DNV·GL

Certificate No:
TAD00000HV
File No:
523.50
Job Id:
262.1-023849-1

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Mud and Cementing Equipment

with type designation(s)
2", 2-1/2", 3", 4" Cementing Hoses,
2", 2-1/2", 3" Super Cementing Hoses

Issued to
Copper State Rubber
Phoenix AZ, United States

is found to comply with
DNVGL-OS-E101 – Drilling plant, Edition July 2015
DNVGL-SI-0166 - Verification for Compliance with Norwegian shelf regulations - Ch.2 Sec.7 DRILL(N), July 2015

Application :

See Page 2

This Certificate is a renewal of D-5732

This Certificate is valid until **2021-11-06**.

Issued at **Houston** on **2016-11-07**

for **DNV GL**

DNV GL local station: **Approval CMC – Houston**

Approval Engineer: **Xiangwen (Maggie) Wang**

Christian Nilsen
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.
If any person suffers loss or damage which is proven to have been caused by any negligent act or omission of the Society, then the Society shall pay compensation to such person for his proven direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question. The maximum compensation shall never exceed USD 2 million.
In this provision the "Society" shall mean DNV GL AS as well as all its direct and indirect owners, affiliates, subsidiaries, directors, officers, employees, agents and any other person or entity acting on behalf of DNV GL AS.

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Product description

2", 2 ½", 3", 4" Cementing 10,000 WP Spec. 090-1915-32, 40, 48, 56, 64
2", 2 ½", 3" Super Cementing 15,000 WP Spec. 090-19225-32, 40, 48

Application/Limitation

Design Parameter	Cementing	Super Cementing
Maximum Allowable Pressure	: 10,000 psi	15,000 psi
Minimum Temperature	: -20° F	
Maximum Temperature	: 250° F	
Service	: API 7K FSL-0, Cement Hose	

Type Approval documentation

Drawing No.	Rev.	Description
4-15000-ASM	0	4 inch Cementing Hose
3-22500-ASM	0	3 inch Super Cementing Hose

Tests carried out

1. Procedures related to testing, welding, NDT, etc. are to be reviewed/approved by DNV GL's local Surveyor. Comprehensive material requirements are to be reviewed/approved by DNV GL's local Surveyor.

2. The following documentation was found to be satisfactory for prototype testing purposes:

Document No.	Rev.	Description
21907	-	Design Verification Testing of 4 inch – 10,000 psi Cementing Hose, prepared by SWRI, dated March 15,2007
21905	-	Design Verification Testing of 3 inch – 15,000 psi Cementing Hose, prepared by SWRI, dated March 12,2007

Marking of product

Marking shall:

- Be reviewed & approved by the local DNV GL Surveyor
- Identify and differentiate each production unit <i.e. serial number>
- Establish traceability to product design and fabrication documentation
- Be in accordance with API 7K §9.6.9

Periodical assessment

For retention of Type Approval, DNV GL's surveyor shall perform a survey every second year in accordance with DNV GL's Class Programme DNVGL-CP-0338 Section 4.

END OF CERTIFICATE