DNV·GL

Certificate No:
**TAS0000251**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Offshore Container**

with type designation(s)
**Complete unit - OSU-PA/PB/PC**
**Cabin - COSU-AA/AB/AAC-E/PC**
**Power Pack - POSU-AA/BA/PC**
**Winch skid - WOSU-AA/AB/AAC/PC**

Issued to
**Schlumberger Oilfield Equipments (Shanghai) Co., Ltd.**
**Shanghai, China**

is found to comply with
**DNV GL standard DNVGL-ST-E271 – 2.7-1 Offshore containers, August 2017**
**ISO 10855:2018 Offshore containers and associated liftings sets – Design, manufacture, testing, inspection and marking**
**IMO/MSC Circular 860**

## Application :

| OSU- | Max. gross mass (kg) | Max. payload (kg) | Max. sling leg angle | Enhancement factor |
|---|---|---|---|---|
| **OSU-PA/PB/PC** | **25000** | **10200** | **30** | **1.104** |
| **COSU-AA/AB/AAC-E/PC** | **6500** | **500** | **45** | **1.733** |
| **WOSU-AA/AB/AAC/PC** | **13000** | **9400** | **30** | **1.368** |
| **POSU-AA/BA/PC** | **4500** | **300** | **45** | **1.962** |

Issued at **Aberdeen** on **2020-01-30**
This Certificate is valid until **2025-01-29**.
DNV GL local station: **Shanghai**

for **DNV GL**

Approval Engineer: **Elisabeth Legg**

**Alex Doig**
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

## Manufactured by

DNV GL id number 172887*

DNV GL id number 183275

DNV GL id number 10074062

*) This type approval will not become valid for this place of manufacture before they have built and tested a prototype witnessed by DNV GL surveyor.

## Responsibility

Schlumberger Oilfield Equipments (Shanghai) Co., Ltd. takes responsibility that both design and production are in compliance with the Rules, Standards and/or Regulations listed on page 1 of this Type Approval Certificate.

## Product description

| Type | Max. external dimensions (LxWxH) | Tare mass** |
|---|---|---|
| Complete Unit – OSU-PA/PB/PC | 6058 x 2438 x 3010 mm | 14800 kg |
| | | |
| Cabin – COSU-AA/AB/AAC-E/PC | 2948 x 2438 x 2800 mm | 6000 kg |
| Winch skid – WOSU-AA/AB/AAC/PC | 2060 x 2438 x 2800 mm | 3600 kg |
| Power pack – POSU-AA/BA/PC | 1050 x 2438 x 2800 mm | 4200 kg |
| Lifting frame - LOSU-AA/PC | 6058 x 2438 x 210 mm | 1000 kg |

**) Tare mass shall be confirmed by weighing. The sum of the tare mass and the payload shall never exceed the maximum gross mass as it is stated on the front page of this certificate

Complete unit (OSU) consists of three different containers (WOSU, COSU, POSU) and a lifting frame (LOSU). The modules are connected to the lifting frame and to each other with twistlocks.

Winch Skid (WOSU), Cabin (COSU) and Power Pack (POSU-BA/PC) may be transported separately. Power Pack (POSU-AA) may only be transported as a part of the assembled unit.

## Application/Limitation

| Type | Design temperature | Minimum shackle bolt diameter |
|---|---|---|
| Cabin – COSU-AA/AAC-E | -20 °C | 24.6 mm (100334680D Rev. AJ) |
| Cabin – COSU-AB | | 23.6 mm (100419450D Rev. AF) |
| Cabin – COSU-PC | | 24.6 mm (102850107D Rev. AH) |
| Winch skid – WOSU-AA/AB | -20 °C | 27.9 mm (100404349D Rev. AR) |
| Winch skid – WOSU-AAC/PC | | 27.4 mm (102850109D Rev. AF) |
| Power pack – POSU-AA | -20 °C | 21.7 mm (100405920D Rev. AM) |
| Power pack – POSU-BA | | 22.7 mm (101069020D Rev. AG) |
| Power pack – POSU-PC | | 21.7 mm (102850106D Rev. AD) |
| Lifting frame - LOSU-PC | -20 °C | 34.0 mm (102850110D Rev. AG) |
| Lifting frame - LOSU-AA | | 34.6 mm (100310214D Rev. AH) |

Twistlocks used to connect the 3 containers (COSU, POSU, WOSU) to the lifting frame (LOSU) and to each other shall be lifting twistlocks certified by DNV GL with the following specification:

- SWL ≥ 100 kN.
- Safety factor against breaking ≥ 5.
- Proof load ≥ 275 kN.
- Charpy impact energy @-20°C in accordance with DNVGL-ST-E271 Table 3-1.
- Twistlocks shall be delivered with 3.1 material certificate in accordance with DNVGL-ST-E271 Table 3-6.

Twistlocks shall be designed to prevent accidental opening and shall have no parts protruding outside the outer surfaces of the assembled unit.

Twistlocks shall be fitted and locked during offshore lifting and transportation activities.

Stackable containers, liable to fill with water, should have a suitable drainage facility.

The DNV GL surveyor shall witness all important production and testing events and issue a certificate for each container. The certificate is only valid when the container is fitted with a DNVGL-ST-E271 certified lifting set.

The following instruction shall be inserted on each container certificate:

> During all periodic inspections, the assembled unit shall be dismantled for inspection of each separate container and locking device.

**Note**: POSU-AA containers shall only be transported as part of the assembled unit or as cargo inside a certified DNVGL-ST-E271 transportation skid. This information shall be stated in all DNV GL product certificates and is to be clearly marked on the container.

Assemblies:

OSU-PA

- COSU-AA or COSU-AAC-E
- LOSU-AA or LOSU-PC
- POSU-AA
- WOSU-AA or WOSU-AAC

OSU-PB

- COSU-AB
- LOSU-AA or LOSU-PC
- POSU-BA
- WOSU-AB

OSU-PC

- COSU-PC
- LOSU-PC
- POSU-PC
- WOSU-PC or WOSU-AAC

## Type Approval documentation

## Tests carried out

Prototypes tested in accordance with DNVGL-ST-E271.

## Marking of product

Each container to be marked in accordance with DNV GL / ISO requirements, including:

- Data and inspection plates
- DNV GL emblem for offshore containers
- VL mark to be hard stamped on the data plate
- Manufacturer's Serial Number to be welded on frame
- Two possible arrangements of padeyes are provided on the lifting frame (LOSU). Padeyes usage is dependent on the weight and centre of gravity of the combined lift. Padeyes shall be clearly marked to ensure they are correctly used during offshore lifting.
- Location of markings for each design can be found in the Appendix to this certificate.

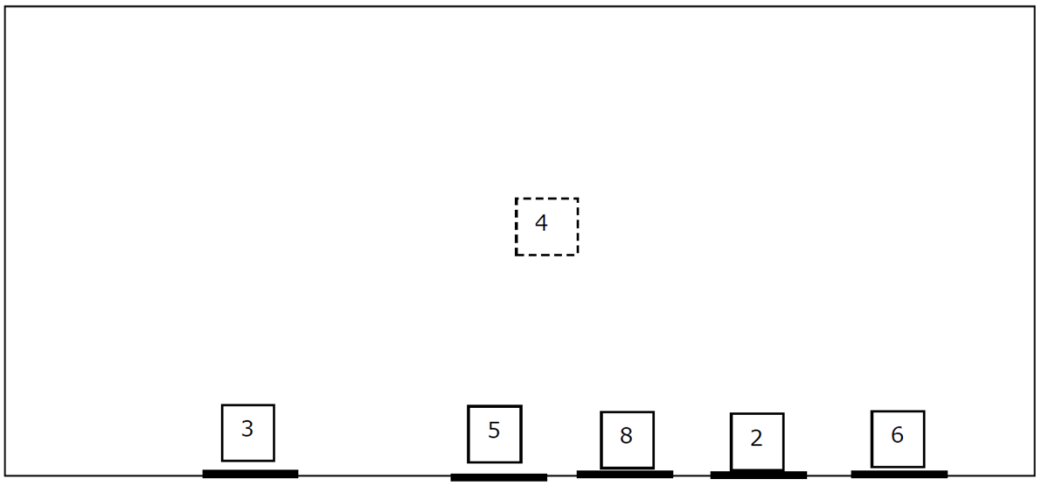
## Periodical assessment

In order to maintain the validity of the type approval certificate, periodical assessments should be carried out in accordance with DNVGL-SE-0284 at 2 and 3.5 year intervals. Periodical assessments will, when possible, be harmonised with other surveys and audits carried out.

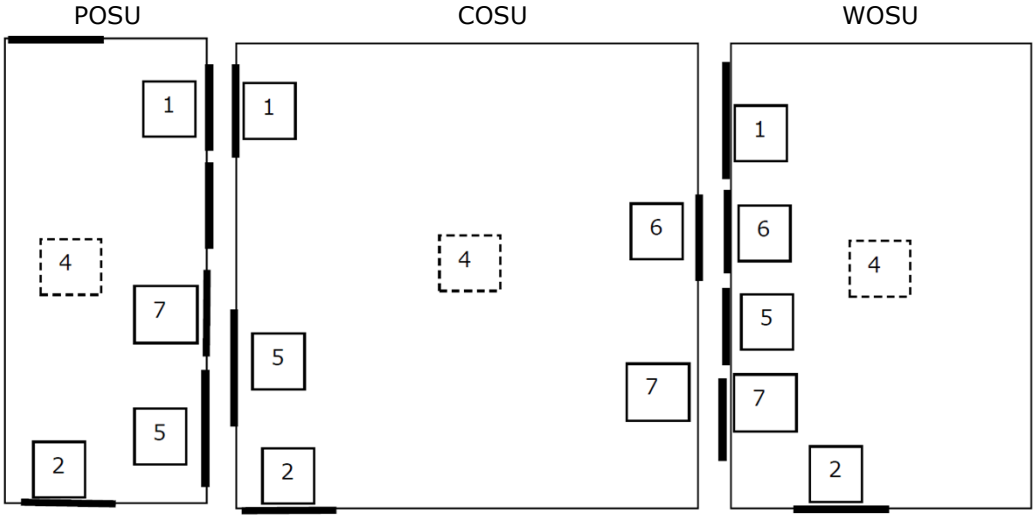
END OF CERTIFICATE

## Appendix – Marking of containers

Lifting frame - LOSU




Individual containers:




1. Information plate to be applied to COSU, POSU, WOSU units (ref. Figure 7-1 DNVGL-ST-E271).
2. Inspection plate to be applied to COSU, LOSU, POSU, WOSU units (ref. Figure 7-2 DNVGL-ST-E271).
3. Information plate to be applied to LOSU unit for combined assembly (OSU) (ref. Figure 7-1 DNVGL-ST-E271).
4. Owner's identification number (ref. section 6.2 DNVGL-ST-E271). To be applied as far as practicable.
5. Manufacturer's serial number to be applied to COSU, LOSU, POSU, WOSU units (ref. section 6.2 DNVGL_ST-E271)
6. DNV GL emblem for offshore containers. VL mark to be hard stamped below emblem. The surveyor shall endeavour to apply emblems with 3 consecutive certificate numbers; the lowest numbered emblem to be applied to the lifting frame. This information is to be clearly described in the product certificate.
7. Weight information to be applied to COSU, POSU, WOSU units (ref. section 6.3 DNVGL-ST-E271).
8. Weight information to be applied to LOSU unit for combined assembly (OSU) (ref. section 6.3 DNVGL-ST-E271).