

DEP SPECIFICATION

NAVIGATIONAL AIDS FOR OFFSHORE STRUCTURES FOR GLOBAL APPLICATION

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DESIGN AND ENGINEERING PRACTICE

DEM1



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1. INTRODUCTION

1.1 SCOPE

This DEP specifies requirements and gives recommendations for the design, manufacture and installation of navigational aids systems for permanent use on offshore fixed structures and floating structures that are permanently moored or tethered.

Navigational aids comprise fog signals, main, secondary and subsidiary marine lanterns, radar beacons, AIS, wave-off lights, red obstruction lights, helideck perimeter lights, helideck touchdown marking lighting, status light and illuminated windsocks.

Temporary navigational aids, equipment associated with platform or structure identification, and installations specifically constructed as aids to navigation are excluded from the scope of this DEP.

Information relating to a specific installation will be given in the project specification or requisition.

This DEP contains mandatory requirements to mitigate process safety risks in accordance with Design Engineering Manual (DEM) 1 – Application of Technical Standards.

This is a revision of the DEP of the same number dated September 2013; see (1.5) regarding the changes.

1.2 DISTRIBUTION, INTENDED USE AND REGULATORY CONSIDERATIONS

Unless otherwise authorised by Shell GSI, the distribution of this DEP is confined to Shell companies and, where necessary, to Contractors and Manufacturers/Suppliers nominated by them. Any authorised access to DEPs does not for that reason constitute an authorization to any documents, data or information to which the DEPs may refer.

This DEP is intended for use in facilities related to offshore oil and gas production. This DEP may also be applied in other similar facilities.

When DEPs are applied, a Management of Change (MOC) process shall be implemented; this is of particular importance when existing facilities are to be modified.

If national and/or local regulations exist in which some of the requirements could be more stringent than in this DEP, the Contractor shall determine by careful scrutiny which of the requirements are the more stringent and which combination of requirements will be acceptable with regards to the safety, environmental, economic and legal aspects. In all cases the Contractor shall inform the Principal of any deviation from the requirements of this DEP which is considered to be necessary in order to comply with national and/or local regulations. The Principal may then negotiate with the Authorities concerned, the objective being to obtain agreement to follow this DEP as closely as possible.

1.3 DEFINITIONS

1.3.1 General definitions

The **Contractor** is the party that carries out all or part of the design, engineering, procurement, construction, commissioning or management of a project or operation of a facility. The Principal may undertake all or part of the duties of the Contractor.

The **Manufacturer/Supplier** is the party that manufactures or supplies equipment and services to perform the duties specified by the Contractor.

The **Principal** is the party that initiates the project and ultimately pays for it. The Principal may also include an agent or consultant authorised to act for, and on behalf of, the Principal.

The word **shall** indicates a requirement.

The capitalised term **SHALL [PS]** indicates a process safety requirement.

The word **should** indicates a recommendation.

The word **may** indicates a permitted option.

1.3.2 Specific definitions

Term	Definition
Availability (IALA Guideline No. 1035 chapter 1.3)	The probability that an aid to navigation or a system of aids to navigation as defined by the Competent Authority is performing its specified function at any randomly chosen time. This is expressed as a percentage of total time that an aid to navigation or a system of aids to navigation should be performing their specified function. This is a measure of the service provided to the mariner.
Aids to Navigation (AtoN)	A device or system external to vessels that is designed and operated to enhance the safe and efficient navigation of vessels and/or vessel traffic
Autonomy time	Duration for which the battery can supply its rated load within its specified voltage limits
Candela (cd)	Expression of light intensity
Certificate	Document issued by a recognised authority certifying that it has examined a certain type of apparatus and, if necessary, has tested it and concluded that the apparatus complies with the relevant standard for such apparatus
Certificate of Conformity	Certificate stating that the electrical apparatus complies with the relevant standards for use in potentially explosive atmospheres.
Decibel (dB)	Expression of sound pressure level (measured at a distance of 1 m (3 ft))
Declaration of Compliance	Document issued by the Manufacturer declaring that the electrical apparatus complies with the requirements of IEC 60079
Effective Intensity	Effective intensity calculated in accordance with the IALA Recommendations E-200-4
Expected Lifetime	Time during which the system remains suitable for the application for which it was made, provided it is used, regularly inspected, examined and serviced in accordance with the Manufacturer's instructions and with replacement of parts subject to mechanical wear
Hazardous Area, (IEC 60050, Chapter 426- 03-01)	Area in which an explosive gas atmosphere is or may be expected to be present in quantities such as to require special precautions for the construction, installation and use of electrical apparatus
Hazardous (Classified) Location (API RP 500)	A location where fire or explosion hazards may exist due to flammable gasses or vapors, flammable liquids, combustible dust, or ignitable fibers or flyings.

Term	Definition
Helicopter Landing Officer (HLO)	A platform based officer, responsible for the safe landing of a helicopter.
Interruptible, maintained electrical supply	A source of electrical power which is backed up by a second (emergency) source of power to provide a supply of electricity that may be interrupted for no more than 15 s.
Limited Obstacle Sector, (LOS)	A limited obstacle area on a helicopter deck, having an angle of 150° on an elevated helicopter deck where obstacles of a certain height are allowed.
Live	Electrically charged
Marking	Data put on the electrical apparatus by the Manufacturer giving information for safe use of the apparatus
Mean High Water Spring (MHWS)	Mean value of the high water spring tides
Morse Code "U"	A signal to the mariner (dot-dot-dash) indicating that the platform is unable to manoeuvre.
Nautical Mile (NM)	1852 m (6076 ft)
Nominal Value, (IEC 60050, Section 151-16-09)	Suitable approximate quantity value used to designate or identify a component, device or equipment
Offshore Installation	Installation located near open saliferous water, e.g., platforms, jetties, floating drilling/production facilities
Rated Value, (IEC 60050, Section 151-16-08)	Quantity value assigned, generally by a manufacturer, for a specific operating condition of a component, device or equipment
Reliability (IALA Guideline No. 1035 chapter 1.3)	The probability that an aid to navigation, when it is available, performs a specified function without failure under given conditions for a specified time. This is a measure of the performance of AtoN equipment.
Safe Landing Area (SLA)	An obstacle free area on a helicopter deck, having an angle of 210° where obstacles higher than 250 mm (10 in) are not allowed.
Secondary Light	A light(s) which comes into operation automatically on failure of the main light(s)

Term	Definition
Subsidiary Light	Additional light(s) used to clearly indicate the horizontal extent of an offshore structure or vessel
Test Report	Document prepared by the Manufacturer indicating in detail the tests and verifications to which the electrical apparatus has been subjected and their results
Uninterruptible maintained electrical supply	A source of electrical power, which is backed up by a second (emergency) source of power to provide a supply of electricity that may be interrupted for no more than 0.5 ms.
Usual Range	Range of a sound signal calculated in accordance with the IALA recommendation E-109
Vital Service	Service which, if failing in operation or when called upon, can cause an unsafe condition of the process and/or electrical installation, jeopardise life, or cause major damage to the installation

1.3.3 Abbreviations

Term	Definition
AIS	Automatic Identification System
AWG	American Wire Gauge
CAA	Civil Aviation Authority
FAA	Federal Aviation Administration
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
NEMA	National Electrical Manufacturers Association
NCCP	Navigational aids Central Control Panel
PV	Photo Voltaic
Racon	Radar beacon
TD/PM	Touchdown/Positioning Marking
TLOF	Touchdown and Lift-Off Area

1.4 CROSS-REFERENCES

Where cross-references to other parts of this DEP are made, the referenced section or clause number is shown in brackets (). Other documents referenced by this DEP are listed in (9).

1.5 SUMMARY OF MAIN CHANGES

This DEP is a full revision of the DEP of the same number dated September 2013. The following are the main, non-editorial changes.

Section/Clause	Change
All	Inclusion of alternative standards for use within North America.
All	Replacement of generic SHALL [PS] requirement with ones specific to process safety risks.
2.1, Item 7	Clarify the interpretation of "should" statements in referenced standards CAP 437 and IALA O-139
3 & 4	Removal of clauses already covered by IALA O-139 or CAP 437 and replaced with a reference to the applicable part within these standards.
3.1.5	New section to reflect changes within the industry for the use of AIS as an aid to navigation.
4.1.4	CAP 437 (7 th edition) requirements relating to helideck touchdown/position and 'H' marking lighting and flood lighting reflected.

1.6 COMMENTS ON THIS DEP

Comments on this DEP may be submitted to the Administrator using one of the following options:

Shell DEPs Online (Users with access to Shell DEPs Online)	Enter the Shell DEPs Online system at https://www.shelldeps.com Select a DEP and then go to the details screen for that DEP. Click on the "Give feedback" link, fill in the online form and submit.
DEP Feedback System (Users with access to Shell Wide Web)	Enter comments directly in the DEP Feedback System which is accessible from the Technical Standards Portal http://swwww.shell.com/standards . Select "Submit DEP Feedback", fill in the online form and submit.
DEP Standard Form (other users)	Use DEP Standard Form 00.00.05.80-Gen. to record feedback and email the form to the Administrator at standards@shell.com .

Feedback that has been registered in the DEP Feedback System by using one of the above options will be reviewed by the DEP Custodian for potential improvements to the DEP.

1.7 DUAL UNITS

This DEP contains both the International System (SI) units, as well as the corresponding US Customary (USC) units, which are given following the SI units in brackets. When agreed by the Principal, the indicated USC values/units may be used.

1.8 NON NORMATIVE TEXT (COMMENTARY)

Text shown in italic style in this DEP indicates text that is non-normative and is provided as explanation or background information only.

Non-normative text is normally indented slightly to the right of the relevant DEP clause.

2. BASIC REQUIREMENTS

2.1 GENERAL

1. The navigational aids system shall be suitable for continuous operation at full load within the specified service conditions.
2. The navigational aids system shall be designed for an expected lifetime of 20 years independent of the type of battery system adopted.
3. Filament lamps shall not be used for maritime or aeronautical navigational aids systems.
4. When referenced from this DEP specification, the contents of CAP 437 and IALA O-139 are intended to be treated as requirements and any deviation from them shall be subject to the approval of the Principal.

Reference is made to CAP 437 and IALA O-139 in this DEP, which are written as a set of "should" recommendations. The intent in this DEP is for the "should" statements in the standards to be interpreted as "shall" requirements unless otherwise agreed by the Principal.

2.2 SAFETY

1. The navigational aids system shall be designed to prevent any risk of short circuits and to ensure personnel and operational safety under all conditions of operation, inspection and maintenance.
2. Components shall be capable of withstanding the thermal and dynamic stresses resulting from internal and external short circuits and circuit switching operations.
3. Damage arising from component failure should be confined to the component concerned.
4. Component materials shall be non-flame propagating.
5. Electrolytes (e.g., for capacitors) shall be:
 - a. Not very toxic per Part III of DEP 01.00.01.30-Gen.
 - b. Totally free from PolyChlorinated Biphenyls (PCBs).

2.3 SERVICE CONDITIONS

2.3.1 Site conditions

1. The equipment shall be suitable for operation in the environmental and service conditions, as specified in the requisition, pertaining to the location where the equipment is to be installed.

2.3.2 Location

1. The battery shall be located in one of the following, unless otherwise specified in the requisition:
 - a. a closed, ventilated room;
 - b. Ex-e ventilated battery boxes.
2. The control panel shall be located in a closed, ventilated room

2.3.3 Altitude

1. The equipment and all its accessories shall be suitable for altitudes up to 200 m (656 ft).