Electrical Engineering Safety

Decision Sheet 14.1

Electrical Installations in Surface Hazardous Areas at Mines & Petroleum Sites

Installation standard, hazardous area classification, equipment certification and competencies

A basis for consistent application of Electrical Engineering Safety issues at NSW mines & Petroleum sites

Decision Sheets are developed by the Inspectors of Electrical Engineering in response to issues raised or questions asked by others in the DPI, in particular Mine Safety Operations and from our external clients. They are for use by any staff in Mine Safety Operations, but primarily by Electrical Engineering staff.
They can be distributed externally to the Department.

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Electrical Engineering Safety Decision Sheet 14-1, Electrical Installations in Surface Hazardous Areas at Mines & Petroleum Sites Installation standard, hazardous area classification, equipment certification and competencies.

Preamble

To prevent explosions from electrical ignition sources at surface sites (mines and petroleum) the following principles need to be applied:

- Hazardous areas must be identified and classified to a set standard;
- The equipment installed in hazardous areas must be suitable, that is, certified to a set standard and under the auspices of a credible certification scheme.
- The electrical installations must comply with a set standard and be installed by competent people.
- The regulator must be competent in the applied standards and have confidence in the certification scheme (this includes review and action capabilities).

The above requirements are a minimum requirement to achieve a tolerable and ALARP (As Low As Reasonably Practicable) risk with respect to preventing explosions that have an electrical ignition source. It should be recognised that the operators of such sites may identify additional risk controls they may wish to implement.

Issues

The legislation that applies to such operations varies depending on the location; as such it can be complicated & time consuming to determine the exact legislative requirements.

There are an increasing number of enquiries as to what the electrical requirements are.

The legislation that definitely applies to the above installations:

- NSW Occupational Health and Safety Act and Regulation.

Legislation that may apply to the above installations:

- NSW Electricity (Consumer safety) Act and Regulation
- NSW Mine Health and Safety Act and Regulation
- NSW Coal Mine Health and Safety Act and Regulation
- Petroleum (Onshore) Act, Regulation and Schedule

Position

For all installations commenced after the date of this decision sheet:

Hazardous Area Classification:

Hazardous areas for new installations are to be identified in accordance with:

AS/NZS 60079.10.1:2009, *Australian/New Zealand Standard AS/NZS 60079.10:2009, Electrical apparatus for explosive gas atmospheres, Part 10: Classification of hazardous areas (IEC 60079-10:2002 MOD).*

It is recognised that hazardous areas have previously been classified in accordance with such standards as *AS/NZS 2430.3.1:2004 Australian/New Zealand Standard.*

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Classification of hazardous areas Part 3.1: Examples of area classification—General, and AS/NZS 2430.3.4:2004 Australian/New Zealand Standard. Classification of hazardous areas Part 3.4: Examples of area classification – Flammable gases. Many of these hazardous areas will be related to relocatable equipment such as onshore exploration drilling rigs. This decision sheet is not intended to require the re classification of hazardous areas on this sort of equipment if there is no change in the critical parameters and assumptions of the original classification.

The suitability of the classification should be periodically reviewed by a person or organisation competent in the classification of hazardous areas for onshore drilling rigs.

Electrical equipment certification

Electrical equipment must have an:

ANZEx Certificate of Conformity, or

IECEx Certificate of Conformity.

Electrical Installations

Electrical installations must comply with the Wiring Rules applicable at the time of the installation. The current version of the Wiring Rules is:

AS/NZS3000:2007, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*

Electrical competencies

For ALL types of sites, electrical installations must be installed, tested and verified by a person with a NSW Qualified Supervisors Certificate issued by the Office of Fair Trading, or

For ALL types of sites, electrical installations must be installed, tested and verified under the supervision of a person with a NSW Qualified Supervisors Certificate issued by the Office of Fair Trading, or

Where the electrical installation is regulated by the Coal Mine Health and Safety legislation, installation, testing and verification can be undertaken or supervised by a Qualified Electrical Engineer as defined in the Coal Mine Health and Safety legislation, or

Where the electrical installation is regulated by the Mine Health and Safety legislation, installation, testing and verification can be undertaken or supervised by a Qualified Electrical Engineer as defined in the Mine Health and Safety legislation.

The above electrician or qualified electrical engineer should also have the appropriate hazardous area competencies as defined in AS/NZS4761:2008 *Competencies for working with electrical equipment for hazardous areas (EEHA) - Competency Standards,* or be certified in accordance with the IECEx Scheme for Certification of Personnel Competencies for Explosive Atmospheres (Note: The IEC Ex Scheme is envisaged to commence in 2009/2010).