NSW GOVERNMENT

NSW Resources Regulator

PLANNED INSPECTION PROGRAM OUTCOMES

Petroleum well sites

Summary

The principal hazard of fire or explosion, due to potential gas leaks, electrical equipment, and pressure vessels, was assessed in planned inspections conducted at petroleum well sites during the first half of 2021. The petroleum well sites were located in the Camden and Narrabri districts. Most of the sites met the safety criteria defined by the relevant Australian standards and guidelines, including Work Health and Safety (Mines and Petroleum Sites) Regulation 2014.

What we did

The NSW Resources Regulator has developed a bowtie hazard management framework and assessment checklist for each program plan. For this program plan, the effectiveness of the safety management system at each well site was assessed against a standard set of control supports and critical controls.

This report summarises assessment findings from 122 individual well sites in various operating stages, which were assessed during the period from January to June 2021. The threats, consequences and critical controls assessed for the material unwanted event of well operations putting a person at risk are shown in Table 1. Note that not all critical controls were applicable at all sites.

Table 1. Threats and critical controls for petroleum well site safety

	THREAT/CONSEQUENCE	CRITICAL CONTROL
Threats	Uncontrolled release of pressurised fluid	Containment vessel integrity
	Gas leak in proximity to ignition source	Equipment suitable for the atmosphere
	Person in proximity to moving parts	Equipment guarding
	Contact with electricity	Electrical installation standards
Consequence	One or more fatalities	Emergency response capability

The assessment conducted on site addressed the identified critical controls by ensuring:

- safety signs and identification plates were displayed
- site fencing was installed around the well site
- installed equipment was fit for purpose
- an up to date first aid kit was available in all site servicing vehicles
- emergency management plans were available and assessable
- regular inspection reports by the title holders or operators were recorded and sighted
- equipment certifications were available
- competencies of personnel working on sites were up to date
- all movable or rotating parts were guarded
- pressure release safety valve calibration was up to date
- hazardous areas around the well centre were defined
- plugged and abandoned well sites met the relevant requirements
- electrical Installations were installed to standard and in good working order
- all non-explosion protected equipment was installed outside identified hazardous areas.

Outcome

The assessments resulted in four notices issued under the Work Health and Safety Act, consisting of two section 23 concern notices and two section 191 improvement notices. The notices identified the following concerns and non-compliances to legislation:

- inadequate controls for the risk of entanglement from exposed rotating shafts
- the mechanical engineering control plan (MECP) did not addressing the introduction to site of mobile plant
- gas cylinders were not being stored correctly and in direct sunlight
- heavily corroded pipe work which could lead to premature failure.

Next Steps

We will continue to conduct assessments for well site safety controls within the petroleum sector due to the critical nature that these hazards present.

In addition, we will continue to complete monitoring and analysis of assessment and/or incident data. This information is used to determine industry performance and identify high risk practices which require further assessment or intervention.

Recommendation

To address the continued compliance regarding the principal hazard of fire and explosion as well as worker safety at petroleum well sites, the industry should:

- install and maintain controls that manage the risk of worker entanglement with moving or rotating equipment
- review the petroleum site's electrical and mechanical engineering control plans (EECP & MECP) and their associated risk assessments, to ensure compliance to the requirements of the Work Health and Safety (Mines & Petroleum Sites) Regulations 2014, Schedule 2
- ensure all gas cylinders are stored correctly
- ensure all pipe work and metallic equipment and structures are protected from corrosion.

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