Oct 13 78

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)
DISTRIBUTION FOR INCOMING MATERIAL 50-275/323

REC: STOLZ J F
NRC

ORG: CRANE P A
PACIFIC GAS & ELEC

DOCDATE: 06/06/78
DATE RCVD: 06/12/78

DOCTYPE: LETTER NOTARIZED: NO
SUBJECT:
FURNISHING INFO RE ACCEPTABILITY OF THE USE OF CASE EPOXY IN ELEC PENETRATIONS...W/ATT SUPPORTING INFO.

COPIES RECEIVED
LTR 1 ENCL 40

PLANT NAME: DIABLO CANYON - UNIT 1
DIABLO CANYON - UNIT 2

REVIEWER INITIAL: XJM
DISTRIBUTER INITIAL: DE

********** DISTRIBUTION OF THIS MATERIAL IS AS FOLLOWS **********

NOTES:
J HANCHETT W/1 CY ALL MATERIAL
F HEBDON W/1 CY ALL SAFETY MATERIAL

PSAR/FSAR AMDTS AND RELATED CORESPONDENCE
(DISTRIBUTION CODE B001)

FOR ACTION:	ASST DIR VASSALLO**LTR ONLY	BR CHIEF LWR#1 BC**LTR ONLY
	PROJ MGR ALLISON**W/ENCL	LIC ASST HYLTON**LTR ONLY
INTERNAL:	REG FILE**W/ENCL	NRC PDR**W/ENCL
	I & E**W/2 ENCL	OELD**LTR ONLY
	OPERATOR LIC BR**W/ENCL	EMERGENCY PLAN BR**W/ENCL
	QAB**W/ENCL	CASE**LTR ONLY
	MIPC**LTR ONLY	AD FOR ENG**LTR ONLY
	MECH ENG BR**W/ENCL	STRUCTURAL ENG BR**W/ENCL
	MATERIAL ENG BR**W/2 ENCL	AD FOR REAC SFTY**LTR ONLY
	REACTOR SYSTEMS BR**W/ENCL	ANALYSIS BR**W/ENCL
	CORE PERFORMANCE BR**W/ENCL	AD FOR PLANT SYSTEMS**LTR ONLY
	AUXILIARY SYS BR**W/ENCL	CONTAINMENT SYSTEMS**W/ENCL
	I & C SYSTEMS BR**W/ENCL	POWER SYS BR**W/ENCL
	AD FOR SITE TECH**W/4 ENCL	AD FOR SITE ANLYS**LTR ONLY
	ACCIDENT ANALYSIS**W/ENCL	EFFLUENT TREAT SYS**W/ENCL
	RAD ASSESSMENT BR**W/ENCL	KIRKWOOD**W/ENCL
EXTERNAL:	LPDR'S SAN LUIS OBISPO, CA**W/ENCL	
	TIC**W/ENCL	
	NSIC**W/ENCL	
	ACRS CAT A**W/16 ENCL	

DISTRIBUTION: LTR 56 ENCL 46
SIZE: 1P+1P

CONTROL NBR: 781640016

********** THE END **********

PACIFIC GAS AND ELECTRIC COMPANY

PG&E

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June 6, 1978

Mr. John F. Stolz, Chief
Light Water Reactors Branch No. 1
Division of Project Management
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Re: Docket No. 50-275-OL
Docket No. 50-323-OL
Diablo Canyon Units 1 and 2

Dear Mr. Stolz:

The following information is provided to address Staff concerns regarding the acceptability of the use of case epoxy in electrical penetrations.

The epoxy used in the cannister type electrical penetration seals was tested extensively to verify suitability for use in this application. Electrical insulating resistance tests were run over an extended period of time with resistance measured at 500 and 1000 volts. The results of this test are shown in the attachment identified as EPAQ-037. Forty copies of this test are enclosed with this letter. The attachment is a summary report and additional details are available for review at General Electric's design record file. In addition to the actual component level testing of the epoxy, a qualification test of the cannister type electrical penetration seal assembly was performed to verify suitability of epoxy to perform in a LOCA environment.

The extensive testing discussed above coupled with the fact that the type of penetration used at Diablo Canyon has been in service at operating reactors since 1969 demonstrates the suitability of the design of the equipment for the intended use.

Five copies of this submittal have been sent directly to Mr. Dennis Allison.

B001
S
1/40 ✱

Kindly acknowledge receipt of the above material on the enclosed copy of this letter and return it to me in the enclosed addressed envelope.

Very truly yours,

Philip A. Crane, Jr.

7816400 16

Attachment
CC w/attachment: Service List

Attachment

TITLE: Epoxy Insulation Resistance Test — Test #EPAQ-037

PRODUCT: Cast Epoxy Insulating Compounds

OBJECTIVE: Verify the vacuum cast epoxy can withstand a long term high humidity environment.

DESCRIPTION: Ten different epoxy formulations were tested. Fifty samples were made with electrodes cast in the epoxy. The samples were inserted in glass tubes which had water at the bottom of the tube. The tube was heated for the duration of the test to keep the relative humidity limits high.

Insulation resistance measured periodically at 500 and 1000 volts test voltage.

Relative humidity: approximately 100%
Duration: 19 months

RESULTS:

(1) Three epoxy formulations broke down after six weeks exposure (epoxy became soft).

(2) All other samples remained intact, some exhibiting a slight loss in hardness from Shore D 55 down to Shore D 25.

(3) Insulation resistance levels: 1×10^{11} ohm-cm (except for formulations that broke down).

Results indicate the vacuum cast epoxy used in the penetration assemblies can withstand the long term effects of high humidity and still maintain insulation resistance levels which allow operation of electrical circuits.

DATE: 2/67

LOCATION: GE, Nuclear Instrumentation Department, San Jose, Calif.

CONDUCTED BY: GE, Nuclear Instrumentation Department, San Jose, Calif.