Provisions related to the marking of permanently located offshore units in the petroleum industry

KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION

Foreword

These provisions have been drawn up by the Norwegian Coastal Administration (NCA) Head office in accordance with the Regulations of 29 April 2010 no. 634 relating to the design and equipping of facilities, etc. in the petroleum activities (the facilities regulations) Section 71 first paragraph.

The NCA's regulation of the marking of permanent offshore units in the petroleum activities cannot be adequately regulated through the Act of 17 April 2009 no. 19 relating to harbours and fairways (the Harbour Act), as such offshore units as a rule are established beyond territorial waters, which is the delimitation of the scope of the act. It is stated that if such offshore units are established within territorial waters, the measure will require permission pursuant to the Harbour Act.

The NCA's provisions are directed towards those establishing and operating petroleum offshore units and other users of the waters.

Established 20 December 2013

Norwegian Coastal Administration - Head Office

Maritime Safety Department

Please note that this document is an English translation of "*Kystverkets bestemmelser om merking av permanent plasserte innretninger i petroleumsvirksomheten*'. Should there be any conflict between the Norwegian provisions and this translation, the wording in the Norwegian provisions will have precedence.

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1 Introduction

These provisions are valid for offshore units which are subject to the facilities regulations. It follows from the regulations Section 71 that:

'Facilities shall be marked such that they can quickly be identified and such that other traffic in the area is notified. Marking of facilities shall be in accordance with the Norwegian Coastal Administration's provisions.

Anchor and marking buoys shall be marked in a corresponding manner.

All navigation marks placed in connection with the petroleum activities shall be in accordance with IALA rules and of a type that is accepted by the Norwegian Coastal Administration for such marking. When anchor points are placed outside the safety zone, the Petroleum Safety Authority Norway can require them to be marked with yellow anchor buoys with yellow reflectors, and if applicable, with yellow flashing lights.'

These provisions shall ensure that such offshore units may be detected at a distance that is sufficient in order for vessels to choose a safe course for passing and are otherwise visible to vessels in the area.

The provisions shall also ensure the detection of other objects related to the petroleum industry, and which can represent a danger for the traffic at sea.

2 General

It is not possible to stipulate a passing distance between vessels and offshore units that will be safe under all conditions. With this reservation, for practical purposes one operates with three zones around an offshore unit:

1 Passing zone: From 10 nautical miles to 3 nautical miles

2 Caution zone: From 3 nautical miles to 500 metres

1 Safety zone: From 500 metres to the offshore unit's outer edge[1]

The provisions are drawn up on the basis that offshore units ordinarily are portrayed on nautical charts, and that vessels follow passage plans that provide a safe passing distance.

In order for an offshore unit to be identified at a shorter range, there are provisions for signs that display an offshore unit's block number and name.

3 Availability and continuity

Light signals, and any radar transponder (racon) and AIS Aid to navigation shall:

- have an availability of 99.8%, and
- be capable of functioning for at least 96 hours on a supplementary energy source in the case of failure of the primary energy source.

Availability shall be documented over a period of 3 years.

If light signals, radar transponder (racon) or AIS Aid to navigation are not functional, this shall be reported to the NCA through the National Coordinator for Navigational Warnings (NAVCO).

[1] The safety zone can under certain circumstances be increased to 1000 metres.

4 Light signals

For the calculation of light intensity to fulfil the requirements for luminous range, IALA's recommendations shall be followed. Calculations shall be based on that the atmospheric transmissivity, $T_M = 0.74$ (meteorological visibility 10 nautical miles).

If there exists documentation that the transmissivity is less than 0.74 ($T_M < 0.74$) the lesser transmissivity shall be used for the calculation of the luminous range.

Light signals must ordinarily be switched on and off when the ambient light level is 50 - 100 lux and 150 - 200 lux respectively.

4.1 Main light signals

Offshore units shall be equipped with main light signals such that at least one light signal is visible from any direction when dark.

The following applies for the main light signals:

(a) Colour: White

(b) Character: Single letter signal 'U' $(\cdot\cdot-)$[2] with a 15 second period

(c) Luminous range: 10 nautical miles[3]

(d) Main light signals shall be synchronized, also with subsidiary light signals

In the character a 'dash' shall have the duration of three 'dots' and the duration of dark between 'dots' and 'dashes' as one 'dot'. The duration of dark between consecutive light signals shall be no less than 8 seconds and no more than 12 seconds.[4]

The main light signal should preferably not be lower than 6 metres and not higher than 30 metres above mean highest astronomical tide (HAT). In special circumstances where the offshore unit is such that the main light signal cannot be installed at 30 metres or lower, it may be installed at a height no higher than 35 metres.

4.2 Subsidiary light signals

Offshore units shall be equipped with subsidiary light signals that indicate the offshore unit's outer edge in the dark, with the exception of those outer edges that may already be marked by main lights pursuant to section. 4.1 above.

The following applies for subsidiary light signals:

(a) Colour: Red

(b) Character: As for main light signals

(c) Luminous range: 3 nautical miles

(d) The subsidiary light signals shall be synchronized, also with the main light signals

5 Radar transponder (racon)

Offshore units should be equipped with a radar transponder (racon) to ensure that these may be detected or are visible where light signals are not considered adequate, and it is appropriate

[2] In the 'International Code of Signals' the single-letter signal 'U' means 'You are running into danger'.
[3] The light range may be over 10 nautical miles.
[4] Example of Mo(U) light signal with a period of 15 seconds and 8 second duration of darkness between consecutive light signals 1 + 1 + 1 + 1 + 3 + 8 = 15 (Underlined numbers represent darkness.)

to use radar for identification. This applies especially to offshore units such as for instance anchor- and marking buoys, loading buoys and supporting structures (steel truss and concrete constructions).

Radar transponders (racon) shall be capable of responding to marine radars in the 3 cm and 10 cm frequency bands. In the 10 cm frequency band this requirement does not apply for NT (New Technology) radars.

Radar transponders shall have a code in the form of an appropriate letter of the Morse code and that starts with a 'dash'. In the code a 'dash' shall have the duration of three 'dots' and the duration between the transmission of 'dashes' and 'dots' shall be one 'dot'.

6 AIS Aid to navigation

Offshore units should be equipped with AIS Aid to Navigation to ensure that they may be detected or are visible where light signals are not considered to be adequate, and it is appropriate to use AIS for identification.

With regard to the eventual use of AIS Aid to navigation one should be aware that:

- portrayal in Electronic Navigational Charts (ENCs) of permanent objects of navigational interest only with standard cartographic symbols normally can give sufficient guidance for mariners, and
- it can be difficult to interpret the picture on an integrated navigational display onboard with ENC and AIS data in instances where respectively a cartographic and an AIS symbol is portraying the same object.

An AIS Aid to Navigation may be either physical or virtual:

- A physical AIS Aid to Navigation is an AIS message 21 'Aids-to-navigation report AtoN)', which represents an Aid to Navigation that physically exists.

  Note: The AIS equipment can be fitted on an offshore unit that physically exists or at another location in the proximity of this.
- A virtual AIS Aid to Navigation is an AIS message 21 'Aids-to-navigation report AtoN)', which represents an Aid to Navigation that does not physically exist.

Use of AIS Aid to Navigation

A physical AIS Aid to Navigation shall preferably be arranged such that the AIS equipment is fitted on an Aid to Navigation that physically exists.

A virtual AIS Aid to Navigation can be used to mark with a virtual Aid to Navigation where it is difficult to establish a physical Aid to Navigation due to conditions amongst others large depth or difficult sea- and weather conditions.

Access to and reporting in the network

An AIS AtoN unit shall use 'random access TDMA' (RATDMA) for control of access to the network (cf. AIS VHF Data Link (VDL)).

Reporting to the network should be in Mode B with transmission of the same message first on channel 1 and then on channel 2 or vice versa, in rapid succession, nominally 4 seconds. Mode B gives highest probability for that all users on the AIS network receives the message.

AIS Aid to Navigation report

An AIS Aid to Navigation report shall be in the form of an 'Aids-to-navigation report (AtoN)' with type indication:

- 'Fixed structure offshore, such as oil platforms, wind farms';
- other type indications such as for example 'Special mark'.

Offshore units shall be indicated by quadrant, block number and name.

Example:

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Maritime Mobile Service Identity

Establishing of AIS Aid to Navigation requires MMSI (Maritime Mobile Service Identity). Such identity is assigned by Telenor Maritim Radio following application.

7 Identification panels

Offshore units shall be equipped with panels stating block number and name, arranged such that at least one panel is visible from any direction.

Numbers and letters shall be at least 1 metre high on a yellow background of retroreflective material. The material shall satisfy requirements toward retroreflection and colour as class 1 material and corresponding yellow colour according to NS-EN 12899-1:2007 Fixed, vertical road traffic signs - Part 1: Fixed signs.

The signs shall be illuminated when dark so that they are visible without use of searchlights.

8 Use of Aids to navigation

For any marking of an object in the waters close to an offshore unit or marking of the circumference of an offshore unit or similar, Aids to navigation may be used as described in NCA's guidelines (cf. 'Retningslinjer for utforming, tekniske krav til og plassering av navigasjonsinnretninger').

9 Validity

These provisions apply from 1 January 2014, and replace previous provisions, including the then Coast Directorate letter of 7 December 2006.

Existing offshore units must through maintenance of light signals etc., ensure that they comply with these provisions no later than 1 January 2019.

10 References

- NORWEGIAN REG 2010-04-29 no. 634: Regulations relating to the design and equipping of facilities, etc. in the petroleum activities (the facilities regulations).
- NORWEGIAN REG 2010-02-12 no. 158 Regulations relating to health, safety and the environment in the petroleum activities and at certain onshore facilities (the Framework Regulations) - CHAPTER VIII Offshore safety zones.
- NORWEGIAN REG 2012-12-19 no. 1329: Regulations relating to signs and navigation aids.
- Retningslinjer for utforming, tekniske krav til og plassering av navigasjonsinnretninger, Kystverkets hovedkontor, januar 2013.
- IALA Recommendation O-139 on the Marking of Man-Made Offshore Structures.
- IALA Recommendation A-126 on the Use of the Automatic Identification System.
- (AIS) in Marine Aids to Navigation Services.
- IALA Guideline No. 1035 to Availability and Reliability of Aids to Navigation.

In addition, reference is made to the recommendations, guidelines and standards of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the International Maritime Organization (IMO), the International Telecommunications Union (ITU) and the International Electrotechnical Commission (IEC) which may be necessary to understand and meet the requirements set out in these provisions.

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