

22 SEP 1988

Docket Nos. 50-277
50-278

Philadelphia Electric Company
ATTN: Mr. C. A. McNeill
Executive Vice President-Nuclear
Correspondence Control Desk
P.O. Box 7520
Philadelphia, Pennsylvania 19101

Gentlemen:

Subject: Summary of Meeting on Selected Potential Restart Impact Issues

A meeting was held in the Region I office at Philadelphia Electric Company's (PECo) request on September 7, 1988. The licensee presented information on selected potential restart impact engineering issues. Attachment 1 is the attendance list and the agenda is provided as Attachment 2.

Licensee handouts were provided for each area discussed and are attached as follows:

<u>Attachment</u>	<u>Subject</u>
3	Introduction
4	Control Panel Mounting
5	Open Commitments and Findings
6	Limiterque Operation at Reduced Voltage
7	Hanger Walkdown
8	Splice Inspections
9	Diesel Generator Control Circuit Modification (Cardox Interface)

NRC thanked the licensee for the information. No commitments were made.

Sincerely,
ORIGINAL SIGNED BY
EDWARD C. WENZINGER

E. Wenzinger, Chief
Projects Branch No. 2

Attachments: As stated

0001.0.0

OFFICIAL RECORD COPY

MTG SUMMARY ON PB RESTART -

09/14/88

8810040353 880922
PDR ADOCK 05000277
P PNU

IE 01/11

22 SEP 1988

cc w/encl:

- John S. Kemper, Sr., Senior Vice President-Nuclear
- J. W. Gallagher, Vice President, Nuclear Services
- E. C. Kistner, Chairman, Nuclear Review Board
- Dickinson M. Smith, Vice President, Peach Bottom Atomic Power Station
- Jack Urban, General Manager, Fuels Department, Delmarva Power & Light Co.
- John F. Franz, Plant Manager, Peach Bottom Atomic Power Station
- Troy B. Conner, Jr., Esquire
- W. H. Hirst, Director, Joint Generation Projects Department,
Atlantic Electric
- Bryan W. Gorman, Manager, External Affairs
- Eugene J. Bradley, Esquire, Assistant General Counsel (Without Report)
- Raymond L. Hovis, Esquire
- Thomas Magette, Power Plant Siting, Nuclear Evaluations
- W. M. Alden, Director, Licensing Section
- Doris Poulsen, Secretary of Harford County Council
Public Document Room (PDR)
- Local Public Document Room (LPDR)
- Nuclear Safety Information Center (NSIC)
- NRC Resident Inspector
Commonwealth of Pennsylvania

bcc w/encl:

- Region I Docket Room (with concurrences)
- Management Assistant, DRMA (w/o encl)
- Section Chief, DRP
- PAO (2) SALP and All Inspection Report:
- Robert J. Bores, DRSS
- R. Martin, NRR
- B. Clayton, EDO

RI:DRP
Williams/rhl

9/14/88

0002.0.0

RI:DRP
Linville

9/19/88

RI:DRP
Wenzinger

9/20/88

OFFICIAL RECORD COPY

MTG SUMMARY ON PB RESTART -

09/14/88

ATTACHMENT 1

PEACH BOTTOM SCHEDULE IMPACT ISSUES MEETING ATTENDEES

SEPTEMBER 7, 1988

NRC

C. Anderson	Chief, Plant Systems Section, DRS
J. Strosnider	Chief, Materials & Processing Section, DRS
T. Martin	Director, Division of Reactor Safety
W. Johnston,	Deputy Director, DRS
J. Linville	Chief, Reactor Projects Section 2A, DRP
T. Kosy	Senior Reactor Engineer, DRS
E. Wenzinger, Sr.	Chief, Projects Branch No. 2, DRP
J. Williams	Project Engineer, DRP

PECo

W. Alden	Director-Licensing
T. Shannon	Project Manager
G. Hunger, Jr.	Manager, Mechanical Engineering
D. O'Rourke	Structural Branch Head
R. Hess	Supervisory Engineer
P. Manzon	Engineer
P. Tutton	Supervisory Engineer
W. Bowers	Manager, Power & Control Systems
D. Mellott	Engineer
R. Rock	Electrical Engineer
D. Thompson, Jr.	Senior Engineer
D. Foss	Peach Bottom Compliance Engineer

Other

H. Abendroth	Atlantic Electric
R. Reichel	Delmarva Power

PHILADELPHIA ELECTRIC COMPANY

SEPTEMBER 7, 1988

INTRODUCTION - T. SHANNON

I - CONTROL PANEL MOUNTING - D. O'ROURKE

II - OPEN COMMITMENTS AND FINDINGS - D. FOSS

III - LIMITORQUE OPERATION AT REDUCED
VOLTAGE - R. HESS

IV - HANGER WALKDOWN - P. TUTTON

V - SPLICE INSPECTIONS - R. ROCK

VI - DIESEL GENERATOR CONTROL CIRCUIT
MODIFICATION (CARDOX INTERFACE) - D. MELOTT

ATTACHMENT 3

PHILADELPHIA ELECTRIC COMPANY NUCLEAR ENGINEERING DEPARTMENT

PEACH BOTTOM RESTART IMPACT ISSUES

- o PURPOSE OF MEETING
 - Presentation of Selected Impact Issues
- o BACKGROUND
 - Definition of a Restart Schedule Impact Issue
 - Identification of Issues
 - All Hands Input Starting Late 1987
 - Review of Issues at other Plants, Browns Ferry, Sequoyah, Rancho Seco.
 - Prioritization of Issues
 - Disposition Required
 - Status Acceptable As Is
 - Physical Work/Study Required but not for Restart
 - Physical Work/Study Required Prior to Restart
 - Each Disposition Included Considerations such as
 - Root Cause Identification
 - Identification of Programmatic Issues
 - Action Plan and Schedule
 - Prevention of Recurrence
- o CONTROLS PROVIDED BY OVERSIGHT TASK FORCE COMPRISED OF:
 - Plant Manager
 - Plant Project Manager
 - Engineering Division Manager
 - Engineering Project Manager
 - Vice President - Engineering at Gilbert Commonwealth

PHILADELPHIA ELECTRIC COMPANY
NUCLEAR ENGINEERING DEPARTMENT

PEACH BOTTOM RESTART IMPACT ISSUES
(cont'd)

- o STATUS
 - All 61 Issues Identified have been Resolved
 - Mod Packages required for restart issued/physical work in progress or complete
 - Documentation Package Being Assembled

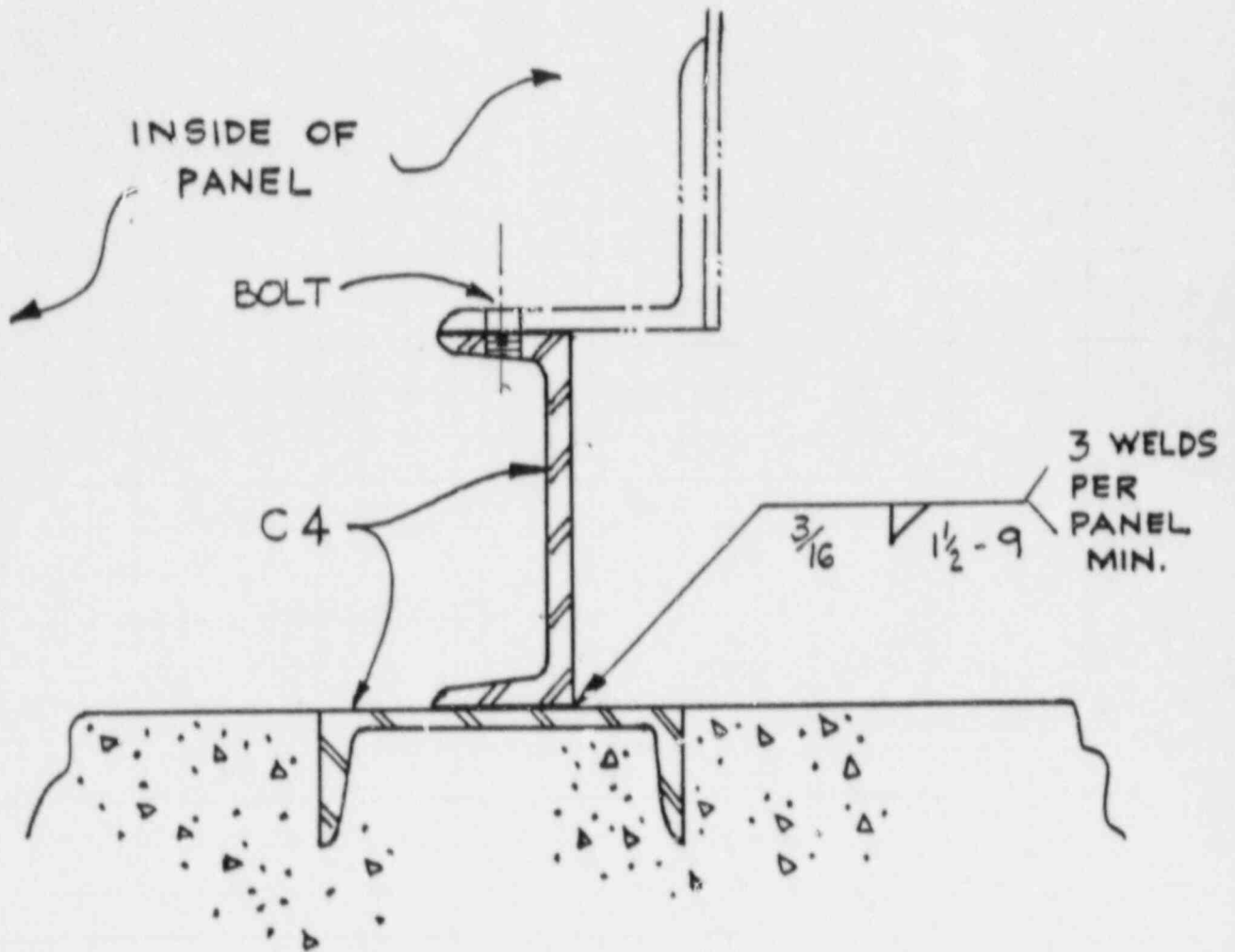
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CONTROL PANEL ANCHORAGE

ISSUE

- INVESTIGATION & MODIFICATION
OF CONTROL PANEL ANCHORAGE

- ADDRESSED PANELS IN MAIN
CONTROL ROOM AND
OUTSIDE CONTROL ROOM



TYPICAL CONTROL PANEL
ANCHORAGE DETAIL

CONTROL PANEL ANCHORAGE

BACKGROUND

- QUESTION FROM
RESIDENT INSPECTOR
- PECO INVESTIGATION & EVALUATION
- ENGINEERING ANALYSIS - NEEDED
TO ACCESS INSIDE OF PANELS

CONTROL PANEL ANCHORAGE

CORRECTIVE ACTIONS

- MODIFY ALL PANELS
IN THE CONTROL ROOM
- EVALUATE ALL PANELS
IN CABLE SPREADING ROOM
-MODIFY AS NEEDED-
- EVALUATE ALL S/R PANELS
IN BALANCE OF PLANT
-MODIFY AS NEEDED-

CONTROL PANEL ANCHORAGE

RESULTS

- ALL CONTROL PANELS IN THE CONTROL ROOM, CABLE SPREADING ROOM, AND S/R PANELS IN THE BALANCE OF THE PLANT HAVE BEEN EVALUATED & MODIFIED AS NECESSARY.
- WORK PERFORMED ON SCHEDULE WITH NO DEFECTS.

PEACH BOTTOM ATOMIC POWER STATION
Plant Division
Technical Section

September 7, 1988

Operating Experience/Commitment Tracking

Operating Experience

1. Present Program (implemented 7/1/88)

- Nuclear Group Admin Procedure (NGAP) implemented 7/1/88
- NGAP development based on INPO guidance and 1987 ISEG effectiveness evaluation
- Station Administrative Guideline implemented 7/1/88
- Depth of review ensured by Superintendent concurrence, Regulatory and Corporate perform sanity check
- Corrective Actions tracking in newly implemented Commitment Tracking Program
- Operating Experience information distributed to station staff
- Pertinent OE information forwarded to training
- Bi-weekly and monthly reports to management
- NQA performs annual effectiveness review
- Currently
 - Received 67 total items in new program
 - No items overdue for review
 - Most items being reviewed within 30 days

2. OEAP Backlog (Pre 3/88 open items)

- Initial scope (open items) SOERs, SILs, TILs, INNs, SERs that require review and/or closure documentation TOTAL: 442
- Committed to INPO to reduce the backlog review of SILs, SERs, INNs to 50% by 7/88 - 100% by 12/88. 50% commitment met.
- SOER recommendation backlog initially 60, projected open at end of Sept. 18

Commitment Tracking

1. Present Program (implemented 7/1/88)

- Coordinated Corporately and implemented at site
- NGAP and site administrative guideline approved and implemented
- Overview
 - Defined scope of documents are funnelled through CTC
 - Individual commitments placed in data base
 - Assigned to PB (bulk), Limerick (bulk), NED, Nuclear Support
 - Site assigns to appropriate individual(s), tracks completion
 - Annual assessment performed by QA
- High level of management involvement
 - Management involved in commitment problem areas
 - Bi-weekly and monthly reports to management

2. NRC OI List Backlog

- Computability of data bases, closure package to resident
- 3/1/88 - 129 open items
- Since 3/1/88, 37 incoming, 66 closed by NRC
- Currently, 45 under NRC review, 55 remain open with PECO

PEACH BOTTOM
ATOMIC POWER STATION
UNITS 2 AND 3

MOTOR OPERATED VALVE (MOV)
REDUCED VOLTAGE OPERATION

BACKGROUND :

- ORIGINAL MOV'S SPECIFIED FOR OPERATION AT 90% RATED VOLTAGE
- BEGINNING IN 1979, MOV'S SPECIFIED FOR OPERATION AT 80% RATED VOLTAGE
- VOLTAGE REGULATION STUDY IDENTIFIED REDUCED VOLTAGE TO MOV'S UNDER CERTAIN CONDITIONS

VOLTAGE REGULATION STUDY

- MAGNITUDE OF REDUCED VOLTAGE
- DURATION OF REDUCED VOLTAGE
- WHEN REDUCED VOLTAGE OCCURS
- OCCURS WITHIN ONE MINUTE OF ACCIDENT INITIATION
- SOME OCCURRENCES VERY SHORT IN DURATION, LESS THAN ONE SECOND WHEN CAUSED BY IN-RUSH CURRENT

BULLETIN 85-03 PROGRAM

- REVIEW / DOCUMENT *MOV* DESIGN BASIS
- ESTABLISH MAXIMUM DIFFERENTIAL PRESSURES
- DEMONSTRATE VALVE OPERABILITY (MOVATS)
- INADVERTENT VALVE OPERATION
- *HPCI* AND *RCIC* SYSTEMS (50 VALVES)

PEC₀ EXPANDED PROGRAM TO INCLUDE ALL SAFETY RELATED *MOV'S* (233 VALVES)

REDUCED VOLTAGE PROGRAM

- ALL SAFETY RELATED *MOV'S* REVIEWED FOR ABILITY TO PERFORM AT REDUCED VOLTAGE

ENGINEERING EVALUATION

- REQUIRED TORQUE LESS THAN AVAILABLE TORQUE AT 80% VOLTAGE 155

- MANUALLY INITIATED *MOV*, NOT REQUIRED IMMEDIATELY AFTER ACCIDENT 41

- FUNCTIONAL REVIEW PERFORMED 18
 - TIME OF VALVE OPERATION
 - DIRECTION OF TRAVEL
 - DESIGN BASIS DIFFERENTIAL PRESSURE
 - INADVERTENT OPERATION

- DETAILED REVIEW 19
 - USED HIGHER RUNNING EFFICIENCY, NOT PULLOUT EFFICIENCY FOR VALVES REQUIRED TO CLOSE

 - USED *MOVATS* TO CONFIRM THAT ACTUAL DESIGN MARGIN EXISTS

TOTAL SCOPE = 233

CONCLUSION

ALL SAFETY RELATED *MOV'S* WERE EVALUATED FOR REDUCED VOLTAGE OPERATION AND ALL WILL PERFORM SAFETY FUNCTION.

**Peach Bottom Atomic Power Station
Units 2**

Assessment of Adequacy

Piping Systems Supports

BACKGROUND:

- * DISCREPANCIES IN SMALL PIPE SUPPORTS WERE IDENTIFIED IN UNIT 2.
- * AN ASSESSMENT PROGRAM WAS INITIATED FOR UNIT 2 SAFETY-RELATED SYSTEMS.
- * IT IS CONCLUDED THAT ALL PIPING SYSTEMS ARE OPERABLE.

APPROACH:

- * ASSESS AVAILABLE INFORMATION
- * PERFORM A QUALITY ASSURED WALKDOWN AND EVALUATION PROGRAM ON A SAMPLE OF PIPING SYSTEMS.

FOCUS:

- * 3 INCH AND SMALLER Q-LISTED PIPING.
- * LARGER PIPING SYSTEMS WERE EXCLUDED BASED ON:
 - RECENT MAJOR MODIFICATIONS
 - ONGOING ISI PROGRAM
 - 79-02 PROGRAM
 - 79-14 PROGRAM

"SMART" SAMPLING:

- * APPROXIMATELY 10% OF ALL 3 INCH AND SMALLER Q-LISTED PIPING WAS WALKED DOWN (50 WALKDOWN PKGS.)**

- * 10% SAMPLING CONSERVATIVELY BIASED ON:**
 - HIGH TEMPERATURE/PRESSURE**
 - LARGE CONCENTRATED WEIGHTS**
 - LARGE DIFFERENTIAL MOVEMENTS**
 - Q/NON-Q PIPING INTERFACE**
 - PLANT LOCATION**

RESULTS:

* APPROXIMATELY 500 DISCREPANCIES WERE FOUND:

- 50% DIMENSIONAL
- 40% SUPPORT RELATED
- 10% OTHER

* DETAILED ANALYSIS OF 8 SELECTED PACKAGES FOUND ALL TO BE OPERABLE

- 6 LONG TERM
- 2 INTERIM (79-02 suppl. 1)

* EVALUATION OF REMAINING 42 PACKAGES

- 50% COMPLETE
- ALL FOUND TO BE OPERABLE

CONCLUSIONS:

- * ADEQUATE MARGINS FOR OPERABILITY EXIST IN Q PIPING.
- * ALL SUPPORTS MEET, AS A MINIMUM, 79-02 SUPL. 1 INTERIM CRITERIA
- * NON-Q PIPE NEAR Q / NON-Q BOUNDARY IS ADEQUATE.

CONCLUSIONS:(CONT'D)

- * MANY HANGER ISOMETRICS FOR 2 INCH AND SMALLER PIPE DO NOT REFLECT FIELD CONDITIONS.
- * 2 1/2 AND 3 INCH PIPING HAVE FEWER DISCREPANCIES THAN SMALLER PIPING.
- * MOST ANOMALIES WERE THE RESULT OF ORIGINAL CONSTRUCTION.

ACTIONS:

- * ASSURE LONG TERM OPERABILITY OF EVALUATED SYSTEMS.
- * UPGRADE NON-Q SYSTEMS NEAR Q-BOUNDARY.
- * REPAIR ALL VISUAL DISCREPANCIES.
- * RESOLVE DISCREPANCIES IN REMAINING 42 WALKDOWN PACKAGES
- * FORECAST COMPLETION 10/30/88.
- * UPDATE PECO PHYSICAL DRAWINGS.

FINAL CONCLUSIONS/ COMMENTS

- * ALL SYSTEMS EVALUATED WERE FOUND OPERABLE.
- * PIPING AGREES WITH P&ID'S
- * ALL PIPING SYSTEMS ARE OPERABLE.

PEACH BOTTOM
ATOMIC POWER STATION
UNITS 2 AND 3

INSPECTION AND REWORK OF CLASS 1E
HEAT SHRINK IN-LINE SPLICES
MODIFICATION 2355

R.B. ROCK

SEPTEMBER 7, 1988

PROBLEM DEFINITION

IMPROPER SELECTION, APPLICATION AND INSTALLATION OF RAYCHEM
HEAT SHRINKABLE TUBING :

CAUSES

- IMPROPER TUBE DIAMETERS
- IMPROPER HEAT SHRINK OVERLAP ONTO WIRE JACKET
- USE OF HEAT SHRINK DIRECTLY OVER OPEN BRAIDING
- IMPROPER BENDING OF SPLICES INSIDE JUNCTION BOX
- HEAT SHRINK IMPROPERLY SHRUNK

EFFECTS

- SPLITTING OR BURSTING OF HEAT SHRINK TUBING DUE TO CIRCUMFERENTIAL STRESS AND ELECTRICAL SHORTING FAILURE
- MOISTURE INTRUSION AT SPLICE ENDS
- LOSS OF SEALANT INTEGRITY DUE TO MOISTURE WICKING THROUGH WOVEN FABRIC

BACKGROUND :

• *IEN 86-53 (JUNE 26, 1986)* - IDENTIFIED PROBLEMS WITH IMPROPER INSTALLATION AT FOUR PLANTS (DAVIS-BESSE, DRESDEN, COMMANCHE PEAK, WATTS BAR). INSTALLATION DISCREPENCIES WITH RAYCHEM HEAT SHRINK TUBING HAVE ALSO BEEN REPORTED AT OTHER PLANTS SINCE *IEN 86-53*.

PBAPS RESPONSE :

• REVIEWED INSTALLATION SPECIFICATION (*E-1317*) AND MAINTENANCE DIVISION STANDARD WORK INSTRUCTIONS. *E-1317* AND *SWI'S* WERE REVISED TO ENHANCE AND CLARIFY HEAT SHRINK REQUIREMENTS.

• NO INSPECTIONS WERE PERFORMED SINCE PROCEDURES WERE THOUGHT TO BE SUFFICIENT.

PBAPS NRC INSPECTION :

NO'S 50-277/87-18 AND 50-278/87-18

- UNRESOLVED ITEM CONCERNING HEAT SHRINK TUBING APPLIED OVER UNIMPREGNATED BRAIDS

- DISCOVERED DURING INSPECTION OF UNIT 2 STANDBY GAS TREATMENT 480 VOLT MOTOR LEAD SPLICE

- SGT MOTOR LEAD WAS IMPREGNATED

- *E-1317, REV. 33* DID NOT SPECIFICALLY ADDRESS REMOVAL OF UNACCEPTABLE BRAIDED CABLE COVERING

PLAN TO RESOLVE

EIF 514 (SEPT. 16 1987) SAMPLE SPLICE INSPECTION

- 19 DEVICES WITH IN-LINE SPLICES INSPECTED (UNIT 2)

17 SOLENOID VALVES

2 MOTORS

RESULTS :

IMPROPER TUBE DIAMETERS

IMPROPER OVERLAPS

IMPROPER BENDING RADIUS

IMPROPER ADHERENCE OF TUBING TO JACKET

MOD 2355 (NOV. 24, 1987) INSPECT AND REWORK SPLICES

UNIT 2:

INSPECT AND REWORK IF NECESSARY, 274

ELECTRICAL, INSTRUMENTATION AND CONTROL

DEVICES WITH SPLICES (SOLENOID VALVES,

MOTORS, PRESSURE SWITCHES, LEVEL SWITCHES)

ALL UNIT 3 SIMILAR SPLICES WERE REWORKED

INSPECTION CRITERIA :

- DEVICES WITH PIGTAIL LEAD WIRE CONNECTIONS
- ELECTRICAL PENETRATIONS AND MOTOR OPERATED VALVES COVERED IN OTHER MODIFICATIONS

STATUS

UNIT 2

274 DEVICE SPLICES INSPECTED	MAY 20, 1988
REWORK COMPLETED ON 198 DEVICES	AUGUST 12, 1988
TESTING COMPLETED ON 186 DEVICES	AUGUST 12, 1988
FORECAST TO COMPLETE UNIT 2	SEPTEMBER 20, 1988

UNIT 3

DEVICES SIMILAR TO *UNIT 2* WILL BE REWORKED. WORK IS FORECAST TO BE COMPLETE BY FEBRUARY 1, 1989

RESULTS ACHEIVED

- RESOLVED *IEN 86-53* CONCERNS FOR *PBAPS*
- ADDRESSED *NRC EQ* INSPECTION UNRESOLVED ITEMS
- ESTABLISHED A LEVEL OF QUALITY AND CONFIDENCE WITH *RAYCHEM* IN-LINE SPLICES

CORRECTIVE ACTION TO PREVENT RECURRENCE

- ISSUED *RAYCHEM* NUCLEAR PRODUCT GUIDE - 1 AS A CONTROLLED VENDOR DOCUMENT

PBAPS NO. 6280 - E - 57 - 1

- *E - 1317* "WIRE AND CABLE, NOTES AND DETAILS POWER, CONTROL AND INSTRUMENTATION"

CURRENTLY UNDER MAJOR REVISION, RAYCHEM HEAT SHRINK SPLICE SECTION WILL REFERENCE *6280-E-57-1* FOR:

- SELECTION OF TUBING
 - INSTALLATION METHODS
 - INSPECTION OF INSTALLATION
- TRAINING (6 HR CLASS BY RAYCHEM)
 - LECTURE (INSTALLATION/INSPECTION TRAINING)
 - HANDS ON EXPERIENCE
 - TRAINING QUIZ

TRAINING COVERED : WCFS-N, NPKV, NPKS AND NMCK TUBING AND KITS

AREAS TRAINED :

NQA

ENGINEERING

CRAFTS PEOPLE

**EFFECTIVENESS OF ACTION TO PREVENT
RECURRENCE**

- TRAINING WAS EFFECTIVE BASED ON RESULTS OF HANDS ON INSPECTION AND QUIZ RESULTS

- HIGHER LEVEL OF STATION AWARENESS CONCERNING RAYCHEM SPLICES BASED ON QUESTIONS BACK TO ENGINEERING

PEACH BOTTOM
ATOMIC POWER STATION
UNITS 2 & 3

DIESEL GENERATOR /
CARDOX SYSTEM INTERFACE

D. S. MELLOTT

Sept. 7, 1988

CONDITION DESCRIPTION

- As originally designed and installed the Fire Suppression (Cardox) System in the Diesel Generator Building is non-seismic and nonsafety-related.
- Upon actuation of the Cardox System a diesel generator trip signal is initiated.
- Automatic actuation of the Cardox System is blocked on a LOCA signal.
- Inadvertant actuation of the Cardox System can trip the diesel generators via initiation of the trip signal or can suffocate the diesel engine because the diesels obtain combustion air from within the diesel generator room.

RESOLUTION ALTERNATIVES

- Upgrade the Cardox System to meet safety-related standards. (Alt A)
- Convert the automatic Cardox System to a manual system and add an automatic deluge system. The diesel trip signal would be deleted. (Alt B)
- Relocate the diesel generator air intake such that combustion air is received from outside the diesel generator rooms. (Alt C)
- Add a LOOP block in addition to the existing LOCA block within the Cardox circuitry. Blocking devices and master selector valves to be upgraded to meet safety-related standards. (Alt D)

SELECTED RESOLUTION

- Alternative "A" was selected based on cost/schedule estimates, licensing assessments, as well as potential impact on Unit 2 Restart
- Modification 2390 initiated to upgrade the Cardox System control and initiation components and circuits to meet safety-related standards.

MOD 2390 SUMMARY

- Specific components and circuits being upgraded include:
 - Cardox Control Panels
 - Heat Detectors
 - EMPC
 - Push Button Stations
 - Master Selector Valves
- Heat detectors to be changed from combination rate-of-rise and fixed temperature type to rate compensation type due to seismic qualification concerns.
- Number of heat detector locations changed from four to eight.