



ELECTRICAL EQUIPMENT IN HAZARDOUS AREAS (EEHA) - PORTABLE ELECTRICAL EQUIPMENT

Standard

Document No.: X060-AE-STD-00009
Security Classification: Business - Internal use only

Rev	Date	Description	Prepared	Checked	TA-1 Endorsed	Director / GM Approved
A	19/09/2013	Issued for review	S. Gregg	S. Longmire		
0	1/12/2014	Issued	S. Gregg	S. Longmire		
1	09/06/2026	Issued for Use	S.Atwell	H.Augustin	S.Atwell	P.Cullen J.Blignaut

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1 INTRODUCTION

1.1 Scope

This standard specifies the general requirements for the use of portable and personal electrical equipment on the INPEX facilities. The objective is to restrict the presence of personal electrical equipment in hazardous areas, and to ensure the safe use of portable electrical equipment in hazardous areas. This standard expands upon the requirements of the AS/NZS 60079 series, and specifies additional INPEX Operations' requirements.

1.2 Purpose

The purpose of this document is to ensure that portable electrical or electronic equipment used in accordance with the requirements of the associated facility safety case.

1.3 Exclusions

This standard does not cover:

- the use of portable and personal non-electrical equipment,
- the transfer of portable and personal electrical equipment directly between the helideck and the living quarters via the prescribed helideck access routes offshore,
- the transport and use of portable and personal electrical equipment outside of the designated process area onshore.

This standard also does not cover the pre-operations phase of the Project - refer to project philosophies and specifications.

1.4 Holds

Nil.

1.5 Abbreviations

EEHA	Electrical Equipment in Hazardous Areas
TIC	Technical Integrity Custodian

1.6 Technical Integrity Custodian

The Technical Integrity Custodian (TIC) for this standard is the Lead Electrical Engineer (TA-1).

2 CODES AND STANDARDS

2.1 General

Australian and New Zealand, (AS, AS/NZS), codes and standards shall be used during the life of the Ichthys Gas Field Development Project for both Offshore and Onshore Facilities.

AS and AS/NZS standards and codes are increasingly based on the standards and codes developed by the IEC. IEC codes and standards may supplement the AS/NZS codes and standards where no direct equivalent exists.

Similarly, other internationally recognised codes and standards, may supplement AS/NZS codes and standards but only when agreed in advance by Company.

The use of any supplementary codes and standards shall fully satisfy the requirements of AS/NZS 60079.14 clause 4.3.2.

In addition, the CPF and FPSO hull electrical systems shall meet the requirements of the applicable DNV classification codes.

2.2 Company Documents

Table 2-1: Pre-Operation Company Documents

Reference	Title
A780-AE-PHI-0001	CPF and FPSO - Electrical and Instrument Equipment for Hazardous Area Philosophy
L290-AE-PHI-0001	Onshore Hazardous Area Classification and Equipment Philosophy

Table 2-2: Operations Phase documents

Reference	Title
X060-AE-STD-0001	Electrical Equipment in Hazardous Areas (EEHA) - Framework
X060-AE-STD-0002	Electrical Equipment in Hazardous Areas (EEHA) - EEHA Verification Dossier
X060-AE-STD-0003	Electrical Equipment in Hazardous Areas (EEHA) - Competency Standard
X060-AE-STD-0004	Electrical Equipment in Hazardous Areas (EEHA) - Maintenance Standard
X060-AE-STD-0005	Electrical Equipment in Hazardous Areas (EEHA) - Testing Standard

Reference	Title
X060-AE-STD-0006	Electrical Equipment in Hazardous Areas (EEHA) - Overhaul Standard
X060-AE-STD-00007	Electrical Equipment in Hazardous Areas (EEHA) - Hazardous Area Classification Standard
X060-AE-STD-00008	Electrical Equipment in Hazardous Areas (EEHA) - Selection and Installation Standard
X060-AE-STD-10000	Electrical Equipment in Hazardous Areas (EEHA) - Inspection Standard

2.3 Australian / New Zealand Codes and Standards

Table 2-3: Australian Standards

Reference	Title
AS/NZS 4761.1	Competencies for working with electrical equipment for hazardous areas (EEHA) Part 1 - Competency Standards.
AS/NZS 3000	Wiring Rules.
AS/NZS 60079	Explosive atmospheres - All parts
AS 60529	Degrees of protection provided by enclosures, (IP Code).
MP87	Miscellaneous publication Australian/New Zealand Certification Scheme for explosion protected electrical equipment (ANZEx Scheme)

2.4 IEC Codes and Standards

The following IEC codes and standards shall apply to this project but are subsidiary to AS and AS/NZS standards:

Table 2-4: IEC Codes and Standards

Reference	Title
IEC 60079	Explosive atmospheres - all parts

IEC 60092-502	Electrical installations in ships – Tankers and special features.
IEC 61892 Part 7	Mobile and fixed offshore units – Electrical Installations: Hazardous Areas
IECEX – publication all parts	IEC Scheme for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEX Scheme)

2.5 Other Applicable Codes and Standards

Table 2-5: Other Applicable Codes and Standards

Reference	Title
DNV-OS-D201	DNV Offshore Standard – Electrical Installation

3 DEFINITIONS

For the purpose of this standard, the definitions below shall apply.

3.1 Personal electrical equipment

Electrical equipment carried or worn by a person and not directly related to work activities. This may include: wrist-watches; calculators; hearing aids; mobile phones; remote car lock fobs, electronic keys, etc.

3.2 Portable electrical equipment

Electrical equipment that is generally only carried by a person in a work environment when the equipment is to be used directly to perform the work. This may include: two-way radios; test equipment; cameras; torches, gas detectors etc.

3.3 Designated process area

Offshore: this is generally defined as any area outside of the living quarters/machinery spaces.

Onshore: this is any area on the plant side of the Operations complex (Main gate, offices, workshops, stores, etc.). All battery rooms onshore shall be considered as process areas for the purposes of this standard.

Electrical and Instrument equipment rooms (LER/LIR) are special cases – refer to section 5.2.2

4 GENERAL

Except when used under a relevant 'permit to work' procedure that verifies both initially and periodically that an explosive atmosphere is not present, all portable and personal electrical equipment used in designated process areas on the INPEX facilities shall comply with the requirements of the AS/NZS 60079 series of standards and this standard.

Although portable and personal electrical equipment may be safe when used in non-hazardous areas in the designated process areas, such equipment may inadvertently be taken into a hazardous area. Hence the requirements of this standard apply to all areas in the designated process areas.

5 USE OF PORTABLE AND PERSONAL ELECTRICAL EQUIPMENT

5.1 Personal Electrical Equipment

General-purpose personal electrical equipment not specifically related to work such as calculators, mobile phones, remote control car keys; etc. are not permitted in the designated process areas. The only exception is battery operated wristwatches.

Based upon industry experience, the ignition risk associated with battery operated wristwatches is deemed to be sufficiently low and therefore these are permitted to be worn on the wrist except in Zone 0 areas. All watches shall be substantially constructed so as risk of accidental damage is minimised and they shall not have exposed charging points.

Hearing aids may be worn in designated process areas providing steps have been taken to ensure they are not easily dislodged and damaged. An inspection by the user of the device is required to ensure the device is free from damage and defects. Any defective equipment shall not be used.

5.2 Portable Electrical Equipment

Portable electrical equipment not of a personal nature that may be required to be used in the process areas, such as two-way radios, test equipment, cameras, torches, laptop PCs, etc. shall only be used in accordance with either clause 5.2.1 or clause 5.2.2 of this standard.

5.2.1 Certified Portable EEHA

The equipment shall be certified for use in a Zone 1 IIC (or IIB+H2) T3 hazardous area in accordance with clause with the INPEX Electrical Equipment in Hazardous Areas (EEHA) - Selection and Installation Standard. Certification for Zone 1 is required because it will be difficult in practice to prevent the transfer of equipment certified only for Zone 2 into a Zone 1 area.

5.2.2 Non-certified Portable Electrical Equipment

Equipment not certified for a Zone 1 IIB T3 hazardous area shall only be used under the relevant INPEX 'permit to work' procedure that verifies both initially and periodically that an explosive atmosphere is not present where the equipment is to be used.

When the equipment is used in accordance with this clause, the equipment may be carried through a hazardous area directly to the process area worksite without the route being verified as being 'gas-free', provided that:

- the equipment is turned off, and
- it is carried in its protective case to prevent damage or battery separation if dropped, and,
- at the work site the conditions of the work permit are followed prior to removing the device from its protective case and energising.

Where the device is to be used within a local electrical or instrument room the device may be transported directly to the room provided the device is de-energised and housed in its protective case without requiring a hot work permit.

In both cases above the permit to work must include conditions that the device may only remain energised when the permit holder is present and the device must be de-energised on any muster event or that the device will be automatically de-energised for a gas detection event in the affected zone (for example a mains powered test instruments plugged into a GPO within a LER/LIR).

Non-certified portable equipment that has been tested by an accredited testing facility and demonstrated to present a negligible likelihood of ignition may be permitted for use within process areas without the need for dedicated perimetry controls.

The use of such equipment shall be subject to a documented risk assessment. As a minimum control measure, the user shall wear a personal gas monitor (PGM) at all times during operation. This provision includes tablet-type devices when utilised within rugged protective enclosures as documented in Report L290-AE-REP-70006 – Non-IS Mobile Device – Drop Ignition Testing.

5.3 Conditions of Use

Portable electrical equipment certified for use in a hazardous area may have 'conditions of use' that restrict its safe use. It is important that all personnel using the equipment, including non-instrument/electrical personnel, know the 'conditions of use'.

The 'conditions of use' applicable to all general usage portable electrical equipment used on the INPEX facilities (eg. torches, two-way radios, etc.) shall be determined and included in the induction or specific task training for the INPEX facilities.

Prior to issuing a work permit for non-general usage certified portable electrical equipment (eg. test instruments, cameras, etc.) the equipment certification shall be reviewed by a person with a current INPEX Inlec Technician EEHA Competency and the 'conditions of use', if any, shall be determined and included as a condition on the work permit.

5.4 Inspection, Testing and Maintenance

Portable and personal explosion-protected electrical equipment shall be inspected, tested and maintained in accordance with the INPEX Electrical Equipment in Hazardous Areas (EEHA) Inspection Standard, the INPEX EEHA Testing Standard, and the INPEX EEHA Maintenance Standard, respectively.

6 COMPETENCY

All persons inspecting, testing and maintaining portable and personal explosion-protected electrical equipment shall have a current INPEX Inlec Technician EEHA Competency. Refer to the INPEX Electrical Equipment in Hazardous Areas (EEHA) Competency Standard.