

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Miscellaneous

with type designation(s)
Wellbore Sensor Assembly
Models: 219063, 219065, 234969

Issued to
Lord Corporation dba Stellar Technology
Amherst NY, 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, Edition July 2015

Application :

see page 2

This Certificate is valid until **2022-02-15**.

Issued at **Houston** on **2017-02-16**

DNV GL local station: **New York**

for **DNV GL**

Approval Engineer: **Monique Seymore**

Mark Miser
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.

Certificate No: **TAD00000MB**
File No: **523.89**
Job Id: **262.1-013278-6**

Product description

This device mounts in the wellbore stream and monitors the wellbore medium – specifically drilling mud pressure and temperature.

The following part numbers are included:

-	219063-20000G-001 Rev. B	3 1/16 x 15M, AX-6S Hub
-	219063-20000G-002 Rev. B	3 1/16 x 15M, AX-6S Hub
-	219065-7500BD-002 Rev. A	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-003 Rev. D	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-004 Rev. C	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-005 Rev. C	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-006 Rev. D	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-007 Rev. C	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-008 Rev. C	3 1/16 x 15M, AX-154 Hub
-	234969-20000G-000 Rev. C	4 1/16 x 15M, BX-155 Hub
-	219063-20000G-101 Rev. A	3 1/16 x 15M, AX-6S Hub
-	219063-20000G-102 Rev. A	3 1/16 x 15M, AX-6S Hub
-	219065-7500BD-102 Rev. A	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-103 Rev. B	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-104 Rev. B	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-105 Rev. B	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-106 Rev. B	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-107 Rev. B	3 1/16 x 15M, BX-154 Hub
-	219065-20000G-108 Rev. B	3 1/16 x 15M, AX-154 Hub
-	219065-20000G-206 Rev. B	3 1/16 x 15M, BX-154 Hub

Design codes/standards used as references

- API 6A "Specification for Wellhead and Christmas Tree Equipment" 20th Edition

Application/Limitation

Nominal Bore Size	: 4 1/16" (103 mm)
Working Pressure	: 15,000 psi (103.4 MPa)
Test Pressure	: 22,500 psi (155.1 MPa)
Product Specification Level	: PSL 3
Service	: Internal H ₂ S
API 6A Temperature Rating	: P (-20°F)
Designation of Systems	: Well Monitoring Systems
Type of Equipment	: Measuring device/sensor

Type Approval documentation

Tests carried out

Reference DNV GL's Type Approval Certification Report, dated 2012-05-29

Marking of product

For traceability, the following markings shall be carried out on each product:

- Serial No.
- As stated in API 6A
- According to the manufacturer's specification(s)

Other comments/conditions

1. Procedures related to testing, welding, NDT, etc. are to be reviewed/approved by DNV GL's local surveyor.
2. Fabrication records are to be maintained in accordance with DNVGL-OS-E101 Ch.3 Sec. 3 [2].

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3. When DNV GL Product Certification is required, each product is to be surveyed during fabrication in accordance with the requirements for Category I equipment as defined in DNV GL's Offshore Standard DNVGL-OS-E101.
4. TAD00000MB replaces TAC D-6061.

Periodical assessment

For retention of the Type Approval, DNV GL's surveyor shall perform a survey every second year in accordance with DNV GL Type Approval Scheme DNVGL-CP-0338, October 2015 Edition.

END OF CERTIFICATE