

# HAZARDOUS AREA EQUIPMENT

*Is your installation at risk?*



**SURVEYING ■ REPORTING ■ REMEDIATION**

# RISK... RELIABILITY... SAFETY

Mitigate risk, increase reliability and guarantee safety as well as ensure legislative compliance for your installation.

Aspin Kemp & Associates are industry leaders in rig-specific hazardous area electrical installation and protection practices and offer a range of integrated services in this highly specific area.

## SURVEYING

AKA conducts surveys to develop a Hazardous Area Equipment Register (HAER) for all electrical equipment located in hazardous areas. This register records all relevant EX equipment details such as the location and the date and type of the last inspection for each item of equipment.

During the survey, each item of electrical equipment, listed on the HAER, is assigned a

unique identification number. This identification number is comprised of an agreed acronym of the area in which the equipment is installed as a prefix followed by sequential numbers.

During the visual inspection, AKA compiles a comprehensive register of all defects found in order of priority. Where defects with EX equipment cannot be rectified at the time of discovery, AKA submits a detailed prioritized

remediation plan categorizing all defective equipment with cost estimates for replacement to the Maintenance/Electrical Supervisor.



## INSPECTION TYPES AND GRADES

### Inspection Types

There are two types of inspection:

**Initial Inspection** is necessary to check that the selected type of protection is appropriate for the hazardous area installation.

**Periodic Inspection** is a routine inspection that applies to existing installations. It monitors the effects of deterioration or change. The intervals between periodic inspections should not exceed three years.

### Inspection Grades

**LEVEL 1 Visual Inspections** identify, equipment easily accessible by step ladders without the need of specialized access such as scaffolding, any defects that are noticeable to the eye, such as missing bolts.

**LEVEL 2 Close Inspections** include visual inspection criteria and additionally identify any defects, such as loose bolts, that are only apparent by using specialized access such as scaffolding or hand tools. Close inspections do not normally require the enclosure to be opened or the equipment to be de-energized.

**LEVEL 3 Detailed Inspections** include close inspection criteria and additionally identify any defects such as loose terminals, which are apparent only by opening the equipment and/or using tools and test equipment. Detailed inspections are performed upon completion of the installation when the equipment has been handed over by the installation contractor prior to it being put into service.

### Factors Affecting Equipment Deterioration

#### ENVIRONMENTAL FACTORS

- Exposure to:
  - water, excessive ambient temperatures, excessive vibration
  - chemicals and solvents
- Vulnerability to corrosion
- Likelihood to accumulate dust or dirt
- Susceptibility to mechanical damage

#### PERSONNEL FACTORS

- Lack of staff training and experience
- Unauthorized equipment modifications or adjustments that may compromise safety and invalidate EX equipment certification
- Inappropriate maintenance, e.g. not according to manufacturer's specification

All work is guaranteed to comply with the requirements of the DSEAR (Dangerous Substances and Explosive Atmospheres Regulations).



Our inspectors and installers are CompEx trained. The CompEx Scheme for Training, Assessment and Certification of People Working in Potentially Explosive Atmospheres was developed in the UK in the mid 1990s by EEMUA and JT Limited to deliver training and assessment of competence for personnel who work on systems and equipment installed in hazardous areas.

## REPORTING

The AKA supervisor (working closely with the Maintenance/Electrical Supervisor) prepares and provides the following documents based upon the development of the Hazardous Area Equipment Database:

INSPECTIONS	REPORTS				
	HAER	HAEDR	RRAP	DRAWINGS	PRELIM REPORTS
LEVEL 1	✓	✓		✓	
LEVEL 2	✓	✓		✓	✓
LEVEL 3	✓	✓	✓	✓	✓

### ✓ Hazardous Area Equipment Defects Report

An HAEDR is a comprehensive list of all defects and non-compliances found during the inspection and prioritized by order of criticality.

A High, do not re-energize until rectified.  
 B Medium, rectify as soon as possible (even if this affects plant operations) but can be lived up in the interim.  
 C Low, rectify at next available opportunity that does not affect operations, but can be lived up in the interim.

### ✓ Equipment Locations Drawings

All items of EX equipment located in designated hazardous areas are included in Equipment Location Drawings. These drawings show areas, such as the drill floor, divided into a grid reference similar to a street map to indicate the equipment locations. Individual items are shown on the drawing indicating their approximate locations. This greatly facilitates equipment identification for both future inspections and in situations where remediation is required.

### ✓ Hazardous Area Equipment Register

An HAER is a list of all items of EX equipment located in designated hazardous areas. For ease of data retrieval, the HAER is divided into sections for each designated hazardous area (e.g. the Drill Floor, Shale Shaker House, and Mud Pit Room). Further consideration is given to the radiuses at outlets, doors, pipe flanges and external battery backup equipment. EX equipment that is located in non-hazardous areas (because of superior construction) are not included in this register.

### ✓ Risk Reduction Action Plan

Where defects with EX equipment cannot be rectified at the time of discovery, AKA will submit a detailed prioritized Risk Reduction Action Plan categorizing all defective equipment with estimated cost for replacement.

### ✓ Preliminary Report

- This report provides:
- The total number of equipment items inspected in each area;
  - Defects found, rectified, remaining, and category of remaining in each area;
  - The total number of defects rectified in each area; and
  - The total number of defects remaining in each area (categorized by priority level).

## REMEDIATION

Remediation work on explosion-proof electrical equipment is performed by AKA's specially trained, skilled personnel in accordance with the remediation plan submitted following the site survey.

We perform all remediation/replacement work to all defective EX or non-EX certified equipment, undertake further detailed inspections, maintenance work, fault determination, cleaning, control operations, functional tests and measurements. We use only genuine OEM spare parts that are manufactured in accordance with specific EX equipment certification required in hazardous environments.

We always verify that the selected type of protection and its installation are appropriate. AKA personnel are highly trained on the remediation and maintenance of certified equipment and take care to maintain the integrity of the protection provided for the EX equipment including consultation with the manufacturer, when necessary.



AKA personnel have up-to-date Offshore Survival training and medical certificates for inspections conducted at sea. Additionally, they adhere to the Permit to Work System. Appropriate continuing training is undertaken.

# Protect your installation!

Electrical devices installed in hazardous areas must be specifically designed to be suitable for safe use in these high-risk environments. These devices must be certified for use according to the requirements specified for the Hazardous Area classification.



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