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Vice President
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April 2, 2001

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: **Docket No. 50-362**
**60-Day Report**
**Licensee Event Report No. 2001-001**
**San Onofre Nuclear Generating Station, Unit 3**

Gentlemen:

This submittal provides Licensee Event Report (LER) 2001-001 describing the failure of a non-safety related 4.16 kv circuit breaker. The failure caused a fire that lasted more than 15 minutes (an Unusual Event was declared) and a partial loss of offsite power. Four consequential events (automatic reactor trip, automatic start of both emergency diesel generators, manual initiation of the Auxiliary Feedwater System, and manual initiation of the Emergency Containment Cooling System) are reportable in accordance with 10CFR50.73(a)(2)(iv)(A). These events did not affect the health and safety of either plant personnel or the public.

Any actions listed are intended to ensure continued compliance with existing commitments as discussed in applicable licensing documents; this LER contains no new commitments. If you require any additional information, please advise.

Sincerely,

Enclosure:

cc: E. W. Merschoff, Regional Administrator, NRC Region IV
J. A. Sloan, NRC Senior Resident Inspector, San Onofre Units 2 & 3

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NRC FORM 366 (MM-YYYY) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES MM-YYYY

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Information and Records Management Branch (T-6 F33), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If a document used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

| FACILITY NAME (1) | DOCKET NUMBER (2) | PAGE (3) |
|---|---|---|
| San Onofre Nuclear Generation Station (SONGS) Unit 3 | 05000-362 | 1 of 8 |

TITLE (4)

**Fire and RPS/ESF Actuations Caused By The Failure of a Non-Safety Related 4.16 kv Circuit Breaker**

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | SONGS Unit 2 | 05000-361 |
| 02 | 03 | 2001 | 2001 | 001 | 0 | 04 | 02 | 2001 | FACILITY NAME | DOCKET NUMBER |

| | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11) | | | |
|---|---|---|---|---|---|
| OPERATING MODE (9) | 1 | 20.2201(b) | 20.2203(a)(3)(i) | 50.73(a)(2)(i)(C) | 50.73(a)(2)(vii) |
| POWER LEVEL (10) | 39 | 20.2201(d) | 20.2203(a)(3)(ii) | 50.73(a)(2)(ii)(A) | 50.73(a)(2)(viii)(A) |
| | | 20.2203(a)(1) | 20.2203(a)(4) | 50.73(a)(2)(ii)(B) | 50.73(a)(2)(viii)(B) |
| | | 20.2203(a)(2)(i) | 50.36(c)(1)(i)(A) | 50.73(a)(2)(iii) | 50.73(a)(2)(ix)(A) |
| | | 20.2203(a)(2)(ii) | 50.36(c)(1)(ii)(A) | X 50.73(a)(2)(iv)(A) | 50.73(a)(2)(x) |
| | | 20.2203(a)(2)(iii) | 50.36(c)(2) | 50.73(a)(2)(v)(A) | 73.71(a)(4) |
| | | 20.2203(a)(2)(iv) | 50.46(a)(3)(ii) | 50.73(a)(2)(v)(B) | 73.71(a)(5) |
| | | 20.2203(a)(2)(v) | 50.73(a)(2)(i)(A) | 50.73(a)(2)(v)(C) | OTHER |
| | | 20.2203(a)(2)(vi) | 50.73(a)(2)(i)(B) | 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |

LICENSEE CONTACT FOR THIS LER (12)

| NAME | TELEPHONE NUMBER (Include Area Code) |
|---|---|
| R. W. Krieger, Vice President, Nuclear Operations | 949-368-6255 |

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |

| SUPPLEMENTAL REPORT EXPECTED (14) | | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
|---|---|---|---|---|---|---|
| | YES (If yes, complete EXPECTED SUBMISSION DATE). | X NO | | | | |

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)


On 2/3/01, plant operators were increasing Unit 3's power following completion of its Cycle 11 refueling outage. At about 1513 PST, when switching offsite power sources for Unit 3, a feeder breaker (3A0712) faulted and started a fire. This resulted in a loss of power to non-1E systems at Unit 3, a turbine/generator trip, a reactor trip, and a start of both Unit 3 Emergency Diesel Generators. Containment emergency coolers were also started. Anticipating the fire would last more than 15 minutes, an Unusual Event was declared at 1527 PST. The failure of a DC breaker to function properly resulted in the unavailability of the turbine/generator lubricating oil system, causing damage to the turbine/generator.

The event was caused when breaker 3A0712 faulted, and started a fire within the breaker cubicle. Ionized gases and smoke diffused through cable passages between adjacent cubicles and entered the Reserve Aux Transformer (RAT) feeder breaker 3A0714 cubicle and caused a ground fault with the 3A0714 cubicle, which resulted in the RAT trip and loss of non-safety-related offsite AC power to Unit 3. The fire consumed much of breaker 3A0712's non-metallic parts and caused substantial melting of current carrying components. Consequently, the exact cause of the breaker fault could not be conclusively determined.

SCE will implement modifications to appropriate preventive maintenance procedures to address the apparent failure causes. SCE has replaced/rebuilt 5 electrical cabinets in bus 3A07. This includes replacement of electrical equipment and cables that were either burned directly or damaged by the fire. Damage to the turbine/generator is being repaired.

| | | |
|---|---|---|
| Plant: | San Onofre Nuclear Generation Station (SONGS) Unit 3 | |
| Event Date: | February 3, 2001 | |
| | Unit 2 | Unit 3 |
| Reactor Vendor: | Combustion Engineering | Combustion Engineering |
| Mode: | Mode 1 – Power Operation | Mode 1 – Power Operation |
| Power: | 100 percent | 39 percent |

BACKGROUND:

During a unit startup, operators routinely transfer electrical buses from their shutdown electrical sources, the Unit's Reserve Auxiliary Transformers (RAT) [FK], to their operating power sources, the Unit Auxiliary Transformers (UAT) [FK]. The event described below occurred when Unit 3 was in a post refueling outage power ascension at approximately 39 percent power while operators were transitioning from the RAT to the UAT.

At the time of this Unit 3 event, Unit 2 was operating at approximately 100 percent power in its normal power alignment, and was relatively unaffected. See Additional Information section, Item 5.

Features of the San Onofre (SONGS) Units 2 and 3 electrical distribution system:

- The 230 kv switchyard [FK] is a double bus, double circuit breaker arrangement with nineteen positions.
- The Unit 3 main transformer 3XM [EL] steps up 22 kv generated by the Unit 3 main generator 3G001 [TB] to 230 kv for transmission to the grid.
- Non-Class 1E 6.9 kv buses 3A01 and 3A02 provide power to the four Unit 3 Reactor Coolant [AB] Pumps (RCP) [P]. During normal operation, the Unit 3 main generator powers these buses through the Unit 3 Unit Auxiliary Transformer (UAT) 3XU2. While shutdown, during startup, or when UAT 3XU2 is not available, these buses are powered from the switchyard through RAT 3XR3. The buses can also be powered from the Unit 2 RAT 2XR3, provided it is not being used to provide power to the Unit 2 RCPs.

  Power to these buses can be manually or automatically transferred from one source to another without de-energizing the buses to ensure continuous operation of the RCPs.
- RATs 3XR1 and 3XR2 step down switchyard voltage to supply 4.16 kv Class 1E buses 3A04 and 3A06. These buses provide power to the Engineered Safety Featured (ESF) loads under normal and accident conditions, using the most preferred source of power available. The preferred sources, in order of preference, are the Unit 3 RATs, the corresponding Unit 2 Class 1E buses, and the Unit 3 emergency diesel generators (EDGs) [EK]. The buses also provide power to selected non-ESF loads under normal and abnormal operating conditions.

  RATs 3XR1 and 3XR2 also supply 4.16 kv non-Class 1E buses 3A03, 3A07, 3A08 and 3A09. However, there are no provisions to power buses 3A03, 3A07, 3A08, or 3A09 from Unit 2 or an EDG.

DESCRIPTION OF THE EVENT:

On February 3, 2001 (event date), operators (utility, licensed) were increasing Unit 3's power following completion of its Cycle 11 refueling outage. There were no abnormal alarms or conditions noted at that time. Buses 3A01 and 3A02 had been successfully transferred to UAT 3XU2. Bus 3A03 had been successfully transferred to UAT 3XU1.

At about 1513 PST, operators transferred bus 3A07 to UAT 3XU1 (closed breaker [BRK] 3A0712), and breaker 3A0714 opened from RAT 3XR2. About one minute later, feeder breaker 3A0712 tripped (AR010200212). This event resulted in, among other things:

1. An Unusual Event (UE) was declared at 1527 PST for a fire anticipated to last more than 15 minutes. The SONGS Fire Department controlled the fire and the UE was exited at 1620 PST. See Additional Information section, Item 1. As required by 10CFR50.72(a)(1)(i), the declaration of a UE was reported to the NRC Emergency Operations Center; NRC Event No. 57113.

2. UAT 3XU1 tripped on "overload" and "differential." Due to the UAT fault protection logic, this condition caused all breakers immediately upstream and immediately downstream of the fault to open. This protective action also isolated the main turbine/generator (TA, TB) from the switchyard and caused it to trip. As designed, buses 3A01 and 3A02 (which power all four Unit 3 RCPs) "fast" transferred back to RAT 3XR3. Bus 3A03 transferred back to RAT 3XR1.

3. Malfunction of 3A0712:

   - Even though breaker 3A0712 tripped, the fault was not isolated, and the fault current continued.

   - Bus 3A07 remained energized as the main generator coasted down.

4. The RAT tripped on "differential." Due to the RAT protection logic, this condition caused all breakers immediately upstream and immediately downstream of the fault to open. This caused the switchyard breakers to the RAT to open and de-energize RATs 3XR1, 3XR2, and 3XR3. Consequently:

   - Buses 3A01 and 3A02 "slow" transferred to Unit 2 RAT 2XR3. See Additional Information section, Item 4. The transfer was completed as designed. Bus voltages dropped momentarily and all four Unit 3 RCPs slowed below 95 percent rated speed. Detecting low RCP speed, the Core Protection Calculator (CPC) [JC/CPU] generated a "Flow-Adjusted-Departure-from-Nucleate-Boiling-Ration (DNBR)" reactor trip. The reactor trip breakers opened as designed and all control rods (AA) fully inserted. A Reactor Protection System (RPS) actuation is reportable in accordance with 10CFR50.73(a)(2)(iv)(A) and 10CFR50.73(a)(2)(iv)(B)(1).

   - Buses 3A03 and 3A07 lost power and the condensate pumps (SD, P), which provide net positive suction head (NPSH) for the main feedwater pumps (SJ, P), tripped. The main feedwater pumps then tripped on low suction pressure. In response to the loss of main feedwater flow, operators manually initiated the Auxiliary Feedwater System (AFW) (BA). The system operated as designed. See Additional Information section, Item 2. This ESF actuation is reportable in accordance with 10CFR50.73(a)(2)(iv)(A) and 10CFR50.73(a)(2)(iv)(B)(6).

   - Both Unit 3 Emergency Diesel Generators (EDGs) automatically started on a Loss of Voltage (LOV) signal on buses 3A04 and 3A06. Because buses 3A04 and 3A06 successfully transferred to Unit 2 RAT 2XR1 and 2XR2 respectively, the EDG output breakers did not close. The emergency power supply systems operated as designed. This ESF actuation is reportable in accordance with 10CFR50.73(a)(2)(iv)(A) and 10CFR50.73(a)(2)(iv)(B)(8).

   - The main condenser circulating water pumps (SG, P) powered from 3A03 and 3A07 tripped, and the main condenser lost vacuum. Heat was removed from the Reactor Coolant System using AFW, the steam generators and the Atmospheric Dump Valves (ADV).

   - The normal AC powered main turbine lubricating oil pumps (TD) lost power. The breaker to the DC powered lubricating pump tripped. The main turbine/generator coasted down

essentially without lubricating oil, and caused damage to the turbine rotors and bearings, generator rotor and bearings, and the generator exciter.

5. About five minutes into the event, all Unit 3 control room annunciators (IB) failed. Operators successfully restored the annunciators in about 15 minutes. Annunciators are not necessary for recovery actions, and all Class 1E control room indications remained available. As a result, loss of the annunciators did not significantly hamper operations or affect the outcome. See Additional Information section, Items 1 and 3.

6. Normal containment Heating, Ventilation, and Air Conditioning (HVAC) was lost. Operators started the Emergency Containment Cooling System (ECC) (BK). This ESF actuation is reportable in accordance with 10CFR50.73(a)(2)(iv)(A) and 10CFR50.73(a)(2)(iv)(B)(7).

7. During this event, Condensate Storage Tank (CST) (KA) T-121 overflowed. The backup water source for CST T-121 has an automatic makeup capability from the High Flow Makeup Demineralizer (HFMUD) (KC) system. Because any leakage through the automatic makeup valve would cause T-121 to overflow, it is common to have the automatic makeup isolated. One of the first Operator actions when initiating AFW is to put the automatic makeup into service. Due to the loss of non-1E DC power caused by the fire, the T-121 level control system also failed (level transmitter failed low, requiring maximum demand), and T-121 overflowed and flooded its enclosure. See additional Information section, item 6.

CAUSE OF THE EVENT:

The event was caused when breaker 3A0712 faulted which caused arcing, localized overheating and started a fire within the breaker cubicle. The arcing damage prevented the breaker from opening to clear the fault. The fire consumed many of the breaker's non-metallic parts and caused substantial melting of current carrying components. Consequently, the exact cause of the breaker fault could not be conclusively determined.

Ionized gases and smoke diffused through cable passages between adjacent cubicles and entered the Reserve Aux Transformer (RAT) feeder breaker 3A0714 cubicle and caused a ground fault with the 3A0714 cubicle which resulted in the RAT trip and loss of non-safety-related offsite AC power to Unit 3. All subsequent operations were as designed, except the DC main turbine lubricating oil pump motor supply breaker malfunctioned.

The Control Room annunciators failed when the breaker to their power distribution panel tripped open as a result of the fire at 3A07. See Additional Information section, Item 3.

CORRECTIVE ACTIONS:

Even though the specific cause of the breaker fault could not be conclusively determined, SCE will implement modifications to appropriate preventive maintenance procedures to address the apparent failure causes.

SCE has replaced/rebuilt 5 electrical cabinets in bus 3A07. This includes replacement of electrical equipment and cables that were either burned directly or damaged by radiant heat from the fire. Damage to the turbine/generator is also being repaired.

SAFETY SIGNIFICANCE:

SCE performed an assessment of the conditional core damage and large early release probabilities, and increase in core damage and large early release probabilities. The assessment was based on the reported component failures during the event and their non-recoveries.

All safety-related equipment designed to mitigate the event operated as designed during the event.

A fire of the type that occurred at Unit 3 was explicitly evaluated in the SONGS Fire Probabilistic Risk Assessment (PRA) and is documented in the SONGS Individual Plant Examination of External Events (IPEEE). The conditional core damage probability from such a fire was 1E-4. Subsequent changes to the PRA Model have occurred since preparation of the IPEEE, including updating of common cause breaker failure probabilities based on more recent studies by NRC contractors.

Based on the current PRA Model in the SONGS Safety Monitor, the Unit 3 conditional core damage probability (CCDP) and large early release probability (CLERP) for the event reported herein were 1.4E-4 and 8.1E-6, respectively. The increase in core damage frequency (CDF) and large early release frequency (LERF) was 3E-6 and 6E-8, respectively.

The impact of the T-121 vault flood on Unit 3 CDF is small because the likelihood of events causing a malfunction of the T-121 level control system (resulting in overfill) followed by a seismic event greater than the OBE after the overfill occurs is less than 1E-6 per year (also see Additional Information section, item 6).

ADDITIONAL INFORMATION:

1. An assessment of the response to the fire and emergency declaration resulted in the following findings:

    - Control room personnel properly declared this occurrence as an "Unusual Event" under Tab E1-1 of the SONGS Emergency Plan. Event classification Tab E1-1 applies for a fire which (1) is not extinguished within 15 minutes of control room notification or verification of a control room alarm and (2) occurs inside the protected area and affecting or adjacent to areas and structures containing vital, safety related or safe shutdown equipment.

    - The actions taken to mitigate and suppress the fire were consistent with SONGS' processes. All fire protection systems and features performed as designed and in accordance with Fire Protection Program expectations. Safe shutdown capability was not affected.

    - Because of communication errors, the control room was informed that the fire was extinguished at 1544 PST and control room personnel closed out the UE at 1620 based on this information. At 1738 PST, fire responders informed the control room that the fire had not yet been extinguished. Control room personnel did not re-open the UE declaration at that time because the fire was already fully contained within the 3A07 cubicle, and did not actually pose a threat to safety related or safe shutdown equipment, and assistance from offsite agencies was not required.

    - Loss of control room annunciators for greater than 15 minutes also meets the SONGS Emergency Plan definition of an Unusual Event (UE). After the control room annunciators lost power at 15:18:16 PST, control room personnel considered the potential need to classify this event under that definition. Before the annunciators were restored, it was concluded the "fire" classification more accurately described the actual plant condition. The "fire" classification also provided a better event definition than "loss of control room annunciators" had offsite assistance been required. The annunciators were restored at 15:32:56 PST.

2. Three condensate booster pumps provide flow and NPSH for the main feedwater pumps. There is a fourth standby pump. The condensate pumps are powered from 4.16 kv buses 3A03 and 3A07. When power was lost to these buses, the running condensate pumps tripped and the standby pump could not start. The main feedwater pumps then tripped on low suction pressure.

    AFW automatically initiates on steam generator low water level. AFW injection valves are automatically or manually controlled to inject on low level into a non-faulted steam generator. In anticipation of decreasing water level from the loss of main feedwater, operators manually initiated AFW and controlled steam generator

level. The motor driven AFW pumps are powered from Class 1E buses 3A04 and 3A06 that were energized from Unit 2. AFW operation was as designed.

3. 125 VDC Non-Class 1E distribution panel 3D5P4 provides control power to switchgear 3A07 (through breaker 3D5P4A2), control room annunciator cabinets L040 and L060, some emergency lighting panels, and other miscellaneous DC control power. 3D5P4 is powered from the 125 VDC distribution switchboard 3D5 through breaker 3D506. Based on the operator actions that restored power to the annunciators, SCE concluded the annunciators were lost when breaker 3D506 tripped open and de-energized 3D5P4

   The fire in 3A07 caused short circuits in the 3A07 DC control power, which is provided from 3D5P4 through circuit breaker 3D5P4A2. Initial operator attempts to close 3D506 were unsuccessful because bus 3D5P4 was still connected to the 3A07 DC fault (breaker 3D5P4A2 still closed). After operators opened 3D5P4A2, which isolated the 3A07 DC fault from 3D5P4, they were able to successfully close 3D506. This action restored power to annunciator cabinets L040 and L060.

   The "as-found" instantaneous trip values of breakers 3D5P4A2 and 3D506 were determined to be acceptable and within the original design. Based on this finding and an analysis of potential fault currents during the event, SCE concluded that either breaker could be expected to trip first. Consequently, the system functioned as designed.

4. When powered from UAT 3XU2, buses 3A01 and 3A02 are provided with two automatic transfer features. For any main generator trip, main transformer trip, UAT trip, or 230 kv switchyard generator output breaker failure, a backup protection trip immediately trips the UAT 3XU2 supply breakers, initiates a "fast" transfer to the Unit 3 RAT 3XR3, and initiates a 10 second delay timer. If RAT 3XR3 is not available or if it de-energizes during the 10-second delay, the transfer is to the Unit 2 RAT, provided it is both (1) available (as it was during this event) and (2) not powering Unit 2 buses 2A01 and 2A02. Otherwise, no transfer occurs and the buses 3A01 and 3A02 de-energize. The transfer to Unit 2 is "fast" if directly to the Unit 2 RAT, and "slow" if it occurs because RAT 3XR3 de-energized during the 10-second delay.

   The automatic bus transfer performed as designed during the event. On the loss of UAT 3XU2, buses 3A01 and 3A02 should "fast" transfer to RAT 3XR3 without a DNBR trip. However, RAT 3XR3 de-energized during the 10-second delay, and both buses "slow" transferred to Unit 2's RAT 2XR3. Bus voltages dropped below approximately 25 percent of the nominal bus voltage, and a reactor trip occurred on low RCP speed as designed.

5. Unit 2 Technical Specification (TS) 3.8.1, AC Sources – Operating, requires two qualified offsite circuits be operable in Modes 1 through 4. The Unit 3 RAT is the preferred alternate source of offsite power for Unit 2. When the Unit 3 RAT became inoperable, Unit 2 entered TS 3.8.1 Action A.2 (restore offsite source operability within 72 hours). About 43 hours after the event, the Unit 3 RAT was returned to service (February 5, 2001, at 1030 PST).

6. One backup water source for Condensate Storage Tank (CST) T-121 is the automatic makeup capability from the HFMUD system. Because T-121 has a capacity of 150,000 gallons and is required by TS 3.7.6 to contain 144,000 gallons, the tank is kept essentially full. Because any leakage through the automatic fill valve would cause T-121 to overflow, it is common to have the automatic makeup isolated. One of the first Operator actions when they initiated AFW was to put the automatic makeup into service. Due to the loss of non-1E DC power caused by the fire, however, the T-121 level control system became inoperable (level transmitter defaults to its lowest setting, requiring maximum demand), and T-121 overflowed and flooded its enclosure.

   The limiting event for the condensate volume is the Reactor Systems Branch Technical Position 5-1 (RSB 5-1) safe shutdown scenario. For the RSB 5-1 scenario, safe shutdown must be demonstrated using only safety grade systems, assuming a coincident loss of onsite or offsite power, and a concurrent single failure. For sizing

of the condensate volume, 24 hours of steaming is assumed, including 4 hours at hot standby prior to initiating cooldown.

Because CST T-120 water volume is not sufficient to meet RSB 5-1, a crosstie is provided between CST T-121 and CST T-120 (or its enclosure vault). To preclude a seismically induced failure from reducing the volume of water available in the CSTs, T-120/121 can be isolated from the non-seismically qualified portions of the condensate system, including the HFMUD system. At Unit 2, isolation valve 2HV-5715 is located outside the T-121 vault. At Unit 3, however, corresponding valve 3HV5715 is located inside the T-121 vault. Therefore, due to the vault flood issue discussed above, an Operator may not have been able to access 3HV-5715 in sufficient time for Unit 3 to meet its RSB 5-1 design basis requirements. As discussed at the end of this section, this has been found to have very little safety significance.

Technical Specification LCO 3.7.6, Condensate Storage Tank (T-121 and T-120) requires T-121 and T-120 to contain at least 144,000 gallons and 360,000 gallons, respectively in Modes 1, 2, 3, and 4 when the steam generators are relied upon for heat removal. When T-120 or T-121 contains less than the required volume, Action A.1 requires a backup water supply be verified operable within 4 hours and every 12 hours thereafter. Action A.2 requires the tank water volume to be restored to its specified volume within 7 days. If Action A.1 or A.2 is not met, Action B.1 requires the reactor be in Mode 3 within 6 hours, and Mode 4 without reliance on the steam generators within 18 hours.

The two condensate storage tanks can be cross-tied by either opening manual valve 3MU476 (T-120 to T-121 connection) or by opening manual valve 3MU088 if T-120 ruptures and empties its contents into its seismically qualified vault (i.e., T-120 vault to T-121 connection). Because both of these valves are located inside the T-121 vault, a flood would have made it difficult for operators to fill T-121 from T-120, if required. Unknowingly, the Unit entered TS 3.7.6 Action A. Action A.1 was, however, met when the automatic makeup system was placed into service. Once the flood was discovered (about 1 hour later), the automatic makeup system was isolated. From time to time, operators opened the isolation valves to replenish T-121, thereby satisfying TS 3.7.6 Action A.2. While operators did not fully understand that the Unit was in the action statement of TS 3.7.6, using the automatic makeup system to fill T-121 satisfied the required actions. Therefore, there was no operation prohibited by TS 3.7.6. Because an operable backup water supply for T-120 was always available and the T-120/T-121 crosstie was returned to service within 7 days, this aspect of the event is not reportable in accordance with 10CFR50.73(a)(2)(i)(B)(2).

10CFR50.73(a)(2)(ii) requires a licensee to report any event or condition that resulted in the condition of the nuclear power plant, including its principal safety barriers, being seriously degraded; or the nuclear power plant being in an unanalyzed condition that significantly degraded plant safety. The change in CDF from the Unit 3 T-121 vault flood is small because the likelihood of events causing a malfunction of the T-121 level control system (resulting in overfill) followed by a seismic event greater than the OBE after overfill occurs is less than 1E-6 per year. Therefore, the flood of the T-121 vault and the temporary loss of access to the water in T-120, does not meet the threshold for reporting under this section.

There was very little safety significance to this condition. A seismic event could cause a loss of offsite power, which could then cause a flood of the T-121 vault if operators aligned normal makeup to T-121 from the HFMUD. If water were available to flood the vault, it would likely also be available to makeup T-121. Conversely, if the seismic event were to cause the HFMUD system to fail, the source of water that flooded the T-121 vault would also be unavailable. SCE has calculated that the change in CDF from Unit 3 T-121 vault flood is small because the likelihood of events causing a malfunction of the T-121 level control system followed by a seismic event capable of failing the HFMUD following the flood of the T-121 vault is less than 1E-6 per year. The T-121 vault is also provided with a manually operated drain valve, which would allow operators to drain the vault if/when a vault flood occurs and is identified. The discussion above also applies to 3HV5715.

To prevent recurrence, SCE is evaluating potential system changes, including modifying the Unit 3 design to be similar to Unit 2, which inhibits opening the automatic makeup control valve on loss of power.

7. In the past three years, SCE has reported:

   - The manual actuation of the Unit 2 ECC (LER 2-2000-011). That event was in response to the loss of the normal containment coolers. However, the cause of the loss of normal containment cooling was different than the event reported herein. The corrective actions for that event would not have been designed to prevent the event reported herein.

   - The manual actuation of the Unit 3 ECC (LER 3-2000-003). That event was in response to the loss of the normal containment circulating fans. However, the cause of the loss of normal containment air circulation was different than the event reported herein. The corrective actions for that event would not have prevented the event reported herein.

   - The automatic start of the Unit 2 EDGs (LER 2-1999-001). That event was caused by personnel error when a breaker was closed on a grounded emergency bus. The corrective actions for that event would not have been expected to prevent the event reported herein.

   - A Unit 3 manual reactor trip and AFW initiation in response to the loss of normal feedwater flow (LER 3-1999-003). The event occurred when the main feedwater regulating valves failed closed. The corrective actions for that event would not have been expected to prevent the event reported herein.

   - A Unit 3 manual reactor trip and AFW initiation in response to a rapid increase in normal feedwater flow (LER 3-1999-004). The event occurred when a main feedwater regulating valve failed open at 24 percent power. The corrective actions for that event would not have been expected to prevent the event reported herein.