NORSOK STANDARD

TEMPORARY EQUIPMENT

Z-015
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FOREWORD

NORSOK (The competitive standing of the Norwegian offshore sector) is the industry initiative to add value, reduce cost and lead time and eliminate unnecessary activities in offshore field developments and operations.

The NORSOK standards are developed by the Norwegian petroleum industry as a part of the NORSOK initiative and supported by OLF (The Norwegian Oil Industry Association) and TBL (Federation of Norwegian Engineering Industries). NORSOK standards are administered and issued by NTS (Norwegian Technology Standards Institution).

The purpose of NORSOK standards is to contribute to meet the NORSOK goals, e.g. by replacing individual oil company specifications and other industry guidelines and documents for use in existing and future petroleum industry developments.

The NORSOK standards make extensive references to international standards. Where relevant, the contents of a NORSOK standard will be used to provide input to the international standardisation process. Subject to implementation into international standards, the NORSOK standard will be withdrawn.

Annexes are informative.

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1 SCOPE

The purpose of this standard is to specify the technical and safety related minimum requirements for temporary equipment to be used on all installations in the North Sea.

2 NORMATIVE REFERENCES

The following standards include provisions which, through references in this text, constitute provisions of this NORSOK standard. Latest issue of the references shall be used (see note 1 below) unless otherwise agreed. Other recognised standards may be used provided it can be shown that they meet or exceed the requirements of the standards below.

DBE	Rules for boilers.
DLI	Order number 192: Compressed air systems (Norwegian text only)
DLI	Order number 515: High-pressure cleaning etc. (Norwegian text only)
DLI	Order number 522: Machinery regulations. (Norwegian text only)
DNV	Certification Note No. 2.7.1: Offshore freight containers design and certification. See Note 2 below.
EN 792	Hand-held non-electric power tools - safety requirements.
IMDG	International Maritime Dangerous Goods Code.
NFPA 72 E	Automatic fire detectors.
NORSOK E-001	Electrical Systems.
NORSOK H-001	HVAC - Heating, Ventilation, Air Condition.
NORSOK R-001	Mechanical Equipment.
NORSOK S-DP-001	Technical safety (will be renumbered S-001).
NORSOK S-002	Working Environment.
NOROSK S-DP-003	Environmental care (will be renumbered S-003)
NORSOK Z-DP-002	Coding system.
NORSOK Z-001	Documentation for Operation (DFO).
NORSOK Z-010	Electrical, instrumentation and telecommunication installation.
NPD	Regulations relating to electrical installations in the petroleum activities.
NPD	Regulations for systematic follow-up of the working environment (SAM).
NPD	Regulations relating to process and auxiliary facilities.
NS-EN 418	Safety of machinery - Emergency stop equipment, functional aspects - principles of design.

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Note 1: Specific references in this NORSOK standard to clauses, paragraphs or sections in normative references may not be correct for normative references revised after issue of this standard. This is, however, not intended to preclude use of latest issue.

Note 2: The reference to classification society rules applies to the technical provisions only. Any requirement therein for classification, certification or third party verification is not part of this NORSOK standard, and may be considered as a separate service.

3 DEFINITIONS AND ABBREVIATIONS.

3.1 Definitions

Temporary equipment: Equipment for limited use offshore, which require hook-up for use and/or can be an ignition source.

Shall	Verbal form used to indicate requirements strictly to be followed in order to conform to the standard and from which no deviation is permitted, unless accepted by all involved parties.
Should	Verbal form used to indicate that among several possibilities one is recommended as particularly suitable, without mentioning or excluding others, or that a certain course of action is preferred but not necessarily required.
May	Verbal form used to indicate a course of action permissible within the limits of the standard.
Can	Verbal form used for statements of possibility and capability, whether material, physical or casual.

Hot work: Hot work embraces work operations where a source of ignition is used or caused. Sources of ignition are generally divided into groups A and B, where B sources are easier to control:

- Examples of type A ignition sources: Welding, hot tapping of pipes and tanks, hot shrinking using open flame, preheating, flame cutting and grinding.
- Examples of type B ignition sources: Hot shrinking with electric hot-air drier, sand blasting, electrical hand tools, megger testing, soldering iron, camera with flash and non-Ex certified electrical appliances and peening.

3.2 Abbreviations

ABE	Fire extinguishers - approved for flammable liquids, fires in wood, paper, fabrics or electrical equipment up to 1000 volt
CCR	Central Control Room
DBE	Directorate for Fire and Explosion Protection (Norwegian)
DLI	Directorate for Labour Inspection (Norwegian)
ESD	Emergency Shut Down
HVAC	Heating, Ventilation and Air Conditioning
IE	Instrumentation and telecommunication earth
IMDG	International Maritime Dangerous Goods

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IS	Intrinsically safe
LEL	Lower Explosion Level
MER	Main Earth Reference
MCC	Motor Control Centre
NC	Normally Closed
NFPA	National Fire Protection Association
NPD	Norwegian Petroleum Directorate
PA	Public Address
PE	Protective Earth
ROV	Remote Operated Vehicle
SAM	NPD Regulations for systematic follow-up of the working environment
SELV	Safety Extra Low Voltage
SJA	Safe job analysis
UPS	Uninterruptible Power Supply

4 TECHNICAL REQUIREMENTS

4.1 Introduction

4.1.1 Functional requirements

Temporary equipment shall be designed and equipped too:

- Ensure it will fulfil its intended functions
- Avoid jeopardising the safety of personal and permanent installations
- Be safely transported

All temporary equipment shall comply with regulatory requirements.

The requisitioned shall specify the relevant environmental loads (outdoor/indoor, wind, rain, temperature min/ max etc).

4.1.2 Matrix for grouping of containers

Technical and safety - related requirements for different types of service-containers are listed in Table 1 and 2 below.

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Table 1 - Matrix for containers in unclassified area

REQUIREMENTS / TYPE CONTAINER			4.4.1 Structure			4.4.2 Fire					4.4.3 Gas		4.4.4 Signal CCR			4.4.5 Tele		4.4.6 Electrical			4.4.7 HVAC	
			Fire class/Rating Note 2	Emergency exit - Note 2	Self closing door	Fire detection	Sprinkler	Portable extinguisher	Room extinguisher system	Fire hose	Gas detector - Note 1	Ignition source disconnected	Fire detection & protection	Gas alarm	Manual alarm	PA	Telephone	Emergency lighting	Ex-inst. external	Ex-inst. internal - Note 1	Mechanical vent.- Note 1	No. of air changes/hour Note 2
A	4.2.1	Accommodation container	A-60	M	M	M	M	M		M	M	M	M	M	M	M	R	M	M		M	6
B	4.2.2	Offices, Coffee bar, Laboratory Logging etc.	A0	M	M	M		M			M	M	M	M		M	R	M	M		M	6
C	4.2.3	Workshop for hot work	A0	M	M	M		M			M	M	M	M		M		M	M	M	M	6
D	4.2.4	Comprimator/ trashhandling										M							M	M		
E	4.2.5	Workshop for cold work	A0	M	M	M		M			M	M	M	M		M		M	M	M	M	6
F	4.2.6	Container for diesel engines	A0		M	M		M	M		M	M	M	M				M	M		M	6
H	4.2.8	Control cont. ROV units	A0	M	M	M		M			M	M	M	M		M	M	M	M		M	6
I	4.2.9	Storage for flammable materials	A0		R	M		M				M	M						M	M		
J	4.2.10	Storage for non flammable materials										M							M	M		
K	4.2.11	Paint storage	A0			M		M				M	M						M	M		
L	4.2.12	Workshop for painters	A0	M	M	M		M			M	M	M	M		M		M	M	M	M	12
M	4.2.13	Chill/freeze container	A0		M							M			M				M			
N	4.2.14	Radio/comm. container	A0	M	M	M		M			M	M	M	M		M	M	M	M		M	6
O	4.2.15	Toilet container	A0	M	M			R			R	M		R		M	R	M	M	M	M	6
P	4.2.16	MCC electrical container	A0		M	M		M			M	M	M	M		R	R	M	M		R	6
Q	4.2.17	Equipped cont. non-ex.	A0		M						M	M		M					M		M	6
R	4.2.18	Equipped cont. ex-proof	A0		M							M							M			

M = Mandatory
R = Recommended

Note 1: The requirements of gas detector, Ex-relating ventilation, see also 4.4.6.4
Note 2: The requirements might be depending of circumstances, ref. to relevant section 4.4.x

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Table 2 - Matrix for containers in hazardous area

REQUIREMENTS / TYPE CONTAINER			4.4.1 Structure				4.4.2 Fire			4.4.3 Gas		4.4.4 Signal CCR			4.4.5 Tele		4.4.6 Electrical			4.4.7 HVAC		
			Fire class/Rating Note 2	Emergency exit - Note 2	Air lock - Note 2	Self closing door	Fire detection	Portable extinguisher	Room extinguisher system	Gas detector - Note 1	Ignition source disconnected	Loss of pressurization	Fire detection & protection	Gas/alarm	PA	Telephone	Emergency lighting	Ex-inst. external	Ex-inst. internal - Note 1	Mechanical vent. - Note 1	No. of air changes/hour Note 2	Overpressure (0.25 mbar)
A	4.2.1	Accommodation container	Only for placement in non-hazardous area																			
B	4.2.2	Offices, Coffee bar, Laboratory Logging etc.	A0	M	R/M	M	M	M		M	M	M	M	M	M	R	M	M		M	10	M
C	4.2.3	Workshop for hot work	A0	M	R/M	M	M	M		M	M	M	M	M	M		M	M	M	M	10	M
D	4.2.4	Comprimator/ trashhandling	Only for placement in non-hazardous area																			
E	4.2.5	Workshop for cold work	A0	M		M		M		M	M			M	M		M	M	M	M	6	
G	4.2.6	Container for diesel engines	A0			M	M	M	M	M	M		M	M			M	M	M	M	6	
H	4.2.8	Control cont. ROV units etc.	A0	M	R/M	M	M	M		M	M	M	M	M	M	M	M	M		M	10	M
I	4.2.9	Storage for flammable materials	A0			R	M	M			M		M					M	M			
J	4.2.10	Storage for non flammable materials						M			M							M	M			
K	4.2.11	Paint storage	A0			M	M	M			M		M					M	M			
L	4.2.12	Workshop for painters	Only for placement in non-hazardous area																			
M	4.2.13	Fridge/freeze container	Only for placement in non-hazardous area																			
N	4.2.14	Radio/comm. container	Only for placement in non-hazardous area																			
O	4.2.15	Toilet container	A0	M		M		M		R	M			R	M	R	M	M	M	M	6	
P	4.2.16	MCC electrical container	A0		R/M	M	M	M		M	M	M	M	M	R	R	M	M		R	10	M
Q	4.2.17	Equipped container non ex proof	A0		R/M	M				M	M	M		M				M		M	6	M
R	4.2.18	Equipped container ex-proof	A0			M					M							M	M			

M = Mandatory
R = Recommended

Note 1: The requirements of gas detector, Ex-relating ventilation, see also 4.4.6.4
Note 2: The requirements might be depending of circumstances, ref. to relevant section 4.4.x

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4.2 Containers

4.2.1 Type A: Accommodation container

Container description:
a) Cabins and corridors/ halls.
b) Mess room and recreation rooms.
c) Sanitarian, wardrobes and laundries.
d) Galley, bakery and kitchen.
e) Hospitals. NB: Special requirements not specified in this document.
f) Other types of rooms used for living purposes onboard.

Special requirements:
a) Accommodation containers shall always be located in a non-hazardous area and shall never have openings of any kind leading to a hazardous area.
b) Fire dampers: Duct penetrations in building components having fire class A which are minimum 750 cm2 in cross-section shall be provided with an approved automatic fire damper.

A fire damper is not needed if the duct penetration is less than 750 cm2. In that case the duct penetration shall, for a coherent length of 900 mm, be of minimum 3 mm gauge steel. This length shall be insulated to the same fire resistance as the adjoining building component.

4.2.2 Type B: Offices, coffee bar, laboratory, well services, etc.

Container description; manned containers assumed to contain ignition sources such as:
a) Laboratories.
b) Offices.
c) Well service containers.
d) Calibration units.
e) Pressure safety valves calibration units.
f) Coffee bar.

Special requirements:
a) Coffee bars shall always be located in a non-hazardous area.

4.2.3 Type C: Workshop for hot work

Container description:
a) Workshop for different types of construction work including hot work purposes.

Special requirements:
a) If gas bottles are stored in the container then a warning notice to this effect shall be posted outside, beside the entry door.
b) If work is causing air pollution, spot extractors shall be installed.
c) Hot work class “A” is not permitted (see subclause 3.1).

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4.2.4 Type D: Compactor and trash handling units

Container description:

a) Trash containers which also include compactor.

Special requirements:

a) Equipment to be equipped with "dead man" emergency stop button.

4.2.5 Type E: Workshop for cold work

Container description:

a) Workshop for different types of construction work without ignition sources and ignition potentials.
b) Manned tool container for non-flammable materials/tools.

4.2.6 Type F: Containers containing diesel motor in non-hazardous area

Container description:

a) Containers being built for containing diesel motor in non-hazardous area.

Special requirements:

a) Requirements for diesel motor, see subclause 4.3.1.
b) Diesel motor shall have emergency stop outside container.
c) If no ventilation of the container or no Ex-rating of the equipment, only location as per item 8 in table 4 subclause 4.4.6.4 is acceptable.

4.2.7 Type G: Container for diesel motor in a hazardous area (zone 2)

Container description:

a) Containers containing a diesel motor installed in a hazardous area, limited to zone 2.

Special requirements:

a) Requirements for controls on a diesel motor, see subclause 4.3.
b) Requirements for air inlets, see subclause 4.4.7.
c) Diesel motor shall have emergency stop outside container.
d) For a container with a diesel motor located in zone 2, the following special requirements shall apply: All equipment in container shall be approved for use in zone 2 area, or container shall be pressurised. With the pressurised solution the ventilation is to be sufficient for cooling requirement of the container. The diesel motor shall have its own air inlet duct for combustion air. Ignitions sources shall be disconnected when gas is detected or pressurisation in container is lost.
e) Motor exhaust temperature shall not exceed 300 deg C. Engine surface temperature of exhaust pipe shall not exceed 200 deg C (T3). Test readings shall be a part of the required documentation.

4.2.8 Type H: Control container for ROV unit

Container description:

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a) Containers used for ROV control units.

4.2.9 Type I: Storage for flammable materials

Container description:

a) Containers being used for storage of flammable materials, except products requiring container type K (ref. subclause 4.2.11).

4.2.10 Type J: Storage for non-flammable materials

Container description:

a) Containers being used for storage of non-flammable materials.
b) Tool container not manned or equipped for work operations.

4.2.11 Type K: Paint storage containers

Container description:

a) Containers being used for storage of paint and hazardous materials.
b) Containers for storage of materials in unopened wrapping, and other product types that cannot emit solvent vapours. All opening of wrappings or storage of products that can emit solvent vapours shall occur in container type L (ref. subclause 4.2.12).

4.2.12 Type L: Painter's workshop

Container description:

a) Containers where open contact with paint and solvents is possible.

Special requirements:

a) Containers shall always be placed in a non-hazardous area.
b) Inside the container is deemed as a hazardous area. Zone category shall be determined based on the product emissions of flammable or explosive gases and the exposure time if emission occurs. Electrical equipment shall be approved for groupe II B and temprating T3 (200° C) as a minimum.
c) Requisitioner has to specify special HVAC requirements.

4.2.13 Type M: Chill and freeze containers

Special requirements:

a) Containers for chill and freeze purposes shall always be located in a non-hazardous area.
b) The door shall also be possible to be opened from the inside.
c) An alarm shall be provided for personnel who are trapped inside.

4.2.14 Type N: Radio and communication room

Container description:

a) Containers used as room for radio and communications equipment.

Special requirements:

a) Only for location in non-hazardous area.

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