

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Marine Riser Equipment**

with type designation(s)

**Diverter III FlexJoint Assembly (PD12054), Diverter III FlexJoint Assembly (PD12214),
Diverter III FlexJoint Assembly (PD13996), Diverter III FlexJoint Assembly (PD14200)**

Issued to

**Oil States Industries Inc.
ARLINGTON, TX, USA**

is found to comply with

DNVGL-OS-E101 – Drilling facilities, Edition January 2018**DNVGL-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2017****Application :****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL when accompanied with a DNV GL Product Certificate (PC).**Issued at **Houston, TX** on **2018-05-11**This Certificate is valid until **2023-05-10**.for **DNV GL**DNV GL local station: **Certification & Inspection Services**Approval Engineer: **Mark Miser****Nick Prokopuk
Team Lead**

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.



Product description

The Diverter III FlexJoint is marine drilling riser equipment that permits relative angular displacement of the drilling riser system elements without excessive bending stresses.

The following design codes/standards were used as references:

- [1] API 16F, 'Specification for Marine Drilling Riser Equipment' 2nd Edition
- [2] ASME Boiler & Pressure Vessel Code, Section VIII, Division 2, 2010, "Rules for Construction of Pressure Vessels"

Application/Limitation

<u>Design Parameter</u>	<u>Value</u>	<u>(Equivalent)</u>
Minimum Design Temperature	: -4°F	(-20 °C)
Maximum Design Temperature	: 446 °F for 7 days : 77 °F for 300 years	(230 °C for 7 days) (25° C for 300 years)
Rated Load (Axial Tensile Capacity)	: 2.0 x 10 ⁶ lbf	(8,896 kN)
Compressive Capacity (Axial Compression)	: 20,000 lbf	(89.0 kN)
Rated Working Pressure	: 500 psi	(34.5 bar)
Maximum Combined Loading Condition #1	: 500 psi pressure : 10,000 ± 30,000 lbf tensile load : ±7.5° Flex Angle	(34.5 bar) (44.5 ± 133.4 kN)
Maximum Combined Loading Condition #2	: 0 psi pressure : 2.0 x 10 ⁶ lbf tensile load : ±5° Flex Angle	(0 bar) (8,896 kN)
Hydrostatic Test Loading Condition	: 750 psi pressure : 0 lbf tension : ±0° Flex Angle	(51.7 bar) (0 kN)
Maximum Flex Angle	: ±7.5° (angle is from generatrix to right cone axis)	
System, Equipment, Service	: Well Control System, Marine Riser Equipment, H ₂ S (Sour)	

Type Approval documentation

Tests carried out

1. This product is to be pressure tested in accordance with normative reference API 16F §8.5.2.
2. Type testing, as documented by qualification testing report SP1E-22-010 Rev. A, was found to be acceptable in accordance with normative reference API 16F §8.5.1.
3. Procedures related to testing, welding, NDT, etc. are to be reviewed/approved by DNV GL's local surveyor.

Marking of product

Marking shall:

1. Be reviewed and approved by the DNV GL local surveyor.
2. Identify and differentiate each production unit <i.e. serial number>.
3. Establish traceability to product design and fabrication documentation.
4. Be in accordance with API 16F §8.6

Periodical assessment

For retention of the Type Approval, DNV GL's surveyor shall perform a retention survey every second year in accordance with DNV GL Type Approval Scheme DNVGL-CP-0338, October 2015 Edition.

End of Certificate