DNV·GL

Certificate No:
TAD00000BX

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Valve

with type designation(s)
2 1/16" - 7.5K Model 200M Manual F.E.
4 1/16" - 7.5K Model 200M Manual F.E.
5 1/8" - 7.5K Model 200M Manual F.E.

Issued to
Worldwide Oilfield Machine, Inc. (WOM)
HOUSTON TX, United States
PUNE, India

is found to comply with
DNV-OS-E101 Drilling Plant October 2013
DNV-OSS-201 - Verification for Compliance with Norwegian Shelf Regulations - Ch.2 Sec.7 DRILL (N), October 2014

Application :

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

THIS CERTIFICATE REPLACES D-6068 WHICH EXPIRES JUNE 30TH 2019
This Certificate is valid until **2019-06-30**.

Issued at **Houston** on **2016-04-07**

for **DNV GL**

DNV GL local station: **Certification & Inspection Services**

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.

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Product description

- Mud Valve, 2 1/16”-7.5K Model 200M F.E., P/N: M0808-IND
- Mud Valve, 5 1/8”-7.5K Model 200M F.E., P/N: N1756-IND
- Mud Valve, 4 1/16”-7.5K Model 200M F.E. W/ 4 1/16”-10K Flanges, P/N: M3963-IND

Reference standards

- API 6A, ‘*Specification for Wellhead and Christmas Tree Equipment*’, 20th Edition
- NACE MR0175/ISO 15156, ‘*Petroleum and Natural Gas Industries – Material for Use in H_2S – Containing Environments in Oil and Gas Production*, 2nd Edition

Application/Limitation

- Max. Working Pressure: 7,500 psi
- Min. Design Temperature: -20 °F
- Max. Design Temperature: 250 °F
- Service: H_2S
- API 6A Material Class: DD-0.5
- API 6A PSL: 3
- API 6A PR: 2

Type Approval documentation

- Drawings:

Drawing No.	Rev.	Description	WOM’s MS
M0808-IND	1	Mud Valve, 2 1/16”-7.5K Model 200M F.E.	Assy.
M0808-26	0	Body	4.6.10/11
30510	4	Bonnet	4.6.10
SW3866	1	Gate	4.6.133
SW3860	3	Seat Assembly	Assy.
SW3860A	1	Seat	4.6.133
SW3862	1	Seat Retainer	4.6.15
3053	5	Stem	4.6.15
3104	0	Packing Gland	4.6.50
M2619-8	1	Stem Adapter	4.6.50
3090	0	Stem Pin	4.6.29
M1765-IND	3	5 1/8”-7,500 psi Model 200 M. Mud Valve F.E W/ 5-1/8”-10K flanges	Assy.
M1765-55ND	0	Body	4.6.10/11/7/70
WM5014M	1	Bonnet	4.6.10
SW2077	5	Gate	4.6.133
SW3453	6	Seat Assembly	Assy.
SW3453A	2	Seat	4.6.134
SW4979	2	Seat Retainer	4.6.15
3085	5	Stem	4.6.15
SW9110	0	Packing Gland	4.6.50
M1765-8	1	Stem Adapter	4.6.50
3091	0	Stem Pin	4.6.29
M3963-IND	1	Mud Valve, 4 1/16”-7.5K Model 200M F.E. W/ 4 1/16”-10K Flanges	Assy.
M1458-26	1	Body	4.6.10/11
30521	1	Bonnet	4.6.10
3460-1	1	Bonnet Gasket	4.6.13
SW3728	1	Gate	4.6.133
SW3849	9	Seat Assembly	Assy.
SW3849A	1	Seat	4.6.135
SW3850	4	Seat Retainer	4.6.15
3060	4	Stem	4.6.15

Drawing No.	Rev.	Description	WOM's MS
M3963-8	0	Stem Adapter	4.6.50
*M0808-IND	1	BOM. Mud Valve, 2 1/16"-7.5K Model 200M F.E.	Assy.
*N1756-IND	3	BOM. 5 1/8"-7,500 psi Model 200 M. Mud Valve F.E W/ 5-1/8"-10K flanges	Assy.
*M3963-IND	1	BOM. Mud Valve, 4 1/16"-7.5K Model 200M F.E. W/ 4 1/16"-10K Flanges	Assy.

*For Information Only
Note: *Other part numbers or updated revisions may be acceptable under this Certificate provided critical aspects of the design remain the same. Changes shall be documented and approved (via Engineering Change Notice or similar) by the Manufacturer's Engineering and/or Quality department as appropriate. DNV GL's local surveyor shall verify the change before issuance of Product Certificate)*

- Calculations:

Document No.	Rev.	Description
-	-	Design package for M0808 submitted on Oct. 20th 2011
-	-	Design package for M1765-IND submitted on Oct. 20th 2011
-	-	Design package for M3963 submitted on Mar. 15th 2010 Ref. TAC D-4428
-	-	Design package for M0808-IND, M1765-IND, M3963-IND submitted on Feb. 2nd 2015 Ref. TAC D-5757

- Materials:

Material Spec	Rev.	Description	Min. Yield Strength	Avg. Charpy @ MDT
4.6.7	7	HS type III casting	60 ksi	20 ft-lbf
4.6.10	11	Low alloy steel	60 ksi	20 ft-lbf
4.6.11	16	Alloy steel	75 ksi	20 ft-lbf
4.6.13	3	316 S.S.	30 ksi	-
4.6.15	11	17-4 S.S.	105 ksi	20 ft-lbf
4.6.18	7	A193/A194	105 ksi	-
4.6.29	2	ETD 150 material	130 ksi	20 ft-lbf
4.6.50	2	Low carbon steel	36 ksi	20 ft-lbf
4.6.70	2	Casting alloy. ASTM A487 -4N type II and 85k material	60 ksi	20 ft-lbf
4.6.119	0	410 S.S.	85 ksi	20 ft-lbf
4.6.133	1	AISI 4140	50 ksi	20 ft-lb_f
4.6.134	1	AISI 4140	60 ksi	20 ft-lb_f
4.6.135	1	AISI 4140	70 ksi	20 ft-lb_f

Tests carried out

1. Pressure test Certificate for M0808 S/N. A-7960 dated 9/27/2004
2. Pressure test Certificate for M1765-ND S/N. IO8526-1 to 3 dated 1/18/2011
3. Pressure test Certificate for M3963 S/N. A-43033 dated 9/23/2011
4. PR-2 Test Report No. ENG.TEST.200M.001
5. PR-2 Test Report No. ENG.TEST.200M.003

Marking of product

For traceability the following marking is to be carried out on each product:

1. Serial No.
2. Manufacturer's name or trademark.
3. Marking shall be in accordance with DNV-OS-E101 and requirements of API 6A.

Periodical assessment

For retention of the 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.

Other conditions/comments

1. Procedures related to testing, welding, NDT, and other quality control requirements are to be reviewed/approved by DNV GL's local surveyor.
2. DNV GL ref.: Project No. PP124258-028FF/PP150835-034FF

END OF CERTIFICATE