

1 INTRODUCTION

This document specifies the requirements that must be met by all vessels built according to the NOFO standard.

It is assumed that vessels satisfy all the requirements set for ocean-going oil recovery vessels by Norwegian authorities and classification societies.

1.1 Definitions and terms

Area standby vessel	A standby vessel that has been approved by the Norwegian authorities to cover emergency preparedness for several installations in one area. The vessel must also satisfy the NOFO standard when it has NOFO oil recovery equipment permanently installed on board.
Design phase	Vessels under construction and before the hull has been started
Dispersant	Liquid chemical to carry out dispersion Use of a dispersing agent has been regulated in separate regulations.
Dispersion	Dispersants are used to accelerate the natural dispersion of an oil slick. Dispersants promote the formation of numerous tiny oil droplets, and delay the reformation of slicks because they contain surfactants. This helps promote rapid dilution by water movement and the droplets of oil are eventually broken down by bacteria in the water. Therefore, dispersant can simply be compared to soap. Chemical dispersion is considered to be used in two different situations: <input type="checkbox"/> As a supplement to mechanical recovery of large oil spills
Dedicated emergency preparedness / Oil Recovery Vessel	An offshore vessel that meets the requirements in the NOFO Standard and has NOFO's oil recovery

	equipment permanently installed on board.
DP	Dynamic Positioning
Eex	Types of standard for electrical apparatus in hazardous areas
Emulsion	Physical phenomenon where drops of water penetrate the oil and form a viscous, stable slick with a water content of up to 80 per cent. The ability to form emulsions varies depending on the type of oil.
Heavy oil skimmer	Skimmer used to recover highly viscous oil from the sea
HPU	Hydraulic Power Unit
IR camera	Infrared camera
MOB boat	Man-over-board boat
NOFO	Norwegian Clean Seas Association for Operating Companies
NOFO OR vessel	Offshore vessels that satisfy the NOFO standard
NOFO tug	Vessel that has been equipped and approved for towing NOFO oil booms
Nozzle	Equipment that using pressure transforms liquid into a cloud of droplets
Oil boom	Boom used to recover and concentrate free flowing oil in order to be pumped aboard the oil recovery vessel
Oil radar	Oil radar senses oil, as oil has a wave dampening effect
Oil skimmer	Equipment used to pump oil from the sea to the oil recovery vessel
Oil skimmer crane	Technical equipment for lifting the oil skimmer between the deck and the sea
OR vessel	Oil Recovery Vessel
ORO	Oil Recovery Operations
Overflow skimmer	Skimmer used to recover oil from the sea

Spray boom	Adjustable device with nozzles positioned in order to distribute dispersing agent evenly over a certain width outside the side of the ship.
Steam nozzles	Nozzles for supplying steam directly into liquid for heating
System index	Index that states the tank capacity for recovered oil on a NOFO OR vessel, e.g.: Tank capacity 1 500 m ³ gives a system index of 1.5. Tank capacity 2 300 m ³ gives a system index 2.3, etc.
Thermal capacity	Factor used in power calculations for heating fluid, In this case, the thermal capacity has been set at 3.44 kJ/kg/oC for a 50% mixture of oil and water
Tank capacity	Capacity of a NOFO OR vessel to take recovered oil on board
Transrec	Derived from “Transfer and Recovery”. Combined handling equipment for hose and skimmer.

1.2 Requirements

Vessels contracted after 1 May 2009 must follow the standard according to the 2009 revision. The revision is not retrospective.

The vessel must be ready for ORO operation with 2 hours of the ORO tanks being loaded and, if necessary, cleaned.

In order to meet the response time requirement in the plans, the vessel must be able to achieve at least 14 knots in normal loaded condition.

It is a requirement for a DP system with minimum IMO Class 1.

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1.3 Submitting documentation for new builds

In the case of new builds to be certified according to the NOFO standard, documentation including drawings must be submitted to NOFO for approval in the design phase. Ref. section 5.1.

In the case of existing vessels to be redesigned for certification according to the NOFO standard at a later date, documents, including drawings, must be submitted for approval as soon as possible. Ref. section 5 - Approval.

1.4 Non-conformance with requirements

NOFO may accept non-conformance with its standard in cases where:

- the non-conformance does not mean that the appropriateness of the vessel in ORO is seriously compromised, or
 - the non-conformance means that the appropriateness of the vessel is improved.
- When submitting documentation, each non-conformance with the Standard must be clearly identified. All non-conformance with the Standard must be clarified with NOFO during the (re)design phase. Each non-conformance will be evaluated individually.

In the case of existing vessels to be upgraded for certification according to the NOFO 2009 standard, documents, including drawings must be submitted for approval as early as possible.

Treatment of non-conformance follows NOFO's processes. Approved non-conformance must be registered as comment on the certificate.

2 VESSELS

2.1 Tanks

2.1.1 ORO Tanks

An active effort must always be made to achieve the largest possible tank capacity.

Under no circumstances must the tank capacity for storage of recovered oil be less than 1 500 m³.

The certificate document must state the system index / tank capacity (e.g.: tank capacity of 1 700 m³ is given using system index 1.7). (Ref. section 1.1, page 2. Definitions and terms)

The ORO system must be included as a screen on the vessel's cargo operation system.

2.1.1.1 Tanks to be used in ORO

The tank capacity in ORO must be able to make use all of the following tanks:

- Mud tanks
- Brine tanks
- Base oil tanks
- Methanol tanks

Special product tanks

NOFO

Staff tanks

Chain boxes

Fuel tanks

2.1.1.2 Tanks not included in the ORO tank capacity

The following tanks must not be included in the ORO tank capacity:

Wing, bottom and other tanks with a lot of inner structure

Freshwater tanks

Tanks with a volume less than 50 m³

2.1.1.3 Cleaning pumps and pipe systems

Cleaning must be taken into consideration when designing the vessel. Pumps and pipe systems must be designed for easy access, or dismantling and cleaning.

2.1.2 Fuel tanks are for the vessel's operation

Dedicated fuel tanks, for the vessel's operation during an oil spill response operation, must be specified.

The tanks must have a capacity for a minimum 30-day oil response operation, of which 5 days will be steaming at 14 knots.

It must be possible to refuel the consumption tanks during an ORO operation.

Dimensions and connections must be in accordance with NORSOK standard.

2.1.3 Freshwater tanks

The freshwater capacity must meet the needs of a 30-day ORO operation.

In addition to general consumption, the capacity requirement includes tank heating consumption.

It must be possible to refill the consumption tanks during an ORO operation.

Dimensions and connections must be in accordance with NORSOK standard.

2.1.4 ORO tank heating

2.1.4.1 Heating capacity

All the vessels ORO tanks must be equipped with a permanent system for heating recovered oil / emulsion.

The system must make it possible to raise the temperature 15°C for a volume of 1 000 m³ within 12 hours; calculated for a sea temperature of 5°C and air temperature of 0°C.

In the calculations the specific heating capacity must be set at 3.44 kJ/kg/°C, which is typical value for a 50% mixture of oil and water.

It must be possible to use the entire capacity of the heat source in a random combination maximum of 3 tanks. NOFO

Standard: