DNV·GL

STATEMENT OF CONFORMITY

Statement No:
PP123395-SOC-01-R0

Owner:	**PETROLEUM DEVELOPMENT OMAN (PDO)**
Name of system/installation:	**Mina Al Fahal Terminal 1182-103**
Location:	**Offshore of Mina Al Fahal Terminal, Oman**
Description:	**C311642 / 1182 / PP19701 / Certification of 3 Nos CALM Buoys**

Main Operational Limitations:

Buoy Details

CALM Buoy	:	**Design Turntable Type**
Design Life	:	**25 years in water without dry docking (1)**
Mooring Force	:	**400 T**
Design Standard	:	**DNV**
Approximate Complete Weight	:	**262 T**
Hull Diameter	:	**12 m**
Hull Height	:	**5.25 m**
Skirt Diameter	:	**16.20 m**
No. of Chainhawse Supports	:	**12 (4, 6 or 8 symmetrical chains patterns)**
Total Height to Overhead Frame	:	**9.3 m**
Free Floating Draught	:	**2.5 m**
Installed Freeboard	:	**1.7m -0.1m/+0.2m**
Centrewell Diameter	:	**3.6 m**
Number of Compartments	:	**6 main + 6 double hull**
Cathodic Protection on Hull	:	**10 years design life**
Main Slewing Bearing	:	**4 metre diameter triple roller main slewing bearing**
Buoy Deck	:	**1:25 Cambered deck for improved drainage**
Mooring Bridle	:	**400 T suitable for dual hawser assemblies**
Rope Guard	:	**Covers complete Turntable**

Centrewell Piping

2 × 24" lines with butterfly valves with manual remote operation (on deck). Lines terminate in 24" 150# flanges. Adaptor spools reduce this to fit the submarine hoses in use at the relevant berth.

1 × 16" line with butterfly valve with manual remote operation (on deck). Lines terminate in 16" 150# flange. Adaptor spool reduce this to fit the submarine hoses in use.

Turntable Piping

2 × 24" lines with rubber expansion pieces and butterfly valves with manual remote operation (on deck). Lines terminate in 24" 150# flanges. Adaptor spools reduce this to fit the floating hoses in use at the relevant berth.

1 × 16" line with rubber expansion piece and butterfly valve with manual remote operation (on deck). Lines terminate in 16" 150# flange. Adaptor spool reduce this to fit the submarine hoses in use.

Swivel – (CPU)
Swivel Paths Double Path Product Swivel
Path 1 – 2 × 24"
Path 2 – 1 × 16"

Double Sealing configuration on external seals with Leakage drain lines to external tank. Leak detection ports for inter-path seals.

One tank for gathering leaks from swivel path. Alarmed for high level.

No hydraulic, pneumatic or electric swivel but facility provided for fitting them

DESIGN TEMPERATURE
Minimum 0° C
Maximum 50° C

DESIGN LIFE
The buoy has an in-water design life of 25 years without requiring dry docking

Typical Operating Conditions
Wind : 8 m/s (1 minute average)
Waves : 1.5 m irregular waves (JONSWAP) with a period of 6.2 sec.
Current : 0.2 m/s on surface and 0.1 m/s on sea-bed.
All in the same direction.

1 Year Storm
Wind : 15 m/s (1 minute average)
Waves : 5.0 m regular with a period from 8 sec.to 15 sec.
Current : 0.75 m/s on surface and 0.5m/s on sea-bed.
All in the same direction.

100 Year Storm
Wind : 30 m/s (1 minute average)
Waves : 10.0 m regular waves with a period from 10 sec or 8.0 m significant irregular waves with a period of 10 sec.
Current : 1.5 m/s on surface and 1.0 m/s on sea-bed.
All in the same direction)

This is to verify:

That the above mentioned system/installation has been verified, by appropriate methods, to comply with the requirements of DNV-OS-E403, DNV-OS-C401, DNV OS E301 & Project Specifications , for the main operational limits stated above, and further outlined in the Reference documents listed below.

Verification involvement:

The verification of the above mentioned system/installation has been performed in accordance with Project Specification and DNV OS E301, DNV OS C301 with the detailed scope of work described in the Reference documents mentioned below.

The verification of the above mentioned system/installation has included:
- Mina Al Fahal Terminal : 1182-103

The detailed scope of work is described in the appended DNV GL Verification report.

Statement No: **PP123395-SOC-01-R0**

Validity:
This statement is valid on the date of issue.

Reference documents:
1. Design Verification Report: DVR-P19701-J-86 Rev.0
2. Manufatcuring Survey Report: PP123395-MSR-001 Rev.0
(appended)

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for **DNV GL**

Azad Abul Kalam
Project Sponsor
DNV GL AS - Abu Dhabi
P.O. Box 3149, Abu Dhabi, U.A.E.