

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Mud and Cementing Equipment**

with type designation(s)

Quintuplex Pump - Model QPA1000

Issued to

SJS Limited**Jingzhou,, Hubei,, China**

is found to comply with

DNVGL-OS-E101 – Drilling facilities, Edition January 2018**DNVGL-SI-0166 – Verification for compliance with Norwegian shelf regulations, Edition July 2018****Application :****See next page.**Issued at **Høvik** on **2019-10-18**This Certificate is valid until **2024-10-17**.DNV GL local station: **Wuhan CMC**Approval Engineer: **Axel Janson**for **DNV GL**

Per Esvall
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.



Job Id: **262.1-009588-3**
Certificate No: **TAD0000163**

Codes and standards used as reference

API Specification 7K, Drilling and Well Servicing Equipment, 6th Edition, December 2015

Application/Limitation

<u>Design Parameter</u>	<u>Value</u>	<u>Equivalent</u>
Pressure Rating – Suction Manifold:	80 psi	5.5 bar
Pressure Rating – 2.75" Plunger:	16 836 psi	1 161 bar
Pressure Rating – 3.0" Plunger:	15 000 psi	1 034 bar
Pressure Rating – 3.5" Plunger:	10 394 psi	717 bar
Pressure Rating – 4.0" Plunger:	7 958 psi	549 bar
Pressure Rating – 4.5" Plunger:	6 288 psi	434 bar
Min. Temperature Rating:	-30 °C	-22 °F

Type Approval Documentation

Fabrication Procedures

Test Procedures:

1. Pressure testing shall be performed in accordance with DNVGL-OS-E101 Ch.2 Sec.8.
2. Function testing shall be carried out in accordance with DNVGL-OS-E101 Ch.2 Sec.8.
3. Charpy testing shall be performed in accordance with DNVGL-OS-E101 Ch.2 Sec.2.

NDE Procedures:

4. NDE/NDT shall be performed in accordance with DNVGL-OS-E101 Ch.2 Sec.8.

Welding Procedures:

5. Qualification of welding procedures and qualification of welders shall be in accordance with DNVGL-OS-E101 Ch.2 Sec.8.

Marking of Product

For traceability, each product shall be marked in accordance with API 7K Ch.10 and shall include:

- Part Number
- Serial Number
- Pressure Rating
- Manufacturer's name or trademark

Documents, signboards etc. which are to accompany each product/delivery

The following documentation shall be prepared and documented by the manufacturer:

- Manufacturer's statement of compliance
- Material certificate record with complete identification and traceability
- Welding procedure specifications and qualification records
- Heat treatment report and records
- Sketch indicating where NDE has been performed and documented results of the testing
- Dimensional test record
- Pressure test report
- Inspection report signed by surveyor

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Other Conditions/Comments

- Materials for pressure containing and primary load-bearing components shall be supplied with material inspection certificate type 3.1 in accordance with DNVGL-OS-E101 Ch.3 Sec.2 §3.2.
- Sealing materials shall be in accordance with DNVGL-OS-E101 Ch.2 Sec.2 §2.8.
- Cast components of the mud-pump suction hydraulic circuit shall be hydraulically tested in production to twice the manufacturer's rated suction pressure.
- Each product to be surveyed during fabrication in accordance with the requirements in DNVGL-OS-E101 Drilling Plant, followed by an issuance of DNV GL Product Certificate Form No. CMC 231.
- Fabrication records are to be maintained in accordance with DNVGL-OS-E101 Ch.3, Sec.3 §2.
- This certificate covers the high-pressure side of the pump only. Pulsation dampender, pressure safety valves and the control system shall be delivered with separate DNV GL Product Certificates.
- This Type Approval Certificate replaces the previously issued certificate D-6110.

Certificate Retention Survey

For retention of this Type Approval, DNV GL AS's representative shall carry out surveys every second year in accordance with DNV GL Type Approval Scheme DNVGL-CP-0338.

END OF CERTIFICATE