



ENGINEERING SAFETY CONSULTANTS

The Global Provider of Functional Safety Expertise and Technical Consultancy

Certificate of Conformity to IEC 61508 Safety Integrity Level (SIL) 1/2

Functional Safety of Safety-Related Programmable Electronic Systems

The **SPX Flow Copes-Vulcan, NPS 10 Class 1500 Globe Valve with P800 Actuator** has been assessed and is considered capable for use in a low demand Safety Function up to SIL 1 or SIL 2 (depending on the Proof Test Interval (PTI) implemented), with regard to random failure rate and architectural constraint, for failsafe closing on loss of electrical supply (SF-1) and failsafe closing on loss of pneumatic supply (SF-2).

The assessment was carried out to determine compliance with IEC 61508 with regards to:

- Random Hardware Failure (Predicted failure rate per year);
- Architectural Constraint (Type A, SFF 60%-90%).

The assessment was based on the assumptions, data provided, and recommendations given in:

- **ESC Ltd Report: J013_SV002 rev.3;**
- **ESC Ltd Report: J013_SM001 rev.1.**

The product was assessed against the following failure modes:

- Failure to close on electrical de-energisation;
- Failure to close on loss of pneumatic supply.

The system assessed comprises the following modules/sub-elements:

- Loss of Electrical Supply (SF-1);
- Loss of Pneumatic Supply (SF-2).

The assessment results are as follows:

Module	Failure mode	Random Hardware Failure (/hr)	Architectural Constraint	SIL Capability
Loss of Electrical Supply (SF-1) (Case 1 – 12 month PTI)	Failure to close	3.29E-03	75%	1
Loss of Electrical Supply (SF-1) (Case 2 – 9 month PTI)	Failure to close	2.47E-03	75%	2
Loss of Electrical Supply (SF-1) (Case 3 – 36 month PTI)	Failure to close	9.87E-03	75%	1
Loss of Pneumatic Supply (SF-2) (Case 1 – 12 month PTI)	Failure to close	3.75E-03	75%	1
Loss of Pneumatic Supply (SF-2) (Case 2 – 9 month PTI)	Failure to close	2.81E-03	75%	2
Loss of Pneumatic Supply (SF-2) (Case 3 – 36 month PTI)	Failure to close	1.12E-02	75%	1

Managing Director: Kenneth G L Simpson
Member of the IEC 61508 committee
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Reg: 12Q12086

ENGINEERING SAFETY CONSULTANTS LTD
Tuition House
27-37 St George's Road Wimbledon London SW19 4EU UK
Telephone/Fax: +44 (0)20 8542 2807
E-Mail: info@esc.uk.net Web: www.esc.uk.net
Registered in England and Wales: 7006868
Registered Office: 27-37 St George's Road Wimbledon London SW19 4EU