WCAP 8587

"Equipment Qualification Data Packages"

Supplement 1

EQDP-HE-3/HE-6

SAFETY RELATED EXTERNALLY MOUNTED LIMIT SWITCHES
(Qualification Group A)

Revision 4

Instruction Sheet

The following instructional information and checklist is being furnished to help insert the following into WCAP-8587 Supplement 1 EQDP-HE-3/HE-6 Class 3 (Non-Proprietary). Discard the old sheet and insert the new sheets as listed below. Revised information is indicated by a bar and number 4 on the outside margin of the page.

Remove (Front/Back)	Insert (Front/Back)
Cover sheet/-- page 2/3	Cover sheet/-- page 2/3

EQUIPMENT QUALIFICATION DATA PACKAGE

This document contains information, relative to the qualification of the equipment identified below, in accordance with the methodology of WCAP 8587. The Specification section (Section 1) defines the assumed limits for the equipment qualification and constitutes interface requirements to the user.

SAFETY RELATED EXTERNALLY MOUNTED LIMIT SWITCHES

(Qualification Group A)

APPROVED: _____

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SECTION 1 - SPECIFICATIONS

1.0 PERFORMANCE SPECIFICATIONS

1.1 Electrical Requirements

		(A)	(B)
1.1.1	Voltage:	125 VDC nominal	120 VAC nominal
1.1.2	Frequency:	N/A	60 Hz
1.1.3	Load:	1/2 amp	5 amp
1.1.4	Electromagnetic Interference	N/A	N/A
1.1.5	Other:	N/A	N/A

1.2 Installation Requirements: The installation during qualification represents the most adverse service condition as recommended by the manufacturer. Replacement of the limit switch in the field will be controlled by issuance of a Field Change Notice. This Field Change Notice will ensure that the installation of the qualified switch is in accordance with the qualification testing installation. 3

1.3 Auxiliary Devices: The limit switch requires interface connections which will be subject to the same conditions as the limit switches. The qualification of these interface connections, is not an objective of the program.

1.4 Preventative Maintenance Schedule: Per the Westinghouse Equipment Qualification test program, no preventive maintenance is required to support the equipment qualified life. This does not preclude development of a preventive maintenance program designed to enhance equipment performance and identify unanticipated equipment degradation as long as this program does not compromise the qualification status of the equipment. Surveillance activities may also be considered to support the basis for/and a possible extension of the qualified life. 4

1.5 Design Life: 40 years

1.6 Operating Cycles (Expected number of cycles during design life, including test): 20,000 for 40 year life.

*Both (A) and (B) are requirements for various in-service application. Based on past testing the (A) requirements are mote severe conditions imposed on the switch.

1.7 Performance Requirements for (b):

	Parameter	Normal Conditions	Abnormal Conditions	Containment Test Conditions	DBE Conditions(a) FLB/SLB	DBE Conditions(a) LOCA	DBE Conditions(a) Seismic	Post DBE Conditions(a) FLB/SLB	Post DBE Conditions(a) LOCA	Post DBE Conditions(a) Seismic
1.7.1	Time requirement	Continuous	Included under normal	Test duration	<24hrs.	<24 hrs.	Event duration	1 year	1 year	Continuous
1.7.2	Performance requirement	Note C		No damage	Note C	Note C	Note C	Note C	Note C	Note C
1.8	Environmental Conditions for Same Function (b)									
1.8.1	Temperature(^{o}F)	50-120	Included under normal	Ambient	Fig. 2	Fig. 3	Ambient	Fig. 2	Fig. 3	Ambient
1.8.2	Pressure (psig)	-6.7/+2.3		70	Fig. 2	Fig. 3	Ambient	Fig. 2	Fig. 3	Ambient
1.8.3	Humidity (% RH)	10-100		Ambient	100	100	Ambient	100	100	Ambient
1.8.4	Radiation (R)	$1.75\times10^{7}\gamma$		None	$3.5\times10^{4}\gamma$ $1.8\times10^{5}\beta$ Fig. 4 & 6	$2.3\times10^{7}\gamma$ $1.7\times10^{8}\beta$ Fig. 5 & 7	None	$1.2\times10^{5}\gamma$ $7.8\times10^{5}\beta$ Fig. 4 & 6	$1.3\times10^{8}\gamma$ $1.3\times10^{9}\beta$ Fig. 5 & 7	None
1.8.5	Chemicals	None		None	Note d	Note d	None	Note d	Note d	None
1.8.6	Vibration	Figure 1		None	None	None	None	None	None	None
1.8.7	Acceleration(g)	None		None	None	None	3.2/3.2/3.2(OBE) 4/4/4(SSE)	None	None	None

Notes:
a: DBE is the Design Basis Event.
b: Margin is not included in the parameters of this section.
c: Limit switch to actuate by passing/not passing electrical signal.
d: The Spray Solution contains 2500 ppm Boron buffered with 0.88% dissolved Sodium Hydroxide to maintain a Ph of 10.5
e: If the component is to be used on air actuated valve in a high pressure system in a large diameter pipe in a long piping run, the hydrodynamic loads that could result from a short valve closing time (<10 seconds) should be evaluated and reviewed against the vibrational environment to which the component has been qualified.