



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

DEC 20 1987

MEMORANDUM FOR: J. Stone, Acting Chief  
Vendor Inspection Branch  
Office of Nuclear Reactor Regulation

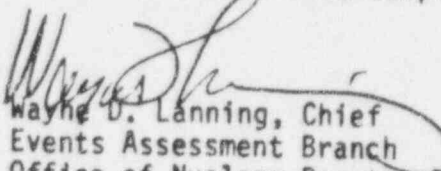
FROM: Wayne D. Lanning, Chief  
Events Assessment Branch  
Office of Nuclear Reactor Regulation


SUBJECT: TRANSFER OF OPERATING EVENT LONG-TERM FOLLOWUP

The purpose of this memorandum is to confirm that your branch will assume the long-term followup on insulation damage at San Onofre 1 involving electrical containment penetration circuits reported in the 6/30/87 morning report (Enclosure 1). This problem involves a loss of electrical circuits through containment boundary due to damaged insulation in electrical penetration assembly pigtaills. This task has already been initiated by your branch. The generic applicability of the problem will be further investigated and an information notice will be written.

A Technical Assignment Control (TAC) has been issued for this followup (Enclosure 2). Please provide the Events Assessment Branch (EAB) with a projected completion date for your evaluation.

We will monitor this activity until you inform us that all followup actions have been completed. We will extract data from the TAC/RITS data base to provide a weekly status of long-term followup activities to headquarters and regional offices. Therefore, please establish a scheduled completion date and keep the TAC data current.

  
Wayne D. Lanning, Chief  
Events Assessment Branch  
Office of Nuclear Reactor Regulation

cc:   
U. Potapovs  
H. Rood  
G. Knighton  
G. Holahan  
D. Crutchfield  
M.L. Reardon  
J. Partlow

B/6

## TACS NUMBER \*

SECTION I REQUEST DATA

SECTION II. SYSTEMS CONTROL DATA

### SECTION III. REVIEW DATA

\* REQUIRED ENTRIES.

PRIORITY ATTENTION REQUIRED MORNING REPORT - REGION V JUNE 30, 1987

## LICENSEE/FACILITY

## NOTIFICATION/SUBJECT

SONGS #1  
DN 50-206  
REN N/A

UPDATE OF R.I. TO RV ON 6/16/87/  
CONTAINMENT PENETRATION GROUNDING

## EVENT

ON JUNE 15, 1987, SOUTHERN CALIFORNIA EDISON (SCE) ADVISED REGION V OF A PROBLEM INVOLVING DAMAGE TO INSULATION ON CONTAINMENT PENETRATION ELECTRICAL CIRCUITS AT SAN ONOFRE UNIT 1 (SONGS 1). THE LICENSEE'S FOLLOWUP ACTION INCLUDED A 100% INSPECTION OF EXPOSED "KAPTON" INSULATED CABLES. IN ADDITION, ALL CRDM CABLES WERE CHECKED FOR LOW INSULATION RESISTANCE BY USING A MEGGER. OF THE 2362 CABLES THAT WERE VISUALLY INSPECTED OUTSIDE OF THE CONTAINMENT, 37 REQUIRED REPAIR. INSIDE OF THE CONTAINMENT 2506 CABLES WERE VISUALLY INSPECTED, 15 REQUIRED REPAIR. 35 CRDM CABLES WITH LOW INSULATION RESISTANCE READINGS WERE REPLACED.

AFTER COMPLETING THE REPAIRS THE LICENSEE ENTERED MODE 3 ON SATURDAY, JUNE 27, 1987, WITH PLANS TO ENTER MODE 2 TODAY AND CONTINUE STARTUP FROM THEIR MID-CYCLE OUTAGE. THE LICENSEE IS STILL CONCERNED ABOUT THE SUSCEPTIBILITY OF THE CABLES TO FUTURE DAMAGE AND IS EVALUATING LONG-TERM ACTIONS TO PROVIDE ADDITIONAL PROTECTION.

CONTACT: P. QUALLS (FTS) 463-3759

PROBLEM

- NUMEROUS DAMAGED PIGTAIL LEADS IN CONTAINMENT ELECTRICAL PENETRATION ASSEMBLIES (EPA'S)

CAUSE

- NICKED KAPTON INSULATION
- SALT AIR CONDENSATION

SIGNIFICANCE

- LOSS OF ELECTRICAL CIRCUITS THROUGH CONTAINMENT BOUNDARY

DISCUSSION

- JUNE 15, 1987, PLANT IN EXTENDED MAINTENANCE OUTAGE, DAMAGED INSULATION FOUND IN NEW EPA PIGTAILS.
- PIGTAILS HAVE 0.009 INCH KAPTON INSULATION.
- POLYOLEFIN SLEEVES OVER PIGTAILS MUST BE CUT TO ALLOW FIELD SPLICING TO PLANT CABLES. POSSIBILITY OF NICKING KAPTON. EQUIPMENT REPLACEMENT AGGRAVATES PROBLEM.
- PIGTAILS OUTSIDE CONTAINMENT ARE EXPOSED TO SALT AIR CONDENSATION & EQUIPMENT AIR LOCK WAS OPEN FOR SIX WEEKS.
- SALTWATER REACTS WITH COPPER CONDUCTOR TO CORRODE COPPER AND PRODUCE SODIUM HYDROXIDE, WHICH READILY DISSOLVES KAPTON.
- SHORT TERM FIX WAS VISUAL INSPECTION AND REPAIR.
- VISUAL INSPECTION RESULTS:  
OUTSIDE CONTAINMENT 37 OF 2362 CABLES DEFECTIVE  
INSIDE CONTAINMENT 15 OF 2506 CABLES DEFECTIVE
- 35 CRDM CABLES ALSO REPLACED BASED ON INSULATION RESISTANCE.
- TOTAL OF ABOUT 150 TO 200 LEADS INVOLVED.
- GENERIC CONCERNS:
  - NUMEROUS PLANTS USE CONAX EPA'S & SEALS.
  - IN 87-08 ADDRESSES NICKED KAPTON INSULATION ON LIMITORQUES.

FOLLOWUP

- LONG TERM ACTION BEING DEVELOPED BY SCE.
  - VENDOR INSPECTION BRANCH TO CONTACT CONAX: POSSIBLE IN.
- CONTACT: R. C. WILSON

# CONAX EPA MODULE

CONTAINMENT  
BOUNDARY

