


U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/92-35, 50-361/92-35, and 50-362/92-35
Docket Nos. 50-206, 50-361, 50-362
License Nos. DPR-13, NPF-10, NPF-15
Licensee: Southern California Edison Company
Irvine Operations Center
23 Parker Street Drive
Irvine, California 92718
Facility Name: San Onofre Units 1, 2, and 3
Meeting at: Region V Office
Walnut Creek, California
Report Prepared By: T. B. Sundsmo, Project Inspector
Approved By: 
H. Wong, Chief
Reactor Projects Section II
12-31-92
Date Signed

Summary

A meeting was held on December 3, 1992, to discuss the status of Unit 1 permanent shutdown planning. A copy of the slides used during the licensee's presentation is enclosed.

DETAILS

1. Meeting Attendees

Southern California Edison Company (SCE)

W. Marsh, Assistant Manager, Nuclear Regulatory Affairs
R. Waldo, Operations Manager
G. Hammond, Supervisor, Onsite Nuclear Licensing
D. Opitz, Unit 1 Outage Manager
C. Anderson, Emergency Planning Supervisor
R. Ashe-Everest, Nuclear Fuels Group Supervisor
A. Tally, Supervisor of Health Physics

Nuclear Regulatory Commission

S. Richards, Deputy Director, Division of Reactor Safety
and Projects
R. Samworth, Senior Project Manager, NRR
H. Wong, Chief, Reactor Projects Section II
T. Sundsmo, Reactor Projects Inspector
T. Meadows, Senior Licensing Examiner
F. Wenslawski, Deputy Director, Division of Radiation Safety and
Safeguards
R. Pate, Chief, Safeguards, Emergency Preparedness and
Non-Power Reactor Branch
J. Reese, Chief, Facilities Radiological Protection Branch
A. McQueen, Emergency Preparedness Analyst
G. Good, Emergency Preparedness Analyst
L. Norderhaug, Physical Security Specialist

Others

R. Lacy, Manager, Nuclear Department, San Diego Gas and Electric

2. Details

The meeting convened at 1:00 p.m. Mr. Richards opened the meeting by thanking SCE management for coming to Region V to present the details involved with the permanent shutdown of Unit 1. Mr. Hammond introduced the SCE presentation.

The following topics were presented by members of the SCE staff:

A. Mr. R. Ashe-Everest presented the discussion regarding the transshipment of fuel from the Unit 1 Spent Fuel Pool (SFP) to Units 2/3. Slides of the previous transshipment of fuel showed the methods used to transport the fuel. For the upcoming transshipment, each shipment will involve seven fuel assemblies transported dry inside a cask. Because the fuel will have decayed sufficiently before transport, no cask cooling will be needed.

B. Mr. D. Opitz presented post-shutdown plant configuration, modifications, implementation schedule, and salvage topics. Some of the key discussion items included:

- Systems needed to support the plant would be classified as "required operable" instead of safety-related. Other systems would be abandoned for salvage. No equipment lay-up plans have been made. System boundaries have been approved, and annotated on plant drawings.
- The maximum estimated temperature of the SFP six months after core off-load is 180 degrees F; it would take about 60 hours to reach this temperature upon a loss of all SFP cooling.
- The Auxiliary Feedwater (AFW) Storage Tank will be the source of make-up water to the SFP. Water level in the tank will be maintained so that the required capacity of make-up can be achieved passively by gravity draining.
- The SFP will not require any boron in its water to maintain the required level of subcriticality. Although the SFP is currently filled with borated water, there are no plans to maintain a specific boron level.
- Systems that would be required operable were discussed. Of note, the Emergency Diesel Generators would be maintained until the maximum estimated SFP temperature upon loss of cooling had decreased to 150 degrees F.

C. Administrative controls and plant staffing topics were presented by Mr. R. Waldo. Discussion items included:

- Post Shutdown Administrative Controls had been approved by NRR. These requirements were derived from operating TS that were modified to delete requirements not applicable to a defueled reactor, to maintain requirements applicable to all modes of operation, and to add requirements that were needed to support a stable defueled condition.
- Plant staffing of Unit 1 will be reduced in a controlled manner over the next few years. Units 2/3 may be impacted because many of the Unit 1 staff, who tend to be more senior, will be reassigned to Units 2/3; no lay-offs of permanent employees were anticipated. Potential effects on site staff morale were discussed.
- Other topics discussed included the long term integrity of the cooling water intake structure, SFP level monitoring systems/alarms, and the Certified Fuel Handler program.

D. Mr. C. Anderson described how the SONGS Emergency Preparedness Plan (EP) would continue to be implemented at Unit 1. Because the SONGS

EP Plan is a site-wide procedure, the permanent shutdown of Unit 1 does not require significant plan revision. When the core is defueled, the potential for any significant release is greatly reduced. However, many EP events, such as fires, security, and contaminated injuries would still be possible. The highest anticipated classification level of such events would be an Alert. Current plans were to maintain the Unit 1 Control Room notification systems (yellow and red phones) and siren panels operable.

- E. The transition of Health Physics during the Permanent shutdown was presented by Mr. A. Tally. After the reactor is defueled, access to some areas will be controlled by locking the areas. Radiation area access will still be controlled by Radiation Work Permit. An automated dosimeter program using alarming dosimeters will be implemented. The current survey program will be maintained, but the frequency of surveys will be adjusted (decreased) based on plant conditions. Since the HP technicians work on all three units, there should be no significant staffing problems.
- F. Mr. W. Marsh presented the licensing actions, plans and schedules that were applicable to the Unit 1 permanent shutdown. Key events included:
- NRC approved the Possession Only License for Unit 1.
 - Submittals of Permanently Defueled TS, and the Certified Fuel Handler Program were scheduled for December 15, 1992.
 - The Preliminary Decommissioning Plan had received management approval at SCE, and had been submitted to the NRC.

3. Closing Remarks

The Region V staff remarked that the information presented had provided very good insight into the upcoming events associated with the permanent shutdown of Unit 1. Mr. Wong emphasized the need for good communications between NRC and SCE when requirements were identified that did not apply to a permanently defueled plant. Mr. Richards endorsed this comment, and added that NRC expected all regulatory requirements would be met and supported early discussion of requirements which were impractical in the plant's current shutdown mode. SCE personnel acknowledged these comments.

The meeting adjourned at 4:30 p.m.

NRC MEETING AGENDA

1. Plans for Transshipment (Bob Ashe-Everest)
2. Post Shutdown Plant Configuration, Modifications, Implementation Schedule, Salvage (Dave Opitz)
3. Administrative Controls Letter Provisions and Unit Staff Transition Plan (Ray Waldo)
4. Licensing Actions - Plans & Schedules (Walt Marsh)
5. Emergency Plan Changes (Cyrus Anderson)
6. Post Shutdown Radiation Control (Al Tally)

UNIT 1
FINAL SHUTDOWN PROJECT

DECEMBER 3, 1992

NRC Region V Briefing

PROJECT SCOPING ITEMS

- Shutdown P & IDs
- Breakers Books
- Thermal Equilibrium and Heat up Calculations
- No Boron Requirements for the Spent Fuel Pit
- Effluent Calculations for LOP or Dropped Fuel Assembly
- Final Configuration Control Plan
- Maintenance Program Changes

GENERAL COMMENTS

- Normal Technical Specifications prior to Offload
- Administrative Control Letter once Defueled
- POL Once Defueled
- Cost Effective Schedule, limited Overtime
- Defueled
- All systems no longer required are removed from service
- No Plant Lay up
- Containment Systems Drained and De-energized
- Secondary Plant Drained and De-energized
- All boric acid systems removed from service
- AFWST to be used as Seismic Makeup for the SFP after offload
- Radwaste Systems to remain in service
- Increase in redundancy during shutdown since systems are not being removed from service
- Effluent Considerations

CONTAINMENT SYSTEMS Drained and De-energized

- All flammable items (oil, chemicals) removed
- Cathodic Protection on the Sphere
- Containment locked and vented to stack (slight negative pressure)
- Reactor Head not completely reassembled (ALARA)
- Fire Protection will still be viable through CRS
- Storage Racks and Lift Rig Storage
- Normal Decontamination Efforts
- Pressurizer Safety Valve removed
- No extra effort to drain low spots in systems
- RCS Crud Burst consistent with normal plant shutdown

SYSTEMS TO BE ELIMINATED

- CONTAINMENT SYSTEMS
 - Letdown
 - Sumps
 - Containment Isolation
 - Control Rod Drive
 - Containment Ventilation
 - Containment Water level Indication
 - Fuel handling
 - H₂ Monitoring
 - Nuclear Instrumentation System
 - Pressurizer
 - Reactor Coolant Pump Seal Water
 - Reactor Coolant System
 - Residual Heat Removal
 - Reactor Protection System
 - Sphere Enclosure
 - Teleflex
 - Subcooling Margin Monitor
 - Seismic Monitoring

- BORIC ACID SYSTEMS
 - Boric Acid System
 - Chemical Recirculation System
 - Volume and Control System

- SECONDARY PLANT
 - Main Steam
 - Feedwater
 - Flash evaporators
 - Feedwater sampling
 - Feedwater Heaters
 - Feedwater System
 - Chemical Feed System
 - Hydrazine Addition

- CONDENSATE / CONDENSER
 - Condensate Air Removal
 - Condensate
 - Condensate Sampling
 - Condenser Vents and Drains

- TURBINE GENERATOR

- Generator
- Generator Gas
- Generator Seal Oil
- Turbine
- Turbine Lube Oil
- Turbine Control Oil
- Turbine Plant Sample Coolers
- High Pressure Turbine
- Low Pressure Turbine

- NON SAFETY RELATED COOLING

- Circulating Water System
- Turbine Plant Cooling Water

- ACCIDENT MITIGATION / MONITORING SYSTEMS

- Dedicated Shutdown Diesel
- Safety Injection
- Emergency Lighting
- Post Accident Sampling

- GASEOUS RADWASTE

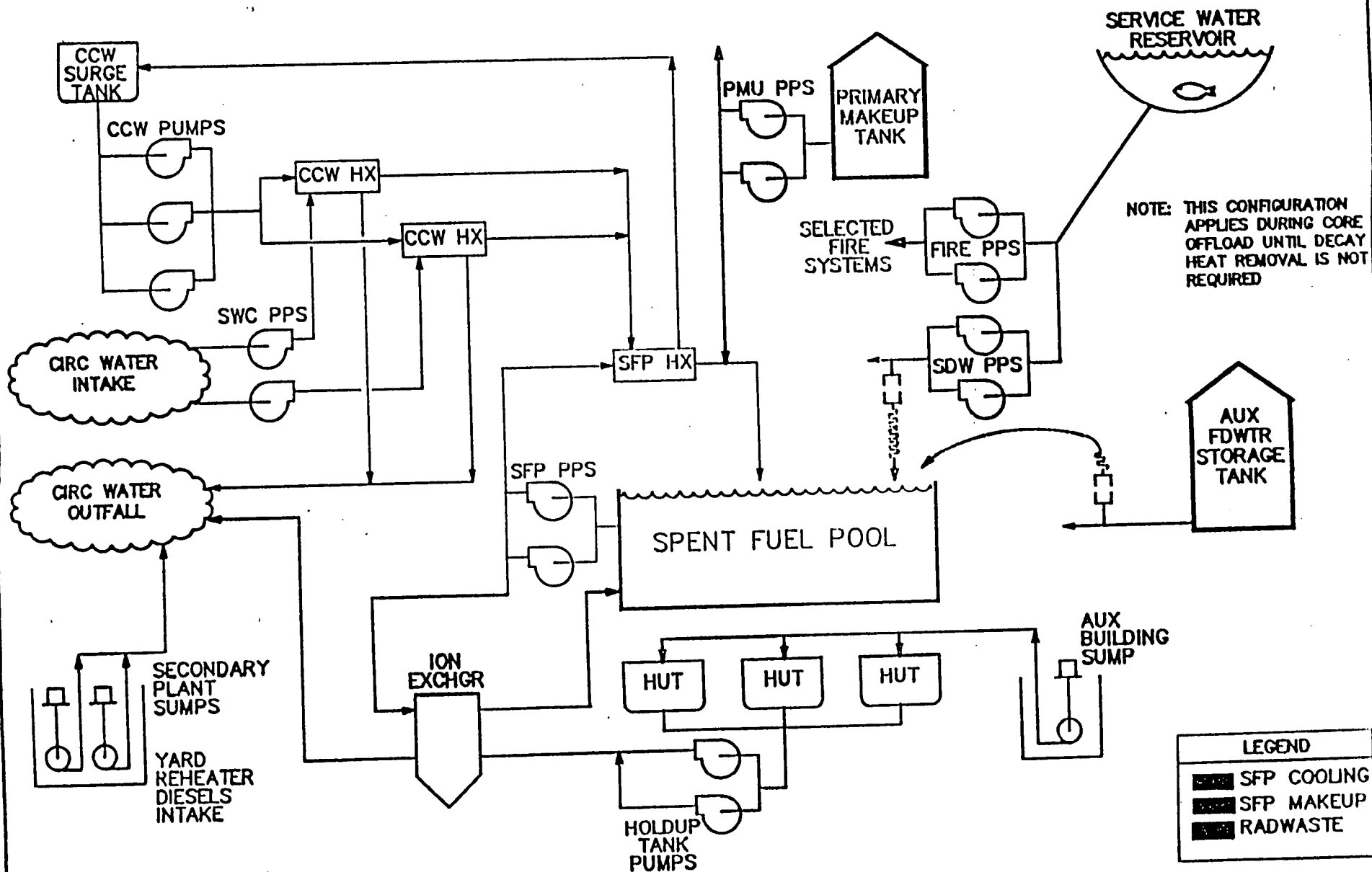
PLANT SYSTEMS TO BE MAINTAINED

- DECAY HEAT REMOVAL
 - Intake
 - Salt Water Cooling
 - Component Cooling Water
 - Spent Fuel Pool Cooling

- RADWASTE / SPENT FUEL POOL CHEMISTRY CONTROL
 - Liquid Radioactive Waste Collection
 - Liquid Radioactive Waste Processing
 - Radwaste Drains

- SPENT FUEL PIT MAKEUP
 - Primary Make-up
 - Reservoir
 - Auxiliary Feedwater Storage Tank

UNIT 1 FINAL SHUTDOWN CONFIGURATION

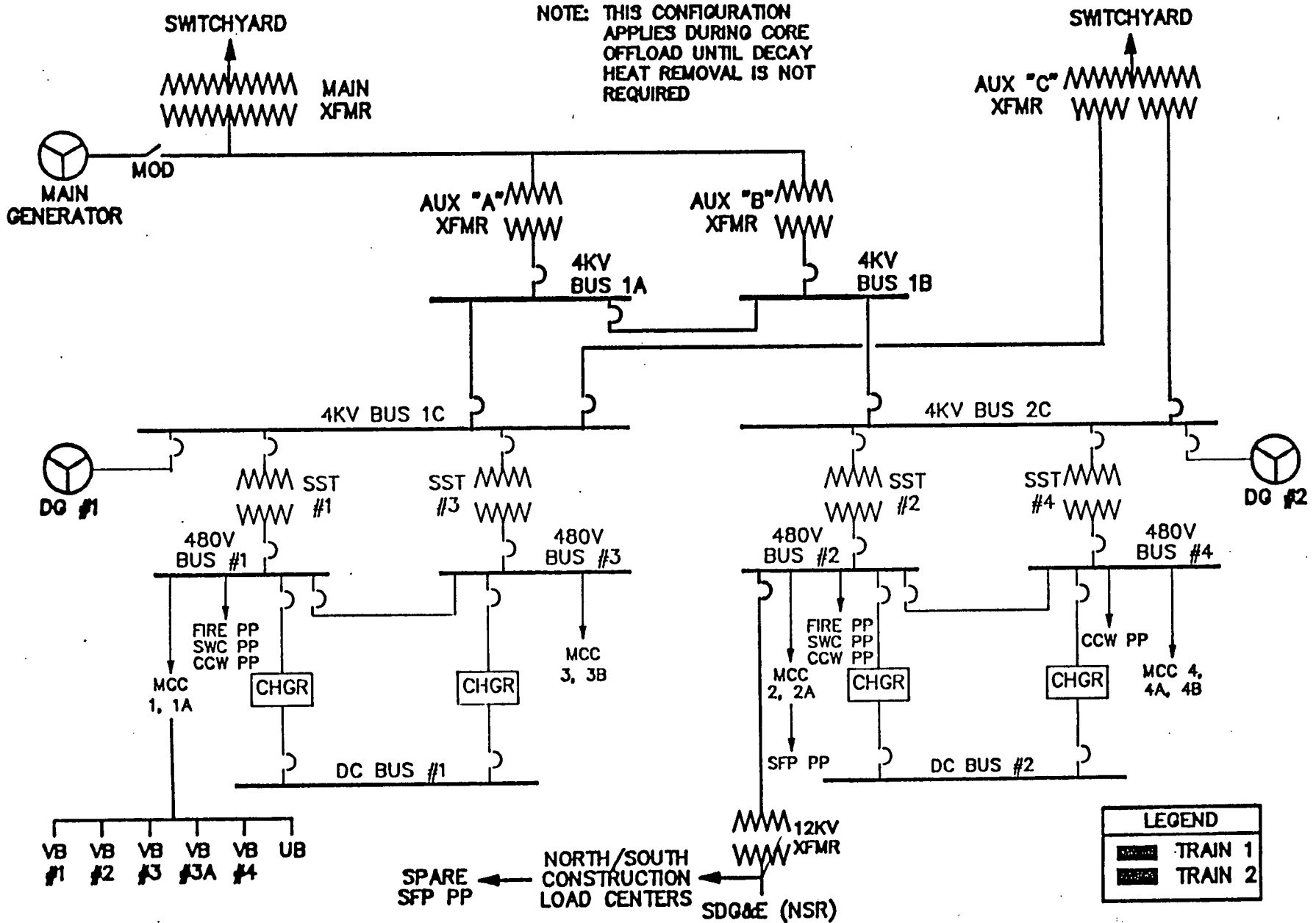


LEGEND	
	SFP COOLING
	SFP MAKEUP
	RADWASTE

- AC POWER SUPPLY
 - Diesel Generators
 - Main, Aux A, Aux B, Aux C transformers
 - Electrical Systems
 - 220 KV
 - 12 K
 - 4 K
 - 480 V
 - DC
 - MCC's
 - Vital Buses
 - Utility Bus

UNIT 1 FINAL SHUTDOWN CONFIGURATION

NOTE: THIS CONFIGURATION
APPLIES DURING CORE
OFFLOAD UNTIL DECAY
HEAT REMOVAL IS NOT
REQUIRED



LEGEND	
	TRAIN 1
	TRAIN 2

- SUPPORT SYSTEMS REQUIRED

- Yard Sumps and Drains
- Fire Protection
- Cranes
- Met Tower
- Gaseous N2 and Liquid Nitrogen
- Snubbers (13 left)
- Instrument Air System
- Lighting
- Perimeter Lighting
- Misc Ventilation - CREATS functional
- Radiation Monitors
- Service and Domestic Water
- Security
- Secondary Sumps and Drains
- Telephones
- Sirens and Siren Control Panel

- POSSIBLE SALVAGE

- HP Turbine

UNIT 1 – FINAL SHUTDOWN PROJECT CONFIGURATION CHANGES REQUIRED FOR SHUTDOWN

<u>SYSTEM</u>	<u>CHANGE REQUIRED</u>
<u>MECHANICAL</u>	
1. GGS	REMOVE 16 CO2 30 H2 BOTTLES
2. GNI	REMOVE 2 H2 148 N2 BOTTLES
3. PZR	REMOVE SAFETY ON MO PER PROCEDURE
4. CVS	BLOCK OPEN VALVES CV-10, CV-116
5. ISA	USING AIR RECEIVERS WITH AUX. AIR COMPRESSOR
6. CRS	BLOCK OPEN CV-92 FOR FIRE PROTECTION
7. RMS	MONITOR UPGRADES
8. DSD	REMOVE BANK & ENGINE BATTERY
9. SIS	REMOVE UPS BATTERY
10. AFW	USE FOR SFP MAKEUP
11. SWC	REMOVE BATTERY FOR GAS ENGINE
12. MSS	REMOVE BOTTLES
<u>ELECTRICAL</u>	
1. VB1-8-1109V	LIFT 9 LEADS (OR PULL FUSES)
2. VB2-12-16V	LIFT 3 LEADS (OR PULL FUSES)
3. VB3-8-1512V	LIFT 1 LEAD (OR PULL FUSES)
4. VB4-8-1402V	LIFT 12 LEADS (OR PULL FUSES)
5. VB4-8-1509V	LIFT 7 LEADS (OR PULL FUSES)

FN=CONFIG

UNIT 1 FINAL SHUTDOWN

MAJOR MILESTONES

BEGIN COASTDOWN	11/16/92
OPEN BREAKERS	11/30/92
BEGIN TRANSSHIPMENT DRY RUNS	01/11/93
BEGIN TRANSSHIPMENT	01/22/93
COMPLETE TRANSSHIPMENT	02/12/93
COMPLETE FUEL TRANSFER EQ CHECKOUT	02/19/93
MODE 6	02/22/93
REFUELING CAVITY FLOODED	02/25/93
BEGIN CORE ALTERATIONS	03/01/93
CORE OFFLOADED	03/10/93
CONTAINMENT CLOSURE	05/15/93
SECURE CIRCULATING WATER PUMPS	06/29/93
SFP THERMAL EQUILIBRIUM OF 150°F	03/20/95

SONGS 1 OPERATION FOR FINAL SHUTDOWN

- **EXISTING TECHNICAL SPECIFICATIONS APPLY UNTIL DEFUELED**

- **ADMINISTRATIVE CONTROLS LETTER APPLIES AFTER DEFUELING**

- **"AT ALL TIMES" LCO**
 - Fire Suppression Water System

- **MODE 6 LCO**
 - One Emergency Diesel Generator without Autostart

SONGS 1 OPERATION FOR FINAL SHUTDOWN

(Continued)

- **MODIFIED MODE 6 LCOs**

- Fuel Loading and Refueling Limits (SFP Boration Not Required)
- Vital Buses Energized by MCCs (Not Inverters)
- Reactor Residual Heat Removal (Not Required)

- **ADMINISTRATIVE CONTROLS**

- Spent Fuel Pool Temperature
- One Train of Cooling
- Spent Fuel Pool Makeup (AFWST)

- **PERMANENTLY DEFUELED TECHNICAL SPECIFICATIONS**

Unit 1 Operations Transition Plan

November 18, 1992

Date	11/1/92	1/4/93	4/1/93	9/1/93	3/1/94
Shift Superintendents/CFH	6	5	4	4	0
Control Room Supervisors/CFH	6	5	4	4	4
Control Operators/SCO	7	5	4	4	4
Asst. Control Operators	15	5	4	0	0
Plant Equip. Operators/NCEO	19	10	8	4	4
Nuclear Operations Asst.	4	4	4	4	0
RO/SRO Staff	11	2	2	0	0
Staff	14	12	12	9	7
TOTAL	82	48	42	29	19
TOTAL DISPLACED	0	34	40	53	63

OPERATOR QUALIFICATION PROGRAM

Certified Fuel Handler

Provides the supervision and oversight previously provided by SROs.

Current SROs will be grandfathered as CFHs

We are developing a program to qualify new CFHs.
It will cover:

- Operating, abnormal and emergency procedures
- Administrative controls
- Accident analyses
- Fuel handling equipment design and operation
- Technical specifications
- Emergency plan
- Supervisory skills
- Industry events

NON-CERTIFIED EQUIPMENT OPERATOR

Provides the workers previously designated as Assistant Control Operators and Plant Equipment Operators.

Currently qualified ACOs and PEOs will be grandfathered as NCEOs.

We are developing a program to qualify new ^NCFHs. It will cover:

- General training
- Science and engineering fundamentals
- Plant systems
- Operating, abnormal, and emergency plan procedures
- Administrative controls
- Fundamental operating practices and standards

**CHANGES TO SONGS
EMERGENCY PREPAREDNESS PROGRAM**

1. THE EMERGENCY PLAN IS A SITE-WIDE DOCUMENT
2. SIGNIFICANTLY REDUCED POTENTIAL FOR RADIOLOGICAL RELEASE
3. NO DECREASE IN EMERGENCY RESPONSE CAPABILITY
4. COMPARISON TO YANKEE AND RANCHO SECO
5. RECOGNITION/CLASSIFICATION OF UNIT 1 EVENTS
6. SHIFT STAFFING CHANGES
7. CHANGES TO EIPs
8. CHANGES TO FACILITIES & EQUIPMENT
9. TRAINING PERSONNEL ON THESE CHANGES
10. NO AFFECT ON RELATIONSHIPS WITH LOCAL AGENCIES
11. CHANGES TO THE EMERGENCY PLAN WILL BE REVIEWED AND COORDINATED THROUGH NRR

SONGS 1 HEALTH PHYSICS TRANSITION PLAN

- **ACCESS CONTROL:**
CONTROL WILL NOT CHANGE UNTIL AFTER THE FUEL IS OFFLOADED AND THE UNIT IS PLACED IN SAFSTOR.
- **LOCKED AREAS:**
WHEN THE UNIT IS DEFUELED AND PLACED IN SAFSTOR SECURITY WILL DEVITALIZE THE AREAS. SOME OF THE AREAS WITH RADIOLOGICAL CONCERNS WILL BE LOCKED AS THE MECHANISM FOR ACCESS CONTROL.
- **RADIATION EXPOSURE PERMIT AREAS:**
THE CONTROLLING MECHANISM FOR ENTRY TO RADIOLOGICAL AREAS WILL BE THE RADIATION EXPOSURE PERMIT. DURING SAFSTOR THE REP WILL BE PREPARED AND ISSUED FROM UNIT 2/3 PLANNING OFFICE. WORKERS WILL NEED TO INITIATE THEIR WORK ACTIVITY FROM UNITS 2/3.

SONGS 1 HEALTH PHYSICS TRANSITION PLAN

- **AUTOMATED DOSIMETRY CONTROL:**
PRIOR TO SAFSTOR WORKERS WILL HAVE THE ABILITY TO SIGN IN ON AN REP AND SELF LOG INTO THE DOSIMETRY STATION. THEY WILL PICK UP AN ALARMING DOSIMETER WHICH IS KEYED INTO THE REP PROCESS.
- **WHOLE BODY PERSONNEL MONITORING:**
AS THE WORKERS EXIT THE AREA THEY WILL BE REQUIRED TO GO THROUGH THE WHOLE BODY PERSONNEL MONITOR OR PERFORM A WHOLE BODY FRISK.
- **SURVEY PROGRAM:**
A SURVEY PROGRAM WILL BE MAINTAINED. SURVEYS WILL BE PERFORMED ON A ROUTINE BASIS TO DETERMINE RADIOLOGICAL CONDITIONS IN WORK AREAS. LOCATIONS, WILL REMAIN APPROXIMATELY AS PRESENTLY DONE. FREQUENCIES, WILL BE BASED UPON THE PROBABILITY OF CHANGING RADIOLOGICAL CONDITIONS AND THE FREQUENCY WITH WHICH THE AREA WILL BE VISITED.

SONGS 1 HEALTH PHYSICS TRANSITION PLAN

- **JOB COVERAGE:**
WORK WILL BE SUPPORTED AS IT IS IN THE EXISTING PROGRAM.
- **STAFFING:**
PRESENT STAFFING WILL CONTINUE UNTIL THE START OF TRANSshipment. WE WILL THEN INCREASE OUR STAFFING TO MEET THE NEEDS OF THE PROJECT.
AFTER MAY 1993, STAFFING WILL BE DETERMINED BY THE NUMBER OF CUSTOMERS AND THE SCOPE OF WORK.
- **WORK MANAGEMENT:**
PRESENT SCHEDULING IS THROUGH THE UNIT 1 SCHEDULING GROUP. DURING THE SHUTDOWN PROCESS THIS WILL BE TRANSFERRED TO OUTAGE MANAGEMENT.

SONGS 1 HEALTH PHYSICS TRANSITION PLAN

- PLANNING AND SCHEDULING DURING SAFSTOR:
WORK AFTER SAFSTOR WILL BE SCHEDULED FROM UNITS 2/3.
ANY HP SUPPORT WILL NEED TO BE SCHEDULED AS A PART OF
THIS PROCESS AND THE TECHNICIANS WILL BE ASSIGNED FROM
THE UNIT 2/3 RESOURCES.

Edison Objectives

- Safely Comply With Regulations
- Minimize Post-Shutdown Costs

Licensing Actions

- Obtain POL
- Advise NRC Of Intended Administrative Controls
- Request Exemptions From 10 CFR 50
- Permanently Defueled Technical Specifications
- Fuel Handler Certification
- Submit Preliminary Decommissioning Plan

Licensing Actions (Continued)

- Resolution of Other Commitments
- Modification of Emergency Plan
- Modification of Security Plan
- Submit Proposed Decommissioning Plan

**CHANGES TO SONGS
EMERGENCY PREPAREDNESS PROGRAM**

- 1. THE EMERGENCY PLAN IS A SITE-WIDE DOCUMENT**
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- 3. NO DECREASE IN EMERGENCY RESPONSE CAPABILITY**
- 4. COMPARISON TO YANKEE AND RANCHO SECO**
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