SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL℠ Company

Dwight E. Nunn
Vice President

January 11, 2002

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: **Docket Nos. 50-361 and 50-362**
Proposed Change Number NPF-10/15-517, Supplement 1
Revision of Facility Operating License
San Onofre Nuclear Generating Station, Units 2 and 3

Reference: Letter from Dwight E. Nunn (SCE) to the Document Control Desk (NRC) dated March 21, 2001; Subject: Docket Nos. 50-361 and 50-362 Proposed Change Number NPF-10/15-517 Revision of Facility Operating License, San Onofre Nuclear Generating Station, Units 2 and 3

Gentlemen:

Enclosure 1 provides additional information to that included in the referenced March 21, 2001 submittal, which requested closure of completed license conditions. Enclosure 2 includes replacement operating license pages to substitute for those provided in the Reference submittal. These replacement operating license pages identify those license amendments which closed other license conditions, not being proposed for closure by the above referenced submittal. SCE is making no formal commitments that would derive from NRC approval of the proposed amendment supplement.

The 10 CFR 50.92 "No Significant Hazards Considerations" evaluation of Proposed Change Number NPF-10/15-517, submitted with the referenced letter, is not impacted by this supplement.

If you have any questions regarding this additional information, please contact me or Mr. Jack L. Rainsberry (949) 368-7420.

Sincerely,

Enclosures

cc: E. W. Merschoff, Regional Administrator, NRC Region IV
J. N. Donohew, NRC Project Manager, San Onofre Units 2, and 3
C. C. Osterholtz, NRC Senior Resident Inspector, San Onofre Units 2 & 3

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UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Application of SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. for a Class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 2 of the San Onofre Nuclear Generating Station	))))))	Docket No. 50-361 Amendment Application No. 201 Supplement 1

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10 CFR 50.90, hereby submit information in support of Amendment Application No. 201. This information consists of responses to NRC requests for additional information on Proposed Change No. NPF-10-517 to Facility Operating License NPF-10. Proposed Change No. NPF-10-517 is a request to administratively update the Facility Operating License by deleting completed license conditions.

State of California
County of San Diego

FRANCES M. THURBER
Commission # 1295266
Notary Public - California
San Diego County
My Comm. Expires Mar 23, 2005

Subscribed and sworn to (or affirmed) before me this 11th day of January, 2002.

By: Dwight E. Nunn
Vice President

Frances M. Thurber
Notary Public

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

Application of SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. for a Class 103 License to Acquire, Possess, and Use a Utilization Facility as Part of Unit No. 3 of the San Onofre Nuclear Generating Station	))))))	Docket No. 50-362 Amendment Application No. 186 Supplement 1

SOUTHERN CALIFORNIA EDISON COMPANY, ET AL. pursuant to 10 CFR 50.90, hereby submit information in support of Amendment Application No. 186. This information consists of responses to NRC requests for additional information on Proposed Change No. NPF-10-517 to Facility Operating License NPF-15. Proposed Change No. NPF-10-517 is a request to administratively update the Facility Operating License by deleting completed license conditions.

State of California
County of San Diego

FRANCES M. THURBER
Commission # 1295266
Notary Public - California
San Diego County
My Comm. Expires Mar 23, 2005

Subscribed and sworn to (or affirmed) before me this 11th day of January, 20 02.

By: Dwight E. Nunn
Vice President

Frances M. Thurber
Notary Public

ENCLOSURE 1

Enclosure 1

PCN-517, Supplement 1

Additional Information Supporting Proposed Change Number
(PCN) NPF-10/15-517
"Revision of Operating License"
San Onofre Nuclear Generating Station
Units 2 and 3

1. **UNIT 2 LICENSE CONDITION 2.C.(19)f. 1-17 - CONTROL ROOM DESIGN (TMI ISSUE I.D.1)**

   The following reference provides additional information for closure of this license condition.

   NRC to SCE letter dated October 5, 1982 "NRC Inspection Reports 50-361/ 82-27 and 50-362/82-19" (PCN-517 Reference No. 36)

   Item 2.a, "(Closed) Item I.D.1, Control Room Design Review (Low Power License Condition 2.C.(19))," confirmed the inspector verified that all requirements of the low power operating license relative to this item had been completed in the Unit 2 control room and confirmed that no items of noncompliance or deviations were identified.

2. **UNIT 3 LICENSE CONDITION 2.C.(17)c. CONTROL ROOM DESIGN REVIEW (TMI ISSUE I.D.1)**

   The following references provide additional information for closure of this license condition.

   NRC to SCE letter dated October 5, 1982 "NRC Inspection Reports 50-361/ 82-27 and 50-362/82-19" (PCN-517 Reference No. 36)

   Item 3c, "(Open) Item I.D.1, Control Room Design Review," confirmed that all items had been satisfactorily resolved, except for: the primary makeup pump flow controller being mislabeled, an error in the placement of Technical Specification limit indicating arrows for Containment Pressure and Refueling Water Storage Tank Level, fuel load pattern recognition information needed to be incorporated into emergency operating procedures, operator training in the use of the process computer was required, and the open/closed legends for hydrogen purge control on the HVAC panel were reversed.

NRC Inspection Reports 50-361/82-39 and 50-362/82-31 dated December 7, 1982 (PCN-517 Reference No. 34)

Item 14.b, "(Closed) Item I.D.1 - Control Room Design Review," confirmed the inspector verified the five items discussed in Inspection Report 50-362/82-19 (above) were satisfactorily completed prior to fuel load.

3. UNIT 2 LICENSE CONDITION 2.C.(19)n. ADDITIONAL MONITORING INSTRUMENTATION

There are three sets of monitors associated with this license condition: 7865, plant vent and containment purge monitors; 7870, condenser evacuation system monitors; and 7828 containment purge only monitors. The following references provide additional information for closure of this license condition.

NRC to SCE letter dated March 2, 1982 "NRC Inspection Report 50-361/82-09" (Reference A)

Enclosure 2 of SCE to NRC letter dated February 1, 1982 (this letter is Enclosure 1 of NRC inspection report 361/82-09) section II "CONDENSER EVACUATION SYSTEM" describes the condenser evacuation system monitor 7870 which provides the capability for iodine and fixed particulate sampling.

NRC to SCE letter dated March 4, 1983 "NRC Inspection Report 50-361/83-08" (Reference B)

Section B. "Sampling and Analysis of Plant Effluents" discusses the procedure for particulate and radioiodine sampling using the wide range gas monitors 7865 and 7870 in a post accident situation. This inspection determined that there were inadequate preparations for the onsite analysis of charcoal or particulate samples, that criteria for offsite shipments was inconsistent, and that procedures were inadequate regarding direction for higher activity particulate and radioiodine samples being sent offsite for analysis.

NRC to SCE letter dated November 16, 1983 "NRC Inspection Report No. 50-361/83-37" (Reference C)

This inspection report addressed sampling and analysis issues raised in Reference B. In section d of this report "Additional Review II.F.1, Attachment 2" the inspector indicated that the system did not appear to meet the intent of NUREG-0737, Item II.F.1-2, in that a significant time delay was necessary before one person could be expected to retrieve a sample with acceptable exposure limits. This issue was identified as open item 50-361/83-37-01.

NRC to SCE letter dated March 7, 1986 "NRC Inspection Report No. 50-361/86-02" (Reference D)

In section 2 "Licensee Action on Previous Inspection Findings (Closed) Followup (50-361/83-37-01)" the inspector verified that procedure SO123-III-8.10.23 was revised to address manpower requirements for post accident sample collection, and closed this item. The current practice for handling high range iodine and particulate WRGM samples continues to utilize procedure SO123-III-8.10.23.

SCE to NRC letter dated February 3, 1982 "Implementation Program for Radiation Monitors" San Onofre Nuclear Generating Station Units 2 and 3 (Reference E)

Enclosure 4 of this letter discusses an SCE proposal to utilize the containment atmosphere monitoring system, gaseous radiation monitors 7804 and 7807, rather than provide direct monitoring on the purge lines.

NUREG-0712 Supplement No. 5 "Safety Evaluation Report related to the operation of San Onofre Nuclear Generating Station Units 2 and 3" dated February 1982 (Reference F)

Section 11.3 approved Interim use of the containment atmosphere monitoring system and associated sampling media in lieu of the SCE planned response to NUREG-0737 of monitoring directly on the purge lines. Requirement for capability to perform continuous monitoring and sampling of the containment purge exhaust directly from the purge stack after the first refueling outage was subsequently documented and fulfilled by installation of containment purge monitors 7828 per Unit 2/3 license conditions 2.C.(17) / 2.C.(15) "Purge System Monitors (Section 11.3, SER, SSER # 5)."

4. UNIT 3 LICENSE CONDITION 2.C.(23) FUEL ASSEMBLY SHOULDER GAP CLEARANCE

The following references provide additional information for closure of this license condition.

SCE to NRC letter dated March 11, 1991 "Fuel assembly Shoulder Gap Adequacy" (Reference G)

This letter requested closure of license condition 2.C.(23) based on the acceptable shoulder gap analysis results for the first five cycles. Further, SCE determined that the Fuel Element Assembly (FEA) shoulder gap analysis results were acceptable for the 16 x 16 fuel design with a FEA shoulder gap clearance of 2.382 inches (vs. 1.332 inches initially). SCE committed to continue to evaluate the adequacy of the FEA shoulder gap as part of the San Onofre Units 2 and 3 reload analyses.

NRC to SCE letter dated March 26, 1991 "Fuel Assembly Shoulder Gap Adequacy" (Reference H)

Responded to the March 11, 1991 SCE letter above, providing NRC concurrence that the shoulder gap clearance provided was adequate for the design life of the fuel and confirming that license condition 2.C.(23) had been met.

5. UNIT 2/3 LICENSE CONDITIONS 2.C.(16)/2.C.(14) RADIOACTIVE WASTE SYSTEM

The following references provide additional information for closure of these license conditions.

SCE to NRC letter dated May 1, 1985 "San Onofre Nuclear Generating Station Units 1, 2, and 3" (Reference I)

This letter advised that the SCE San Onofre contract with Chem-Nuclear, Inc. for the, NRC interim approved Process Control Program (PCP) had expired on April 1, 1985 and that Chem-Nuclear had been replaced by Nuclear Packaging (NuPac), Inc. as the vendor of wet radwaste treatment services at the San Onofre Nuclear Generating Station. This letter also advised that the NuPac topical report, P-02-NP, which addressed their dewatering system, had been submitted for NRC review in August 1984. This (May 1, 1985) letter requested NRC approval of topical report, TP-02-NP for SCE use of the NuPac dewatering system, as described in the NuPac topical report.

NRC to SCE letter dated June 11, 1985 "Interim Approval of Dewatering of Spent Resin" (Reference J)

Responded to the May 1, 1985 SCE letter above, granting interim approval effective until the NRC review of NuPac's licensing topical report would be completed.

NRC to SCE letter dated August 10, 1995 "Final Draft of the NRC Safety Evaluation Report (SER) on San Onofre Improved Standard Technical Specifications (STS)" (Reference K)

Provided a final draft of the NRC safety evaluation report (SER) on SCE license amendment request PCN-299 dated August 25, 1994, for conversion of the San Onofre Nuclear Generating Station (SONGS) Unit 2 and 3 Technical Specifications to the improved standard Technical Specifications. This SER's discussion of the Process Control Program (PCP) for waste solidification, on page 69, refers to the San Onofre Licensee Controlled Specifications (LCS) and

Topical Quality Assurance Program (TQAM) PCP descriptions. The SER concludes that the regulatory controls for the San Onofre Topical Quality Assurance Manual (TQAM) provided sufficient control of the requirements and that removing PCP provisions from the Technical Specifications was acceptable.

NRC to SCE letter dated February 9, 2000 "NRC Inspection Report No. 50-361/2000-01: 50-362/2000-01" (Reference L)

Inspection report item R1c concluded that SCE met regulatory requirements associated with the solid radioactive waste management program.

San Onofre Units 2 and 3 Licensee Controlled Specifications (LCS) Sections 5.0.103.2.2 Process Control Program (PCP) (Reference M)

LCS 5.0.103.2.2 provides the current PCP control to ensure that processing and packaging of solid radioactive wastes at San Onofre is accomplished in a manner to ensure that all regulatory compliance requirements are met.

6. UNIT 3 LICENSE CONDITION 2.C.(22) AUXILIARY BUILDING VENTILATION SYSTEM

The following reference provides additional information for closure of this license condition.

Design Change Package (DCP) 790.1 dated August 7, 1984 Design Change Package (DCP) 790.1 (Reference N)

Design changes to block potential release paths and provide better Auxiliary Building ventilation air flow were installed by implementation of Design Change Package (DCP) 790.1.

7. UNIT 2 LICENSE CONDITION 2.C.(19)e PROCEDURES FOR VERIFYING CORRECT PERFORMANCE OF OPERATION ACTIVITIES

The following reference provides additional information for closure of this license condition.

NRC to SCE letter dated March 15, 1982 "NRC Inspection Report No. 50-361/82-10" (PCN-517 Reference No. 31)

Inspection report, item 3b closed this license condition.

REFERENCES

(References are listed in the sequence used in this Supplement)

36. NRC to SCE letter dated October 5, 1982 "NRC Inspection Report 50-361/82-27" (PCN-517 Reference No. 36)

34. NRC Inspection Report 50-362/82-31 dated December 7, 1982 (PCN-517 Reference No. 34)

A. NRC to SCE letter dated March 2, 1982 "NRC Inspection Report 50-361/82-09"

B. NRC to SCE letter dated March 4, 1983 "NRC Inspection Report 50-361/83-08"

C. NRC to SCE letter dated November 16, 1983 "NRC Inspection Report 50-361/83-37"

D. NRC to SCE letter dated March 7, 1986 "NRC Inspection Report 50-361/86-02"

E. SCE to NRC letter dated February 3, 1982 "Implementation Program for Radiation Monitors" San Onofre Nuclear Generating Station Units 2 and 3

F. NUREG-0712 Supplement No. 5 "Safety Evaluation Report related to the operation of San Onofre Nuclear Generating Station Units 2 and 3" dated February 1982

G. SCE to NRC letter dated March 11, 1991 "Fuel assembly Shoulder Gap Adequacy"

H. NRC to SCE letter dated March 26, 1991 "Fuel assembly Shoulder Gap Adequacy"

I. SCE to NRC letter dated May 1, 1985 "San Onofre Nuclear Generating Station Units 1, 2, and 3"

J. NRC to SCE letter dated June 11, 1985 "Interim Approval of Dewatering of Spent Resin"

K. NRC to SCE letter dated August 10, 1995 "Final Draft of the NRC Safety Evaluation Report (SER) on San Onofre Improved Standard Technical Specifications (STS)"

L. NRC to SCE letter dated February 9, 2000 "NRC Inspection Report No. 50-361/2000-01: 50-362/2000-01"

M. San Onofre Units 2 and 3 Licensee Controlled Specifications (LCS) Sections 5.0.103.2.2 Process Control Program (PCP)

N. Design Change Package (DCP) 790.1 dated August 7, 1984 Design Change Package (DCP) 790.1

31. NRC to SCE letter dated March 15, 1982 "NRC Inspection Report No. 50-361/82-10" (PCN-517 Reference No. 31)

pcn517rai1d

Reference #36

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

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October 5, 1982

Docket Nos. 50-361
50-362

Southern California Edison Company
P. O. Box 800
2244 Walnut Grove Avenue
Rosemead, California 91770

Attention: Dr. L. T. Papay, Vice President
Advanced Engineering

Gentlemen:

Subject: NRC Inspection of San Onofre Units Nos. 2 and 3 82-19 & 82-27

This refers to the routine inspection conducted by Messrs. D. F. Kirsch and M. Mendonca of this office on September 5-17, 1982 of activities authorized by NRC License No. NPF-10 and NRC Construction Permit No. CPPR-98, and to the discussion of our findings held with Mr. W. C. Moody and other members of the Southern California Edison Company staff at the conclusion of the inspection on September 17, 1982.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

for T. W. Bishop, Chief
Reactor Projects Branch No. 2

Enclosure:
NRC Inspection Report
Nos. 50-361/82-27
50-362/82-19

cc w/o enclosure:
R. Dietch, SCE

cc w/enclosure:
H. B. Ray, SCE (San Clemente)

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U. S. NUCLEAR REGULATORY COMMISSION

REGION V

A012-RB

Report No. 50-361/82-27
50-362/82-19

Docket No. 50-361 and 50-362 License No. NPF-10 (Unit 2)
CPPR-98 (Unit 3) Safeguards Group

Licensee: Southern California Edison Company
P. O. Box 800
2244 Walnut Grove Avenue

Rosemead, California 91770

Facility Name: San Onofre Units 2 and 3

Inspection at: San Onofre Site, San Clemente, California

Inspection conducted: September 6-17, 1982

Inspectors: D. F. Kirsch, Chief, Reactor Projects Section No. 3 — Date Signed

M. Mendonca, Reactor Inspector — Date Signed

Approved by: D. F. Kirsch, Chief, Reactor Projects Section 3, Reactor Projects Branch No. 2 — Date Signed

Summary:

Inspection from September 6-17, 1982 (Report No. 50-361/82-27 and 50-362/82-19)

Areas Inspected: Routine announced inspection of the licensee's actions regarding TMI Action Plan requirements; Unit 2 low power level testing data review, Unit 2 precritical testing data review and examination of licensee actions taken to resolve welding related allegations.

This inspection involved 85 inspector-hours on site by two NRC inspectors.

Results: No items of noncompliance or deviations were identified.

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DETAILS

1. Individuals Contacted

*M. L. Richter, Project Engineer
*J. R. Tate, Operations Supervisor
*W. C. Moody, Deputy Station Manager
*D. B. Schone, Project Quality Assurance Supervisor
*B. Kaez, Assistant Station Manager, Technical
*H. E. Morgan, Assistant Station Manager, Operations
*R. A. Croy, Manager, Configuration Control and Compliance
*P. R. King, Unit 2/3 Operations Quality Assurance Supervisor
*C. R. Horton, Unit 2/3 Startup Quality Assurance Supervisor
*C. A. Kargis, Unit 2/3 Operations Quality Assurance Engineer
*J. S. Iyer, Lead Compliance Engineer
*S. K. Moy, Compliance Engineer
G. Pattersen, Startup Quality Assurance Engineer

The inspectors also interviewed other licensee and Bechtel employees during the course of the inspection. These included Operations, Engineering, Quality Assurance (QA), and startup personnel.

*Denotes those individuals attending the exit interview on September 17, 1982.

Also present at the exit interview was A. I. Chaffee, Unit 2 Senior Resident Inspector.

2. TMI Action Plan Requirements - Unit 2

a. (Closed) Item I.D.1, Control Room Design Review (Low Power License Condition 2.C.(19))

The inspector verified that all requirements of the low power operating license and the Safety Evaluation Report (SER), Supplement No. 1, relative to this item, had been completed in the Unit 2 control room.

The red arrows, indicating a technical specification limit, and red bars, indicating alarm conditions, were installed correctly on the indicators for Refueling Water Storage Tank temperature and level.

No items of noncompliance or deviations were identified.

b. (Closed) Item 1.4.1, Special Low-Power Testing and Training

The inspector examined procedure No. [illegible]-000-00 (Natural Circulation Test Program) and observed that the procedure: (a) had been properly reviewed and approved; (b) contained the necessary instructions for the testing to initiate and verify natural circulation, maintain natural circulation with all pressurizer heaters secured, demonstrate natural circulation during decaying pressures, and demonstrate natural circulation with one steam generator isolated; and (c) included appropriate verifications to assure that operators experienced the initiation, maintenance and recovery from natural circulation.

The inspector observed the conduct of natural circulation and training during the performance of test procedures. The inspector independently verified the completion of procedure specified test prerequisites, that installed test equipment was calibrated as required, compliance with procedure specified initial conditions prior to the conduct of testing, [illegible] with procedure specified limits and precautions during the conduct of testing.

No items of noncompliance or deviations were identified.

The licensee reported that two operators, due to unavoidable circumstances, had not participated in the training provided by the conduct of procedure No. [illegible]-000-00. [illegible] representatives stated that these two operators would be immediately trained in the initiation, maintenance, and recovery from natural circulation during the natural circulation tests to be performed during Unit 2 power escalation testing. Based upon this commitment, the inspector considers this item to be closed.

c. (Closed) Item II.E.1.1, AFW Pump 48 hour Endurance Test

The inspector examined the data obtained from the 48 hour endurance runs of AFW pumps P140 and P147 and verified compliance with procedure specified acceptance criteria. The inspector also verified acceptable performance of the feedring integrity test.

(Closed) Item III.D.1.1, Integrity of Systems Outside Containment Likely to Contain Radioactive Material

The inspector verified that the licensee has completed leak rate measurements and leak reduction work for the following systems:

- Postaccident Sampling
- Containment Spray
- High Pressure Safety Injection, and
- Low Pressure Safety Injection.

Further, the inspector verified that the licensee has planned a leak reduction program for primary coolant sources outside containment.

3. TMI Action Plan Requirements - Unit 3

The inspector has determined that the below listed TMI Action Plan requirements are closed for Unit 3 based on the following considerations: (a) each of these items is primarily administrative in nature; (b) the administrative aspects of each were previously closed for Unit 2 and documented in NRC Inspection Report Nos. 50-361/81-25, 81-26, 81-23, 82-04, 82-10 and 82-12; (c) procedures applicable to these items are common to both SONGS-2 and 3; and (d) the procedures have not undergone revisions which would negate the conclusions reached during the Unit 2 reviews of these items. Where inspections have verified certain aspects, the results are indicated in parenthesis.

- Item I.A.1.1, Shift Technical Advisor
- Item I.A.1.2, Shift Supervisor Responsibilities
- Item I.A.1.3, Shift Manning
- Item I.A.2.1, Immediate Upgrade of RO and SRO Training and Qualifications
- Item I.A.2.3, Administration of Training Programs
- Item I.B.1.2, Evaluation of Organization and Management
- Item I.C.2, Shift and Relief Turnover Procedures
- Item I.C.3, Shift Supervisor Responsibility

KEN PURDY 12-14-82 ●10

Item I.C.4, Control Room Access

Item I.C.5, Feedback of Operating Experience

Item I.C.7, NSSS Vendor Review of Low Power Test Procedures

Item I.C.8, Pilot Monitoring of Selected Emergency Procedures for Near-Term Operating License Applicants

Item II.B.4, Training for Mitigating Core Damage (Training for next group of license candidates will be completed by early November, 1982)

Item II.G.1, Power Supplies (from Emergency Busses) [illegible] do not have power operated pressurizer relief valves and safety-grade pressurizer level instrumentation is required [illegible] safety-grade instrument power sources) [illegible]

Item II.K.1, IE Bulletins on Measures to [illegible] and Loss of Feedwater Accidents

Item II.K.2, Orders on B&W Plants (Not applicable [illegible])

Item II.K.3, Final Recommendations of B&W Task Force

a. (Open) Item I.C.1, Guidance for Evaluation and Development of Procedures for Transients and Accidents

The licensee had submitted emergency procedure guidelines for NRR review and approval by letter dated April [illegible] NRR approval. The emergency procedure guidelines [illegible] verify incorporation of the approved guidelines by [illegible] selected emergency procedures before the first [illegible] outage.

b. (Open) Item I.C.5, Feedback of Operating Experience Performance of Operating Activities

The inspector verified that the licensee has procedures and administrative controls in place to affect the correct performance of operating activities referenced by this action item.

The licensee has established a list of systems required to be operational prior to fuel load, however, control of only a small number of these has been accepted by the operations department. The licensee intends to utilize the same procedures that were

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used on Unit 2 to effect systems turnover on Unit 3. The licensee stated that all systems required for fuel load would be turned over to the operations department and system operability established in accordance with Technical Specification requirements prior to loading fuel. This item is open pending verification of the above stated system turnovers.

c. (Open) Item I.D.1, Control Room Design Review

The inspector examined the licensee's actions to resolve the comments provided in Supplement 1 to the Safety Evaluation Report (SSER#1). All items referenced by SSER#1 had been satisfactorily resolved except for the following:

- the primary makeup pump flow controller was not installed as the refueling water flow controller (Reference: SSER#1, Item I.D.1, paragraph 3b2.b, Fuel Load Item). This item will be examined further during a future inspection.

- a temporary rack has been installed on the control room desk for laying out drawings. A permanent rack is scheduled for installation; however, the inspector feels the temporary rack does not impede air circulation and, therefore, satisfactorily resolves this item (Reference: SSER#1, Item I.D.1, paragraph 3.1.c, Fuel Load Item).

- An error was observed in the placement of the arrows indicating Technical Specification limits for Containment Pressure and Refueling Water Storage Tank level. A licensee representative corrected the containment pressure arrow immediately, however, the inspector observed that the Design Change Package drawing had been incorrectly annotated to indicate this item had been satisfactorily completed. The licensee stated that when the Design Change Package requirements are completed an audit would be performed to verify that control room indicators are annotated properly to indicate alarm regions, control regions and Technical Specification limits. The results of this audit will be examined during a future inspection. (References: SSER#1, Item I.D.1, 3.6.f, Five Percent Power Item).

- SSER#1, Item I.D.1, paragraph 3b3.a (Fuel Load Item) requires that pattern recognition information be incorporated into emergency operating procedures whenever Safety Injection (SI) has to be verified. The licensee was in the process of modifying the Low Pressure Safety Injection,

Shutdown Cooling system by adding/removing some valves, thus making the Unit 3 system configuration different from Unit 2 (SONS-2). Therefore, the Sizewell recognition information, emergency procedures and system operating procedures, applicable to Unit 3, will not necessarily be the same as those previously established as SONS procedures. The licensee stated that the Sizewell recognition information and emergency/operating procedures would be reviewed and appropriately revised to assure applicability to Unit 3 configurations before fuel loading. These revisions will be examined during a future inspection.

Operator training in the use of the process computer has been scheduled for completion prior to the NRR [illegible] operator examinations on the differences between [illegible]. The licensee stated that process computer use training will be provided to all of the present class of operator [illegible] candidates. This item will be examined during a future inspection. (Reference: Sizewell [illegible] Fuel Load Item).

SSER1, Item I.D.1, paragraph 3.2.d (Fuel Load Item) indicates that open/closed legends for hydrogen [illegible] on the HVAC panel are reversed. The inspector observed similar inconsistencies on HVAC panel 3. The licensee stated that the legend/light marking system used on the hydrogen purge control panels would be reexamined to determine conformance with design conditions. This item will be examined during a future inspection.

d. (Open) Item I.G.1, Training During Low Power Testing

Discussions with the licensee and the NRR Licensing Project Manager indicate that the need for performing natural circulation demonstrations on Unit 3, during the low power physics test sequence, merely for the training of operators, is being revaluated by both parties. This item is open pending the results of those evaluations.

e. (Closed) Item II.B.1, Reactor Coolant System Vents

The inspector examined the licensee's actions resolving this item. Specifically, the following examinations were conducted.

Design Change Package DCP-[illegible] was properly reviewed, approved and closed.

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Procedure SP23-3-2.23 (Reactor Coolant Gas Vent System) adequately specified system operating instructions and was properly approved for use.

System hydrostatic test data including boundaries, pressure gage calibration, test pressure and time at test pressure appeared to be in conformance with the ASME B&PV Code.

Review of remote operated valve electrical and operability tests per procedure SP2-SM-400-14 established that the valves fail closed on loss of power.

Verification of design commitments such as:

- remote venting capability (from the pressurizer or reactor vessel head vent) in the control room.
- positive indication and control of power operated valves in the control room.
- administrative requirements assuring that power is removed during normal operations.
- all valves are powered from emergency power sources.
- the system is capable of venting either to the quench tank or to the upper containment atmosphere.

Visual examination of selected portions of the installed system and valves, including welding quality, for conformance with design requirements, the ASME B&PV Code, and the FSAR system diagram.

No items of noncompliance or deviations were identified.

f. (Closed) Item II.B.2, Design Review of Plant Shielding and Environmental Qualification of Equipment for Spaces/Systems Which may be used in Post-Accident Conditions

The licensee's evaluation of this item was contained in FSAR Amendment 23 and indicated that the only modification of plant design was the addition of a steel shielding door to prevent radiation streaming toward the control room area. The inspector examined the installation of the required door and verified the installation.

No items of noncompliance or deviations were identified.

KEN FURDY 12-14-82 1015

g. (Closed) Item II.D.3: Direct Indication of Relief and Safety Valve Position

The inspector verified selected details of the installation and calibration of the acoustic monitoring system for position indication of the pressurizer code safety valves. Units 2 and 3 do not have power operated pressurizer relief valves.

No items of noncompliance or deviations were identified.

h. (Closed) Item II.E.1.2: Auxiliary Feedwater Initiation and Indication

The licensee's response and commitments with regard to this item are contained in the FSAR, Amendment 23. The inspector performed the following verifications of licensee commitments with regard to this item:

- Design Change Package - 23M was properly reviewed, approved and closed out.
- The AFW system initiating circuitry incorporates both manual and automatic initiation capability.
- The initiating signals and circuits are powered from emergency power supplies.
- Manual initiation is from main control room panels 6252 and 53.
- The AFW flow indications provide for one channel of safety grade flow indication for each steam generator.
- The instrument channels are powered from safety grade instrument buses.
- Preoperational Test Procedure No. 3PE-235-01, Revision 0, (Auxiliary Feedwater Pump Motor and Turbine Driven System) data review demonstrates compliance with specified acceptance criteria.

No items of noncompliance or deviations were identified.

KEN PROY 12-14-82 1015

-9-

(Open) Item II.E.3.1, Emergency Power Supply for Pressurizer Heaters

The licensee's response and commitments relative to this item are contained in the FSAR, Amendment 23. The inspector performed the following verifications:

The two banks are powered from emergency buses and are automatically isolated by safety injection or emergency feedwater actuation signals.

An override switch enables the operator to override the above automatic signals and reclose the breakers.

The use of the override capability is administratively controlled and is annunciated in the control room.

The licensee had submitted a Unit 3 Licensee Event Report (No. 82-036) describing a condition wherein under loss of offsite power these pressurizer heaters would not be energized from the emergency power source. In response to the inspector's concern for Unit 3 applicability, it was established that the identical conditions existed in Unit 3 and that a design change rectifying the situation had not yet been [illegible]. This item will be examined further upon completion and [illegible] of the changes identified by the licensee.

j. (Closed) II.E.4.1, Containment Dedicated Penetrations - Hydrogen Control

The licensee's primary means of containment hydrogen control is provided by electrical hydrogen recombiners installed inside containment. A backup method uses penetrations [illegible] containment. System operating procedures applicable to [illegible] and 3 are established.

The inspector examined the results of test procedure No. 3P[illegible], Revision 0, (Hydrogen Recombiner System) which tested the operation of the internal hydrogen recombiners. The test was complete and the procedure obtained data was under review by the Test Working Group. It appeared that the data demonstrated operation of the hydrogen recombiner system and compliance with specified acceptance criteria.

No items of noncompliance or deviations were identified.

KEN PURDY 12-14-82 1015

k. (Closed) Item III.E.4.2, Containment Isolation Capabilities

The licensee's response and commitments relative to this item are contained in the FSAR Amendments [illegible] and [illegible]. The list of valves providing containment isolation is contained in Table 3.5-1, Section A, of the Technical Specifications.

The Inspector performed the following examinations relative to this item:

- valve operator actuation logic diagrams for a sample of several containment isolation valves [illegible]
- preoperational test procedure [illegible] SPS-101-04, Revision 0 (Containment Isolation Valves) [illegible] review
- preoperational test procedure [illegible] SPS-[illegible]-01, Revision 0 (Verification of Load Group Assignments) [illegible] review

Based upon the above reviews the Inspector concluded that:

- Containment isolation valve operator logic had been modified to provide containment isolation on receipt of the Containment Isolation Actuation Signal (CIAS) and Safety Injection Actuation Signal (SIAS), with the allowed exception of the Main Steam Isolation Valves and Main Feed Isolation Valves.
- Override capability of a sample of five valves contained in FSAR Table III.E.4.2-1 was verified to be in compliance with commitments.
- Resetting of the CIAS signal does not result in the automatic opening of containment isolation valves.
- Preoperational test procedures verified the operation of all containment isolation valves in accordance with design requirements as regards actuation and override capability.

The licensee was currently in the process of verifying the proper operation of Train B actuation. Train A had been completed. By Technical Specifications, the operation of Train B must be completed prior to entry into Mode 4. The licensee's schedule would succeed this requirement.

Pursuant to the above examinations, the inspector identified an apparent oversight in the Technical Specification surveillance requirements relative to Containment Isolation Valves.

Technical Specification paragraph 4.6.3.2a requires that each containment isolation valve in Table 3.6-1 be demonstrated operable at least once per 18 months by "Verifying that on a containment isolation test signal, each isolation valve actuates to its isolation position." In response to this TMI Action item the licensee provided for diverse [illegible] by requiring that each containment isolation valve actuate to its isolation position on receipt of the Safety Injection Signal in addition to the Containment Isolation Actuation Signal. The existing Technical Specification does not [illegible] testing the SIAS diversity modification. However, [illegible] licensee's procedure for accomplishing this surveillance (SP23-3-3.1A) correctly performs this surveillance by verifying isolation with both the CIAS and SIAS signals. This oversight has been brought to the attention of the licensee and NRR for resolution.

No items of noncompliance or deviations were identified.

l. (Open) Item II.F.1. Additional Accident Monitoring Instrumentation

The licensee's response and commitments relative to this item are contained in the FSAR and are detailed by Amendments 21 through 23.

The inspector verified selected details of licensee commitments related to the installation and calibration of the following additional instrumentation:

- Containment wide-range water level monitor
- Containment wide-range pressure monitor
- Containment Hydrogen concentration monitor

No items of noncompliance or deviations were identified.

m. (Open) Item II.F.2. Identification of and Recovery from Conditions Leading to Inadequate Core Cooling

The licensee's response and commitments relative to this item are contained in the FSAR. Additional instrumentations required are:

- A two channel sub-cooled margin monitor system

- Reactor vessel level indication using heated junction thermocouples

The inspector performed a preliminary evaluation of the licensee's actions and system calibration procedures relative to this topic. This item will be examined during a future inspection pending the completion of installation and testing of the above systems.

4. Low Power Level Data Review - Unit 2

The data obtained pursuant to the conduct of low power physics testing and initial criticality were examined. The inspector verified that these evolutions were conducted in accordance with approved procedures, the data conformed to specified acceptance criteria, and the data had been appropriately reviewed by the licensee.

No items of noncompliance or deviations were identified.

5. Precritical Data Review - Unit 2

The inspector reviewed the following licensee tests and data:

- Incore Instrumentation Functionals
- Reactor Coolant System Leakage Measurement
- Pressurizer Performance and Spray Valve Adjustment
- Reactor Coolant System Flow Measurement
- Reactor Internals Vibration Monitoring
- Control Element Drive Mechanism Test
- Post Core Hot-Functionals
- Pre-critical Comparison of the Core Protection Calculator, Plant Protection System, and Computer, and
- Precritical Check on Initial Criticality.

These tests had been conducted as specified by approved procedures, the data has been reviewed by appropriate licensee personnel and the data appears to conform to specified acceptance criteria.

No items of noncompliance or deviations were identified.

6. Licensee Actions to Resolve Allegation

During the course of the inspection the licensee notified the inspector that on September 7, 1982, certain allegations had been received by SCE regarding welding adequacy at SONGS 2 and 3. The alleger had been previously employed at SONGS by Bechtel Power Corporation. The allegers concerns were:

Allegation 1: The welding requirements of AWS D1.1 regarding "end returns" were not being complied with on pipe hangers, electrical struts and structural steel. In addition, it was alleged that "end return" requirements were not shown on design detail drawings.

Allegation 2: A spacer plate was believed by the alleger to be missing on the upper inside door hinge of the Unit 2 containment personnel hatch.

Allegation 3: The alleger believed that Bechtel had misinterpreted the ASME Section III welding standards regarding backset weld engagement length without initiating a code case and obtaining appropriate code relief.

Allegation 4: Based upon numerous spelling errors in nondestructive testing reports, the alleger believed that the quality of nondestructive examinations performed by Peabody Testing personnel may be questionable. (The concern here appears to center on the qualifications and capabilities of testing personnel if those personnel make frequent spelling errors.)

The inspector reviewed the licensee's actions to resolve these allegations by discussions with licensee personnel and examination of documentation.

The licensee appeared to have taken comprehensive investigative action and adequately addressed all issues. The licensee's investigation did not substantiate any allegation.

This item is considered closed.

7. Exit Interview

The inspectors met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on September 17, 1982 and discussed the inspection scope and findings.

Reference #34

8402230-12

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-361/82-39, 50-362/82-31

Docket No. 50-361; 50-362

Construction Permit No. CPPR-98

License No. NPF-10, NPF-15

Safeguards Group

Licensee: Southern California Edison (SCE) Company
P. O. Box 800
2244 Walnut Grove Avenue

Rosemead, California 91770

Facility Name: Rosemead, California 91770

Inspection at: San Onofre - Unit 2 and Unit 3

Inspection conducted: October 26 through November 8, 1982

Inspectors: J P Stewart for 12-7-82
A. Chaffee, Senior Resident Inspector, Unit 2 — Date Signed

Date Signed

Approved by: J P Stewart for 12-7-82
D. Kirsch, Chief, Reactor Projects Section No. 3 — Date Signed
Reactor Projects Branch No. 2

Summary:

Inspection on October 26, 1982 through November 28, 1982 (Report Nos. 50-361/82-39, 50-362/82-31)

Areas Inspected: Routine, unannounced resident inspection of the Unit 2 and 3 Operations and Startup Test Programs including the following areas: followup on inspector identified items; operational safety verification; monthly surveillance observations; monthly maintenance observations (Unit 2); Review of Plant Operations (Unit 2); Power Ascension Test Witnessing (Unit 2); Transient Test Witnessing (Unit 2); Initial Fuel Load Witnessing (Unit 3); Plant Trips (Unit 2); and independent inspection effort.

Routine, unannounced resident inspection of the Unit 3 Preoperational Test Program including the following areas: follow-up on inspector identified items; plant tour; and TMI Action Items.

This inspection involved 63 inspector hours on Unit 2 and 47 inspector hours on Unit 3 for a total of 110 hours by one NRC inspector.

Results: Of the 13 areas examined, one apparent item of noncompliance was identified (failure to properly administer operator overtime - paragraph 11, severity level 4).

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RV Form 219 (2)

DETAILS

1. Persons Contacted

H. Ray, Station Manager
*B. Katz, Technical Manager
*H. Morgan, Operations Manager
P. Knapp, Health Physics Manager
*J. Wambold, Maintenance Manager
M. Short, Project Support Manager
*W. Moody, Deputy Station Manager
*P. Croy, Compliance and Configuration Manager
A. Talley, Material and Administrative Services Manager
F. Eller, Security Manager
D. McCloskey, Emergency Preparedness Manager
*D. Schone, Units 2/3 Project Quality Assurance Supervisor
*P. King, Units 2/3 Operations Quality Assurance Supervisor
*C. Horton, Units 2/3 Startup Quality Assurance Supervisor
*C. Kergis, Lead Quality Assurance Engineer, Unit 3
*V. Fischer, Superintendent of Plant Coordination
*G. Patterson, Startup Quality Assurance Engineer
*K. O'Conner, Unit 3 Startup Supervisor
*M. Speer, Compliance Engineer

The inspectors also interviewed and talked with other licensee employees during the course of the inspection; these included shift supervisors; control room operators, startup engineers, and quality assurance personnel.

*Denotes those persons attending the exit interview on November 19, 1982.

Also present at the exit interview were M. Mendonca, Reactor Inspector and P. Stewart, Reactor Inspector.

2. Follow-up on Inspector Identified Problems (Units 2 and 3)

a. (Closed) (82-30-02) Use of out of date annunciator procedures in the Control Room

The inspector previously found that eight of twenty three (non-controlled pink) annunciator procedures were several months out of date. These uncontrolled procedures apparently were for operator use in that they were located on the control room panels in front of the applicable annunciator panel. The licensee in response to this situation removed the pink copies and installed controlled white copies. Thus, adequate document control appears to have been effected. The inspector did not observe any negative safety impact resulting from the existence of the out-of-date procedures. No items of noncompliance or deviations were noted.

3. Operational Safety Verification (Units 2 and 3)

The inspector observed control room operations, reviewed applicable logs and interviewed control room operators during the inspection period. The inspector verified the operability of selected emergency systems, reviewed tagout records and verified proper return to service of affected components. Tours of Unit 3 (containment, safety equipment building, diesel generator building and turbine building) the common control building and radwaste building and the Unit 2 turbine building were conducted to observe plant equipment conditions. The tours were conducted to inspect for potential fire hazards, fluid leaks, and excessive vibrations and to verify that maintenance requests had been initiated for equipment in need of maintenance. The inspector, by observation and direct interview, verified that selected positions of the physical security plan was being implemented in accordance with the station security plan.

The inspector observed plant housekeeping/cleanliness conditions and verified implementation of radiation protection controls. These reviews and observations were conducted to verify that facility operations were in conformance with the requirements established under technical specifications, 10 CFR, and administrative procedures.

No items of noncompliance or deviations were identified.

4. Monthly Surveillance Observation (Units 2 and 3)

The inspector observed a surveillance required by technical specifications (Core Operating Limit Supervisory System is out of service testing) and verified that: testing was performed in accordance with adequate procedures; that test instrumentation was calibrated; that limiting conditions for operation were met; that removal and restoration of the affected components were accomplished; that test results conformed with technical specification and procedure requirements; test results were reviewed by personnel other than the individual directing the test; and that any deficiencies identified during the testing were properly reviewed and resolved by appropriate management personnel.

PK The inspector also witnessed portions of the following test activities: S023-3-3.25, Once a shift surveillance, (Modes 1-4); and S023-3-3.22 Reactor Pre-refueling Surveillance. PK

No items of noncompliance or deviations were identified.

5. Monthly Maintenance Observation (Unit 2)

Station maintenance activities of components listed below were observed and/or reviewed to ascertain that they were conducted in accordance with approved procedures, regulatory guides, industry codes and standards, and in conformance with technical specifications.

a) Feed regulating valve 2FV1121 operator repair
b) Foxborro 200 power supply plug mounting repair

No items of noncompliance or deviations were identified.

6. Review of Plant Operations/Onsite Review Committee (Unit 2)

The inspector examined the onsite review functions conducted during the period of February 16, 1982 to October, 1982 to verify conformance with technical specifications and other regulatory requirements. This examination included: review group membership and qualifications; review group meeting frequency and quorum; and, verification that review of certain plant activities, required by technical specifications (including proposed technical specification changes, noncompliance items and corrective action, proposed facility and procedure changes and proposed tests and experiments conducted per 10 CFR 50.59) was performed.

No items of noncompliance or deviations were identified.

7. Witness of 20% Power Plateau Power Ascension Testing (Unit 2)

The inspectors observed selected portions of the following tests:

NSSS Calorimetric	2ST-344-10
Subchannel Gain Adjustments	2ST-344-12

During the performance of these tests, the inspector verified, on a selected basis by observation and discussion with licensee personnel, that those portions of the tests observed were conducted using an approved procedure, test equipment was properly calibrated, test data were collected and recorded, and that the test adequately demonstrated conformance with applicable acceptance criteria.

No items of noncompliance or deviations were identified.

8. Witness of Transient Tests (Unit 2)

The inspector observed selected portions of transient test 2PA-401-01 (20% main control board Rx trip).

During the performance of this test, the inspector verified, on a selected basis by observation and discussion with licensee personnel, that those portions of the test observed were conducted using an approved procedure, test equipment was properly calibrated, test data were collected and recorded, and that the test adequately demonstrated conformance with applicable acceptance criteria.

No items of noncompliance or deviations were identified.

9. Witness of Initial Fuel Load (Unit 3)

The inspector observed the licensee's performance of initial fuel loading in accordance with procedure 3FL-101-01. Based on these observations, the inspector established the following:

a. The licensee appeared to have performed these activities in accordance with regulatory requirements.

b. The nuclear instrumentation required for this procedure appeared to have been properly calibrated and proper operation was demonstrated.

c. Direct communication was established between the control room and the refueling level.

d. The staffing requirements for this activity appeared to have been met.

e. A current procedure was utilized.

f. Inverse Multiplication Plots were being properly maintained.

g. The boron concentration appeared to be properly sampled and analyzed.

Overall, this activity appeared to proceed very smoothly with few problems. Initial fuel load commenced on November 15 and was completed on November 21, 1982.

No items of noncompliance or deviations were identified.

10. Plant Trips (Unit 2)

Following the plant trips on November 10, 11, 13 (two trips) and 17, the inspector ascertained the status of the reactor and safety systems by observation of control room indicators and discussions with licensee personnel concerning plant parameters, emergency system status and reactor coolant chemistry. The inspector verified the establishment of proper communications and reviewed the corrective actions taken by the licensee.

All systems responded as expected and the plant was subsequently returned to operation. The plant remained in Mode 5, while recovering from out of specification steam generator chemistry, for an extended period following the trip on November 17, 1982.

No items of noncompliance or deviations were identified.

11. Independent Inspection (Units 2 and 3)

a. Use and Approval of Operator Overtime

The inspector reviewed operator working hours on several occasions since the issuance of the Unit 2 operating licensee on February 16, 1982. The following is a summary of operator working hours since licensing of Unit 2.

Month	Average Operator Hours Per Week	SHIFT SCHEDULE: Licensed Operators	SHIFT SCHEDULE: Non Licensed
Feb.	(Data not reviewed)		
March	60 hrs.	3 Watch Sections 12 hr. Watches	Same
April	60 hrs.	12 hr. Watches	Same
May	60 hrs.	12 hr. Watches	Same
June	58 hrs.	12 hr. Watches	Same
July	50 hrs.	4 Watch Sections 8 hr. Watches	3 Watch Sections 12 hr. Watches
August	48 hrs.	8 hr. Watches	12 hr. Watches
September	48 hrs.	5 Watch Sections 8 hr. Watches	4 Watch Sections 8 hr. Watches
October	47 hrs.	8 hr. Watches	8 hr. Watches

The inspector has also reviewed during the current and previous inspection implementation of operator overtime for conformance with condition 2.C(19)b (Shift Manning) of Unit 2 License No. NPF-10. The following is a summary of this review:

OVERTIME GUIDANCE DEVIAIONS

MONTH	CRITERIA	OCCURRENCES: With Proper Documented Management Authorization	OCCURRENCES: Without Proper Documented Management Authorization
Feb.	Data not reviewed		
March	Exceeded 72 hrs. in seven day period	32*	97*
April	" " " " " "	19*	0
May	" " " " " "	4*	0
June	" " " " " "	1*	0

OVERTIME GUIDANCE DEVIATIONS

MONTH	CRITERIA	OCCURRENCES: With Proper Documented Management Authorization	OCCURRENCES: Without Proper Documented Management Authorization
July	Exceeded 72 hrs. in seven day period	6*	1
August	" " " " " "	3*	1
September	" " " " " "	1*	0
October	" " " " " "	10* (authorization documentation not verified)	
September	16 hr. shift	0	1
September	24 hr. in 48 hr. period	0	2

*Some of these occurrences actually occurred on Unit 3, thus the number of events associated with Unit 2 are somewhat less.

Unit 2 License, NPF-10, condition 2.C(19)b (Shift Manning) states:

"SCE shall develop and implement administrative procedures to limit the working hours of individuals of the nuclear power plant operating staff who are responsible for manipulating plant controls or for adjusting on-line systems and equipment affecting plant safety which would have an immediate impact on public health and safety.

Adequate shift coverage shall be maintained without routine heavy use of overtime. However, in the event that unforeseen problems require substantial amounts of overtime to be used, the following guidelines shall be followed:

1. An individual shall not be permitted to work more than 16 hours straight (excluding shift turnover time).

2. An individual shall not be permitted to work more than 16 hours in any 24-hour period, nor more than 24 hours in any 48-hour period, nor more than 72 hours in any seven day period (all excluding shift turnover time).

3. A break of at least eight hours shall be allowed between work periods (including shift turnover time).

4. The use of overtime shall be considered on an individual basis and not for the entire staff on a shift.

Any deviation from the above guidelines shall be authorized by the station manager, his deputy, the operations manager, or higher levels of management, in accordance with established procedures and with documentation of the basis for granting the deviation. Controls shall be included in the procedures such that individual overtime will be reviewed monthly by the station manager or his designee to assure that excessive hours have not been assigned. Routine deviation from the above guidelines is not authorized."

Previous reviews of operator working hours have resulted in two Notices of Violation (One level IV, on April 23, 1982 for the 97* non-approved overtime occurrences in March and one level V on November 8, 1982 for the two occurrences in the July, August time frame). The current review identified three occurrences of non-approved overtime use during the September time frame. These occurrences are categorized as a level IV violation. The most recent occurrence of non-approved overtime use appears to have resulted from the following failures in the licensee's tracking system.

(1) The licensee's system for keeping track of operator hours relied upon scheduled hours rather than hours actually worked. Since operators sometimes work longer than scheduled, actual hours worked were apparently not identified to management. This resulted in three cases where overtime deviations occurred without appropriate management approval. This condition was corrected on 11/1/82 by Special Order 82-38.

(2) The licensee's program also appears inadequate in the implementation of the overtime guidance criterion of not exceeding 24 hours in a 48 hour period. This was due, in part, to the licensee's reviewing of only calendar day periods rather than any 48 hour period. This item was corrected on the interim basis by holding a training session for the overtime reviewers to make them aware of the need to look at any 48 hour period. The licensee is further developing an operations procedure to consolidate and formalize the operations department overtime control program. This procedure will be published by January 3, 1983. (50-361/82-39-01)

b. Temporary Modification Log

PK

The Inspector reviewed the Licensee's Temporary Modification Log for conformance to the licensee's operating instruction S023-0-16 (Temporary Modification Control), revision 4, dated 7/13/82, and American National Standard N18.7-1976. The following discrepancies were identified during a review of 115 temporary modifications forms (TMFs) contained in the control room temporary modification logs.

(1) Fifteen TMFs were missing the "requesting department supervisor" review signature and dates.

(2) Twenty-five of fifty-eight TMFs checked did not have applicable caution tags affixed in the control room to alert the operator to the existence of the temporary modification.

(3) Eight TMFs did not have the nonconformance report conditional release status annotated when the equipment was declared operable.

(4) Two TMFs were still open but the modification had been removed. These were both on non-safety related equipment.

(5) Fourteen TMFs identified instances where systems appeared to be returned to service, but the TMFs did not reflect that they had been declared operable by the operator.

The fact that many of the above discrepancies are covered by other tracking systems (such as the Equipment Control and Nonconformance Reporting) mitigates the safety significance of this finding. The inspector considers that the lack of caution tags in the control room is of safety significance because it reduces the operators ability to maintain awareness of temporary modification status.

The licensee's Quality Assurance organization has initiated initially a daily check of new temporary modification forms versus caution tags being hung in the control room beginning 11/22/82.

The Station Operations Manager stated that the Temporary Modification instruction SO23-0-16 would be revised as necessary in light of the above findings and the necessary additional manpower would be expended to upgrade the condition of the temporary modification log. The licensee committed to complete the above actions prior to January 20, 1983. (50-361/82-39-02)

No items of noncompliance or deviations were identified in this area.

12. Follow-up on Inspector Identified Items

The inspector examined the status of the licensee's program to maintain environmental qualification of safety equipment considering the licensee's August 23, 1982 letter to NRR and the August 30, 1982 letter from NRR to the licensee. Based on discussions with licensee personnel, it appears that the licensee understands the requirements in this area and sufficient work has been done to assure the continued development and implementation of the environmental qualification maintenance program within the time frame specified in the August 30, 1982 letter from NRR to SCE. This item is closed.

No items of noncompliance or deviations were identified.

13. Plant Tour

The inspector toured Unit 3 and found that plant housekeeping was adequate for fuel load. The inspector found that fire protection equipment was being upgraded in preparation for fuel load and that, emergency lighting installation and testing was essentially complete. The inspector also spot-checked the adequacy of various testing activities in progress. No items of noncompliance or deviations were identified.

14. TMI Action Items:

a. (Closed) II.F.2 - Instrumentation for Detection of Inadequate Core Cooling

Based on discussions with licensee personnel and visual inspection and demonstration of the equipment involved, the inspector verified that the licensee had completed action to assure that:

(1) The subcooling monitors were modified to include the maximum unheated junction thermocouple temperature and the representative core exit thermocouple input.

(2) Incore detector assemblies (core exit thermocouples and associated cabling) are environmentally qualified and have seismic and environmentally qualified Class IE connectors.

(3) Qualified cables were installed for the core exit thermocouples.

(4) The heated junction thermocouple probe and associated process instrumentation were installed.

No items of noncompliance or deviations were identified.

b. (Closed) Item I.D.1 - Control Room Design Review

The inspector verified, by visual inspections and discussions with licensee personnel, that the following items were satisfactorily completed prior to fuel load.

(1) Primary makeup pump flow controller labeling errors were corrected.

(2) Technical specifications red arrow placement errors were corrected.

(3) Safety Injection pattern recognition drawings were approved and placed in the control room.

(4) Operator training on Unit 3 plant computer was satisfactory.

(5) HVAC panel SLI155 open/closed legend inconsistencies were corrected.

No items of noncompliance or deviations were identified.

c. (Closed) Item I.C.6 - Verification of Correct Performance of Operating Activities

The inspector verified that all systems required to support fuel load were turned over to the operations staff before fuel load commenced and that the I.C.6 program initiated on Unit 2 had been implemented on Unit 3.

No items of noncompliance or deviations were identified.

15. Exit Interview - Units 2 and 3

The inspector met with licensee representatives (denoted in Paragraph 1) on November 19, 1982 and summarized the scope and results of the inspection. The licensee acknowledged the apparent violation of license conditions regarding the use and approval of operating personnel overtime (paragraph 11.a).

REFERENCE A

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 200
WALNUT CREEK, CALIFORNIA 94596

MAR 2 1982

Docket No. 50-361

Southern California Edison Company
P. O. Box 800
2244 Walnut Grove Avenue
Rosemead, California, 91770

Attention: Dr. L. T. Papay, Vice President Advanced Engineering

Gentlemen:

Subject: NRC Inspection of San Onofre Unit 2

This refers to the routine inspection conducted by Messrs. M. Cillis and F. A. Wenslawski of this office on January 25 - 29, 1982 of activities authorized by NRC Construction Permit No. CPPR-97, and to the discussions of our findings held by Mr. Cillis with Mr. H. B. Ray and other members of your staff at the conclusion of the inspection. This also refers to followup telephone calls on February 4, 5 and 8, a meeting held in the Region V office with members of the SCE staff and consultants on February 8 and followup reviews in the Region V office during the period of February 9-12, 1982.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel and observations by the inspectors.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

H. E. Book

H. E. Book, Chief
Radiological Safety Branch

Enclosure:
Inspection Report
No. 50-361/82-09

U. S. NUCLEAR REGULATORY COMMISSION

Report No. 50-361/82-09

Docket No. 50-361 Licensee No. CPPR-97

Licensee: Southern California Eidson Company
P. O. Box 800
2244 Walnut Grove Avenue

Rosemead, California 91770

Facility Name: San Onofre Unit 2

Inspection at: San Onofre Site, San Diego County, California

Inspection Conducted: January 25 - February 12, 1982

Inspectors: M. Cillis — 2/26/82
M. Cillis, Radiation Specialist — Date Signed

F. Wenslawski — 3/1/82
F. A. Wenslawski, Chief, Reactor Radiation Protection Section — Date Signed

Approved by: F. Wenslawski — 3/1/82
F. A. Wenslawski, Chief, Reactor Radiation Protection Section — Date Signed

Approved by: H. E. Book — 3/2/82
H. E. Book, Chief, Radiological Safety Branch — Date Signed

Inspection Summary

Inspection on January 25-February 12, 1982 (Report No. 50-361/82-09)

Areas Inspected: Routine announced preoperational inspection which included a tour of facilities, action on IE Circulars, and an examination of licensee action on previous inspection findings in regards to the status process and effluent radiation monitoring systems and the radiological environmental monitoring program prior to the issuance of an Operating License (O.L.). The inspection involved 71 hours of on site time and 79 hours of followup inspection effort at the Regional Office by two NRC inspectors.

Results: No items of noncompliance or deviations were identified. Agreements were reached by SCE, NRR (ETSB) and the NRC Regional office for implementation of the licensee's process and effluent monitoring systems, radiological environmental monitoring program and a Quality Assurance program for effluent and environmental monitoring to support issuance of an operating license for the facility.

8203290350 820302

DETAILS

1. **Persons Contacted**

Southern California Edison Company (SCE)

*H. B. Ray, Station Manager
*+W. C. Moody, Deputy Station Manager
*+D. E. Munn, Project Manager
T. Elkins, Startup Engineer
*T. Garvens, Lead Quality Assurance Engineer
*B. Katz, Station Technical Manager
*J. P. Albers, Health Physics Engineer
*W. C. Marsh, Health Physics Manager (Acting)
*C. A. Kergis, Operations, Quality Assurance Engineer
D. Pilmer, Manager, Nuclear Engineering and Safety
*+D. B. Schone, Project QA Supervisor, Units 2/3
*+R. Rosenblum, Supervisor, Construction & T/S Engineering
W. G. Frick, Chemistry Supervisor
*F. Briggs, Compliance Engineer
*P. King, QA Supervisor, Operations
K. Slagle, Startup Engineer
G. Holloway, Supervisor, Startup Engineer
+R. Dietch, Vice President, Nucelar Engineering & Operations
+J. G. Haynes, Manager nuclear Operations
+G. Morgan, Station Manager, Operations
+M. Medford, Manager, Songs 2&3 Licensing

Bechtel Power Corporation

*+J. R. Purucker, Professional Engineer
*S. H. Fried, Professional Engineer
D. Hansen, Professional Engineer, Senior Member

Allen Nuclear Associates, Inc. (ANA, Inc)

*L. Reynolds, Radiation Protection Engineer
+W. D. Allen, Radiation Protection Engineer

*Denotes those present at exit interview held on January 29, 1982.
+Denotes those present at meeting held at Region V Office on February 8, 1982.

In addition to the individuals noted above, the inspectors held conference calls with SCE and NRR (ETSB, RAB) personnel on February 4, 5, and 8, 1982 and met with and interviewed other members of the licensee's and contractors staff at the site and at the NRC Regional Office on February 8, 1982.

2. General Discussion

The purpose for the inspection was to examine SCE's capabilities and readiness for implementation of a radiation protection program that is consistent with the Technical Specifications (T.S.) prior to issuance of an Operating License (O.L.). The focus of the inspection was concentrated on the status of:

a. Implementation of Process and Effluent Monitoring Systems and procedures and training governing these systems.

b. Implementation of a Radiological Environmental Monitoring Program required by Section 3/4.12 of the T.S.

c. Implementation of an approved Off Site Dose Calculation Manual (ODCM) required by Section 6.14 of the T.S.

d. Implementation of an approved Process Control Program required by Section 6.13 of the T.S.

e. Implementation of a Quality Assurance Program for effluent and environmental monitoring using the guidance in Regulatory Guide 4.15, Revision 1, February 1979 as required by Section 6.8.1.i of the T.S.

Previous NRC concerns in regards to the above items are discussed in Region V, IE Inspection Report 50-361/81-35 and previous Region V preoperational inspection reports.

The site inspection, ending on January 29, 1982, included an examination of procedures, records, and discussions with the licensee's staff and NRR (ETSB and RAB) personnel. Also included was a tour of the licensee's facilities at Unit 2. Process and effluent monitoring systems located in the rad waste, containment and auxiliary buildings were observed during the tour.

Inspection findings revealed that the licensee was not fully prepared to implement his program with respect to items a through e above consistent with the T.S.'s unless the concept for a phase-in-approach discussed in paragraph 2 of Inspection Report 50-361/81-35 was approved by the NRC.

The NRC inspectors concluded that the phase-in-approach concept could be safely implemented provided the O.L. and T.S. were amended to clearly define specific conditions for implementation of certain items. This conclusion was based on:

- Discussions with the licensee staff and SCE management at the January 29, 1982 exit interview.

- An examination of SCE correspondence provided to the NRC Region V office and NRR between the period of February 1-12, 1982.

- Conference calls between SCE, NRR and NRC Region V Reactor Radiation Protection Section on February 4th, 5th and 8th, 1982.

- Discussions from a meeting between SCE Management personnel denoted in paragraph 1 and the NRC staff at the Region V office on February 8, 1982.

- Conference calls between NRC, Region V and NRR (ETSB and RAB) between February 1 and 12, 1982.

All of the correspondence provided by SCE satisfactorily addressed NRC findings discussed at the January 29, 1982 exit interview and will be included as Enclosures 1 through 5 of this report.

Subsequently the T.S. and O.L. were modified to the satisfaction of SCE, NRR (ETSB and RAB) and NRC Region V staff. These modifications clearly define the conditions for implementation of items a through e above using the phase-in-approach concept.

With a few exceptions, the conditions established in the O.L. and T.S. as a result of this inspection will require the licensee to fully implement items a through e above prior to first exceeding 5% rated thermal power or sooner. The exceptions are as follows:

a. An enhanced system for continuous monitoring and sampling of the containment purge exhaust directly from the purge stack shall be installed and operational prior to startup following the first refueling outage. In the interim, the containment airborne monitor 2RT-7804-1 and associated sampling media shall perform this function.

b. Continuous sampling (T.S. Table 4.11-1, Notation C) provisions shall be operational prior to January 1, 1983. In the interim, administrative controls for composite sampling of continuous releases per T.S. Table 4.11-1, Table Notation b. will be allowed.

c. Sampling of the Miscellaneous Waste Evaporator Condensate will not be required if the Condensate Monitor Tank Bypass Valve (SA1415-2 1/2"-200) is verified locked closed at least once per 31 days.

Remaining conditions, for the most part are identified in Section 3/4.10.5, "Special Test Exceptions", the O.L. or in the applicable portions of Appendix "A" to the T.S.

Details summarizing the above are discussed in the subsequent sections of this report.

No items of noncompliance or deviations were identified.

3. Technical Specifications Surveillance Requirements

A review of Station Order S023-G-3, Revision 2, "Technical Specification Surveillance Requirements" was conducted during the inspection. The purpose for the Station Order is to outline the surveillance requirements of the T.S. and to define the responsibilities and identify the applicable procedure for accomplishing the T.S. surveillances.

The inspection revealed that approximately 50% of the health physics related procedures listed in the station order were not yet issued at the time of this inspection. The inspection also revealed that some of the procedures were prepared prior to the issuance of the latest T.S. revision and were probably obsolete and/or outdated. Most of the procedures pertaining to process and effluent monitoring systems were not issued. Discussions with the licensee's staff at the exit interview indicated that the Task Force (discussed in paragraph 9 of IE Inspection Report 50-631/81-35) would be responsible for issuing these procedures. The schedule for issuing these procedures had been established to support the implementation of the involved monitoring systems using the phased-in approach concept. A schedule for preparation and issuing of these procedures was provided to the inspector. The schedule appeared acceptable.

The inspectors examined Chemical Procedure S023-III-1.6, Revision 2, "Primary System Chemical Limits", dated 1 April 1981 during the inspection. This procedure was one of those listed in Station Order S023-G-3. The review of this procedure revealed an error existed in paragraph 6.1.4. The Dose Equivalent Iodine-131 value of less than <6.5 millicuries per gram specified in this paragraph is not in agreement with Section 3/4.4.7 of the T.S. which requires the specific activity of the primary coolant be limited to less than ≤ 1.0 microcuries per gram Dose Equivalent Iodine-131. This was discussed at the exit interview.

The inspectors reviewed the procedure for and test results of the "Generic Tests" (G.T.) of the Unit 2 NMC Containment Airborne Radiation Monitoring System. The G.T. consists of 10 individual modules for performing calibration and functional checks that were consistent with the FSAR requirements. The generic tests checked such items as:

- digital output circuit calibrations/functional verifications
- power supply
- modular count rate meter
- filter paper advance and check source drive circuits
- flow instrumentation

Additionally, instrument and control loop verifications and isotopic standarizations were performed with this test procedure. The isotopic tests were performed on all three system channels (gaseous, particulate and iodine) using NBS traceable sources. The tests were performed in accordance with Section 11.5.2.1.5.2 of the FSAR using generally accepted methods and procedures common to industry practice.

The licensee Task Force members (discussed in paragraph 9 of the IE Inspection Report 50-361/81-35) stated that the calibration of the Containment Airborne Radiation Monitoring System (as well as other process and effluent monitoring systems) did not meet the requirements of TABLE NOTATION (2) of Table 4.3-8 of the T.S. and the requirements of R.G. - 4.15, Revision 1. Table 4.3-8 requires the initial channel calibration of the monitoring system over its intended range of energy and measurement range. Regulatory Guide 4.15, Revision 1 requires an enhanced calibration and quality assurance program.

New calibration procedures are being developed by SCE's Radiation Monitoring Task Force to perform an "enhanced calibration" that will be consistent with the T.S. and Regulatory Guide 4.15, Revision 1. The "enhanced calibration" for process and effluent monitoring systems will be implemented using the phased approach. In the interim the data of initial vendor's calibration and system calibration performed on-site have been reviewed by qualified professionals and been determined to be adequate and consistent with the calibration requirements of the FSAR. The NRC inspector was in agreement with this approach after discussions with SCE and NRR (ETSB & RAB) and reviewing the SCE correspondence discussed in Section 2 of this report.

The O.L. and Appendix "A" of the T.S.; in particular Section 3/4.10.5 of the T.S., were modified to clearly define the conditions associated with the implementation of the process and effluent monitoring systems using the phase in approach.

No items of noncompliance or deviations were identified.

4. TMI Action Items

The inspectors examined the licensee status for implementation of certain TMI Action Plan Requirements discussed in NUREG 0737, Items II.B.3 and II.F.1 and paragraph 6 of IE Inspection Report 50-361/81-35. The inspection report identified that the licensee would formally request NRR approval to extend the completion of these items. The inspectors examined: (a) a licensee's memorandum to NRR dated December 22, 1981, (b) SER, Supplement 4, and (c) conditions which were added to the O.L.

The examiniation revealed that the approval for implementation of these items has been extended to prior to first exceeding 5% rated thermal power. Additionally, a similar approval for extended implementation of Sections 6.8.4.b, "In-plant Radiation Monitoring" programs and 6.8.4.d. "Post-Accident Sampling" program was granted. The conditions for implementation of the above items are clearly defined in the O.L. and Appendix "A" to the Technical Specifications. The need for these extensions were discussed at the exit interview.

No items of noncompliance or deviations were identified.

5. Radiological Environmental Monitoring Program (REMP)

A meeting was held with SCE management on January 26, 1982 to discuss the implementation of a REMP that will be consistent with Sections 3/4.12 and 6.8.1.i of the T.S.. Also discussed where the concerns with the REMP identified in paragraph 5 of IE Inspection Report 50-361/81-35.

The discussions revealed that the licensee had prepared an action plan for upgrading the REMP at Units 2/3 to ensure compliance with the T.S. requirements. The plan also provides for a systematic upgrading of the REMP currently in effect at Unit 1. An SCE corporate office group has been designated the responsibility for implementation of the REMP. Implementation of a REMP that will be in full compliance with the T.S. is not expected to be completed until prior to first exceeding 5% rated thermal power or July 1, 1982, which ever comes earlier.

SCE has submitted a formal request to NRR and NRC's Region V Office asking for relief for implementation of the Interlaboratory Comparison program specified in Section 3/4.12.3 and for implementation of the Quality Assurance Program specified in Section 6.8.1.i of the T.S..

The request was reviewed and deemed acceptable by NRR (ETSB and RAB) and the NRC Region V staff. Specific conditions authorizing the refief have been clearly defined in the O.L. and Appendix "A" of the T.S..

No items of noncompliance or deviations were identified.

6. Implementation of Process and Effluent Monitoring Systems

The inspectors conducted a tour of the Unit 2 facility for the purpose of observing the status of process and effluent monitoring systems. Concerns that could affect the implementation of process and effluent monitoring systems consistent with the T.S. which were identified from previous inspections and this tour were discussed with the licensee. The concerns were discussed in detail with the Task Force and at the exit interview. Also discussed were items that interfaced with the implementation of process and effluent monitoring systems. The need for obtaining satisfactorily resolutions for each concern and/or item identified prior to issuance of an OL was stressed during the discussions. The following concerns/items were discussed:

a. The environmental qualification of the Containment Area High Range Monitors.

b. The ability of the NMC and GA monitoring systems to meet ANSI-N13.1, "Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities" due to the long sampling lines and numerous right angle bends and mechanical fittings on the sampling skids.

c. Whether particle deposition and heat tracing engineering evaluations were accomplished for all of the process and effluent monitoring systems.

d. Schedules for completion of SAI particle deposition studies.

e. The necessity to heat trace the NMC Plant Vent Stack Airborne Monitor had not been resolved.

f. Whether the Unit 1 condensation problem associated with the GA wide range monitor was also applicable to Unit 2/3 GA monitoring systems. The condensation problem with the Unit 1 wide range monitor was reported to Region V by the licensee. The report identified that the problem existed even though the sampling lines were heat traced.

g. The acceptability of the Containment Airborne Monitor to meet the T.S., Table 3.3-13 requirement for monitoring the containment purge.

h. The method for accomplishing continuous sampling of the containment purge, plant and vent condenser evacuation system as required by the T.S..

i. Information regarding the acceptability of the process and effluent monitoring system initial calibration and the method and schedule for accomplishing the enhanced calibrations.

j. Preparation and issuance of procedures for performing T.S. channel calibrations, channel functional checks, source checks and other T.S. surveillances.

k) Training of personnel in the use of and requirements for process and effluent monitoring systems and the Radioactive Effluent Monitoring Program.

The above concerns were also discussed with NRR (ETSB and RAB) personnel as identified in Section 2 of this report. Additionally, the licensee had provided the NRC with the correspondence (Enclosures 1 through 5) discussed in Section 2 of this report. The discussions and correspondence satisfactorily addressed the above concerns and as a result the O.L. and T.S. were subsequently modified as discussed in Section 2 of this report. Concerns not included as conditions in the O.L. and T.S. were resolved by discussions and in the licensee's correspondence provided to the inspectors.

No items of noncompliance or deviations were identified.

7. Radiological Effluent Monitoring Program

The inspectors reviewed Chemical Procedure S0123-III-5.0, Revision 0, "Effluent Monitoring Program" and met with the effluent engineer discussed in Section 3 of IE Inspection Report 50.361/81-35. Procedure S0123-III-5.0 defines the Radioactive Effluent Monitoring Program. The program has been assigned to the Supervisor of Plant Chemistry for establishing procedures for monitoring, sampling and analysis and record keeping required for liquid and airborne radioactive waste releases. The effluent engineer has been assigned the responsibility for implementation of the Effluent Monitoring program.

Discussions were held with the Effluent Engineer and a review of a schedule he had prepared for implementation of the Effluent Monitoring Program was conducted. The discussions revealed that the scheduled implementation of the program was well defined. Implementing procedures and training were expected to be complete by February 19, 1982.

The establishment of this program appeared to be emerging in an orderly process due to the efforts of the effluent engineer.

No items of noncompliance or deviations were identified.

8. Licensee Action on IE Circulars

a. IEC 81-09, Containment Effluent Water that Bypasses Radioactivity Monitor.

The licensee's evaluation adequately addressed the concerns of the circular. The evaluation concluded that all possible liquid effluent release paths were being monitored. This matter is considered closed. (IC-81-09).

9. Licensee Actions on Previous Inspection Findings

A question raised in paragraph 8 of IE Inspection Report 50-361/81-35 concerning the possible leakage of Quick Disconnects (Q.D.'s) associated with the NMC Plant Vent Stack Monitor was evaluated by the licensee. The inspector examined the licensee's evaluation report. The report identified that the type of Q.D. used has a proven performance record and of greater significance is the fact that the Q.D. location is on the negative side of the pumo so that any failures causing leakage would be inward. The licensee was informed that the evaluation adequately addressed the question which was raised.

No items of noncompliance or deviations were identified.

10. Exit Interview

The inspectors met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the site inspection on January 29, 1982. The inspectors summarized the scope and findings of the inspection. The licensee was informed that there were no apparent items of noncompliance or deviations. The inspectors discussed the concerns summerized in Sections 2, 3, 4, 5, 6 and 7 of this report. The inspectors commended the efforts of the Effluent Engineer. Strong management effort was committed in response to resolving the concerns identified by the inspectors.

At the licensee's request, a management meeting was held in Region V office on February 8, 1982 to discuss the progress and status of open items impending before the issuance of the operating license.

DESIGNATED ORIGINAL

Certified By JK

Southern California Edison Company

SAN ONOFRE NUCLEAR GENERATING STATION
P.O. BOX 128
SAN CLEMENTE, CALIFORNIA 92672

H. B. RAY
STATION MANAGER

TELEPHONE
(714) 492 7700

February 1, 1982

U. S. Nuclear Regulatory Commission
Office of Inspection and Enforcement
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Attention: Mr. Frank Wenslawski

Dear Sir:

Subject: Information Committed to be Provided Region V as a Result of January 29, 1982 Exit Interview by Messrs. Wenslawski and Cillis

During the subject Exit Interview concerning the Region's preoperational inspection of the Health Physics inspection modules for San Onofre Unit 2 fuel loading, we enumerated ten specific items of information which would be provided the Region for review. In addition, we committed to provide the Region with a copy of the Technical Specifications related to process and effluent monitors, as marked up at the January 29, 1982 meeting with representatives of the Office of Nuclear Reactor Regulation.

Enclosure (1) to this letter identifies the status of each of the ten specific items enumerated at the January 29, 1982 Exit Interview. That status reflects the fact that four of the ten items are provided as Enclosures (2), (3), (6) and (7) to this letter; another item is partially provided by Enclosures (4) and (5) to this letter; and all remaining items will be provided by February 5, 1982. Information provided as enclosures to this letter includes all items identified by Messrs. Wenslawski and Cillis as necessary to permit favorable input (in the areas of their inspection) by the Region to the Office of Nuclear Reactor Regulation regarding our preparedness for fuel loading at Unit 2, with the exception of item 8. (training), which will be provided by February 4, 1982.

ENCLOSURE (1)

8203290358 820302
PDR ADOCK 05000361
G PDR

With respect to the forwarding of a copy of the marked-up Technical Specifications related to process and effluent monitors, that will be received by you under separate cover on February 2, 1982.

If you have any questions concerning the information forwarded by this letter, or require additional information, please let me know.

H B Ray / N Morris

Enclosure (1)

INFORMATION COMMITTED TO BE PROVIDED REGION V AS A RESULT OF JANUARY 29, 1982 EXIT INTERVIEW BY MESSRS. WENSLAWSKI AND CILLIS

ITEM	STATUS
1. Provide Region V wit. a copy of correspondence with NRR requesting relief from T. S. 6.8.1.i for implementation of QA in Radiological Environmental Monitoring Program until 5% power or 7/1/82, whichever comes first.	To be provided by February 3, 1982
2. Provide Region V with a writeup representing a systematic evaluation of sampling line compliance with ANSI 13.1 and other, applicable criteria (include discussion of intended use of SAI, heat tracing and condensation considerations).	To be provided by February 5, 1982
*3. Provide Region V with a writeup presenting our position with respect to how we will meet tech spec requirements for continuous sampling of containment purge, etc; include a schedule.	Enclosure (2)
*4. Provide Region V with environmental qualification documentation for containment area high-range monitor cabling and connection (confirm acceptable environmental qualification of entire system; however, no additional submittal of information to the Region is required).	Enclosure (3)
*5. Provide Region V with a writeup describing system calibration addressing: (1) why vendor calibration is satisfactory and has not been subsequently affected; and, (2) the origin and acceptability of field calibration sources.	Enclosure (4) provides information for four monitors (Control Room Airborne; Containment Airborne; Containment & Purge Area; and, Plant Vent Stack Airborne Monitors). Information for additional five monitors (Hi-range in Containment; Radwaste Discharge Line; Blowdowr Neutralization Sump; Turbine Bldg. Sump; and, Steam Jet Air Ejector Monitors) to be provided February 4, 1982. Enclosure (5) provides the basi for the schedule for calibration of these nine monitors.

* Must be addressed insofar as the five monitors required for fuel loading in order to permit favorable input by Region V to NRR regarding preparedness

ITEM	STATUS
*6. Provide Region V with a schedule for the completion of all Task Force procedures.	Enclosure (6)
7. Incorporate alarm set points, calibration curves and other information in the ODCM, or justify their exclusion. Provide Region V with a schedule of our plans in this regard.	To be provided February 3, 1982
*8. Provide Region V with a schedule for completion of training in the use of process and effluent monitoring system.	To be provided by February 4, 1982
9. Provide Region V with a summary of enhanced calibration which will be undertaken to ensure conformance to the tech specs; include a schedule.	Enclosure (7)
10. Provide Region V with a writeup concerning the implementation of a QA program for effluent monitoring, as required by Tech Spec 6.8.1.1.	To be provided by February 4, 1982

Enclosure 2

NRC Item 3 - GASEOUS EFFLUENT STREAM SAMPLING

I. CONTAINMENT PURGE SAMPLING PRESENT PROVISIONS:

Redundant NMC gaseous radiation monitors RE-7804-1 and RE-7807-2 (FSAR-11.5.2.1.4.5) presently monitor containment airborne activity. One monitor samples the containment atmosphere at approximately elevation 90' (same vicinity as the purge exhaust) and the other monitor samples at approximately elevation 35'. Extensive mixing of the containment atmosphere by the normal HVAC units ensures that the sample locations are representative of the entire containment atmosphere, and are therefore considered to be representative of the containment purge effluent stream. These monitors provide the capability for Iodine, particulate and gas grab sampling. At present the particulate sample is of the moving filter paper type. The moving filter paper will be disabled (or alternatively a fixed filter mechanism will be installed) to provide interim fixed particulate sample capabilites per Technical Specification table 4.11-2.B. A correction factor will be applied to sample analysis to account for sample line deposition. This topic will be discussed as part of NRC Item 2. Sample flow indication is provided on the monitor. Based on the above, these monitors will be used to obtain composite samples of the purge stream as required by Technical Specifications until the enhancements are complete.

Future Enhancement

The capability to obtain continuous, composite particulate and iodine samples directly from the purge stack will be provided.

Future Enhancement (Cont'd)

The system will be capable of obtaining representative samples over the full range of containment purge operation. The system will also provi... gas grab sample capabilities, indication of purge flow, and sample flow. Conceptual design of this system has begun. In the absence of confirmed procurement, engineering and construction schedules, operability of these modifications cannot be committed to prior to 1-1-83. More accurate operability dates will be available within 90 days.

II CONDENSEP EVACUATION SYSTEM

The condenser evacuation system is monitored by two detector systems. First NMC monitor RE-7818 (FSAR 11.5.2.1.4.17) which is a noble gas monitor. Secondly by General Atomic monitor RE-7870-1 (FSAR 11.5.2.1.4.8) a wide range gas monitor which envelops the range of the NMC noble gas monitor and also provides the capability for Iodine and fixed particulate sampling. The General Atomic monitor provides effluent flow indication. This capability will be available at Initial Criticality as specified in the pending Technical Specification revision table 4.11-2 (double asterick footnote). The monitors described above will be used to supply composite samples of the condenser evaluation purge stream as required by Technical Specifications until the the enhancements are complete.

Future Enhancement

Gas grab sampling capabilities are being added to the wide range gas monitor (7870-1).

Future Enhancement (Cont'd)

Conceptual design has been completed and procurement, engineering, and construction are now being pursued. In the absence of confirmed procurement, engineering, and construction schedules, operability cannot be committed to prior to 1-1-83. More accurate commitment dates will be available within 90 days.

III PLANT VENT STACK

Present Provisions:

NMC radiation monitior RE 7808 (FSAR 11.5.2.1.4.6) provides continuous monitoring of the plant vent stacks as well as iodine, particulate and grab sample provisions. Presently the particulate sample is of the moving filter paper type. The moving filter paper will be disabled (or alternatively a fix filter mechanism will be installed) to provide interim fixed particulate sample capabilities per Technical Specification table 4.11-2.C.2. A correction factor has been determined for sample line deposition and will be applied to the sample analysis. This topic will be discussed as part of NRC Item 2. The monitor also provides total sample flow indication. This monitor will be utilized to supply the composite samples required by Technical Specifications until the enhancements are complete.

General Atomic wide range gas monitors (2RE-7865-1 and 3RE-7865-1, FSAR 11.5.2.1.4.9) which envelops the gaseous range of RE-7808 will be available prior to exceeding 5% power (per Technical Specification table 3.3-10 double asterick footnote). The General Atomic monitors provide the capability for iodine and fixed particulate sampling.

REFERENCE B

50/206, 361, 362

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

RECEIVED
MAR 7 1983
NUCLEAR LICENSING

March 4, 1983

Docket Nos. 50-206, 50-361, 50-362

Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, California 91770

Attention: Dr. L. T. Papay, Vice President
Advanced Engineering

Gentlemen:

50/206 50/361 & 50/362
*83-04, 83-06
50/361
83-08

Subject: NRC Inspections - San Onofre Units 1, 2 and 3

This refers to the inspections conducted by Messrs. L. F. Miller and A. E. Chaffee of this office, during the period of January 3 through February 12, 1983, and by Messrs G. P. Yuhas and C. I. Sherman on February 7 through 11, 1983 of activities authorized by NRC License Nos. DPR-13, NPF-10, and NPF-15 and to the discussion of our findings held with Mr. H. B. Ray and other members of your staff at the conclusion of the inspections.

Areas examined during these inspections are described in the enclosed inspection reports. Within these areas, the inspections consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspectors.

Enforcement action related to these inspections will be the subject of separate correspondence.

In accordance with 10 CFR 2.790(a), a copy of this letter and enclosures will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

J. L. Crews, Director
Division of Resident, Reactor Projects
and Engineering Programs

Enclosures:

A. Inspection Report
Nos. 50-206/83-04
50-361/83-06
50-362/83-06

B. Inspection Report
No. 50-361/83-08

cc w/enclosures:
R. Dietch, Vice President
H. B. Ray, SCE (San Clemente)

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-361/83-08

Docket No. 50-361 License No. NPF-10 Safeguards Group _____

Licensee: Southern California Edison Company

P. O. Box 800, 2244 Walnut Grove Avenue

Rosemead, California 91770

Facility Name: San Onofre Unit 2

Inspection at: San Clemente, California

Inspection conducted: February 7-11, 1983, and subsequent telephone conversations thru February 25, 1983

Inspectors: G.P. Yuhas — 3/4/83
G. P. Yuhas, Radiation Specialist — Date Signed

G.P. Yuhas for — 3/4/83
C. I. Sherman, Radiation Specialist — Date Signed

Approved by: F. A. Wenslawski — 3/4/83
F. A. Wenslawski, Chief, Reactor Radiation Protection Section — Date Signed

Approved by: H. E. Book — 3/4/83
H. E. Book, Chief, Radiological Safety Branch — Date Signed

Summary:

Inspection on February 7-11, and subsequent telephone conversations thru February 25, 1983 (Report No. 50-361/83-08)

Routine uannounced inspection of the implementation of LIcense Condition 2.C.(19)i. and Technical Specification requirements associated with TMI Action Items (NUREG-0737) II.B.3 Post Accident Sampling Capability (PASS), II.F.1. Attachment 1, Noble Gas Effluent Monitor, II.F.1. Attachment 2, Sampling and Analysis of Plant Effluents, and II.F.1. Attachment 3, Containment High-range Radiation Monitor. The inspection included review of the as-built systems; evaluation of selected criteria; status of program development; and witnessing of a demonstration of PASS operability. The inspection involved 80 hours on site by two regionally based inspectors.

Results: Of the areas inspected, two apparent items of noncompliance were identified (failure to have an operable post-accident sampling system and a fully implemented post-accident sampling program, License Condition 2.C.(19)i, failure to report a violation of a license condition, License Condition 2.G., paragraph 4).

DETAILS

1. Persons Contacted

*H. B. Ray, Station Manager
*W. C. Moody Deputy Station Manager
*B. Katz, Station Technical Manager
*H. E. Morgan, Operations Manager
*P. S. Knapp, Health Physics Manager
*J. M. Curran, Manager, Quality Assurance
*J. B. Droste, Supervisor, NSSS
*D. Schone, Site Quality Assurance Manager
*R. E. Reiss, QA Engineering
*P. Chang, Effluent Engineer
*M. B. Reardon, QA Engineering
*W. M. Brush, Instrumentation and Control (I&C) Supervisor
*D. C. Evans, Emergency Planning
*S. W. Chick, Chemistry
*G. T. Gibson, Technical Compliance
*R. S. Warnock, Supervisor, Health Physics Engineering
B. Markham, Startup Engineer
S. Marlett, Nuclear Engineer

*Indicates those individuals attending the exit interview on February 11, 1983.

In addition to the above individuals, the inspector met with and interviewed other members of the licensee's staff.

2. Licensee Action on Previous Inspection Findings

(Open) (82-26-02) Inspector identified item involving control of very high radiation areas. During an October 1982 inspection (Report No. 50-361/82-33), it was noted that a schedule to implement commitments made in the licensee's September 23, 1982 letter had not been established. From discussions with the assigned engineer and review of Proposed Facility Change packages 82-355, 82-603, and 82-604, it is clear that a schedule has been established and is being implemented as planned. Completed modifications will be reviewed during a subsequent inspection.

3. II.F.1 Accident-Monitoring Instrumentation

This inspection effort was a continuation of the review documented in Report No. 50-361/83-04. During that inspection, indications of a need to improve the operability, maintenance, and administrative controls associated with the radiation monitoring system were observed. The Supervisor of Instrumentation and Control had become aware of similiar perceptions, such that, at the onset of this inspection he outlined specific actions taken to improve these areas. The actions taken included: (1) Establishment of a task force consisting of an Instrument and Control (I&C) Foreman, I&C Engineer, four station I&C

Technicians, eight I&C Technicians from Action Systems, Inc., and professional assistance from ASTA and Action Systems, Inc. (2) Development of a specialized I&C training program to be presented in March 1983. (3) A thorough review of the radiation monitoring equipment spare parts situation.

The focus of this inspection effort was to verify compliance with Technical Specification 3.3.3.6, Accident Monitoring Instrumentation, 6.8.4.d. Post-Accident Sampling, and commitments made in the Final Safety Analysis Report (FSAR) and subsequent correspondence.

A. Noble Gas Effluent Monitors

There are four pathways by which noble gas could be expected to be released to the environment during accident conditions. The Wide Range Gas Monitor (WRGM) 2RE7865 samples from either the plant vent or containment purge path ways. The WRGM 2RE7870 samples the steam jet air ejector exhaust. The Main Steam Line Monitors, 2RE7874 and 2RE7875, are designed to measure the releases via the main steam pathway.

The inspector found that the WRGMs have been installed as described in the licensee's "Response to NRC Action Plan NUREG 0660, San Onofre 2/3," Item II.F.1, and FSAR Chapter 11.5.2.1.1.8. During tours of the facility on February 9 and 10, 1983, with Unit 2 in Mode 1, the inspector noted that the WRGMs were operating consistent with Technical Specification (TS) 3.3.3.6. The WRGM design criteria items A. through H. of paragraph 1.2.1 presented in the licensee's "Response to NRC Action Plan NUREG 0660" were either observed or discussed with licensee representatives. The following observations are noted:

- Calibration of the WRGM low range detector (General Atomics RD-52) by the licensee using Kr-85 at 5E-5 uCi/cc and Xe-133 at 5E-4 and 5E-2 uCi/cc found significant variation from the calibration data supplied in the vendor's topical report, "General Atomics RD-52, E-115-647." The cause was thought to be erroneous calibration by the vendor. The licensee submitted a 10 CFR 50.55(e) Report dated July 21, 1982, regarding this subject. As of this inspection, the licensee had not yet received or reviewed a revised calibration and energy response topical report for the RD-52. The licensee's review and evaluation of this report will be discussed in a subsequent inspection (50-361/83-08-01).

- Calibration of the WRGM mid and high range detectors (General Atomics RD-72) by the licensee using Xe-133 at 5E-2 and 5 uCi/cc found signficant variation from the calibration data supplied in the vendor's topical report, "General Atomics RD-72, E-255-961." The licensee determined the cause to be the vendor's failure to install a spacer which properly positions the CdTe detector. The licensee also described this condition in the 50.55e Report noted above. The licensee informed the

inspector that GA Technologies has re-performed the RD-72 and RD-52 type calibration, however, they had not yet received the new topical reports. Evaluation of consistency between the new topical report and the licensee's enhanced calibration results will be reviewed in a subsequent inspection (50-361/83-08-02).

- In the licensee's July 21, 1982 50.55(e) Report inconsistencies between vendor supplied flow calibration data and licensee measurements from stack flow transmitters were identified. Subsequently, the licensee determined that a vendor wiring error and software deficiency resulted in only one stack area being used to calculate flow regardless of the stack selected. This condition was corrected for the licensee's units.

- Startup Problem Report No. 3498 documents a condition wherein the automatic shifting function from low to mid and high range can be duped by an oscillation of radioactivity resulting in a "mid/high range pump failure alarm" and loss of range overlap. The vendor issued Field Change Order 034 dated July 1, 1982, to correct this problem.

- Based on tours of the Penetration Building, Control Room, and review of procedures and documentation, the licensee had installed and was operating the main steam line radiation monitors as described in the licensee submittal and TS 3.3.3.6.

- Continuing evaluation of particulate and iodine sample characteristics of the WRGM system by SAI was in progress. The inspector was informed that additional measurements have been taken since the last inspection. Review of the final evaluation of sample line fallout characteristics will be made in a subsequent inspection (50-361/83-08-03).

B. Sampling and Analysis of Plant Effluents

Technical Specification 6.8.4.d. Post-Accident Sampling states in part that a program which will ensure the capability to obtain and analyze radioactive iodines and particulates in plant gaseous effluents samples under accident conditions will be established, implemented, and maintained. The program shall include the training of personnel, the procedures for sampling and analysis and the provisions for maintenance of sampling and analysis equipment. License Condition 2.C.19(i) requires that this program be fully implemented by January 1, 1983.

This requirement is in response to TMI Action Item (NUREGs-0660, 0737) II.F.1. Attachment 2. The licensee informed NRR (Item II.F.1.2.0, "Radioiodine and Particulate Effluent Monitors," "Response to NRC Action Plan NUREG 0660") that: "The wide-range effluent monitor is provided with grab sample cartridges for collection of particulate and iodine samples. This sample will be analyzed onsite."

When asked by the inspector how this would be accomplished, several licensee representatives stated low level samples would be analyzed onsite and higher activity samples would be sent offsite to a contractor laboratory. Station Procedures SO23-VIII-27.1 and SO123-III-5.3.23 were presented as the existing program.

Procedures SO23-VIII-27.1, "Particulate and Radioiodine Sampling Using the Wide Range Gas Monitor (RE 7865, 7870) in a Post-Accident Situation," Revision 0, dated November 24, 1982, and SO123-III-5.3.23, "Unit 2/3 Radioactive Gas sampling and Analysis Procedures," Revision 0, dated November 20, 1982, were reviewed.

Handling and analysis of these potentially highly radioactive samples were discussed with responsible representatives of the Emergency Planning, Chemistry, and Health Physics Staffs.

Based on review of these procedures and as a result of discussions with licensee representatives, the inspector determined that:

- No preparations have been made for onsite analysis of charcoal or particulate samples with activity levels specified in SO123-III-5.3.23, Section 6.5.6.4, or USNRC Regulatory Guide 1.97, Revision 2.

- Section 6.2.1.6 of SO23-VIII-27.1 is inconsistent with other sections of the procedure which call for offsite shipments if the dose rate from these samples is in excess of 0.05 mr/hr and SO123-III-6.3.23.

- The licensee apparently has a contract (P.O. No. S1692901) with GA Technologies to analyze higher activity particulate and radioiodine samples from inside containment, however no specific procedures to accomplish this action have been developed for post accident effluent samples.

  Failure to develope a program which would insure the capability to analyze onsite post accident radioactive iodine and particulate samples represents apparent noncompliance with License Condition 2.C.(19)i and Technical Specification 6.8.4.d. (50-361/83-08-04).

C. Containment High-Range Radiation Monitor

Inspection Report No. 50-361/83-04 documents review of installation and procedure implementation for the Containment High-Range Radiation Monitors 2RE7820-1 and 2RE7820-2. During this inspection, GA Topical Report No. E-255-978, "Energy Response Test and Dose Rate Calibration of Model RD-23, High-Range Radiation Monitor Detector," was reviewed. This report documents detector energy response from 60 Kev to 3 Mev and linearity from 0.6 to 5.17 E6 R/hr. The detector satisfies the criteria for energy response and linearity.

During tours of the Control Room, the inspector noted that 2RE7820-1 was in the alarm mode. This alarm had been acknowledged by the operator such that Annunciator Window 57C10, "High Range In Containment Monitor Radiation High," remained lit. It appears, based on work request data, that this condition may have existed since January 23, 1983. Two Startup Problem Reports Nos. 3916, dated October 28, 1982, and 4255, dated January 17, 1983, identify the alarm condition to be the result of an electronically unrealistic set point (2 R/hr). The monitor's range is from 1 to 1.0E8 R/hr. The detector has an installed source which produces an equivalent dose rate of 1 R/hr. This means the alarm set point is very close to the instrument's limit of accuracy (±3% of equivalent linear full scale). With one channel in alarm, the control console operator would not receive indication of an alarm from the other channel, 2RE7820-2.

The inspector discussed with licensee representatives the negative effect of having one channel in the alarm mode and the reporting requirements of TS 6.9.1.13.b. The licensee presented a memorandum dated February 9, 1983, from Bechtel Power Corporation to SCE recommending a change in the alarm set point. The licensee's action regarding this matter will be reviewed in a subsequent inspection (50-361/83-08-05).

In summary, one apparent item of noncompliance (50-361/83-08-04) and four inspector follow-up items were identified associated with the inspection of TMI Action Item II.F.1. Attachments 1, 2, and 3.

4. Post Accident Sampling System (PASS) Capability

As a result of the accident at Three Mile Island Unit 2, NRC determined that it is necessary for the licensees to be able to perform chemical and radiochemical analysis of the reactor coolant and containment atmosphere after an accident in order to assess the degree of core damage. In addition, these samples and analyses must be performed rapidly and without excessive radiation exposure to the workers involved.

The specifics of this requirement were presented in the following documents: NUREGs -0578, -0660, -0694, and -0737. Southern California Edison Company (SCE) described specific actions to be taken at Units 2 and 3 to satisfy this requirement in Section "II.B.3 - NUREG 0737 Post-Accident Sampling Capability," of their submittal to NRR titled, "Response to NRC Action Plan NUREG 0660 San Onofre 2 and 3." This information and subsequent correspondence provided the basis for NRC's conclusion that an adequate system meeting the II.B.3 requirement would be installed prior to operation above 5 percent power (Safety Evaluation Report, NUREG-0712 Supplement No. 1). By letter dated December 22, 1981, SCE requested and was granted relief from the January 1, 1982 date based on delays in system material delivery (NUREG-0712 Supplement 4). With issuance of Facility Operating License NPF-10 on February 16, 1982, a specific license condition, 2.C.(19)i, was included which stated:

"Post-Accident Sampling (II.B.3. SSER #1, SSER #4, Section 1.12, SSER #5)

Prior to exceeding five (5) percent power, the post-accident sampling system shall be operable and the post-accident sampling program shall be fully implemented."

The post-accident sampling program was addressed in Section 6.8.4 of the Technical Specifications. This section states in part that:

"The following programs shall be established, implemented, and maintained:...

Post-Accident Sampling

A program which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere samples under accident conditions. The program shall include the training of personnel, the procedures for sampling and analysis and the provisions for maintenance of sampling and analysis equipment."

By letters dated September 11, 14, and 15, 1982, the licensee requested and was granted a delay in implementing Licensee Condition 2.C.(19)i until January 1, 1983 (Amendment No. 8 to NPF-10, dated September 17, 1982). According to the licensee, this delay was necessary due to problems in design, material lead time, and a number of hardware problems which collectively prevented the system from being declared operable.

On December 21, 1982, the licensee submitted a letter to Mr. G. W. Knighton of NRR which stated in part that:

"Improvements and modifications, as discussed in Reference "C" and in a meeting with NRC staff on September 13, 1982, have been completed. Testing of each individual item has also been completed. On the day that the PASS Demonstration Test was to be performed, SONGS 2 tripped while operating at the 50 percent power level. The plant remains in a shutdown condition to replace reactor coolant pump seals. With the plant shutdown, it is not possible to complete the PASS Demonstration Test or to implement the enhanced operator training on the system after the demonstration test.

SONGS 2 is expected to return to power by early January, 1983, at which time the PASS Demonstration Test will be completed and operator training will be conducted. In the meantime, SCE considers the PASS to be operable and License Condition 2.C(19)i to be satisfied."

Based on this letter and discussions with licensee representatives during an inspection the week of January 17-21, 1983, the inspector advised the licensee representatives that compliance with the PASS requirements would be inspected sometime after January 31, 1983.

During the entrance interview on February 7, 1983, in response to questions from the inspector, Station Management stated that the PASS was operable and that the licensee was in compliance with Technical Specification 6.8.4.d. Later that day, the Lead Technical Compliance Engineer informed the inspector of the station position, that a demonstration test had successfully been conducted on January 22, 1983, that the station had not yet accepted the system from the startup group, that the demonstration test could be used to operate the system, and that the classroom training of chemistry technicians had been completed.

On February 8, 1983, the inspector confirmed by discussion with the Unit 2 Chemistry Supervisor that no technicians had actually drawn samples using the PASS. Two technicians were actively involved in receiving on the job training using a draft version of the system operating procedures.

At the close of business, on February 8, 1983, the inspector was shown a letter dated February 9, 1983, from K.P. Baskin (SCE) to G. W. Knighton (NRC) which stated in part that "Station operating procedures and 'hands-on' training will be completed by March 1, 1983 providing continued operation of Unit 2," and that personnel qualified to operate the system were available.

On February 9, 1983, the inspectors met with the cognizant station and startup engineers to review the demonstration test package. The inspector was informed that these engineers (or others) using the "Demonstration Test" procedure would operate the PASS should a sample be necessary.

Based on review of the "Demonstration Test" 2AC-228-01, Revision 0, and discussions with these engineers the inspector observed:

- 2AC-228-01 referenced S0123-III-8.2.23, "Unit 2/3 Startup and Fill of the Post-Accident Sampling System," and S0123-III-8.3.23, "Unit 2/3 Sampling Procedures and In-Line Analysis for the Post-Accident Sampling System," as the step-by-step direction by which to operate the PASS. The engineers acknowledged that these procedures (Revision 0, dated December 2, 1982) were inadequate due to extensive system modification. They stated that during the Demonstration Test changes were made in order to collect and analyze the samples. These changes were not documented as Temporary Change Notices (TCNs). Therefore, the completed 2AC-228-01 did not constitute an <u>approved</u> procedure which could be reused in a step-by-step manner to operate the PASS.

  Emergency Plan Implementing Procedures S023-VIII-46.1 thru 46.4 issued April 8, 1982, also covered operation of the PASS. On February 17, 1983, the cognizant engineer informed the inspector by telephone that these procedures were also in error and should have been cancelled.

- Test Exception Reports (TEP) were issued for failure to meet the acceptance criteria for oxygen and boron. In addition, a TEP should have been issued for the total gas analysis as this value slightly exceeded the established limit.

- The "Demonstration Test" was not an integrated system checkout in that it did not include the on-line gamma spectroscopy unit.

- The test did not include collection of an undiluted sample for offsite analysis.

  Note: The licensee has purchased a shipping container for this purpose, however, the unit has not yet been issued a Certificate of Compliance by NRC.

- No specific frequency or acceptance criteria had been established which would require periodic use of the system to demonstrate operability.

  Based on these observations the inspector stated that due to informalities and incompleteness of the "Demonstration Test" package, it did not appear to satisfy the program requirement of TS 6.8.4.d.

  The Station Manager, on being informed of this finding, directed that on February 10, 1983, a sample of the Unit 2 reactor coolant system would be performed using approved procedures which demonstrate the operability of the system and its capability to meet the criteria presented in the licensee's response to TMI Action Item II.B.3.

- On February 10, 1983, at 12:30 p.m., the inspectors and licensee representatives met at the PASS Laboratory. The licensee had written, reviewed, and issued Revision 1 to S0123-III-8.2.23, 8.3.23, 8.4.23, and 8.7. Ground rules were established that a sample of reactor coolant would be collected and analyzed for pH, boron, hydrogen, oxygen, total gas and gamma isotopic activity within three hours by cognizant engineers using the approved procedures. Procedures would not be violated. If changes were necessary, the time required to process TCNs would be included in the three-hour limit.

  At 1:30 p.m., S0123-III-8.2.23, "Startup And Fill of The Post-Accident Sample System," was initiated. The time involved to complete this procedure was not counted against the three-hour limit since it could normally be completed prior to the decision to actually take a sample. S0123-III-8.2.23 was completed at 4:10 p.m.

  At 4:15 p.m., an actual sample in accordance with S0123-II-8.3.23, Revision 1, "Sampling Procedures and In-Line Analysis for the Post-Accident Sampling System," was initiated.

At 4:40 p.m., the licensee recognized that step 6.0.3 could not be followed. This step involved establishment of proper burette and surge vessel levels. TCNs were prepared and issued to S0123-III-8.2.23, 8.3.23, and 8.4.23 at 6:25 p.m. During the sampling effort, the inspector identified three leaks on the sample system lines which needed repair. At 8:45 p.m. the licensee concluded the sample effort. Acceptable results for pH, boron and total gas were measured. Apparent system in-leakage resulted in an unacceptably low hydrogen concentration and a oxygen concentration in excess of the total gas value (including oxygen).

The insector informed licensee representatives that the system was not operable in that: a sample could not be collected and analyzed within three hours in accordance with S0123-II.8.3.23; acceptable results for hydrogen and oxygen were not achieved; and observed leakage in accident conditions would likely have resulted in unnecessary radiation exposure to the workers.

As part of the PASS system operability demonstration, the inspector observed operation of the Inline Gamma Spectrometry System in accordance with Chemistry Procedure S0123-III-8.7, Revision 1, "Operation and Calibration of "PASS" Laboratory Gamma Spectrometer."

During the test, the licensee had to issued a Temporary Change Notice (TCN) in accordance with plant procedures in order to correct minor omissions in the procedure. In addition, due to a loose connector, it appeared that the licensee would not have been unable to perform a energy efficiency correction and isotopic identification of the acquired spectrum. Inoperability of the system was identified by a vendor representative present during the test. The licensee was able to find and correct the problem after being informed that a problem existed by the vendor.

The inspector discussed with licensee representatives concerns regarding inadequate procedures and the vendor's intervention. The inspector was advised that a revised procedure had been prepared and will be modified as technician training reveals additional deficiencies.

The inspector informed the licensee representatives that on February 10, 1983, the PASS System was not fully operable due to the described mechanical problems, that proper procedures did not exist to ensure meeting TS 6.8.4.d. and that Licensee Condition 2.C.(19)i was not met. It is apparent that prior to this date, a program, per 2.C.(19)i, had not been fully implemented but that certain startup personnel could operate the system if necessary. It should be noted that at the time of this inspection other avenues existed for taking II.B.3 samples due to the low fission product inventory.

Failure of the post-accident sampling system to be operable and the post-accident sampling program to be fully implemented on February 10, 1983, represents apparent noncompliance with License Condition 2.C.(19)i (50-361/83-08-04).

On February 10, 1983, the licensee provided the inspector a copy of SCE Corrective Action Request (CAR) S023 P-325 dated January 31, 1983. The CAR stated:

> "Amendment No. 8 to Facility Operating License NPF-10 for San Onofre Nuclear Generating Station, Unit 2, Paragraph 2.C.(19)i states... 'By January 1, 1983, the post-accident sampling system shall be operable and the post-accident sampling program shall be fully implemented.'
>
> Contrary the above requirement, the post-accident sampling program has not been fully implemented in that adequate system operating procedures have not been approved or issued for use and operator training on the system has not yet been conducted."

In accordance with 10 CFR 2, Appendix C, "General Policy and Procedure for NRC Enforcement Actions," a Notice of Violation may not be issued for a violation provided:

(1) It was identified by the licensee;

(2) It is severity level IV or V;

(3) It was reported, if required;

(4) It will be corrected within reasonable time; and

(5) It was not a violation that could have been prevented by corrective action for previous violations.

Based on inoffice review of License No. NPF-10, the inspector notes that License Condition 2.G states:

> "SCE shall report any violations of the requirements contained in Section 2, Items C(1), C(3) through C(22), E, and F of this license within 24 hours by telephone and confirmed by telegram, mailgram, or facsimile transmission to the NRC Regional Administrator, Region V, or his designee, no later than the first working day following the violation, with a written followup report within fourteen (14) days."

Review of Region V correspondence found no report indicating that SCE had informed the Regional Administrator of failure to comply with 2.C.(19)i after January 31, 1983 (the date of the CAR). On February 25, 1983, the Deputy Station Manager acknowledged that a report pursuant to 2.G had not been submitted. The Deputy Station Manager discussed the need for this report with the inspector in view of the inspection findings. The inspector advised that a late report is better than no report.

Failure to submit a timely report of a violation of License Condition 2.C.(19)i represents noncompliance with License Condition 2.G (50-361/83-08-06).

5. Exit Interview

The inspector met with the licensee representatives (denoted in paragragh 1) at the conclusion of the inspection on February 11, 1983. The inspector summarized the scope and findings of the inspection.

Regarding the Containment High Range Radiation Monitor, the inspector directed the licensees' attention to the reporting requirement of Technical Specification 6.9.1.13.b.

In response to the finding that the PASS was not operable and a program satisfying License Condition 2.C.(19)i was not in place, the licensee stated that application for a revision to the license condition would be submitted.

REFERENCE C

11/18/83

C8312016-4/5

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

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NOV 16 1983

Docket No. 50-361, 50-362

Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead California 91770

Attention: Mr. Charles B. McCarthy, Jr., Vice President
Advanced Engineering

Gentlemen:

Subject: NRC Inspection San Onofre Units 2 and 3

This refers to the routine inspection conducted by Mr. C. Sherman of this office on October 17-20, 1983, of activities authorized by NRC License No. NPF-10, NPF-15 and to the discussion of our findings held by Mr. Sherman with Mr. J. Haynes and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

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C B McCarthy

NOV 1 6 1983

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

F. A. Wenslawski, Chief
Radiological Safety Branch

Enclosure:
Inspection Report
No. 50-361/83-37
50-362/83-35

cc w/o enc:
D. J. Fogarty, Executive Vice President
H. B. Ray, Site Manager (San Clemente)

C831201G- 449

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-361/83-37, 50-362/83-35

Docket Nos. 50-361, 50-362 License Nos. NPF-10, NPF-15

Licensee: Southern California Edison Company
P. O. Box 800, 2244 Walnut Grove Avenue
Rosemead, California 91770

Facility Name: San Onofre Units 2 and 3

Inspection at: San Clemente, California

Inspection conducted: October 17 through 20, 1983

Inspectors: Conrad L Sherman
C. I. Sherman, Radiation Specialist

Nov 14 83
Date Signed

Approved By: for F. A. Wenslawski, Chief
Radiological Safety Branch

11/14/83
Date Signed

Summary:

Inspection on October 17 through 20, 1983 (Report Nos. 50-361/83-37 and 50-362/83-35)

Areas Inspected: Routine unannounced inspection to review the licensee's actions regarding previous inspection findings, Licensee Event Report No. 83-17-L and items of noncompliance. The inspection involved 24 hours onsite by one regionally based inspector.

Results: Of the 3 areas inspected no items of noncompliance or deviations were identified.

RECEIVED
LICENSEE
CDM/LD

DETAILS

1. Persons Contacted

*J. Haynes, Station Manager
*W. Moody, Deputy Station Manager
#*P. Knapp, Health Physics Manager
*R. Rosenblum, Station Technical Manager
#*J. Droste, Assistant Technical Manager
*G. Gibson, Supervisor, Compliance, Configuration and Control
*R. McWey, Chemist
*D. Brevig, Supervisor, Nuclear Plant Chemistry
*R. Reiss, Quality Assurance Engineer
*R. Santosnosso, Supervisor, Instrumentation and Control
#*E. Goldin, Health Physics Engineer
*J. Wambold, Maintenance Manager
#R. Warnock, Supervisor, Health Physics Engineering
*K. Helm, Effluent Engineer
J. Trimble, General Atomics
*D. Schone, Quality Assurance Manager
D. Stickney, Instrumentation and Control Engineer
H. Mathis, Training Manager
M. Rhoades, Nuclear Chemistry Technician
J. Scott, Training Instructor
D. Todd, Nuclear Chemistry Technican
C. Spoonmore, Training Instructor

*Indicates those individuals attending the exit interview on October 20, 1983.
#Indicates those individuals participating in telephone call on October 25, 1983.

2. Licensee Action on Previous Inspection Findings

(Closed) (50-361/83-08-06) Item of noncompliance related to failure to submit a timely report of a violation of License Condition 2.C.(19)i as required by License Condition 19.G.

The inspector reviewed the SCE response to the Notice of Violation, specifically the corrective steps taken to avoid further violations. In discussion with licensee representatives, the inspector noted that the special review meetings identified as a corrective step in the enclosure to the May 2, 1983 letter have been conducted for the Post Accident Sample System (PASS) and other regulatory requirements.

(Closed) (50-361/83-08-04) this item of noncompliance was related to failure of Post Accident Sampling System to be operable and the Post Accident Sampling Program to be fully implemented in accordance

with facility License Condition (License No. NPF-10) 2.C.(19)i. and T.S. 6.8.4.d. Following the inspection resulting in this item of noncompliance, license condition 2.C.(19).i was amended (No. 17 for NPF-10 and No. 5 for NPF-15) to read as follows:

Post Accident Sampling System (NUREG-0737 Item II.B.3)

1. By June 1, 1983, SCE shall substantially complete all of the PASS procedures identified in Enclosure 3 of the SCE letter of April 14, 1983.

2. Prior to September 1, 1983, SCE shall maintain in effect all compensatory measures other than the PASS that are identified in the SCE letter of April 14, 1983, that are not already covered by Technical Specification surveillance requirements.

3. By September 1, 1983, the PASS shall be operable and the post accident sampling program shall be implemented.

4. Until September 1, 1983, SCE shall provide monthly progress reports on PASS testing, surveillance, maintenance and modifications, and operator training.

This inspection verified that these new license conditions were satisfied.

a. Procedures

The SCE letter of April 14, 1983 (R. Dietch to H. Denton) identifies 32 procedures in place as of April 4, 1983. The inspector verified that these procedures were issued and that additional procedures identified were in place at the time of the inspection. Additional procedures were issued subsequent to the April 14 letter.

The following procedures were reviewed:

No.	Procedure No.	Title
1.	S023-I-8.130	PASS Semi-Annual Preventative Maintenance
2.	S023-I-8.131	PASS 18-Month Preventative Maintenance
3.	S023-I-8.132	Refueling Interval PASS Air Cleanup System Charcoal Absorber Testing
4.	S023-I-8.133	Refueling Interval PASS Air Cleanup System HEPA Filter Testing

5.	S023-II-4.45	PASS Area Radiation Monitors Channel Calibration
6.	S023-II-8.10	Loop Verification
7.	S023-II.9.361	Containment High Range Area Radiation Monitor Calibration
8.	S023-II-9.362	Area Radiation Monitor Readout Calibration
9.	S023-II-9.363	Area Radiation Monitoring System Calibration
10.	S023-II-8.772	PASS Instrumentation Loops Calibration
11.	S023-II.9.191	Sigma Indicator Model 9263 Calibration
12.	S023-II-9.384	Sigma Boron Meter Model 9262 Converter Calibration
13.	S023-II-9.382	PASS Liquid and Gaseous Flowmeter Calibration
14.	S023-II-9.10	Rosemount Differential Pressure Transmitter Calibration
15.	S023-II-9.37	Pneumatic Valve Calibration
16.	S023-II-9.351	Fischer Porter Manual Station Calibration
17.	S023-II-12.446	PASS Instrumentation Calibration
18.	S023-II-9.383	Beckman pH Analyzer Model 940B Calibration
19.	S023-II-9.381	Delphi Model "B" Thermal Conductivity Analyzer Calibration
20.	S023-II-9.82	Pressure Switch Calibration
21.	S023-II.9.380	Delpha Paramagnetic Oxygen Analyzer Model 'J' Calibration
22.	S023-II-9.183	Thermon Temperature Indicating Controller Calibration

23.	S0123-III-8.0	PASS Sampling Program and Analytical Requirements
24.	S0123-III-8.1	PASS Routine Surveillances
25.	S0123-III-8.2.23	Purge and Fill of the PASS
26.	S0123-III-8.3.23	Sampling Procedures and In-Line Analysis for PASS
27.	S0123-III-8.4.23	Purging and Refilling of the PASS (cancelled)
28.	S0123-III-8.5.23	Chemistry Calibration Procedure for PASS
29.	S0123-III-8.6.23	Access to the PASS During Accident Conditions
30.	S0123-III-8.7	Operation and Calibration of PASS Spectrometer
31.	S0123-III-8.8	Alternate Methods of Post-Accident Sampling
32.	S0123-III-8.9	Operation and Calibration of the ND-SIX
33.	III.8.10.23	Radioactive Iodine and Particulate Sampling Under Accident Conditions
34.	S0123-VII 8.11	Movement of Emergency Samples at SONGS
35.	S0123-VII 8.11.2	Handling and Shipping of Undiluted Pass Samples
36.	S0123-VII 8.11.2	Shipment of Wide Range Gas Monitor Samples
37.	S0123-G-19	PASS Program
38.	Table 15 EOF Procedure	Interim Procedure for Core Damage Assessment
39.	General Atomic Procedure ACD:EL:001A	Post Accident Sample Cask Receipt and Chloride Analysis

Based upon the review of procedures and other documents, the inspector concluded that the procedures identified in the April 14 and May 2, 1983 (L. Papay to R. DeYoung) letters were substantially complete at the time of the inspection and had been issued prior to June 1, 1983.

b. Compensatory Measures

Compensatory measures identified in the April 14 letter (Enclosure 5) are incorporated in procedure S0123-III-8.8, "Alternate Methods of Post Accident Sampling". The inspector reviewed this procedure to insure that compensatory measures were consistent with those discussed in the April 14 letter and SER NO. 17.

Compensatory measures consist of those covered by technical specification requirements, calculational methods and radiochemistry laboratory equipment. Principal compensatory measures not covered by other technical specification requirements identified in procedures S0123-III-8.8 are as follows:

PASS Function	Alternate Method
Hydrogen or Total Gas in RCS	Calculation based on Pressure and Temperature from Plant Computer
Containment Atmosphere Hydrogen	Grab sample from effluent monitor 7804
Boron Concentration	Calculation

For each PASS function, diluted grab samples were available from PASS for radiochemistry laboratory analysis and undiluted grab samples were available from the radiochemistry laboratory sample station.

The inspector also reviewed S0123-III-8.1," Post-Accident Sampling-System Routine Surveillances". This procedure provides for comparison of PASS values with those obtained by routine radiochemistry procedures. Acceptance criteria are as described in the April 14 letter.

The inspector reviewed records of surveillance activities from June 1983 to date. In each case where a primary PASS instrument was out of service, alternate methods were available to perform the required analysis.

During the mid June to August PASS outage, the diluted grab sample capability was not available and compensatory measures available were based on technical specification required monitors. The inspector noted that in the event of high radiation levels precluding the use of the normal sample station and the PASS diluted sample capability inoperable, no alternate methods would be available onsite for pH, reactor coolant radionuclides or chlorides. These limitations are discussed in SER No. 17.

Based on review of PASS routine surveillance records, other records maintained to indicate availability of alternate methods, review of procedures, and discussion with personnel the inspector concluded that adequate compensatory measures were in effect during periods of PASS inoperability.

c.1 Operability

The inspector reviewed surveillance records associated with S0123-III-8.1 for September. The inspector noted that the Boron instrument did not meet surveillance acceptance critiera on August 31, 1983. This was noted in the monthly report dated September 6, 1983. Alternate methods were available. Review of Instrument Calibration Data Cards (ICDC) for this instrument indicated that this instrument was recalibrated on September 9, 1983 and that acceptable surveillance tests were performed on September 22 and October 13, 1983. A licensee representative indicated that calibration was found to be temperature sensitive and that actions had been taken to improve the calibration program for this instrument. The inspector noted that all other PASS instruments met their surveillance criteria during the August 31 test.

The inspector concluded that the PASS was operable on September 1, 1983.

c.2 Pass Program

The Post Accident Sampling Program as defined in Technical Specification 6.8.4.d (NPF-10) states, "A program which will ensure the capability to obtain and analyze reactor coolant, radioactive iodines and particulates in plant gaseous effluents, and containment atmosphere samples under accident conditions. The program shall include the training of personnel, the procedures for sampling and analysis and the provisions for maintenance of sampling and analysis equipment."

As described above, the inspector reviewed procedures for sampling and analysis. The training of personnel and provisions for maintenance were also reviewed.

With respect to training, the inspector reviewed training records, lesson plan outlines and discussed PASS training with two chemistry technicians. Based upon review of these items and other documents and discussions, the inspector concluded that the training portion of the PASS program was implemented.

With respect to maintenance, the inspector discussed and/or reviewed portions of the I&C instrument maintenance and maintenance department equipment maintenance programs. Based on these reviews, the inspector concluded that the licensee had provided for maintenance of sampling and analysis equipment.

d. Progress Reports:

The inspector verified that monthly progress reports were submitted in June, July, August and September. These reports covered the required areas. The inspector did not note any facts conflicting with information developed during the inspection process.

In summary, based on detailed review of records, procedures other documents and discussions with personnel, License Condition 2.c.(19).i as related to NUREG-0737 Item III.B.3 is satisfied. The inspector had no further questions on this matter.

(Closed) 50-362/83-08-04) Item of noncompliance related to the failure to develop a program to analyze onsite post accident radioactive iodine and particulate samples pursuant to NUREG 0737, item II.F.1, Attachment 2, as required by License Condition 2.C.(19)i and Technical Specification 6.8.4.d.

The inspector reviewed training of personnel, procedures for sampling and analysis, and provisions for maintenance.

a. Training. The inspector noted that the licensee provided training to address operation and sampling the wide range gas monitor (WRGM) during accident conditions. The inspector reviewed training records of Nuclear Chemistry Technicians (NCT) qualified to operate PASS, discussed the training program with the instructor, the chemistry manager, and two PASS qualified NCT. The inspector concluded, based upon these reviews that the training program was adequate.

b. Procedures for Sampling and Analysis

The inspector reviewed procedures previously identified as Nos. 32, 33, 35 and 36. Except as noted in (d), these procedures appear to adequately address sample removal, transport, analysis, and offsite shipment of WRGM samples.

c. Maintenance: The licensee stated that wide range gas monitor maintenance is provided for under normal plant surveillance procedures which are conducted on a quarterly frequency. The inspector reviewed procedures for 92 day channel functional test and 18 month channel calibration. The inspector was satisfied that these procedures form an adequate basis for a maintenance program.

d. Additional Review II.F.1, Attachment 2. This item provides a criterion to collect and analyze radioactive iodine and particulate during and following and accident. Clarification (2) states that the system design shall be such that plant personnel could remove samples, replace sample media and transport samples to the onsite analysis facility with radiation exposures not exceeding general design criteria (GDC) 19 (10 CFR 50, Appendix A) of 5 rem whole body. Discussions with licensee staff indicated personnel apparently believed retrieval of samples from the wide range gas monitor (WRGM) could be delayed as long as necessary following an accident in order that radiation doses could be kept below 5 rem. In order to clairfy the licensee position, the inspector conducted additional discussions with the licensee.

The inspector reviewed a memo dated April 15, 1983 from E. Golden to F. Briggs which discussed Post-Accident dose rates at the WRGM sample skids. This memo concluded that WRGM filter collection might have to wait 10 days in order to limit whole body dose to one individual to 5 rem. This memo assumed a severe LOCA event releasing 100% of the noble gas inventory to containment and leakage (20% of technical specification) through a containment penetration to the mini-purge duct. This memo provided radiation exposure rates at the WRGM skid as a function of time following shutdown for each source (containment, HPSI, LPSI, etc.) and a total exposure rate from all sources. Data for this memo was provided by Bechtel. The licensee made additional calculations to estimate the contribution from containment purge and mini purge valve leakage.

In a telephone conservation with license representatives denoted in paragraph 1 on October 25, 1982, additional information was provided to the inspector. This information was based on revised assumptions concerning leakage, attenuation of radiation by the ventilation duct and the assumption that activity on the WRGM filters could be limited so that retrieval would not be encumbered by a bulky shield.

Based on licensee provided figures, the inspector tabulated the following information:

Time From Shutdown(hr)	Dose Rate at WRGM SKID (R/hr)	Persons required to retrieve filter with 30 minute removal time limiting dose 5 rem
0.5	48.4	5
1 hr	43	5
2	37	4
4	26	3
8	14.5*	3
24	6.3*	1
48	3.0*	1

*Numbers estimated by inspector from values provided.

The inspector indicated to licensee representatives that their system did not appear to meet the intent of NUREG-0737, Item II.F.1-2 in that a significant time delay was necessary before one person could be expected to retrieve a sample. The inspector noted that procedure SO123-III-8.10.23 addressed sample activity, dose rates at the WRGM skid and delay in taking the sample due to the rapid reduction in dose rate in the first few hours following reactor shutdown. The procedure did not address the possible need to use more than one person to retrieve a sample.

This aspect of acceptability of the licensee's response to item II.F.1-2 has been referred to NRR for review and will be evaluated in a subsequent inspection (Open, 50-361/83-37-01).

3. Licensee Event Report No. 83-017

(Closed) (83-17-L), (Closed)(83-08-05). On January 24, 1983, the licensee determined that continuing alarms on the containment high range monitor were defeating its function. This evaluation was made following observations by an NRC inspector on January 21, 1983. The inspector reviewed licensee followup actions which included a Technical Specification revision of the Alarm Point from 2R/hr to 10R/hr and addition of a second alarm indicator light.

4. Exit Interview

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on October 20, 1983. The inspector summarized the scope and findings of the inspection.

Regarding access to the wide range gas monitor, the licensee stated that additional evaluation would be completed to refine projected exposure rates following an accident.

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SONGS 2 & 3

DK

November 18, 1983

HAROLD B. RAY

IE

SUBJECT: NRC Inspection Report Nos. 50-361/83-37 and 50-362/83-35
San Onofre Nuclear Generating Station, Units 2 and 3

Attached for your information and appropriate action is a copy of the subject report covering inspections on October 17 through October 20, 1983.

Areas inspected were licensee's actions regarding previous inspection findings, License Event Report No. 83-17-1 and items of noncompliance.

No items of noncompliance or deviations were identified.

One new open item (50-361/83-37-01) was identified regarding retrieval of samples from the wide-range gas monitor (WRGM) following an accident.

If you have any questions, please contact me.

J. M. CURRAN

GFEgan:4174Q
Attachment
cc: Kenneth P. Baskin
C. B. McCarthy
D. E. Nunn
J. M. Curran
J. A. Beoletto
H. S. Leasure
W. M. Schwab
K. G. Grothues
E. N. Cramer
D. F. Pilmer
W. W. Strom
M. O. Medford
W. C. Moody
P. A. Croy
H. E. Morgan
R. M. Rosenblum
P. J. Knapp
D. A. Herbst
D. B. Schone
G. F. Egan
QA File
CDM Center

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE SUITE 210
WALNUT CREEK CALIFORNIA 94596

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Docket No. 50-361, 50-362

Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead California 91770

Attention: Mr. Charles B. McCarthy, Jr., Vice President
Advanced Engineering

Gentlemen:

Subject: NRC Inspection San Onofre Units 2 and 3

This refers to the routine inspection conducted by Mr. C. Sherman of this office on October 17-20, 1983, of activities authorized by NRC License No. NPF-10, NPF-15 and to the discussion of our findings held by Mr. Sherman with Mr. J. Haynes and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

No items of noncompliance with NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room unless you notify this office, by telephone, within ten days of the date of this letter and submit written application to withhold information contained therein within thirty days of the date of this letter. Such application must be consistent with the requirements of 2.790(b)(1).

RECEIVED

C. B. McCARTHY

NOV 16 1983

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

F. A. Wenslawski, Chief
Radiological Safety Branch

Enclosure:
Inspection Report
No. 50-361/83-37
50-362/83-35

cc w/o enc:
D. J. Fogarty, Executive Vice President
H. B. Ray, Site Manager (San Clemente)

REFERENCE D

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V
1450 MARIA LANE, SUITE 210
WALNUT CREEK, CALIFORNIA 94596

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J. M. CURRAN

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Docket Nos. 50-206, 50-361 and 50-362

Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, California 91770

Attention: Mr. Kenneth P. Baskin, Vice President
Nuclear Engineering, Safety and Licensing Department

Gentlemen:

Subject: NRC Inspection San Onofre Units 1, 2 and 3

This refers to the inspection conducted by Messers. H. North and J. Moore of this office on January 13-17 and February 3-7, 1986, of activities authorized by NRC License Nos. DPR-13, NPF-10 and NPF-15 and to the discussion of our findings held by Messers. North and Moore with Mr. H. E. Morgan on January 17 and February 7, 1986, and other members of your staff at the conclusion of the inspection.

Areas examined during this inspection are described in the enclosed inspection report. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations by the inspector.

No violations of NRC requirements were identified within the scope of this inspection.

In accordance with 10 CFR 2.790(a), a copy of this letter and the enclosure will be placed in the NRC Public Document Room.

Should you have any questions concerning this inspection, we will be glad to discuss them with you.

Sincerely,

F. A. Wenslawski

F. A. Wenslawski, Chief
Emergency Preparedness and Radiological
Protection Branch

Enclosure:
Inspection Report Nos. 50-206/86-02, 50-361/86-02 and 50-362/86-02

cc w/enclosure:
D. J. Fogarty, SCE H. B. Ray, SCE (San Clemente)
H. E. Morgan, SCE (San Clemente)
State of CA

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-206/86-02, 50-361/86-02 and 50-362/86-02

Docket Nos. 50-206, 50-361 and 50-362

License Nos. DPR-13, NPF-10 and NPF-15

Licensee: Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, California 91770

Facility Name: San Onofre Nuclear Generating Station - Units 1, 2 and 3

Inspection at: San Onofre Nuclear Generating Station

Inspection Conducted: January 13-17 and February 3-7, 1986

Inspector: GP Yuhas for — 3/6/86
H. S. North, Senior Radiation Specialist — Date Signed

GP Yuhas for — 3/6/86
J. F. Moore, Radiation Specialist — Date Signed

Approved By: GP Yuhas — 3/6/86
G. P. Yuhas, Chief — Date Signed
Facilities Radiation Protection Section

Summary:

Inspection on January 13-17 and February 3-7, 1986 (Report Nos. 50-206/86-02, 50-361/86-02 and 50-362/86-02)

Areas Inspected: Routine, unannounced inspection of licensee action on previous inspection findings, review of licensee reports, gaseous waste systems, radiological environmental monitoring, occupational exposure during extended outages, Unit 3 fuel fragment contamination, facility tours and followup on Information Notices. Inspection procedures addressed included 83729, 80721, 84724 and 65051.

Results: Of the areas inspected, no violations or deviations were identified.

1. Persons Contacted

*+H. Morgan, Station Manager
* M. Wharton, Deputy Station Manager
A. Abusamra, PASS Chemistry
* J. Albers, Supervisor Unit 2/3 Health Physics (HP)
J. Anaya, Supervisor Unit 1 Instrumentation
J. Beebe, Supervisor Unit 1 Radiation Monitoring Instrumentation
* E. Bennett, Quality Assurance (QA) Engineer
+L. Bray, HP Engineer
D. Brevig, Senior Project Engineer
* J. Curran, Manager QA
R. Dickey, Supervisor Dosimetry
* M. Freedman, Compliance Engineer
* G. Gibson, Supervisor Compliance
*+K. Helm, Effluent Engineer
*+R. Jervey, QA Engineer
+C. Kergis, Compliance Engineer
*+P. Knapp, Manager HP
J. Madigan, Supervisor Unit 1 HP
+J. Mundis, Supervisor Nuclear Services
* J. Reilly, Manager Station Technical
*+D. Schone, Site QA Manager
* R. Warnock, Supervisor HP Engineering
M. White, Environmental Engineer
+W. Zintl, Manager Compliance

* Denotes attendance at the January 17, 1986, exit interview.
+Denotes attendance at the February 7, 1986, exit interview.

In addition to the individuals identified above, the inspectors met and held discussions with other members of the licensee's staff.

2. Licensee Action on Previous Inspection Findings
(Closed) Followup (50-361/83-37-01)

Inspector identified item related to the proposed use of multiple persons to collect high activity particulate and iodine WRGM samples following an accident to control individual exposures within GDC 19 limits. Inspection Report No. 50-361/83-37 noted that the proposed use of several persons to limit exposures was to be discussed with NRR. NRR concurred with the proposed solution. Licensee procedure SO123-III-8.10-23 Rev. 3 had been revised to address manpower requirements for sample collection post accident. This matter is considered closed.

(Closed) Followup (50-361, -362/84-12-03)

Inspector identified item relating to the licensee's failure to declare an "Unusual Event" on June 2, 1984. In response the licensee issued Special Order, Number 84-13, dated May 7, 1984 Significance of Effluent

Monitor Alarms and subsequently completed (July 11, 1984) issuance of Temporary Change Notices (TCNs) to numerous alarm response procedures to assure that they led to EPIP S023-VIII-1 Recognition and Classification of Emergencies. This matter is considered closed.

(Open) Followup (50-206/85-29-01)

Inspector identified item relating to the disposal of SNM contaminated Nuclear Assurance Corporation cask waste. The waste has not been shipped to a burial site. The licensee is corresponding with NRC concerning the disposal. This matter will be reviewed during a subsequent inspection.

(Closed) Followup (50-206, -361, -362/85-10-21)

Inspector identified item related to qualification and training of persons conducting sampling activities. Three Unit 2 LER's relating to sampling and analysis discrepancies (85-25, -26, -48) were examined. The licensee's corrective actions were verified. Chemistry technicians and plant equipment operators were interviewed. Samples to be collected during the next shift were documented and passed on to the incoming chemistry shift. Chemistry technicians had been trained in sampling techniques and sampling locations. Responsibility for sample collection was assigned to chemistry and there was no evidence to indicate that this responsibility had been redelegated to another segment of the staff. This matter is considered closed.

(Closed) Followup (50-362/82-15-03)

Inspector identified item related to adequacy of the radwaste building and compactor ventilation system. Previously addressed in Inspection Report No. 50-362/82-20 and 82-34.

Documents examined:

Letter, H. B. Ray, SCE to R. H. Engelken, NRC dated November 5, 1982, documenting commitments concerning the ventilation system;

San Onofre Commitment Register System (SOCR) entries related to Inspection Report No. 50-362/82-15 and supporting documents; and

Memorandum: Warnock to Knapp, April 8, 1985, Subject: DAW Compactor Ventilation Evaluation.

A Bechtel Power Corporation report on the Radwaste Area Ventilation System, Log BE-6344, dated October 5, 1982, addressed building negative pressure, rooms without mechanical ventilation (172) and rooms with mechanical ventilation (98). The report concluded that with doors in the proper position, seals on a number of doors and penetrations and with the addition of ventilation ducting to the two waste gas compressor rooms the HVAC system meets the FSAR described performance. During numerous tours of the radwaste building the inspector has observed that negative pressure is maintained and that negative pressure is maintained in the waste gas compressor rooms with the additional ducting which was installed.

With respect to the DAW compactor the licensee's Health Physics Engineering group evaluated the compactor use and concluded that with appropriate controls (e.g. respirators required, compactor filters tested following installation, proper air flow, access control and air sampling) the compactor could be operated and exhausted to the room air. Based on observations and document review this matter is considered closed.

No violations or deviations were identified.

3. Review of Licensee Reports

The inspector reviewed Licensee Event and Special Reports related to radiation protection and chemistry matters. The review verified that reporting requirements were met, causes identified or under investigation, that corrective actions appeared appropriate and that LER forms were complete. Reports identified with an asterisk, indicate a more detailed on site review.

Docket No.	50-206	50-361	50-362
	85-07-L0	84-44-L1	85-12-L0
	85-08-X0	85-08-X0	85-18-L0
	85-08-X2	85-23-L0	85-21-L0
	85-09-L0	85-25-L0	85-23-L0
	85-10-L0	85-27-L0	85-24-L0
	*85-15-L0	85-29-L0	85-25-L0
		85-32-L0	85-27-L0
		85-33-L0	85-28-L0
		85-36-L0	*85-31-L0
		85-37-L0	85-33-L0
		85-39-L1	*85-35-L0
		85-43-L0	85-34-L0
		85-44-L0	85-37-L0
		85-48-L0	85-41-L1
		85-53-L0	
		85-56-L0	

LER 50-206/85-15-L0, reported discovery of two holes in the containment/stack line to monitors R-1211 and R-1212. The licensee temporarily patched the holes and planned to replace the sample line during the current outage. The licensee agreed to evaluate the effect of the holes, which may have existed since the sphere shield construction project (1975), on reports of effluents from Unit 1. This matter will be examined during a subsequent inspection (50-206/86-02-01).

Unit 3, LER's 85-31-L0 and 85-35-L0 reported FHIS and CPIS actuations respectively. Followup onsite confirmed no relationships with the fuel particle problem (see report section 7).

No violations or deviations were identified.

4. Unit 1 Gaseous Waste System

A. Audits and Appraisals

Records of audits performed by Quality Assurance (QA) were examined and discussed with the responsible QA engineers. Audit No. SCES-020-85, conducted March 21 to May 24, 1985, verified that procedures were in compliance with changes made to the Offsite Dose Calculation Manual (ODCM) and the Radiological Environmental Technical Specifications (RETS). The scheduled audit for 1986 had not been conducted at the time of this inspection. The review found the auditor's qualifications included four years of experience as a Health Physics technician preparing effluent release permits.

B. Changes

Discussion with licensee representatives and a tour of the facilities disclosed that the gaseous waste system had not been changed with the following exceptions:

1. The cryogenics system had been retired in place.

2. A second computer based data reduction system was used to prepare monthly reports and verify release calculations.

C. Effluents

The inspector reviewed the Monthly Effluent Reports for the period January 1985 to December 1985. Releases were within 10 CFR 50 Appendix I guidelines and the EPA limits expressed in 40 CFR 190.

The inspector verified by manual calculations that the beta and gamma air doses from Kr-85, Xe-131m, Xe-133m and Xe-133 as reported in a Gaseous Effluent Release Permit were correct. The inspector also verified by manual calculation the maximum organ dose from I-131 using data from the July 1985 Plant Vent Stack Release Report. The licensee's use of ODCM dose conversion factors was confirmed.

The inspector discussed the gaseous effluent release process with the chemistry supervisor and a chemistry technician and verified that the proper procedure was used for sampling the waste gas decay tanks. The inspector was unable to observe the preparation of a release permit since the tanks had been emptied following the plant shutdown on November 21, 1985.

D. Air Cleaning

The Unit 1 Facility Technical Specification section 3.12 Control Room Emergency Air Treatment System requires that the system be maintained operable including satisfactory execution of the tests and analyses specified in Technical Specification 4.11 Control Room Emergency Air Treatment System. Maintenance Order 840830930, action on which was completed October 23, 1984, included necessary testing and the replacement of one leaking carbon filter.

Technical Specification 4.11 requires testing once per year for standby service or after every 720 hours of system operation. The testing was initially scheduled in October 1985 however the work order had been placed on hold while the plant was in modes 5 and 6. The work was rescheduled for completion immediately prior to mode 4 operation.

No violations or deviations were identified.

5. Radiological Environmental Monitoring

The subject program was last inspected January 23-27, 1984 (Inspection Report No. 50-206/84-04, 50-361, 362/84-05). The meteorology portion of the program was addressed in Inspection Report 50-206/83-24, 50-361/84-39 and 50-362/83-38.

A. Audits and Appraisals

The audit program included both the licensee and contractor phases of the program and was conducted by both the onsite and corporate QA organizations. Reports of audits and surveillances were examined.

Audit Report No.	Date	Topic
RDC-1-84	12/14/85	Contractor-Radiation Detection Company
LFE-1-84	7/27/85	Contractor-EAL Corp. (Analytical Contractor)
LFE-1-85	7/2/85	Contractor-EAL Corp. (Analytical Contractor)
SCES-075-85		All Tech. Spec. Units 1, 2 & 3, Land Use Census Contractors
SCES-088-84	12/3/84-1/30/85	Units 1, 2 & 3 Tech. Spec. Report Submission
SCEE-9-85	10/25/85	Timely Submission of Reports
SCEE-8-85	10/21-11/8/85	Verify Transfer of Functions to Nuclear Services Group
SCEE-6-85	10/17-11/17/85	Construction-Offshore Pad Removal
SCEE-5-85	8/12-8/29/85	Verify Environmental Record Retention
SCEE-4-85	6/28-8/5/85	Verify Implementation of Environmental Protection Plan-Unit 2/3
SCEE-3-85	4/15-7/17/85	Verify Implementation Unit 1 Environmental Tech. Spec.
SCEE-1-85	2/27-3/8/85	Verify Implementation Unit 1 Environmental Monitoring Tech. Specs.

Surveillances were conducted of Westec Services Inc. marine sampling contractor (ENV-1210-84, 10/16/84) and of local crop sampling by the onsite environmental group (ENV-002-84, 8/21/84).

A small number of discrepancies were identified during the audits which resulted in the issuance of Corrective Action Requests (CARs), for which prompt and effective corrective actions were taken. The

most significant and still unresolved matter concerned the licensees failure to report NPDES (National Pollution Discharge Elimination System) violations to NRC pursuant to the Unit 2/3 T.S. 6.9.3.g and Unit 1 T.S. 6.19.2.c (now 6.16.2.c as per Amendment 91). The T.S. require the licensee to provide copies of reports of violations of NPDES Permits or State certifications (pursuant to Section 401 of the Clean Water Act) to the NRC. This failure was initially identified in connection with Units 2/3 by Audit SCEE-4-85 and CAR GO-G-107 was issued. Subsequently Audit SCES-075-85 identified the failure in connection with Unit 1 and the previously issued CAR was amended to address all three Units.

At the time of the inspection the licensee had not resolved the response to the CAR. The failure to resolve the issue centers on the interpretation of the term violation. The NPDES permits issued by California Regional Water Quality Control Board order for San Onofre are:

Unit	Order Number	Permit Number
Unit 1	76-21	CA 00033
Unit 2	85-11	CA 0108073
Unit 3	85-13	CA 0108181

The Permits require the annual reporting of detailed analytical results. The licensee voluntarily submits reports on a monthly basis. Some of these reports contain values which are in excess of Permit levels but are not necessarily of such significance as to be reportable to NRC in the view of SCE's Operations and Maintenance Support (O&MS) organization. SCE's QA organization has viewed these reports as reportable to NRC since they represent violations of Permit levels.

The Permits also provide in section F.6. for oral notification and a 5 day written report of, "any noncompliance which may endanger health or the environment". In addition section F.7. requires notification, "as soon as it is known if there is reason to believe;" that certain discharges have or may occur. O&MS contends that those matters properly reportable to NRC are those described in Permit sections F.6 and F.7. No events requiring reporting under sections F.6. and F.7. have occurred. The licensee's resolution of CAR GO-G-107 will be examined during a subsequent inspection (50-206, -361, -362/86-02-02).

QA

B. Changes

The onsite environmental monitoring representative, an Environmental Engineer, now reports administratively to the O&MS organization and technically to the supervisor of the corporate Nuclear Safety and Licensing (NS&L) group. This individual had been employed at San Onofre in this capacity since 1982 and was completing degree work for a BA in Environmental Analysis. The onsite representative was responsible for collection, packaging, shipment and record keeping of all terrestrial sampling and TLDs. All terrestrial samples were

shipped by Express Mail to EAL Corporation, the analytical contractor. TLDs were shipped to Radiation Detection Company. Marine samples were collected by Westec Services Inc. formerly Lockheed Ocean Sciences Laboratory under a contract administered by NS&L. Weekly reports of samples collected, problems identified (e.g. reduced air sample volume due to pump or power failures) were sent to NS&L. The only change in sampling location since the last inspection was the San Clemente air sample location, formerly at the San Diego Gas and Electric building, which was moved to the San Clemente City Hall effective January 14, 1986. The new sample location is in the same sector at approximately the same distance from the plant. The change was required by the sale of the building at the original location.

The marine sampling program, annual census program and corporate office portion of the program will be examined during a subsequent inspection (50-206, 361 & 362/86-02-03).

C. Implementation of the Radiological Environmental Monitoring Program

The Annual Radiological Environmental Operating Reports for 1983 and 1984 were reviewed. The "Mesa-E.O.F." sampling station was observed during the weekly particulate and iodine sample change. The station also included TLD's and a pressurized ion chamber. Environmental program procedures were reviewed, specifically:

Number	Title	Date
S0123-IX-1.1 Rev. 1	Environmental Sample Collection	8/26/85
S0123-IX-1.2 Rev. 1	Air Sampling	8/26/85
S0123-IX-1.4 Rev. 2	Drinking Water	8/26/85
S0123-IX-1.5 Rev. 2	Sediment from Shoreline (Beach Sand)	8/26/85
S0123-IX-1.6 Rev. 2	Local Crops	8/27/85
S0123-IX-1.8 Rev. 2	Soil Sampling	8/26/85

D. Implementation of the Meteorological Monitoring Program

The licensee contracts with Dames and Moore for monthly maintenance and quarterly calibrations of meteorological equipment and data reduction of chart and data logger (digital) records. The licensee's I&C staff changes the recorder charts every two weeks. Monthly maintenance records for the period June-December 1985 and the second and third quarterly calibrations in 1985 and the first quarterly calibration in 1986 were examined.

No violations or deviations were identified.

6. Occupational Exposure During Extended Outages - Unit 1

A. Audits and Appraisals

No audits specifically addressing this topic area had been conducted. Two surveillances related to this topic had been conducted:

HP-007-86, Bioassay, Verification of Iodine Protection Factor, as applied to the use of the GMR Iodine respirator canister; and

HP-034-86, Health Physics Surveillance, visual inspection of postings, containment housekeeping, availability of supplies of booties and gloves in containment and frisker operation at the equipment hatch exit. The surveillance noted the high frisker background at that location.

B. Changes

The licensee had planned a reorganization of the operational H.P. staff to improve control of technician activities and to provide a single responsible Health Physics representative onsite at all times. Technician crews of 6-8 will be permanently assigned to a foreman. Each crew and foreman will rotate through the shift schedule. Two general foremen will be assigned one each to Units 1 and 2/3. The general foremen will assign crews on the basis of work load and job priority.

For the Unit 1 outage in order to maintain technician exposures ALARA, the job coverage had been changed from constant to zone coverage. Continuous health physics coverage requirements have been relaxed for some evolutions.

Individual technician exposure was to be administratively limited to 300 mrem/quarter. Cumulative technician exposure was to be followed by the foremen on a daily basis to provide for appropriate distribution of exposure. Crew exposures were to be evenly distributed within ± 250 mrem. Increases in the administrative limit can be approved only after justification and review by the Unit Health Physics Supervisor. This change was in response to a Health Physics Division goal to reduce exposures received by the Health Physics staff. All health physics supervisors were coordinating their efforts with the ALARA supervisor. As part of this effort the licensee had increased the use of alarming dosimeters which can be preset to alarm at various total exposures, reducing the necessity for constant coverage by technicians.

The new Health Physics building was in service replacing the old Third Point access to Unit 1. Access through Door 16 was limited to operations personnel requiring prompt access.

C. Planning and Preparation

Unit 1 health physics representatives including the assigned Unit 1 ALARA Engineer began attending planning meetings in May 1985. In September 1985, two technicians were assigned to work with the Unit 1 Maintenance Schedulers in outage planning.

Thirty contract technicians, onsite for the Unit 3 outage and 23 Unit 2/3 technicians were used to augment the Unit 1 technician staff of 15 providing a total of 68 technicians for the Unit 1 outage.

The staffing increase was delayed past the start of the Unit 1 outage since the outage began a week early as a result of the water hammer event. The contract technician staff was increased to limit the number of overtime hours worked by the staff. The health physics staff was operating three shifts using three foremen and two upgraded technicians per shift. The health physics staff reported good cooperation from various work groups in prioritizing work based on technician availability.

Special training on steam generator repairs and penetration work was planned. Due to the two unit outage, only foremen received the penetration work training and few technicians received steam generator mock up training. However the crews that had done the Unit 3 steam generator work were available for Unit 1 and several contractor technicians had good steam generator work experience.

An additional breathing air compressor was provided which augmented the existing equipment. The compressors were able to support 6 manifolds which permitted supplied air work simultaneously on the three steam generators, penetrations, upender cavities in containment and in the fuel building and the north charging pump room.

Portable ventilation units were used during the steam generator work. A contamination control tent was utilized in the auxiliary building for the charging pump work.

D. External Exposure Control

Discussions with the dosimetry staff established that no changes had occurred with respect to the program for utilization of extremity and specialized dosimetry or to station administrative exposure limits. Pocket ionization chamber (PIC)/TLD comparisons were performed by the licensee. PIC's were generally found to indicate higher exposures than TLDs but most were within 25% of the TLD indicated exposure. No problems had been identified with respect to extremity exposures. Daily reports of work groups or department exposures were provided to supervisors as well as an alphabetical listing of individual exposures.

E. Internal Exposure Control

No changes in the internal exposure control program were identified. A corporate Dosimetry Records and Archival Retrieval System (DARS) had been implemented. No concerns with respect to Unit 1 internal exposures were identified. Records of evaluations of internal exposures and bioassays and whole body counts will be examined during a subsequent inspection (50-206/86-02-05).

F. Control of Radioactive Materials and Contamination, Surveys and Monitoring

Portable survey instruments available for use were examined and found to be within the required calibration frequency. Frisker stations were observed and noted to be set on the appropriate range. Use of friskers by personnel exiting the Unit I containment, radwaste building and the controlled area at the health physics building were observed to be of appropriate duration and thoroughness. Records of surveys will be examined during a subsequent inspection (50-206/86-02-06).

6. Maintaining Occupational Exposures ALARA

The licensee had established a station goal of less than 1000 manrem for 1986. The 1985 Unit 1 goal was 305.4 manrem. The approximate Unit 1 total exposure was 70 manrem prior to the outage and 96 manrem during the first month of the outage (December 1985), a total of approximately 170 manrem.

The Unit 2/3, 1985 goal was 767.6 manrem and the measured exposure was 605.5 manrem. Examination of the source of exposure to Unit 1 health physics personnel identified surveys as a principal contributor. As a result the frequency of routine surveys of areas not continuously occupied had been reduced. The change which, was implemented in October-November 1985, had resulted in reduced personnel exposures. No changes in connection with contamination control had been observed. The largest single contributor to exposures were the surveys associated with radiation exposure permit (REP) preparation. In cooperation with the Maintenance Department only maintenance tasks to be started within two days are submitted for REP preparation. This change from the previous practice of submitting all jobs scheduled (e.g. the January 6-12, 1986 list called for REP's for 258 jobs) was expected to result in a significant manrem reduction. Additional ALARA related topics were identified in section B. above.

The licensee had implemented an ALARA awards program providing for quarterly recognition of outstanding exposure reduction efforts. The awards are based on established guidelines and include certificates and a prize.

Significant ALARA activities noted by the inspector at Units 2/3 included:

- Operation's and Management Supports development of a steam generator manway shield which provided a small opening for eddy current testing while reducing the platform exposure to approximately 100 mrem/hour. The shield also has doors which close the opening when not in use.

- Robotics device "Genesis" used for ultrasonic testing and mechanical steam generator tube plugging saved an estimated 20 manrem.

- Learning through experience on the Pressurizer Spray Valve work, using the same crew where possible, the Unit 2 work resulted in 75.5 manrem of exposure. The same work on Unit 3 resulted in 57.8 manrem exposure.

No violations or deviations were identified.

7. Unit 3 Fuel Fragment (Fuel Fleas) Contamination

A. Beginning on October 30, 1985, the licensee identified the existence of microscopic particulate contamination with fuel fragments subsequently dubbed "Fuel Fleas". Following the recognition of this problem, extensive surveys were conducted of the Fuel Handling Building, Radwaste Building and all levels of the Unit 3 Containment and the reactor cavity. The particles are believed by the licensee to have apparently originated during a fuel bundle reconstitution evolution performed in the Unit 3 Fuel Handling Building.

While "Fuel Fleas" were found in other areas the principal concentrations were found in the Unit 3 Fuel Handling Building and reactor cavity. The contamination in the reactor cavity was located principally in the lower level near the upender. The major portion of this activity was flushed to the radwaste system. Some of the "Fuel Fleas" were found on modesty garments. Frisking of modesty garments at the laundry was increased to a 100% sample. The solvent and lint filters from the modesty garment dry cleaning machines were surveyed for presence of the "Fuel Fleas" with negative results. Protective clothing used in the Unit 3 Fuel Handling Building was isolated. Access to the Fuel Handling Building was denied for routine non-essential access on November 6, 1985 so that extensive radiological surveys could be conducted. After successful decontamination efforts the building was released for access. Personnel who had worked in the Fuel Handling Building following the fuel reconstitution evolutions were identified and whole body counts were performed. No indications of "Fuel Flea" constituents were found in the first 80 persons counted. Extensive review of air sample data showed no evidence of "Fuel Fleas" or their constituents. Surveys established that no "Fuel Fleas" were found more than one foot above the floor.

On November 21, 1985 access to the Fuel Handling Building was again restricted for decontamination. Access was limited to the decon crew and operator surveillance under continuous H.P. coverage.

Since protective clothing appeared to be a medium for the transfer of "Fuel Fleas" all protective clothing was withdrawn from use. Protective clothing unused since before the Unit 3 fuel reconstitution work or disposable protective clothing was used to replace the withdrawn clothing.

Licensee analysis of "Fuel Fleas" identified the presence of the following fission products: Nb-95, Zr-95, Ru-103, Ru-106, Ba-140, La-140, Ce-141 and CE-144. EAL Corporation analyzed three "Fuel Fleas" and confirmed the licensee's analysis and in addition

identified the presence of Cs-134, 137, Pm-147, 148m, Eu-154, Y-91, Cm-242 and Pu-238.

Because of the high beta energy (500 keV vs 90 keV for "normal" contamination) exhibited by the "Fuel Fleas" a specially modified ion chamber instrument utilizing different window thicknesses was developed by the onsite H.P. Engineering group. This instrument was used to conduct extensive surveys.

As a result of the extensive surveys and the routine frisking program "Fuel Fleas" were found on protective clothing and modesty garments of several personnel. The licensee performed evaluations to assess the skin dose to exposed individuals.

The Region V staff evaluated the licensee's methodology and results of skin dose assessments for personnel exposed to the "Fuel Fleas". The licensee's evaluation included a conservative exposure scenario, comparison of the theoretically derived spent fuel spectrum, and the spectrum measured by gamma pulse height analysis by both SCE and an independent laboratory, and the final estimation of activity of the limiting radionuclides based on licensee assumptions. We find these studies, considerations and assumptions to be acceptable. The key assumption being that the "Fuel Fleas" were in direct contact with the skin.

The basis of acceptability was the comparison of the licensee's methodology of evaluation of skin dose, using Healy's model (1), against other models also acceptable to the staff. In the draft report "Dose Calculations for Contamination of the Skin Including the Computer Code Varskin," NUREG-4418, the authors introduce a computer code, Varskin, which calculates dose to the skin by a beta emitting radionuclide, from point and disc sources. They use Berger's (2) data of energy distribution around point sources in water from which they compute skin dose as a function of distance for a point or disc source (skin thickness), of any given strength and time of exposure. The model and data of Spangler and Willis (3) was also used by the staff as an alternative method (Loevingers equations (4)) for skin evaluation.

Using the data, provided to the staff by the licensee, of one of the exposed individuals, the following results were tabulated, as shown, for two of the radionuclides identified in the inventory of fission products which comprised the "Fuel Flea".

Isotope	uCi/cm^2	Dose (mrad for 2.2 hr exposure)		
		SONGS	VARSKIN	SPANGLER
91 Y	1.98×10^{-2}	405	337	330
140 Ba	8.25×10^{-4}	16	12	14

It is noted that the Healy model, used by the licensee, provides a conservative dose estimate as compared to the Varskin computer code and the Spangler model.

Based on the conservative model used by the licensee to determine the skin dose to individuals exposed to "Fuel Fleas", and the fact that the dose estimate for all the radionuclides found in the "fuel flea" provides a total dose of 1517 mrem to the exposed individual which represents 20% of permissible skin dose, the staff finds the SCE methodology for skin dose evaluation to be acceptable.

(1) Surface Contamination - Decision Levels - LA-4558-MS - J. W. Healy
(2) M. J. Berger, MIRD #8, J. Nucl. Med. 1971
(3) G. W. Spangler, C. A. Willis "Permissible Contamination Levels" Proceeding of a Symposium held at Gatlenburg, Tennessee June 1984 pg 151-158)
(4) Describe Radioisotope Sources - R. Loevinger, etal "Radiation Dosimetry" Hine and Brownell pp. 711-715.

The final licensee actions and effectiveness of the decontamination will be examined in a subsequent inspection (50-362/86-02-04)

No violations or deviations were identified.

8. Tours

Tours were conducted during the inspection of the protected areas of all three units, the Unit 1 containment, radwaste building, backyard, chemistry laboratory, and the health physics building. Confirmatory radiation surveys were performed with an ion chamber survey instrument, NRC-015844, due for calibration February 18, 1986. No discrepancies in posting were identified. In addition the recently completed Materials Control Building, with office space on the second floor and decontamination facilities on the first floor, and the laundry - change room facilities on 65.5-70 elev. Units 2/3 and Multipurpose Handling Facility which were under construction were toured.

No violations or deviations were identified.

9. Followup on IE Information Notices

The inspector verified receipt, review for applicability and initiation or completion of action, if required, with respect to IE Information Notices Nos. 85-42, 85-42 Rev. 1, 85-81, 85-87 and 85-92.

No violations or deviations were identified.

10. Exit Interview

The scope and findings of the inspection were discussed with the individuals denoted in report section 1. The licensee was informed that no violations or deviations were identified.

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D. B. SCHONE

cc PRK
CWM

AD12-QL
SONGS 1, 2 and 3

1986 MAR 12 PM 12:13

QA MAILED

March 12, 1986

HAROLD B. RAY

SUBJECT: NRC Inspection Report No. 50-206/86-02, 50-361/86-02 and 50-362/86-02
San Onofre Nuclear Generating Station, Units 1, 2 and 3

Attached for your information and appropriate action is a copy of NRC letter dated March 7, 1986, transmitting the subject Inspection Report covering the routine inspection of Units 1, 2 and 3 Radiological Program conducted January 13-17, 1986 and February 3-7, 1986.

Areas inspected included: licensee action on previous inspection findings, review of licensee reports, gaseous waste systems, radiological environmental monitoring, occupational exposure during extended outages, Unit 3 fuel fragment contamination, facility tours and followup on Information Notices.

No violations of NRC requirements were identified within the scope of the inspection.

If you have any questions, please contact me.

J. M. Curran
J. M. CURRAN

DCallahan:8933Q/sit
Attachment

cc: Kenneth P. Baskin
M. O. Medford
R. M. Rosenblum
D. A. Herbst
D. F. Pilmer
E. N. Cramer
D. B. Schone
J. A. Beoletto
D. E. Nunn
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K. A. Slagle
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M. P. Short
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D. E. Shull
B. Katz
J. J. Wambold
F. P. Eller, Jr.
D. H. Peacor
W. G. Zintl
K. G. Grothues
J. K. Yann
H. S. Leasure
R. N. Schweinberg
L. Mayweather/SOCR
QA File
CDM Center
H. L. Chun

REFERENCE E

February 3, 1982

Director, Office of Nuclear Reactor Regulation
Attention: Mr. Frank Miraglia, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 2 and 3

On January 28, 1982, a meeting was held at the NRC offices in Bethesda, Maryland. The purpose of the meeting was to discuss the implementation program for radiation monitors for San Onofre Nuclear Generating Station, Units 2 and 3.

The implementation program has two main objectives. The first is to provide radiation monitors for which the calibration is consistent with the latest state of the art criteria on the most expeditious schedule possible. The second objective is to ensure consistency between the schedule for bringing the radiation monitors into full compliance with the technical specifications and the stage in the initial plant startup at which they are functionally required. To achieve these objectives we have developed a phased approach.

In accordance with agreements reached in the meeting, enclosed for your use are seven (7) copies (NRC Mail Code B028) of the following material:

Enclosure 1: Specific Technical Specification pages changed to provide schedule relief requested to allow sufficient time for enhanced calibration of radiation monitors.

Enclosure 2: Tabular presentation summarizing for each radiation monitor, the schedule relief requested, the reason the schedule relief is required and justification for the schedule relief.

Enclosure 3: Justification for schedule relief on installation of proportional samplers.

Enclosure 4: Discussion of present containment purge sampling provisions.

If you have any questions concerning these matters, please call me.

Very truly yours,

M.D.M.

for K. P. Baskin
Manager of Nuclear Engineering,
Safety, and Licensing

DLCox:3336
Enclosures

cc: F. J. Wenslawski-Region V

bcc: (See attached sheet)

ENCLOSURE 4

DISCUSSION OF CONTAINMENT PURGE SAMPLING PRESENT PROVISION

Two NMC gaseous radiation monitors, RE-7804-1 and RE7807-2, (FSAR-11.5.2.1.4.5) presently monitor containment airborne activity. Monitor RE-7804-1 samples the containment atmosphere at approximately elevation 90 feet (same vicinity as the mini-purge exhaust) and monitor RE-7807-2 samples at approximately elevation 35 feet. Extensive mixing of the containment atmosphere by the normal HVAC units ensures that either sample location is representative of the entire containment atmosphere, and therefore considered to be representative of the containment purge effluent stream. In particular, either sample location will be representative of the large purge-system effluent stream, due to the multiple distribution lines of this system within containment. These monitors provide the capability for Iodine, particulate and gas grab sampling. A correction factor will be applied to the sample analysis to account for sample line deposition. Flow indication is provided on the monitor. Based on the above, these monitors will be used to obtain composite samples of the purge stream as required by Technical Specifications.

REFERENCE F

NUREG-0712
Supplement No. 5

Safety Evaluation Report

related to the operation of San Onofre Nuclear Generating Station, Units 2 and 3

Docket Nos. 50-361 and 50-362

Southern California Edison Company, et al.

U.S. Nuclear Regulatory Commission

Office of Nuclear Reactor Regulation

February 1982

TABLE OF CONTENTS

		PAGE
1	INTRODUCTION AND GENERAL DISCUSSION	1-1
	1.1 Introduction	1-1
	1.7 Summary of Outstanding Issues	1-1
	1.9 License Conditions	1-2
	1.12 Status of San Onofre 2 Construction and Preoperational Testing	1-3
3	DESIGN CRITERIA-STRUCTURES, COMPONENTS, EQUIPMENT AND SYSTEMS	3-1
	3.7 Seismic Design	3-1
	3.7.4 Seismic Design Verification Program	3-1
	3.8 Design of Category I Structures	3-12
	3.8.1 Concrete Containment	3-12
5	REACTOR COOLANT SYSTEM AND CONNECTED SYSTEMS	5-1
	5.4 Component and Subsystem Design	5-1
	5.4.3 Shutdown Cooling System (Residual Heat Removal System)	5-1
6	ENGINEERED SAFETY FEATURES	6-1
	6.4 Control Room Habitability Systems	6-1
7	INSTRUMENTATION AND CONTROLS	7-1
	7.2 Reactor Protection System	7-1
	7.2.4 Bypass of a Plant Protection System Trip Channel	7-1
	7.5 Safety-Related Display Instrumentation	7-2
	7.5.1 Post-Accident Monitoring Instrumentation	7-2
9	AUXILIARY SYSTEMS	9-1
	9.5 Other Auxiliary Systems	9-1
	9.5.1 Fire Protection System	9-1

TABLE OF CONTENTS (continued)

		PAGE
11	RADIOACTIVE WASTE SYSTEM	11-1
	11.1 Summary Description	11-1
	11.3 Process and Effluent Monitoring Systems	11-1
22	TMI-2 REQUIREMENTS	22-1
	22.2 Discussion of Requirements	22-1
	I.A.1.3 Shift Manning	22-1
	I.C.1 Guidance for the Evaluation and Development of Procedures for Accidents and Transients	22-2
	II.E.3.1 Emergency Power Supply for Pressurizer Heaters	22-3
	II.K.2.17 Potential for Voiding in the Reactor Coolant System During Transients	22-3
	II.K.3.30 Revised Small-Break LOCA Methods to Show Compliance with 10 CFR 50, Appendix K	22-4
	III.A.2 Improved Licensee Emergency Preparedness - Long Term	22-4
	APPENDICES	
	A CONTINUATION OF CHRONOLOGY	A-1
	B ERRATA TO SER AND SER SUPPLEMENTS	B-1
	C PRINCIPAL STAFF REVIEWERS	C-1

1 INTRODUCTION AND GENERAL DISCUSSION

1.1 Introduction

On December 31, 1980, the Nuclear Regulatory Commission (NRC) staff issued a partial Safety Evaluation Report (SER) covering the geology and seismology aspects of the San Onofre Nuclear Generating Station Units 2 and 3 (SONGS 2 and 3, or San Onofre 2 and 3). On February 6, 1981, the staff issued a complete SER covering all non-TMI-related aspects of our safety review of San Onofre 2 and 3, including, for convenience, the previously issued geology and seismology sections. On February 25, 1981, the staff issued Supplement No. 1 to the SER which addressed the TMI-related aspects of our safety review. On May 8, 1981, the staff issued Supplement No. 2 to the SER, which addressed a number of the open items identified in the SER and in Supplement No. 1 to the SER. On September 16, 1981, the staff issued Supplement No. 3 to the SER, in which we updated the status of our review with regard to certain of the items that were left unresolved in Supplement No. 2 to the SER. On January 22, 1982, the staff issued Supplement No. 4 to the SER in which we addressed the open items identified in the SER and previous supplements, as well as several TMI-related items, for which the applicants had requested relief from the dated requirements of NUREG-0737.

In this supplement to the SER, we address several items that have come to light since the previous supplement was issued, including an additional applicant request for relief from certain dated requirements of NUREG-0737.

The items addressed in this report are covered in sections having the same number and title as the section of the SER or SER Supplement in which they were previously discussed. Appendix A to this report is a continuation of the chronology of the radiological review of San Onofre 2 and 3. Appendix B contains errata to the SER and previous SER supplements. Appendix C is a list of the principal NRC staff reviewers who contributed to this supplement. The NRC project manager for San Onofre 2 and 3 is Mr. Harry Rood. Mr. Rood may be contacted by writing to the Division of Licensing, U.S. Nuclear Regulatory Commission, Washington, D.C., 20555.

1.7 Summary of Outstanding Issues

In its Partial Initial Decision on San Onofre 2 and 3 of January 11, 1982, the Atomic Safety and Licensing Board authorized issuance of a license permitting "the loading of fuel and low power testing (up to 5 percent of rated power) for Unit 2 of the San Onofre Nuclear Generating Station."

The Board's Order was subject to the following condition: "that the Emergency Plan for Units 2 and 3 will be in effect prior to the first fuel loading activities, including complete implementing procedures and accomplishment of all required training. Satisfaction of this condition shall be evidenced by an NRC inspection and report to the Board. If any deficiencies are found, the report shall include an assessment of their significance to the activities authorized by this Order."

By letter dated February 12, 1982, the NRC staff submitted the required report to the Board, in satisfaction of the condition in the Board's Order.

At this time there are no outstanding issues that must be resolved prior to issuance of an operating license for San Onofre 2 authorizing fuel loading and operation at power levels up to five percent of full power.

1.9 License Conditions

In the SER and previous SER supplements, a number of potential license conditions were discussed. By letter dated February 3, 1982, the applicants have identified three areas where plant modifications have been completed, thereby eliminating the need for a license condition. These areas are:

(1) Control room design review (NUREG-0737 Item I.D.1). Items 1.0, 2.0, and 3.0 have been completed. See Section 22.2 (I.D.1) of Supplement 1 to the SER.

(2) Additional accident monitoring instrumentation (NUREG-0737 Item II.F.1, Attachment 6). One channel of the containment atmosphere hydrogen concentration monitor has been attached to a recorder. See Section 22.2 (II.F.1) of Supplement 1 to the SER.

(3) Upgraded emergency preparedness (NUREG-0737 Item III.A.1.1). The applicants have completed installation and operational testing of the 10-mile emergency planning zone early warning system. See Section 22.2 (III.A.1.1) of Supplement No. 1 to the SER.

Since the last SER supplement was issued, several new issues have arisen, and new information has been developed for several issues previously discussed in the SER and its supplements, for which a license condition may be desirable to ensure that staff requirements are met during plant operation. These are listed below. Some of these items must be completed by a fixed date, and some are tied to specific stages of operation, such as exceeding 5 percent of full power.

(1) Inspection requirements. Section 1.12.

(2) Design verification program final report. Section 3.7.4.

(3) Containment tendon surveillance and re-tensioning. Section 3.8.1.

(4) Control room pressurization system modifications. Section 6.4.

(5) Post-accident monitoring instrumentation. Section 7.5.1.

(6) Emergency lighting system. Section 9.5.1.7.

(7) Review of differences from Section 9.5.1 of NUREG-0800. Section 9.5.1.11.

(8) Process control program. Section 11.1.

(9) Purge stack monitors. Section 11.3.

(10) Shift manning. Section 22.2 (I.A.1.3).

(11) Emergency procedures. Section 22.2 (I.C.1).

(12) Pressurizer heater reset procedures. Section 22.2 (II.E.3.1).

(13) Analysis of voiding in reactor coolant system. Section 22.2 (II.K.2.17).

(14) Revised small-break LOCA methods. Section 22.2 (II.K.3.30).

(15) Improved emergency support facilities. Section 22.2 (III.A.2).

1.12 Status of San Onofre 2 Construction and Preoperational Testing

By letter dated February 9, 1982, SCE stated with regard to San Onofre 2 that "plant design and construction are in accordance with the application" and "the unit is ready to enter the fuel loading and low power testing phase of the start-up program."

In addition, the NRC staff has inspected San Onofre 2 and has determined that construction and preoperational testing of the facility have been completed in substantial agreement with docketed commitments and regulatory requirements, with the exceptions noted below. No additional items resulted from the inspection effort that would preclude issuance of an operating license to permit facility operation up to five (5) percent of full power. The items given below will be included in the San Onofre 2 operating license as conditions.

(1) Fire Protection System

Prior to fuel loading, the Southern California Edison Company (SCE) shall complete inspection of all Unit 2 and Common Area fire seals, and shall repair deficient seals or implement compensatory measures as defined in the Technical Specifications.

(2) Post-accident Sampling

Prior to exceeding five (5) percent power, the post-accident sampling system shall be operable and the post-accident sampling program shall be fully implemented.

(3) Surveillance Program

Prior to entering any operational mode for the first time, including initial fuel loading, SCE shall:

a. Have completed a review of the surveillance procedures applicable to the change of mode, and determined that the procedures demonstrate the operability of the required systems with respect to all acceptance criteria defined in the Technical Specifications.

b. Have dispatched written certification to the NRC Regional Administrator, Region V, that the actions defined in a, above, have been completed for the mode or modes to be entered.

(4) Laboratory Instrumentation

Prior to initial entry into operating Mode 2, the laboratory instrumentation described in Sections 11.5.2.2.2 and 12.5.2.2.1 of the Final Safety Analysis Report shall be calibrated and shall be capable of analyzing sample types and geometries necessary to support facility operation. In addition, at that time there shall also be approved, written procedures governing laboratory operations and analyses.

11 RADIOACTIVE WASTE SYSTEM

11.1 Summary Description

In Section 11 of the SER, repeated mention was made of the UF radwaste solidification system that was, at that time, planned for use at San Onofre 2 and 3. After the staff review of Section 11 was complete, the applicants stated that the UF system will be totally isolated and will not be used for solidification. Until a new system is installed, a Chem. Nuclear Inc. solidification process, per NUREG-0472, will be used, with cement as the solidifcation system.

The process control program for this system was submitted for NRC staff review by letter dated January 29, 1982. Until the staff has reviewed and approved the program, we will prohibit shipment of "wet" solid waste from the facility. This will be accomplished by a condition in the San Onofre 2 operating license.

11.3 Process and Effluent Monitoring System

In the FSAR the applicants committed to monitor and sample the containment purge exhaust, which is a separate release pathway at San Onofre 2 and 3. However, by letter dated February 3, 1982, the applicants propose to utilize the containment atmosphere monitoring system rather than provide a monitoring system directly on the purge lines.

Based on our review of the applicants' submittal, we have concluded that the proposed capability to monitor and sample the effluent via the containment purge should be enhanced to provide the capability for continuous monitoring and sampling of the containment purge exhaust directly from the purge stack for the low and high volume containment purge systems. Consequently, we will condition the San Onofre 2 operating license to require this capability after the first refueling outage.

Until that time, the applicants propose to use either of the containment airborne monitors 2RT-7804-1 or 2RT-7807-2 and the associated sampling media for continuous monitoring and sampling the purge exhaust of Unit 2. We find this is acceptable until initial criticality; thereafter, prior to startup following the first refueling outage, the applicants' proposal to use the airborne monitor 2RT-7804-1 for the above mentioned purpose is acceptable for the following reasons:

(1) No release of radioactivity to the environment via the containment purge system is expected prior to initial criticality, since there will be no buildup of fission products in the fuel prior to initial criticality. In the unlikely event of a criticality accident during initial fuel loading, the containment will be isolated.

(2) Extensive mixing of the containment atmosphere by the normal HVAC units is expected to ensure that the containment atmosphere is somewhat representative of the effluent stream during the high volume purging.

(3) Technical specifications for plant operation will preclude operation of the low volume purge for more than 1000 hours a year. Since the airborne monitor RT-7804-1 and the associated sampling media are in the vicinity of the low volume purge intake, the containment atmosphere will be representative of the effluent stream during the low volume purging.

APPENDIX A

CONTINUATION OF CHRONOLOGY OF RADIOLOGICAL REVIEW

January 13, 1982	Letter from applicants providing information on instrumentation for inadequate core cooling
January 14, 1982	Letter from applicants concerning design verification program by General Atomics.
January 15, 1982	Letter from applicants transmitting several Potential Finding Reports
January 18, 1982	Letter from applicants regarding instrumentation for detection of inadequate core cooling.
January 18, 1982	Letter from applicants transmitting two Potential Finding Reports
January 18, 1982	Letter from applicants concerning effects of input voltage faults on plant protection system matrix relay circuit.
January 19, 1982	Letter from applicants forwarding additional Potential Finding Reports.
January 20, 1982	Letter from applicants transmitting additional Potential Finding Reports.
January 21, 1982	Letter from applicants transmitting additional Potential Finding Reports.
January 22, 1982	Letter from applicants forwarding General Atomics letter regarding its fiscal independence.
January 22, 1982	Issuance of Supplement No. 4 to Safety Evaluation Report.
January 22, 1982	Letter from applicants transmitting a Potential Finding Report.
January 22, 1982	Letter from applicants transmitting the following (proprietary and nonproprietary) reports: (1) "CETOP-D Code Structure and Modeling Methods for San Onofre Nuclear Generating Station Units 2 and 3, "CEN-160(S), Rev. 1 (2) "Response to Questions on Documents Supporting SONGS 2 License Submittal," CEN-184(S), Rev. 2

	(3) "CPC/CEAC System Phase I Software Verification Test Report," 176(S), Rev. 01
	(4) "CPC/CEAC System Phase II Software Verification Test Report," CEN-173(S), Rev. 02.
January 25, 1982	Letter from applicants transmitting Revision 4 to Security Plan.
January 25, 1982	Letter from applicants forwarding "Interim Report -- Independent Verification of San Onofre Nuclear Generating Station Units 2 & 3 Seismic Design and Quality Assurance Program Effectiveness".
January 25, 1982	Letter from applicants transmitting additional Potential Finding Reports.
January 26, 1982	Letter from applicants transmitting a Potential Finding Report.
January 26, 1982	Letter from applicants transmitting additional Potential Finding Reports.
January 27, 1982	Letter from applicants concerning Items I.C.1 and II.K.2.17 of NUREG-0737.
January 27, 1982	Letter from applicants advising of intent to install fixed emergency lighting in certain areas prior to exceeding 5% power.
January 28, 1982	Meeting with applicants to discuss radiological technical specifications.
January 28, 1982	Meeting with applicants to discuss interim report on design verification program.
January 28, 1982	Letter from applicants forwarding recent meeting handouts and associated changes in control room design.
January 29, 1982	Letter from applicants transmitting revised responses to staff Question 222.44 concerning effects of control system failures and revised FSAR information concerning the shutdown cooling system and related operating procedures.
January 29, 1982	Letter from applicants forwarding several Potential Finding Reports.
January 29, 1982	Letter from applicants transmitting "CNSI Cement Solidification System" Document No. 4313-01354-01-NP.
January 29, 1982	Letter from applicants providing supplemental information to January 18, 1982 letter on matrix relay circuit.

February 1, 1982	Letter from applicants transmitting request for extension of construction completion date for Unit 2 to April 2, 1982.
February 1, 1982	Letter from applicants advising that future Preliminary Finding Reports on seismic design will be transmitted to NRC after they are fully processed by General Atomics.
February 3, 1982	Letter from applicants forwarding documents related to implementation program for radiation monitors.
February 3, 1982	Letter from appplicants advising of compliance with potential license conditions in Safety Evaluation Report and revised Appendix E to 10 CFR Part 50.
February 4, 1982	Letter from applicants forwarding several additional Potential Finding Reports.
February 5, 1982	Letter from applicants forwarding several additional Potential Finding Reports.
February 8, 1982	Board Notification - NRR Draft SER on ACRS concerns Regarding System 80 Feed and Bleed Capability.
February 9, 1982	Meeting with applicants to discuss disposition of potential findings on GA design verification program.
February 11, 1982	Letter from applicants forwarding letter dated February 10, 1982 from General Atomic summarizing current status of design verification program.
February 14, 1982	Letter from applicants forwarding letter dated February 14, 1982 from General Atomic documenting statements made in telephone discussions and additional review work.

REFERENCE G

NRC FILE

AD12
S023
NRC

March 11, 1991

ENTERED

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-361 and 50-362
Fuel Assembly Shoulder Gap Adequacy
San Onofre Nuclear Generating Station
Units 2 and 3

This letter is a request for the NRC to concur that the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 fuel element assembly (FEA) shoulder gap is adequate for the design life of the fuel, and to close the San Onofre Unit 3 License Condition 2.C(23). References are listed in Enclosure 1. The License Condition is as follows:

2.C(23) Fuel Assembly Shoulder Gap Clearance (SCE letter of July 25, 1983)

Prior to entering Startup (Mode 2) after each refueling, SCE shall either provide a report that demonstrates that the existing fuel element assembly (FEA) has sufficient available shoulder gap clearance for at least the next cycle of operation, or identify to the NRC and implement a modified FEA design that has adequate shoulder gap clearance for at least the next cycle of operation. The commitment will apply until the NRC concurs that the shoulder gap clearance provided is adequate for the design life of the fuel.

The review of the fuel mechanical design, including shoulder gap, is an essential element of each reload at San Onofre to determine if an unreviewed safety question exists. Considering the satisfactory results of the first five cycles, Southern California Edison (SCE) concludes there is sufficient information and experience to support closing Unit 3 License Condition 2.C(23) for Cycle 6 and subsequent cycles while relying on the standard reload process to ensure an adequate fuel shoulder gap. The basis for this conclusion is discussed below.

Background Information

FEA shoulder gaps change with residence time in the reactor due to differential growth between the fuel rods and the fuel assembly guide tubes. Shoulder gap measurements taken during the first refueling outage at Combustion Engineering's (C-E) first nuclear plant (Arkansas Power and Light's ANO-2, Docket No. 50-368) using the 16X16 fuel design revealed shoulder gaps to be less than those predicted. As a result, mechanical modifications (guide tube shims) were made to selected ANO-2 Batch C fuel assemblies to ensure adequate shoulder gaps would exist for continued operation of those assemblies.

The findings at ANO-2 resulted in the NRC imposing a license condition, regarding shoulder gap adequacy, to the operating licenses of C-E plants employing the 16X16 fuel design.

To evaluate the acceptability of San Onofre Units 2 and 3 fuel operation through Cycle 3 without making mechanical modifications to the FEAs, shoulder gaps were inspected and measurements were taken on selected Unit 2 FEAs at the end of Cycle 1 (4 Batch B and 19 Batch C FEAs) and the end of Cycle 2 (2 Batch B and 13 Batch C FEAs). At Units 2 and 3, the initial fuel loading for the first operating cycle consisted of Batches A, B, and C. Both Batches B and C were used in the second operating cycle, and Batch C was also used in the third operating cycle. The shoulder gap data from these inspections and the analysis performed are summarized in References 1 and 2. The FEAs inspected and analyzed were primarily Batch C because Batch C assemblies would 1) experience the greatest differential growth and, 2) for Cycle 3, be the most limiting fuel type with the smallest initial shoulder gap (1.332 inches vs. 2.100 and 2.382 inches for the reload batches). From the results of the analysis, SCE concluded that the original core fuel design provided adequate shoulder gaps for burnups in excess of the peak Batch C discharge burnups at the end of Cycle 3 (44,000 Megawatt Days per Metric Ton), and, therefore, mechanical modifications were not required.

Current Evaluation Technique

As stated in the SONGS Reload Analysis Reports, the evaluation technique for predicting shoulder gap clearance during these cycles employs the limiting fuel rod growth rate from the ANO-2 Batch C fuel and a conservative estimate of guide tube growth. This conservative technique, which was approved by the NRC through References 3 and 4, and the much larger initial shoulder gaps of the modified fuel design for reload batches provided the basis for demonstrating that the Units 2 and 3 fuel assemblies contain adequate shoulder gaps through Cycles 4 and 5 operation

(see References 5 and 6). This conservative evaluation technique will continue to be used to verify the shoulder gap adequacy of operating fuel prior to the start of each operating cycle.

As shown in Table 1, the fuel design has been modified to significantly increase the shoulder gap clearance of the reload batches. This fuel design modification, which provides 1.050 inches more shoulder gap clearance (2.382 inches) than the shoulder gap clearance (1.332 inches) of the initial fuel loads, ensures that the shoulder gaps are adequate for Cycle 6 and future cycles.

TABLE 1
Comparison of Shoulder Gaps for SONGS Fuel

Fuel Design	Initial Shoulder Gaps (in) Unit 2	Unit 3
Batch A	1.332	1.332
Batch B	1.332	1.332
Batch C	1.332	1.332
Batch D	2.100	2.100
Batch E	2.100	2.100
Batch F	2.100	2.382
Batch G	2.382	2.382
Later Batches	2.382	2.382

We plan to continue designing fuel reload batches with an initial shoulder gap of 2.382 inches (identical to Batch G reload for Unit 2 and Batch F reload for Unit 3). Any future design change to this initial shoulder gap would be evaluated using the NRC approved analysis technique, as part of the reload process, to ensure the adequacy of the shoulder gap clearance.

Summary

Unit 3 License Condition 2.C(23), regarding shoulder gap adequacy in 16X16 fuel design, was a result of observations at ANO-2 where shoulder gaps of Batch C fuel assemblies were found to be less than predicted. Results of fuel inspections, measurements, and analyses performed at the end of Cycles 1 and 2 on selected SONGS Unit 2 FEAs verified the adequacy of the shoulder gaps through Cycle 3 operation. The reload process at SONGS, which employs the NRC approved technique discussed above and the larger initial shoulder gaps of the modified fuel design for reload batches, verified the adequacy of the shoulder gaps for Cycles 4 and 5 operation.

The modified fuel design with initial shoulder gap clearance of 2.382 inches will continue to be used in Cycle 6 and future cycles. Current fuel management plans for Cycle 6 and subsequent cycles predict fuel discharge burnups to be less than or equal to Cycle 5 burnups. Therefore, shoulder gap clearance is determined to be adequate for Cycle 6 and beyond. Nevertheless, SCE shall continue to evaluate the adequacy of the shoulder gap as part of each SONGS Units 2 and 3 Reload Analysis Report.

Based on the acceptable shoulder gap analysis results for the first five cycles, SCE concludes there is sufficient information and conservatism to maintain an adequate shoulder gap for fuel rod design lifetime. By this submittal, SCE requests your concurrence that the shoulder gap provided is adequate for the design life of the fuel and closure of Unit 3 License Condition 2.C(23).

If you would like additional information on this subject, please let me know.

Very truly yours,

R M Rosenblum

R. M. Rosenblum
Manager of Nuclear Regulatory Affairs

LPC\GAP.ERS

Enclosure

cc: J. B. Martin, Regional Administrator, NRC Region V
C. W. Caldwell, NRC Senior Resident Inspector, Units 1, 2, and 3

REFERENCE H

RECEIVED
APR 01 1991
NUCLEAR LICENSING

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

March 26, 1991

Docket Nos. 50-361
and 50-362

ENTERED

Mr. Harold B. Ray
Senior Vice President
Southern California Edison Co.
Irvine Operations Center
23 Parker Street
Irvine, California 92718

Mr. Gary D. Cotton
Senior Vice President
Engineering and Operations
San Diego Gas & Electric Co.
101 Ash Street
San Diego, California 92112

Gentlemen:

SUBJECT: FUEL ELEMENT ASSEMBLY SHOULDER GAP ADEQUACY (TAC NOS. 79937 AND 79926)

By letter dated March 11, 1991, you requested staff concurrence that San Onofre Nuclear Generating Station, Unit Nos. 2 and 3, fuel element assembly shoulder gap is adequate for the design life of the fuel, and to close the San Onofre Unit 3 License Condition 2.C(23). The San Onofre Unit 3 license condition states:

> Prior to entering Startup (Mode 2) after each refueling, SCE shall either provide a report that demonstrates that the existing fuel element assembly (FEA) has sufficient available shoulder gap clearance for at least the next cycle of operation, or identify to the NRC and implement a modified FEA design that has adequate shoulder gap clearance for at least the next cycle of operation. The commitment will apply until the NRC concurs that the shoulder gap clearance provided is adequate for the design life of the fuel.

In your letter, you state that the use of a modified 16X16 fuel design with an FEA shoulder gap clearance of 2.382 inches (vs. 1.332 inches initially) will continue to be used in Cycle 6 and future cycles, with each additional cycle having fuel discharge burnups less than or equal to Cycle 5 fuel discharge burnups. Further, you determined that the FEA shoulder gap analysis results were acceptable for the first five cycles of operation for both units and you will continue to evaluate the adequacy of the FEA shoulder gap as a part of your reload analysis.

Based upon this information, the staff concurs that the FEA shoulder gap clearance provided is adequate for the design life of the fuel. Therefore, the requirements of the San Onofre Unit 3 License Condition 2.C(23) have been met.

Sincerely,

Lawrence E. Kokajko, Project Manager
Project Directorate V
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

cc: See next page

cc:
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Mr. Charles B. Brinkman
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Regional Administrator, Region V
U.S. Nuclear Regulatory Commission
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

REFERENCE I

May 1, 1985

AD12
S023

Director, Office of Nuclear Reactor Regulation
Attention: George W. Knighton, Branch Chief
Licensing Branch No. 3
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gentlemen:

Subject: Docket Nos. 50-206, 50-361 and 50-362
San Onofre Nuclear Generating Station
Units 1, 2 and 3

The current Process Control Program (PCP) for San Onofre Nuclear Generating Station (SONGS) uses Chem-Nuclear, Inc. as the vendor of wet radwaste solidification services. NRC interim approval of the current SONGS PCP using Chem-Nuclear, Inc. was granted by NRC letters dated December 27, 1984 for Unit 1 and April 24, 1984 for Units 2 and 3. The Chem-Nuclear contract with Southern California Edison Company (SCE) expired on April 1, 1985. SCE replaced Chem-Nuclear, Inc. with Nuclear Packaging (NuPac), Inc. as the vendor of wet radwaste treatment services at SONGS.

NuPac's topical report, TP-02-NP, which addresses their dewatering system was submitted for NRC review in August 1984. NuPac will dewater wet radwaste at SONGS for shipment in high integrity containers in accordance with this topical report. SONGS currently has interim approval from the State of Washington for use of high integrity containers. SCE understands that review of the NuPac topical report has progressed to the point where interim, if not final approval of the dewatering system may be granted. SCE therefore requests NRC approval for the use by SCE of the NuPac dewatering system as described in the NuPac topical report.

It is SCE's intention to commence processing of wet radwaste using the NuPac dewatering system in June 1985. Therefore, approval of the use of the NuPac process at SONGS is requested by June 1, 1985.

If you have any questions regarding this request, please call me.

Very truly yours,

M. O. Medford
Manager, Nuclear Licensing

PS:3939F

cc: Mr. J. A. Zwolinski, Branch Chief, Operating Reactors Branch No. 5
Mr. W. A. Paulson, NRR Project Manager, San Onofre Unit 1
Mr. H. Rood, NRC (to be opened by addressee only)
Mr. F. R. Huey, Senior Resident Inspector, SONGS
Mr. J. B. Martin, Regional Administrator, NRC Region V

bcc: (See attached sheet)

REFERENCE J

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUN 11 1985

Docket Nos.: 50-361
and 50-362

Mr. Kenneth P. Baskin
Vice President
Southern Carolina Edison Company
2244 Walnut Grove Avenue
Post Office Box 800
Rosemead, California 91770

Mr. James C. Holcombe
Vice President - Power Supply
San Diego Gas & Electric Company
101 Ash Street
Post Office Box 1831
San Diego, California 92112

Gentlemen:

SUBJECT: INTERIM APPROVAL OF DEWATERING OF SPENT RESIN

By a letter dated May 1, 1985, Southern California Edison Company (SCE) requested NRC approval for replacing Chem-Nuclear, Inc., with Nuclear Packaging (NuPac) as the vendor of wet solid radwaste treatment services and use of NuPac spent resin dewatering processes as described in the NuPac Topical Report, TP-02-NP at San Onofre Nuclear Generating Station (SONGS), Unit Nos. 1, 2 and 3.

A Nuclear Packaging, Inc., topical report, which describes spent resin dewatering processes, was submitted for NRC review in August 1984. The topical report is being reviewed by the NRC staff. The review of the topical report is scheduled to be completed by the end of July 1985 provided that NuPac submits their responses to the remaining NRC licensing review questions on or before June 30, 1985, as stated in their letter to NRC dated April 30, 1985.

The preliminary review of the NuPac Topical Report, TP-02-NP by the NRC staff indicates that it meets the intent of the requirements set forth in Branch Technical Position, ETSB 11-3, Rev. 2, "Design Guidance for Solid Radioactive Waste Management Systems Installed in Light-Water-Cooled Nuclear Power Reactor Plant," and Regulatory Guide 1.143, "Design Guidance for Radioactive Waste Management Systems, Structures and Components in Light-Water-Cooled Nuclear Reactor Power Plants."

Meanwhile, SCE has requested prompt approval of their request in order to alleviate wet solid radwaste storage at SONGS and to proceed with dewatering of spent resin.

Based on our preliminary review of the topical report, the NRC staff finds the request acceptable as an interim approval effective until our review of NuPac's licensing topical report is complete. This interim approval will provide also an opportunity for field testing of dewatering detection instrument which is currently being developed by NuPac. These field test

results and description of the instrument selected are needed to complete our review of the NuPac topical report. All such field tests on the waste containers should be supplemented with conventional pumping method of drainable liquid to ensure the dewatered container meet free standing liquid criteria set forth in Section 61.56(a)(3) of 10 CFR Part 61.

We hereby grant interim authorization to proceed with dewatering of spent resin in accordance with NuPac Operations and Maintenance Procedure, OM-17, Rev. 0, dated October 22, 1984, the SONGS PCP (San Onofre Health Physics Procedure S023-VII-8.5.1, Rev. 1, dated April 11, 1984) and SONGS Radwaste Solidification Procedure (S0123-VII-8.5, Rev. 2, dated April 3, 1984). The dewatered waste should be classified in accordance with SONGS Solid Radioactive Waste Packaging, Labeling, and Shipping Procedure (S0123-VII-8.1, Rev. 4, dated April 11, 1984) which complies with Section 61.55 of 10 CFR 61.

Sincerely,

H. Pood Gr

George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

cc: See next page

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