

50-275/323-OCA-2
I-MFP-126

MFP Exhibit 126
8/21/93 DOLLIE FEIGEL
Reptr.

DC2-91-TI-N088 D2
October 30, 1991

'93 OCT 28 P5 48

INADVERTENT SI DUE TO PERSONNEL ERROR

MANAGEMENT SUMMARY

On October 6, 1991 at 0008 PDT with Unit 2 in Mode 5, two Instrument and Controls technicians were reconfiguring the Solid State Protection System per STP I-16D4. In violation of the procedure both technicians incorrectly placed the outputs in operate prior to inhibiting the inputs resulting in a safety injection signal from each SSPS train and an inadvertent safety injection.

Root Cause:

Personnel error, in that the technicians did not utilize the applicable procedure when performing the SSPS realignment.

NUCLEAR REGULATORY COMMISSION

Docket No. 50-275-OCA Official Ex. No. MFP-126
In the matter of PACIFIC GAS AND ELECTRIC CO
SI: _____ IDENTIFIED
Approved: _____ RECEIVED
Other: _____ REJECTED _____
Contributor Ann Riley & Assoc DATE 8-21-93
Other: _____ Witness: _____
Reporter Dollie Feigel

INADVERTENT SI DUE TO PERSONNEL ERROR

I. Plant Conditions

Unit 2 was in Mode 5 (2R4 Refueling Outage).

II. Description of Event

A. Event:

On October 5, 1991, two Instrument and Controls (I&C) technicians were assigned work order R0088409 to reconfigure the SOLID STATE PROTECTION SYSTEM (SSPS) from "INPUTS IN NORMAL/OUTPUTS IN TEST" to "INPUTS INHIBITED/OUTPUTS IN OPERATE" per Surveillance Test Procedure (STP) I-16D4, "Reconfiguring an SSPS Train in Modes 5 or 6," by the cognizant I&C foreman. Since the SSPS was removed from service and both technicians had previously been tailboarded and had successfully performed the same STP earlier in the week no additional tailboard was conducted. The technicians were informed there was no rush to complete this job.

The two technicians then proceeded to the Control Room and obtained permission from the Shift Foreman (SFM) and Control Operator (CO) to reconfigure SSPS Trains A and B.

On October 6, 1991, at 0008:29.426 PDT the "SSPS GENERAL WARNING TRAIN-B" alarm occurred when one technician repositioned the Train B "MODE SELECTOR" switch to the "OPERATE" position prior to placing the "INPUT ERROR INHIBIT" switch in the "INHIBIT" position. This sequence is opposite the required sequence of STP I-16D4. The technician did not have a copy of STP I-16D4 in his possession when manipulating the switches. The repositioning of this switch created a safety injection (SI) signal. The second technician was proceeding to SSPS train A and was not present when the first technician reconfigured train B of the SSPS. This placed SSPS train B "OUTPUTS IN OPERATE" and "INPUTS IN NORMAL" and the following actions occurred:

CONTAINMENT ISOLATION PHASE A,
4KV BUS-G AUTO XFR,
4KV BUS-H AUTO XFR,
FW ISOL FROM REACT TRIP P-4 AND LO T_{AVG} 2/4,
DSL 2-2 CRANKING,
AUX SALT WTR PP 2-1 and
SAFETY INJECTION.

On October 6, 1991 at 0008:30.596 PDT an "SSPS GENERAL WARNING TRAIN-B" alarm occurred when the technician placed the Train B "INPUT ERROR INHIBIT" switch in the "INHIBIT" position, this placed SSPS train "B" in the intended configuration per STP I-16D4.

On October 6, 1991 at 0008:56.345 PDT the "SSPS GENERAL WARNING TRAIN-A" alarm occurred when the second technician, acting independent of the first technician, placed the SSPS Train A "MODE SELECTOR SWITCH" in the "OPERATE" position prior to placing the "INPUT ERROR INHIBIT" switch in the "INHIBIT" position. This switch repositioning created a second SI signal. The technician did have a copy of STP I-16D4 with him at the time but was referring to the "Summary Sheet" instead of the procedure. This placed SSPS Train A "OUTPUTS IN OPERATE" and "INPUTS IN NORMAL" and the following actions occurred:

4KV BUS-F AUTO XFR,
DSL 1-3 CRANKING and
MAIN STM ISOLATED.

On October 6, 1991 at 0009:00.149 PDT an "SSPS GENERAL WARNING TRAIN-A" alarm occurred when the second technician placed the Train A "INPUT ERROR INHIBIT" switch in the "INHIBIT" position, this placed SSPS Train A in the intended configuration per STP I-16D4.

The two technicians then verified that each train was properly configured per STP I-16D4 and initialled the summary sheet. Upon entering the Control Room the technicians were informed by Operations that "...something had gone wrong." The technician who had reconfigured SSPS Train A retraced his steps and realized he had operated the switches in the incorrect order and informed his supervisor.

On October 6, 1991, at 0015 PDT, Operations personnel reset the SI and returned the plant to normal Mode 5 alignments.

B. Inoperable Structures, Components, or Systems that Contributed to the Event:

None.

C. Dates and Approximate Times for Major Occurrences:

1. Oct. 6, 1991; 0008:29 PDT: Event/discovery date. An SSPS Train B SI signal occurs.
2. Oct. 6, 1991; 0008:56 PDT: Event date. An SSPS Train A SI signal occurs.
3. Oct. 6, 1991; 0015 PDT: All equipment and valves returned to normal Mode 5 alignments.
4. Oct. 6, 1991; 0218 PDT: A four-hour non-emergency report required by 10 CFR 50.72 (b)(2)(ii) was made.

D. Other Systems or Secondary Functions Affected:

Auxiliary Salt Water Pump 2-1 Auto-Start,
Residual Heat Removal Pump 2-1 Auto-Start,

Diesel Generators 1-3 and 2-2 Auto-Start and
Vital 4KV Busses F, G and H Auto-Transfer.

E. Method of Discovery:

The event was immediately apparent to plant operators due to alarms and indications received in the Control Room.

F. Operators Actions:

Operations personnel reset the SI and returned all equipment and valves to a normal Mode 5 alignments.

G. Safety System Responses:

The following Engineered Safeguards Actuations occurred:

Safety injection,

Vital 4kV busses transferred to Startup power,

Phase "A" Containment Isolation,

Feedwater Isolation,

Main Steam Line Isolation and

Diesel Generators started.

III. Cause of the Event

A. Immediate Cause:

The immediate cause of the event was improperly configuring of the SSPS inputs in "Normal" / outputs in "Operate" while in Mode 5 operation.

B. Determination of Cause:

1. Human Factors:

a. Communications:

Communication was inadequate in this event

in that the tailboard did not re-emphasize the risks and requirements associated with reconfiguring the SSPS. The technicians acted independently and failed to utilize concurrent verification when manipulating equipment that could result in an ESF actuation.

b. Procedures:

STP I-16D4 is adequate as written and contains the proper sequencing to prevent this occurrence, and also requires the use of concurrent verification. The technicians failed to utilize the procedure.

c. Training:

STP I-16D4 does not remove the SSPS from service or return the SSPS to service and, in fact, is only performed when the SSPS is removed from service, therefore no specific qualification exists for performance of this procedure. However, since both technicians had successfully performed STP I-16D4 in the very recent past, the I&C foreman felt that the technicians were qualified to perform this task. The senior technician was qualified to perform STP I-16D4.

d. Human Factors:

No human factors were relevant to this event.

e. Management System:

Management has issued numerous procedures, policies and tailboards emphasizing verbatim compliance, self-verification and concurrent verification. The technicians were aware of these procedures and policies but failed to follow them. The PG&E Positive Discipline Program has been in effect since January 1991 and has shown improvement in these areas.

2. Equipment/Material:

- a. Material Degradation: N/A.
- b. Design: N/A.
- c. Installation: N/A.
- d. Manufacturing: N/A.
- e. Preventive Maintenance: N/A.
- f. Testing: N/A.
- g. End-of-life failure: N/A.

C. Root Cause:

Root cause of the event is personnel error, in that technicians did not utilize the applicable procedure during performance of STP I-16D4.

D. Contributory Cause:

- 1. The technicians did not practice self-verification.
- 2. The technicians did not practice concurrent verification.

IV. Analysis of the Event

A. Safety Analysis:

Unit 2 was in Mode 5 when this event occurred. The accident-mitigating, Engineered Safety Feature (ESF) equipment functioned as intended. SI actuated, 4kV vital busses transferred to Startup power, a Phase A containment isolation occurred, Feedwater isolated, Main Steam isolated, ASW pump 2-1 started, RHR pump 2-2 and DGs 1-3 and 2-2 started.

No water was injected into the RCS since ECCS pumps were secured for refueling outage maintenance.

Thus the health and safety of the public were not adversely affected by this event.

B. Reportability:

1. Reviewed under QAP-15.B and determined to be non-conforming in accordance with Section 2.1.2.
2. Reviewed under 10 CFR 50.72 and 10 CFR 50.73 per NUREG 1022 and determined to be reportable in accordance with 10 CFR 50.72(b)(2)(ii) and 10 CFR 50.73(a)(2)(iv) as an ESF actuation. See Licensee Event Report (LER) 2-91-007 for more information.
3. This event does not require a 10 CFR 21 report.
4. This event does not require reporting via an INPO Nuclear Network entry.
5. Reviewed 10 CFR 50.9 and determined the event was not reportable under 10 CFR 50.9 since event was being reported under 10 CFR 50.73.
6. Reviewed under the criteria of AP C-22 requiring the issue and approval of a JCO and determined that no JCO is required.

V. Corrective Actions

A. Immediate Corrective Actions:

After determining the cause of the event was personnel error, Operations returned the plant to normal Mode 5 alignments.

B. Corrective Actions to Prevent Recurrence:

1. An I&C Department tailboard was held on October 7, 1991 by the I&C Section Director and General Foremen, again emphasizing the importance of verbatim compliance, self-verification and concurrent verification.

RESPONSIBILITY: W. Crockett COMPLETE
I&C (PSIT)

AR A0246850, AE # 01
Not outage related.
No JCO required.
Not an NRC commitment.
Not a CMD commitment.

2. A memorandum will be issued by the Vice President for DCPD Operations emphasizing the necessity to utilize procedures, self-verify and concurrent verify when working with equipment that affects personnel and Plant safety.

RESPONSIBILITY: W. Crockett COMPLETE
I&C (PSIT)
AR A0246850, AE # 02
Not outage related.
No JCO required.
Not an NRC commitment.
Not a CMD commitment.

3. The foreman and technicians responsible for this event will be counselled in accordance with the PG&E Positive Discipline Program.

RESPONSIBILITY: W. Crockett COMPLETE
I&C (PSIT)
AR A0246850, AE # 03
Not outage related.
No JCO required.
Not an NRC commitment.
Not a CMD commitment.

VI. Additional Information

A. Failed Components:

None.

B. Previous Similar Events:

Licensee Event Report 1-84-008, "Inadvertent Safety Injection Actuation," dated April 16, 1984, describes a similar event. An I&C technician was performing STP I-16B, "Testing of Safety Injection Reset Timer and Slave Relay K602," when he deviated from the STP and placed the "INPUT-ERROR-INHIBIT" switch for Train A into the "NORMAL"

position, causing an SI. The technician was counselled and other I&C personnel were briefed on the need to follow procedures and inform supervision when unexpected test results occur.

The corrective actions for LER 1-84-008 could not have prevented the event reported in NCR DC2-91-TI-N088 since the personnel involved in the 1991 event made a conscious decision not to utilize the STP.

C. Operating Experience Review:

1. NPRDS:

Not applicable.

2. NRC Information Notices, Bulletins, Generic Letters:

None.

3. INPO SOERs and SERs:

None.

D. Trend Code:

TI (I&C) - A1 (personnel error, procedure not followed).

E. Corrective Action Tracking:

1. The tracking action request is A0246850.

2. Corrective actions are not outage related.

F. Footnotes and Special Comments:

None.

G. References:

1. Initiating Action Request A0246453.

2. LER 2-91-007.

H. TRG Meeting Minutes:

On October 9, 1991, at 1:00 pm PDT in Room 533 of the Administration Building, the TRG held the initial meeting regarding the SI that occurred in Unit 2 on October 6, 1991. The SI was due to personnel error, when two I&C technicians independently caused an SI signal in each of the two trains of SSPS due to not utilizing the applicable STP.

There was no hardware, software or procedural problems involved in this event. There was, however, a personnel safety near-miss. A worker was working on an MSIV when the inadvertent SIs occurred and had to jump back to avoid the closing valve. Fortunately, his injuries were minor. See AR A0247268 for more information.

No reconvene is planned for this TRG. The estimated closure date for this NCR is January 31, 1992.

I. Remarks:

None.