DNV·GL

Certificate No:
TAD00000HU
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",3-1/2", 4", 5" Imperial Driller Hose,
2", 2-1/2", 3", 3-1/2", 4", 5", 6" Master Driller Hose,
2-1/2", 3", 3-1/2", 4", 5", 6" Super Driller Hose

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-5733

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”, 2-1/2", 3", 3-1/2" 4", 5" Imperial Driller 4,000 WP Spec. 090-1908-32, 40, 48, 56, 64, 80
2”, 2-1/2", 3", 3-1/2" 4", 5", 6” Master Driller 5,000 WP Spec. 090-1910-32, 40, 48, 56, 64, 80, 96
2-1/2", 3", 3-1/2" 4", 5", 6” Super Driller 7,500 WP Spec. 090-1912-40, 48, 56, 64, 80, 96

Application/Limitation

Design Parameter	Imperial	Master	Super
Maximum Allowable Pressure	: 4,000 psi	5,000 psi	7,500 psi
Minimum Temperature	: -20° F		
Maximum Temperature	: 250° F		
Service (Imperial Driller)	: API 7K FSL-1 & FSL-2 Rotary Hose		
Serivce (Master Driller & Super Driller)	: API 7K FSL-2 Rotary Hose		

Type Approval documentation

Drawing No.	Rev.	Description
5-12500-ASM	0	5” Super Driller Hose
6-15000-ASM	0	6” Super Driller 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
21908	-	Design Verification Testing of 5 inch – 7,500 psi Grade E Rotary Drilling Hose, prepared by SWRI, dated March 15,2007
18.16887	-	Design Verification Testing of 6 inch – 7,500 psi Rotary Drilling Hose, prepared by SWRI, dated February 27, 2012

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 Class Programme DNVGL-CP-0338, Section 4.

END OF CERTIFICATE