

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

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

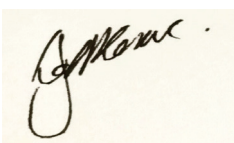
- Methane (CH4) Sensor ME5070-2-19-009
- 7.2V Battery ME5070-2-99-151
- Charger PL118506
- Display ME1185 or ME5350
- Solenoid / Relay SYJ712 series / G2R series

Product Failure Rates – Low Demand

Methane Shutdown Function	Character Display	Graphics Display
SIL Capability	1	1
Sub-System Type	B	B
Hardware Fault Tolerance (HFT)	0	0
Safe Failure Fractions (SFF)	80.6%	80.6%
PFH1oo1	8.11×10^{-6}	9.03×10^{-6}
PDF1oo1 (2 year proof-test interval)	0.0711	0.0791
MTBF	23949 hrs	21529 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: 25th July 2016

Verification: Marcus Punch Pty. Ltd.
Date: 25th July 2016