

PACIFIC GAS AND ELECTRIC COMPANY

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JAMES D. SHIFFER  
VICE PRESIDENT  
NUCLEAR POWER GENERATION

December 26, 1985

PGandE Letter No.: DCL-85-376

Mr. John B. Martin, Regional Administrator  
U. S. Nuclear Regulatory Commission, Region V  
1450 Maria Lane, Suite 210  
Walnut Creek, CA 94596-5368

Re: Docket No. 50-323; OL-DPR-82  
Diablo Canyon Unit 2  
Response to IEIR 50-323/85-32 -- Notice of Violation

1985 DEC 27 AM 10:13  
RECEIVED  
NRC  
REGION V I&E

Dear Mr. Martin:

NRC Inspection Report 50-323/85-32, dated November 26, 1985, contained a Notice of Violation citing a Level IV violation. PGandE's response to this Notice of Violation is enclosed.

As part of PGandE's policy that operational activities are handled in a cautious and thorough manner, attention is being focused on a number of areas. One such area is the thoroughness with which operational problems are investigated and resolved prior to continuation of operation. PGandE is providing increased attention to maintenance history and postmaintenance testing activities including identification of individuals and groups who are responsible for performing postmaintenance testing.

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

Sincerely,

Enclosure

cc: L. J. Chandler  
R. T. Dodds  
B. Norton  
H. E. Schierling  
S. A. Varga  
CPUC  
Diablo Distribution

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## ENCLOSURE

RESPONSE TO NOTICE OF VIOLATION IN NRC  
INSPECTION REPORT NO. 50-323/85-32

On November 26, 1985, NRC Region V issued a Severity Level IV Notice of Violation (Notice) as part of NRC Inspection Report 50-323/85-32 (Inspection Report) for Diablo Canyon Unit 2. PGandE's response to this Notice is as follows:

STATEMENT OF VIOLATION

"As a result of the inspection conducted during the period of September 29 through November 9, 1985, and in accordance with the NRC Enforcement Policy (10 CFR Part 2, Appendix C), the following violation was identified:

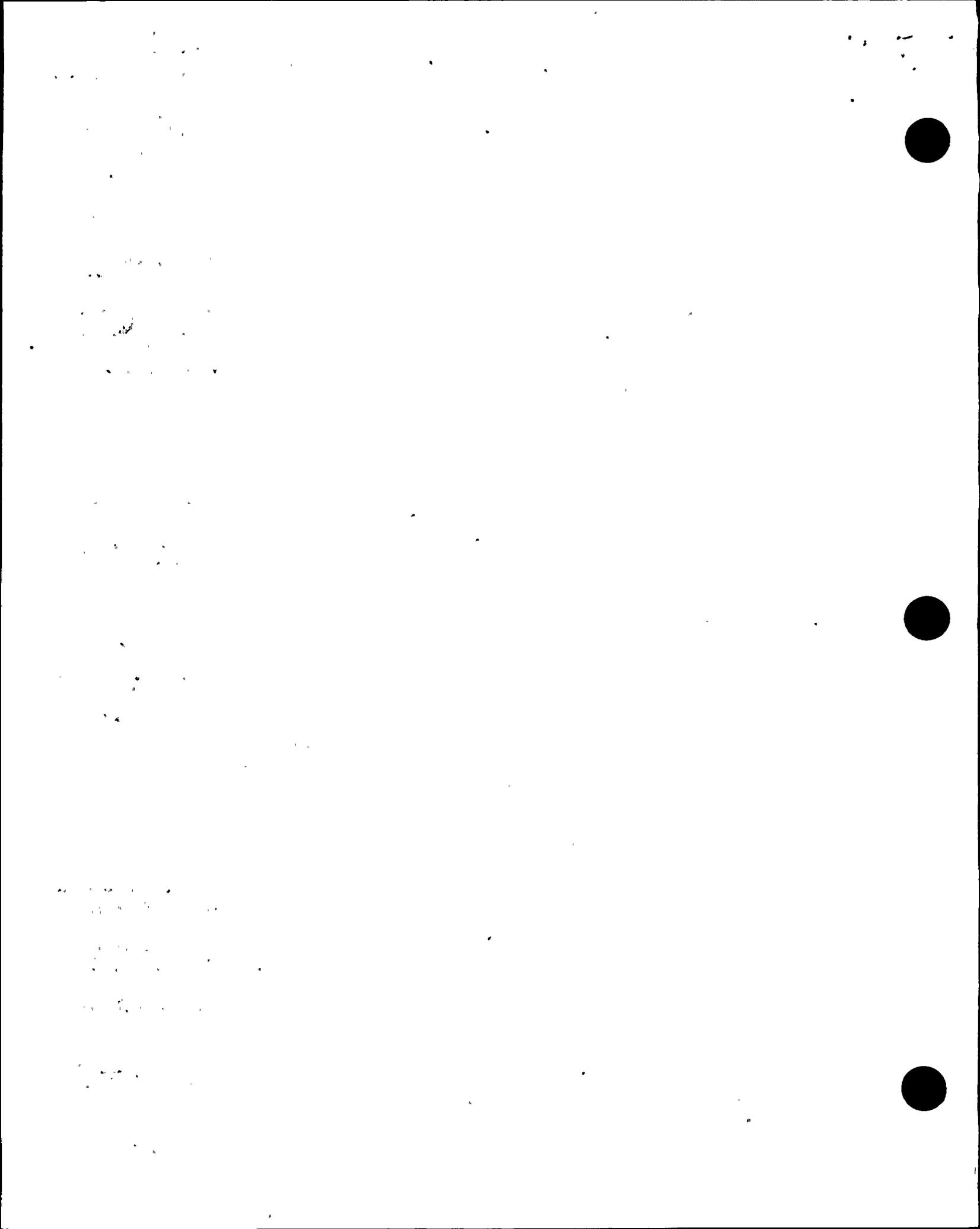
Technical Specification 3.3.2 requires that "Engineered Safety Features Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE... with RESPONSE TIMES as shown in Table 3.3-5," and "With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3." Table 3.3-3 requires both of the channels operable, for the automatic actuation relays of safety injections functions in modes 1 through 4. Table 3.3-5 lists response times for feedwater isolation due to various "Safety Injection" signals, and in table notation (2) specified FCV-439 as one of the feedwater system valves required to close. Table 3.3-3 ACTION 14, under automatic actuation logic and relays for safety injection functions, does not allow entry into an applicable mode with reliance on action statement requirement, i.e., it is not 3.0.4 exempt.

Contrary to the above, FCV-439 was open and was not capable of being closed on actuation of its ESFAS relay from 8:40 a.m. on October 5, 1985, when Unit 2 entered mode 4, until 1:28 p.m. on October 31, 1985, when FCV-439 was manually closed. Throughout this time period Unit 2 was maintained in modes 1 through 4. See report section 7.d for details.

This is a Severity Level IV Violation (Supplement I)."

EXPLANATION AND CORRECTIVE STEPS TAKENDescription of Events

On September 6, 1985, a problem was observed by personnel performing a surveillance test procedure (STP) on FCV-439 (Steam Generator 2-2 Main Feedwater Isolation Valve) which involved the control circuit protection fuse blowing several times. Since no apparent cause was found for the blown fuses and the event could not be repeated during Maintenance troubleshooting, the first blown fuse was assumed to be spurious and the subsequent failures were attributed to difficulties in testing the system. The control circuit was checked for continuity, and proper valve operation was verified by using the control room control switch. The system was then declared operable.



On October 5, 1985, Unit 2 entered Mode 4. Subsequently, FCV-439 failed to close as designed on a P-14 (Steam Generator Hi-Hi Level Permissive) signal on October 24, 1985. The FCV-439 control circuit transformer had burned out. The transformer was replaced and tested satisfactorily and FCV-439 was declared operable on October 25, 1985. Since the failure was attributed to a random component failure, no further investigation was performed.

On October 31, 1985, FCV-439 again failed to close as designed on a P-14 signal, at which time PGandE surmised that the failures were not random and that further investigation was necessary. After additional investigation, the failure to close was finally determined to have been caused by a wiring error on the main control board involving the circuitry for slave relay K621 rather than a random component or testing-related failure. The wiring was immediately corrected and the transformer was replaced, thus making the valve operable on November 1, 1985.

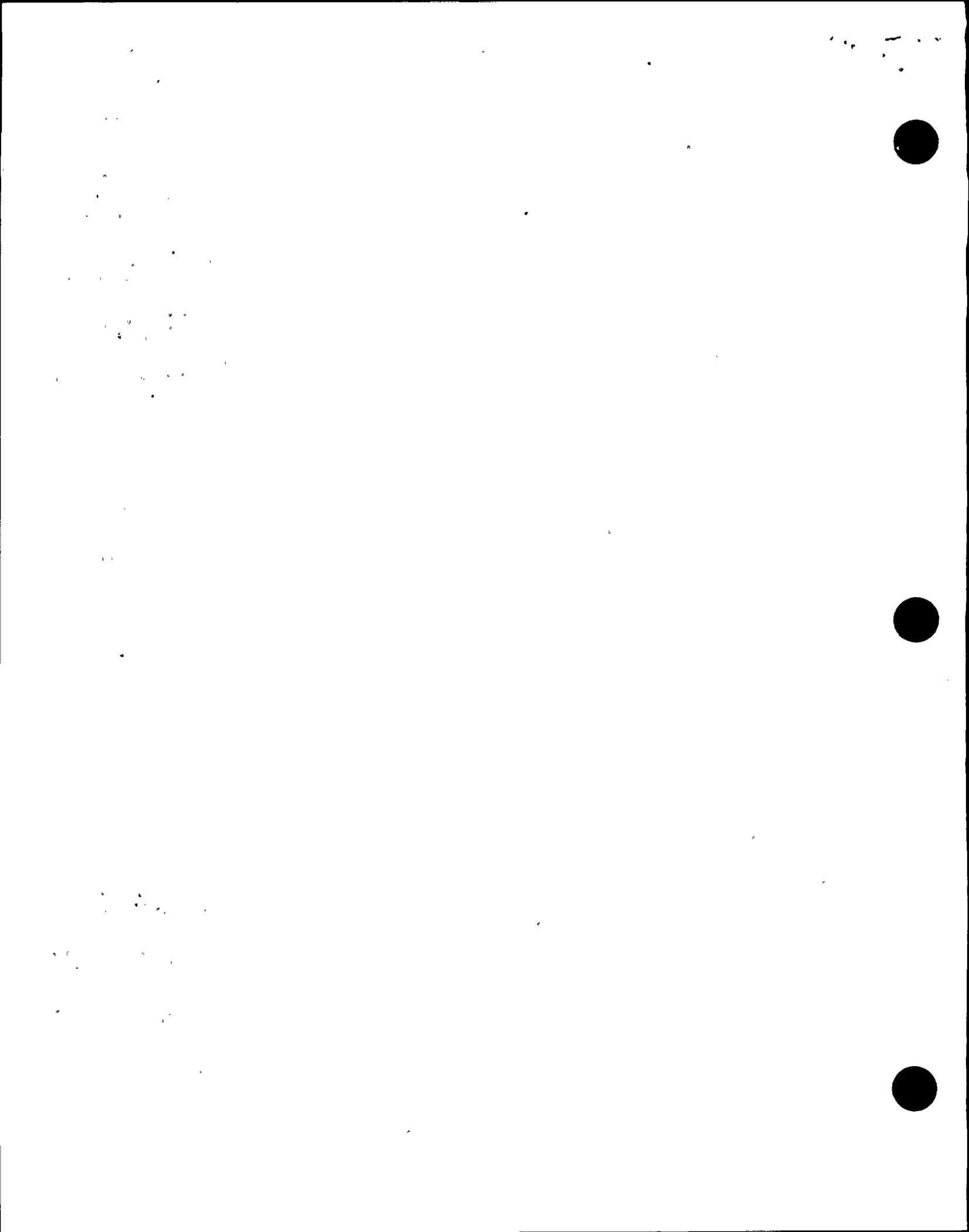
As a result of the further investigation and eventual corrective action, PGandE recognizes that the equipment maintenance history and trending were not adequately evaluated during the troubleshooting for the September 6 and October 24 events.

On November 7, 1985, during the first available outage, the valve operator system wiring was rechecked against the wiring drawings. The wiring was determined to be functionally correct.

#### Results of Investigation

In March 1983, Startup Preoperational Test TP 33.2 had demonstrated the wiring to be functionally correct. An investigation concluded that an unauthorized circuit alteration was made sometime between March 1983, when the startup test was completed, and September 6, 1985. The wiring error caused the FCV-439 control circuit transformer and fuse failures which resulted in the associated instrument channels' inability to meet the Limiting Conditions for Operation (LCO) of Technical Specification (T.S.) 3.3.2; Table 3.3-3, items 1 and 5 (which require feedwater isolation upon a safety injection (SI) or P-14 signal). The circuit was discovered to be wired in accordance with a November 1982 revision of a PGandE connection drawing which may have contributed to the termination error. A Field Change Transmittal (FCT) was issued on November 7, 1985 to correct the drawing to be consistent with other electrical drawings and functional test results. After the wiring was corrected to its intended configuration, all four feedwater isolation valves were operated using relay K621 and were determined to work satisfactorily.

Both Operations and General Construction records were checked, and no documentation was found which identified when the erroneous terminations were made. Additionally, discussions with Maintenance supervision also could not identify when such work was performed. As indicated above, a successful startup test conducted in March 1983 demonstrated that the wiring was functionally correct. A special continuity test circuit is provided for components, such as the feedwater isolation valves, which cannot be exercised



during operation. This permits testing the associated slave relay during operation and verifies actuation circuit continuity. Although the circuit continuity test will normally discover wiring errors and equipment failures, this specific wiring error could only be discovered during a functional test.

#### Corrective Steps Taken

As indicated in the Inspection Report, it has always been PGandE's policy to investigate and resolve problems at DCPD in a thorough fashion. However, to reinforce this policy, on November 5, 1985, a Maintenance Bulletin was issued to all electrical maintenance personnel reemphasizing the importance of checking equipment history files prior to performance of corrective maintenance. Such a check would have alerted personnel to the previous fuse failures, and would have prompted a more thorough investigation following the October 24, 1985 failure. This bulletin was also sent to training for inclusion in general maintenance training. In addition, a computer program is being developed to trend maintenance history.

As indicated above, the startup testing of this system was completed in March 1983. This system was turned over to Plant Operations on July 5, 1985. Administrative Procedure C-6, Supplement 1, "Clearance Request/Job Assignment," provides instructions for obtaining clearances on all plant equipment. Although the specific date of the unauthorized circuit alteration has not been established, during the transition from plant construction to operation, the clearance procedural controls used for work control were strengthened and thus provide additional assurance that unauthorized/undocumented changes do not occur. In addition, construction entry permits are required prior to any site construction contractor activities. It is PGandE's opinion that no additional strengthening of these procedures is warranted, as the procedures in their present form provide adequate control over work activities.

Although the circuit alteration and thorough investigation of maintenance problems are the key areas mentioned in the inspection report, postmaintenance testing was also reviewed. Postmaintenance testing of the transformer replacement should have included a functionality test in addition to the continuity test which was performed. As discussed below, to provide additional assurance that proper postmaintenance testing is conducted on safety-related components, Administrative Procedure C-6S3 (on postmaintenance testing) will be revised to require that the review of the specified postmaintenance testing be performed by the organization performing maintenance to ensure that it adequately tests the equipment features upon which the maintenance or modification was performed.

All four feedwater isolation valves were tested (1) for continuity, (2) by manual operation, and (3) by simulating operation of the K621 relay, and were determined to work satisfactorily. A review of surveillance records was performed to identify similar slave relays that receive an actuation signal from a single solid state protection system (SSPS) train and had not been functionally tested. For those relays not functionally tested, operational

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records were reviewed to verify that the components had actuated when required during previous plant operation. These reviews indicated that one additional slave relay (on Main Feedwater Pump (MFP) 2-2) was not called upon to operate. The slave relay was functionally tested and determined to trip MFP 2-2 as required.

Similar reviews of surveillance and operational records for components actuated by both SSPS trains were also performed. All these components had either been previously functionally tested or verified to actuate when required during previous plant operation.

#### CORRECTIVE STEPS WHICH WILL BE TAKEN

To provide additional assurance, each multiple channel engineered safety feature (ESF) that is normally tested by a continuity check will be functionally tested by actuation from its associated slave relay(s) during the Unit 2 strainer outage.

As previously indicated, to provide additional assurance that proper postmaintenance testing is conducted on safety-related components, Administrative Procedure C-6S3 will be revised to require that the organization performing maintenance review the specified postmaintenance testing to ensure that it adequately tests equipment features upon which the maintenance or modification was performed.

#### DATE WHEN FULL COMPLIANCE WILL BE ACHIEVED

Since the unit must be shut down to perform the above testing, the slave relay testing for multiple channel ESFs will be completed during the Unit 2 strainer outage. Administrative Procedure C-6S3 will be revised by February 6, 1986.

In conclusion, it has always been PGandE's policy to approach plant operations in a cautious and thorough manner. An integral part of that policy is, as stated above and reemphasized by the November 5, 1985 Maintenance Bulletin, to investigate and resolve problems in a thorough fashion. PGandE has focused attention on the general issues raised in the inspection report and has taken actions to address the specific concerns raised in the violation. This includes:

1. Issuance of a Maintenance Bulletin to reemphasize the importance of checking equipment history files prior to performance of corrective maintenance.
2. Revision of the procedure dealing with postmaintenance testing to require that the organization performing maintenance also review the specified postmaintenance testing to ensure that it adequately tests the equipment features upon which the maintenance or modification was performed.
3. Functional testing of each multiple channel ESF that is normally tested by a continuity check, by actuation from its associated slave relay(s) during the Unit 2 strainer outage.

