

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-206/86-25

Docket No. 50-206

License No. DPR-13

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

Facility Name: San Onofre Unit 1

Inspection at: San Clemente, California

Inspection conducted: May 20-22, 1986

Inspector:

Dennis J. Willett
D. J. Willett, Reactor Inspector

6-6-86
Date Signed

Talbert Young Jr.
J. Hayes, Engineer, NRR Plant Systems

6-6-86
Date Signed

Talbert Young Jr.
J. Driscoll, Contract Engineer
Argonne National Laboratory

6-6-86
Date Signed

Approved by:

Talbert Young Jr.
T. Young Jr., Chief
Engineering Section

6-6-86
Date Signed

Summary:

Inspection during period of May 20-22, 1986 (Report No. 50-206/86-25)

Area Inspected: Special announced inspection of the Control Room and TSC
Emergency Ventilation Systems.

Results: In the areas inspected one unresolved item and no violations or
deviations were identified.

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DETAILS

1. Persons Contacted

Licensee Personnel

@ * D.E. Nunn, Manager of Nuclear Generation Services
°@* #J.L. Rainsberry, Supervisor Unit-1 Licensing
@ * M.A. Wharton, Deputy Station Manager
°@* #M.P. Short, Unit-1 Project Manager
@ * D.L. Johnson, Cognizant Engineer, Ventilation
°@* #M.S. Tolson, Nuclear Safety Engineer
* H.C. Schutter, Unit-1 Shift Superintendent
* J.L. Reeder, Unit-1 Superintendent
* # G.T. Gibson, Compliance Engineer
* R.E. Reiss, QA Engineer
@ * #L.A. Bennett, Unit-1 Licensing Engineer
@ * #M.F. Freedman, Compliance Engineer
@ W.G. Zintl, Manager Compliance
@ D.L. Evans, Planning and Control Engineer
@ M. Zenker, Compliance Engineer
@ R. Ornelas, Unit-1 Licensing Engineer
@ D. Allstan, Unit-1 Licensing Engineer
@ W. Flournuy, Unit-1 Licensing Engineer
@ A.J. Schramm, Unit-1 Shift Superintendent
@ * G. Hughes, President, Erin Engineering
@ * T. Hook, Engineer, Erin Engineering
@ * G.T. Vechinski, Bechtel Engineer

NRC personnel

°@* #J.J. Hayes, NRR Plant Systems Branch
°@* #D.J. Willett, RV Reactor Inspector
°@* #J.W. Driscoll, Consultant Argonne Lab's
°@ * M.D. Carnes, Consultant Argonne Lab's
@ * A. Pawlak, IAEA
°# T. Young, RV Engineering Section Chief
°# R. Pate, RV Reactor Projects Branch Chief
°# P. Narbut, RV Project Inspector
J. Milhoan, NRR Plant Systems Branch Chief
°# T. Quay, NRR Plant Systems Section Chief
R. Dudley, NRR Project Manager

The inspectors also held discussions with other licensee and contract personnel during this inspection. These included licensed and non licensed operators, plant staff engineers, technicians, administrative assistants and quality assurance personnel.

@ Denotes those present during the entrance meeting on May 20, 1986

* Denotes those present during the exit meeting on May 22, 1986.

Denotes those present during teleconference on June 4, 1986.

° Denotes those present during teleconference on June 5, 1986.

2. System Measurements

On May 21 and 22, 1986, a Region V inspector accompanied by a NRR Plant Systems Branch Engineer and two consultants from Argonne National Laboratories, took flow measurements of the Control Room and Technical Support Center (TSC) ventilation systems, while these systems were in the normal and emergency modes of operation. The four data sets recorded were for the following combinations of possible operating modes :

- (1) CR ventilation system in Normal, TSC system in Normal
- (2) CR ventilation system in Emergency mode, TSC system in Normal
- (3) CR ventilation system in Emergency mode, TSC system in Emergency
- (4) CR ventilation system in Emergency mode, TSC Normal & Emergency systems secured.

To verify the HVAC system design parameters, flow measurements were taken with a hot-wire anemometer, differential pressure measurements were recorded across the control room to TSC, control room to outside, and TSC to outside boundaries with a differential pressure gauge and inclined monometer.

The ventilation system duct work joints are of a type known as "Pittsburg lock seam". "The Nuclear Clean Air Handbook - 1976" states that systems with "Pittsburg Lock Seam" type joints are expected to experience average leakage on the order of 5 % of total flow. During flow measurements, the following additional leaks were identified, measured and leak flow rates computed:

- (1) Leak in the C.R. normal/emergency cooling coil. approx. 45 cfm
- (2) Leak in loop-seal for cooler drain in TSC system. approx. 1 to 2 cfm
- (3) Leak in TSC fan (no shaft seal) shaft. approx. 100 cfm
- (4) Leak in Control Room return duct work (small hole). approx 1.0 cfm

The significance of this leakage is still being evaluated.

The inspectors reviewed the system operating, emergency operating and surveillance procedures; design change packages; air balance tests; and system descriptions for the TSC and control room ventilation systems; but could not, at the time of the site inspection, determine the design basis for the system configuration because of conflicting details between the documents reviewed. Questions and concerns identified in this review were included in a checklist of 44 items presented to the licensee at the beginning of the inspection for discussion/resolution during the inspection. The licensee committed to provide the design basis for the current control room system by May 30, 1986, (submitted

June 2, 1986) and to also, at the same time, provide a schedule for a preliminary design of the concepts outlined in the March 28, 1986, Control Room Habitability Systems Upgrade Plan submittal # 133.

The inspectors reviewed the system design basis as presented in the June 2, 1986 Control Room HVAC Description (Ltr. M.O. Medford SCE to G.E Lear NRR.) and discussed their questions about the Design Basis and concerns resulting from an evaluation of the data obtained in the May 20 - 22 inspection, in teleconferences on June 4 and 5, 1986.

The licensee has been providing additional information, on a daily basis, since the site inspection. This information includes additional licensee system measurements, revised calculations, revised assumptions and upgrade efforts to seal the HVAC system duct work and wall penetrations between the Control Room and TSC.

NRR concluded that because of the higher than design make-up flow and the interaction (leakage) between the Control Room and TSC, that the "as found" control room configuration may not meet it's design requirements and that the integrity of the control room HVAC system was questionable. The situation is under evaluation by NRR. The licensee stated that post inspection efforts to seal the approximately 50 penetrations between the Control Room and TSC accounted for, collectively a hole equal to approximately one square foot. NRR stated that, prior to Unit-1 restart, the Control Room HVAC System should be verified to be in accordance with design values and demonstrated to be independent of the TSC. This is an Unresolved item (86-25-01).

NRR Plant Systems Branch is currently analyzing the inspection data and evaluating this data relative to past, current and proposed system configurations. The licensee's June 2, 1986 submittal and it's revised estimates is being used as the system design basis for the NRR evaluation. NRR acceptance criteria for HVAC system performance will be transmitted to the licensee for resolution prior to Unit 1 restart.

3. System Operability

Through discussions with licensee personnel, document review and data evaluation, it appears that the control room ventilation system deficiencies identified by SCE in April and September 1984, regarding damper leakage, excess make-up flow, low return flow, and system leakage, were not adequately dispositioned prior to returning the Unit to criticality and operation. The circumstances and details of the identification and disposition of non-conformances relative to the control room HVAC system are considered an Unresolved Item (86-25-02).

4. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, violations or deviations. Unresolved items identified during the inspection are discussed in paragraphs 2 and 3.

5. Exit Interview

The inspection team met with representatives (denoted in paragraph 1) on May 20, 22, June 4 and 5, 1986. The scope and findings of the inspection, which were discussed during these meetings are summarized as set forth in paragraphs 1 through 4 of this report.