

IEC61508

CERTIFICATE OF COMPLIANCE

NAUTITECH™

SHUTDOWN SYSTEM

This document is issued as a summary of the hardware failure data affecting the application of the equipment as a sub-system being part of a Safety Function intended to conform with the requirements of IEC61508 - Functional Safety of Electrical/Electronic/Programmable Logic Safety Systems. The hardware has been subjected to a Failure Modes Effects and Diagnostics Analysis (FMEDA) to determine the specific failure modes and failure rates with the relevant results presented herein.

Methane Shutdown Safety Function: Electronic Engines

The methane shutdown safety function utilises the standard hardware platform from Nautitech consisting of the following items/products:

Item	Product Code	Character Display	Graphics Display
CH4 Sensor Head	ME5070-2-19-009	✓	✓
Deputy Bypass	CT500141	✓	✓
Character Display (*)	PL118503	✓	
Graphics Display (*)	ME5350-1-99-260		✓
PMU	PL500102	✓	✓

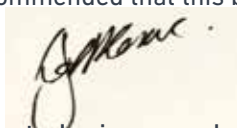
Notes (*) Display units are interchangeable

Product Failure Rates

Methane Shutdown Safety Function: Electronic Engines	Character Display	Graphics Display
SIL Capability	1	1
Sub-System Type	B	B
Hardware Fault Tolerance (HFT)	0	0
Safe Failure Fractions (SFF)	84.8%	84.4%
PFH1oo1	8.35×10^{-6}	8.04×10^{-6}
PFD1oo1 (2 year proof-test interval)	7.32×10^{-2}	7.05×10^{-2}
MTBF	18248 hrs	16808 hrs

Notes

- Reliability data for this analysis is taken from MIL-HDBK217F Notice 2 and Siemens SN29500 Reliability Data Handbook.
- Proof testing must be carried out according to the application requirements, however it is recommended that this be carried out atleast once every two years.



Signed on behalf of Nautitech

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Date: 1st Nov 2016



Verification: Marcus Punch Pty. Ltd.
Date: 1st Nov 2016