

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Joints and Loops

with type designation(s)
LS15 Swivel Joint and Service Loop Assemblies
Part Numbers: See Page 2

Issued to

FMC Technologies
Stephenville, Texas, USA

is found to comply with
DNVGL-OS-E101 – Drilling plant, Edition July 2015
DNVGL-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2015

Application :

Max Working Pressure: 15000 psi
Max Test Pressure: 22500 psi
Temperature Class: -20 to 250 °F
Service: General
Performance Requirement: 1

This Certificate is valid until **2021-08-30**.

Issued at **Houston, Texas** on **2016-08-31**

for **DNV GL**

DNV GL local station: **Approval CMC**

Approval Engineer: **Kevin Bui**

Christian Nilsen
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.

Job Id: **262.1-005077-8**
Certificate No: **TAD00000EN**

References

- API Spec 6A, Specification for wellhead and christmas tree equipment, 20th Ed
- Project No. PP161030-3, Attn. Andrew Huf

Part Descriptions and Numbers

<u>Part Description</u>	<u>Part No./Rev.</u>
1.0 LS15 Style 10 Swivel Joint Assy	3139550/E
1.0 LS15 Style 50 Swivel Joint Assy	3139547/E
1.5 LS15 Style 10 Swivel Joint Assy	3139781/E
1.5 LS15 Style 50 Swivel Joint Assy	3139778/I
2.0 LS15 Style 10 Swivel Joint Assy	3139477/N
2.0 LS15 Style 10 Swivel Joint Assy	3139905/O
2.0 LS15 Style 100 Swivel Joint Assy	3144207/E
2.0 LS15 Style 50 Swivel Joint Assy	3139475/N
2.0 LS15 Service Loop Assy	3145679/H
2.0 LS15 Service Loop Assy	6102805/J
2.0 LS15 Service Loop Assy	P503245/F

Type Approval Documentation

- Drawings and Material Specifications:

<u>Title</u>	<u>Drawing No./Rev.</u>	<u>Specification No./Rev.</u>	<u>Note</u>
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<u>Title</u>	<u>Drawing No./Rev.</u>	<u>Specification No./Rev.</u>	<u>Note</u>
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- Notes:

Other part numbers or updated revisions may be acceptable under this TAC provided critical aspects of the design remain the same. Changes shall be documented and approved via ECN or similar by FMC Engineering and/or QA. DNV GL Surveyor shall verify the changes before issuance of Product Certificate.

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Calculation Reports

<u>Title</u>	<u>Document No./Rev.</u>
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Test Reports

<u>Title</u>	<u>Part No.</u>	<u>Serial No.</u>
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Fabrication Procedures

- Procedures related to NDE, welding, testing, marking etc shall be reviewed by DNV GL Surveyor.

Marking of Products

- For traceability, the product shall be marked at least with part number and serial number.

Periodical Assessments

- For retention of TAC, periodical assessments shall be carried out bi-yearly.

Comments

- This TAC replaces TAC No. D-4596.