DNV·GL

Certificate No:
TAD00000UX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valves

with type designation(s)
3-1/16 15K SUPRAM DX Subsea Hydraulic Failsafeclose Gate Valves
Part Numbers: See Page 2

Issued to
SRI Energy
Stafford, Texas, USA
Pudukottai District, Tamil Nadu, India

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 :

See Page 2

Issued at **Houston** on **2017-12-18**
This Certificate is valid until **2022-12-17**.
DNV GL local station: **Approval CMC**

Approval Engineer: **Kevin Bui**

for **DNV GL**

Meindert Van Mierlo
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.

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Design Codes/Standards Used as References

- API 6A, Specification for Wellhead & Christmas Tree Equipment, 20th Ed
- API 17D, Design & Operation of SS Prod. Systems – SS Wellhead & Tree Equipment, 2nd Ed
- NACE MR0175, Materials for Use in H_2S-containing Environments in Oil & Gas Production, 2015 Ed

Product Descriptions

Part No./Rev.	Description
SDX 3015DFC-HAD1/2	3-1/16 15K SUPRAM DX Subsea Hydraulic Failsafeclose Gate Valve
SDX 3015DFC-HBD1/1	3-1/16 15K SUPRAM DX Subsea Hydraulic Failsafeclose Gate Valve

Application/Limitation

Design Parameter	SDX3015DFCHAD1	SDX3015DFCHBD1	Note
Gate Valve			
Nom Size (in)	3-1/16	3-1/16	
Max Int WP (psi)	15,000	15,000	
Shell Test Pressure (psi)	22,500	22,500	
Temperature Class (°F)	-20 to 250	-20 to 350	
Material Class	EE-NL (Sour)	EE-NL (Sour)	Valve Chamber
Product Spec Level	3	3G	
Performance Requirement	6A PR-2, 17D	6A PR-2, 17D	
Rated Ext Pressure (psi)	6,000	6,000	
Hydraulic Actuator			
Min to Max Int WP (psi)	1,500 to 3,000	1,500 to 3,000	
Shell Test Pressure (psi)	4,500	4,500	
Temperature Class (°F)	35 to 151	35 to 151	
Material Class	AA (General)	AA (General)	Hydraulic Chamber
Performance Requirement	6A PR-2, 17D	6A PR-2, 17D	
Rated Ext Pressure (psi)	6,000	6,000	

Type Approval Documentation

- Drawings:

Drawing No./Rev.	Title
	Actuator Assembly
	Actuator Assembly
	Balance Stem
	Balance Stem Protector
	Body
	Bonnet
	Bonnet Gasket
	Bottom Flange
	Cap
	Cushion Flange
	Cylinder
	Gate
	Gate T Nut

Drawing No./Rev.	Title
	Housing

Operating Stem
Packing Gland
Piston
Piston T-Nut
Seat
Seat Retainer
Spring Lifter
Transition Piece
Valve Assembly
Valve Assembly

- Calculations:

  See Document No. MAT SDX-03-15DFC DESIGN CALCULATION, Rev. 2.

- Material Specifications:

Title	Spec. No./Rev.	Material	Min YS(ksi)	Min Avg CVN(ft.lb)
Balance Stem				
Balance Stem				
Balance Stem Protector				
Body				
Bonnet				
Bonnet Gasket				
Bonnet Nut				
Bonnet Stud				
Bottom Flange				
Cap				
Cushion Flange				
Cushion Flange Nut				
Cushion Flange Stud				
Cylinder				
Gate				
Gate T Nut				
Housing				
Housing Nut				
Housing Stud				
Operating Stem				
Operating Stem				
Packing Gland				
Piston				
Piston T-Nut				
Seat				
Seat Retainer				
Spring Lifter				
Transition Piece				

  See Material Specifications for additional requirements. See BOM's for alternative materials.

- Notes:

Other part numbers or revisions may be acceptable under this TAC provided critical aspects of the design remain the same. Changes shall be documented and approved by SRI Energy Engineering and Quality. DNV GL Surveyor shall verify these changes before issuance of Product Certificates.

Tests Carried Out

- See API 6A PR-2 Reports for Valve SK-246, SN S-279-004 and Actuator SK-244, SN S-279-003.
- See API 17D Reports for Valve and Actuator SK-244, SN S-279-003.
- See FAT Reports for Valve and Actuator SK-244, SN S-279-003.

Marking of Products

- For traceability, product and data book shall be marked at least with company name, part number and serial number.

Periodical Assessments

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

Fabrication Procedures

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

Project Description

- Project No. A0462731, Attn. Gayathri Ragavan.