazards  
 Regular Risk Evaluation

<b>Visit by:</b>	Flor Araceli Manriquez
<b>Visit date:</b>	23 March 2015
<b>Site Contact:</b>	Mr. Brian Reynolds, Senior E & I Engineer at +61 0 408228477, brian.reynolds@apa.com.au
<b>Final Conference Attendees:</b>	Mr. Brian Reynolds, Senior E & I Engineer

## Reference Information continued

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**Location Index Number:** AUP066.00-01  
**Account Number:** 1-59382

**RiskMark Information included in this report is current as of 10 April 2015.**