Certificate no.:
TAD00001KW

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Coupling

with type designation(s)
2" 10 KSI EQD - 2-1/16" API 10K BX152 Flange, 2" 10 KSI EQD - 2" Fig 1502 M x F Hammer Union, 2" 10 KSI EQD - 2" Grayloc B20 Hub, 2" 10 KSI EQD - 2-1/16" API 10K Hub Connection, 2" 15 KSI EQD - 2-1/16" API 15K BX152 Flange, 2" 15 KSI EQD - 2" Fig 1502 M x F Hammer Union

issued to
Flint Subsea Limited
Ellesmere Port, **United Kingdom**

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2021

Application:

See next page.

Issued at **Høvik** on **2024-01-02**
This Certificate is valid until **2029-01-01**.
DNV local unit: **UK & Ireland CMC & VMC**

for **DNV**

Approval Engineer: **Axel Janson**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Codes and standards used as reference

[1] API Standard 6A, “Wellhead and Christmas Tree Equipment”, 21st Edition 2018

[2] API Standard 17G, Design and Manufacture of Subsea Well Intervention Equipment, 3rd Edition, 2019

[3] ISO 13628-7, Design and Operation of Subsea Production Systems, First Edition, 2005

Product Description

Emergency quick disconnectors used as weak links to prevent excessive tension in flexible subsea hoses.

EQD Model	End connections
2" 10 KSI EQD	2-1/16" API 10K BX152 Flange
	2" Fig 1502 M x F Hammer Union
	2" Grayloc B20 Hub
	2-1/16" API 10K Hub Connection
2" 15 KSI EQD	2-1/16" API 15K BX152 Flange
	2" Fig 1502 M x F Hammer Union

Application/Limitation

Design Parameter	Value	Equivalent
Max. Working Pressure – 10KSI Models:	690 bar	10 000 psi
Max. Working Pressure – 15KSI Models:	1 034 bar	15 000 psi
Max. Bending Moment – 10KSI Models:	3 000 Nm	2 214 ft-lbs
Max. Bending Moment – 15KSI Models:	4 000 Nm	2 952 ft-lbs
Max. Tension Pin Load:	10 mT	2 205 lbs
Min. Design Temperature:	-10 °C	14 °F
Max. Design Temperature:	82 °C	180 °F
Max. Hydraulic Pressure (hydraulic disconnect):	200 bar	2 900 psi
Service:	Sour	
API 6A Performance Requirement Level:	PR2	

Type Approval Documentation

Material Specifications

Component	Material Specification	Min. Yield	Ch. Spec. (L. Avg.)
Primary Pressure Retaining Comp. - 10KSI Models	Super Duplex 32760	550 MPa	42J @-10 °C
Primary Pressure Retaining Comp. - 15KSI Models	NO7718 120K API 6ACRA	827 MPa	42J @-10 °C
Locking Bolts	UNS NO7718	827 MPa	42J @-10 °C

Fabrication and Testing Procedures

Test Procedures:

1. Pressure testing shall be performed according to DNV Offshore Standard DNV-OS-E101 Ch.2 Sec.8 §3.3.
2. Charpy impact testing shall be performed in accordance with DNV Offshore Standard DNV-OS-E101 Ch.2 Sec.2.

NDE Procedures:

3. NDE/NDT shall be performed in accordance with DNV Offshore Standard DNV-OS-E101 Ch.2 Sec.8 §3.

Welding Procedures:

4. Qualification of welders, welding- and heat treatment procedures shall be in accordance with DNV Offshore Standard DNV-OS-E101 Ch.2 Sec.8 Table 2.

Marking of Product

Marking shall be carried out in accordance with API 6A and shall contain:

- Part number
- Serial number
- Manufacturer's name
- Rated working pressure

Other Comments

- All wetted components for sour service shall be tested and verified for hardness in accordance with NACE MR-0175.
- Non-metallic sealing materials shall be selected in accordance with DNV-OS-E101 Ch.2 Sec.2 §2.7.
- Locking bolts and nuts shall be delivered in accordance with API 20E BSL-3.

Certificate Retention Survey

For retention of this Type Approval Certificate, DNV shall carry out retention survey every second year in accordance with DNV Type Approval Scheme DNV-CP-0338.

END OF CERTIFICATE