February 2, 1990

Official Copy

Docket No. 50-261
License No. DPR-23

See Rpt.

Carolina Power and Light Company
ATTN: Mr. Lynn W. Eury
Executive Vice President
Power Supply
P. O. Box 1551
Raleigh, NC 27602

Gentlemen:

SUBJECT: MANAGEMENT MEETING - H. B. ROBINSON

This refers to the Management Meeting held at your request on December 28, 1989. This meeting concerned items of mutual interest pertinent to your H. B. Robinson facility. A list of attendees, a summary, and a copy of your handout are enclosed. We considered this meeting beneficial and informative and wish to thank you for your efforts.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

Should you have any questions concerning this matter, please contact us.

Sincerely,

Original Signed by
Stewart D. Ebneter

Stewart D. Ebneter
Regional Administrator

Enclosures:
1. List of Attendees
2. Management Meeting Summary
3. Handout

cc w/encls: (See page 2)

IA-3

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IE45

cc w/encls:
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Robinson Nuclear Project Department
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Hartsville, SC 29550

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State of South Carolina

bcc w/encl:
Document Control Desk

NRC Resident Inspector
U.S. Nuclear Regulatory Commission
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RII:DRP	RII:DRP	RII:DRP	RII:DRP	RII:ORA
MGlasman	HDance	DVerrelli	LReyes	JMilhoan
01/ /90	01/31/90	01/31/90	01/31/90	01/ /90

February 2, 1990

ENCLOSURE 1

LIST OF ATTENDEES
ROBINSON MANAGEMENT MEETING
12/28/89

Carolina Power & Light Company

J. Moon, Senior Engineer, Technical Support - Robinson Plant
P. Lewis, Senior Engineer - Nuclear Engineering Dept.
C. Dietz, Manager - Robinson Nuclear Plant
R. Watson, Senior Vice President - Nuclear Generation
J. Sheppard, Manager - Operations
M. Heath, Engineering Supervisor
G. Attarian, NED Electrical Discipline Manager
R. Prunty, Manager, Robinson/Harris Licensing Unit

Nuclear Regulatory Commission

S. Ebneter, Regional Administrator
J. Milhoan, Deputy Regional Administrator
L. Reyes, Director, Division of Reactor Projects (DRP)
E. Merschoff, Deputy Director, Division of Reactor Safety (DRS)
C. Julian, Chief, Engineering Branch, DRS
D. Verrelli, Chief, Reactor Projects Branch 1, DRP
H. Dance, Chief, Reactor Projects Section 1A, DRP
T. Conlon, Chief, Plant Safety Section, DRS
M. Glasman, Project Engineer, DRP
L. Garner, Senior Resident Inspector - H. B. Robinson
P. Fillion, Reactor Inspector, DRS

February 2, 1990

ENCLOSURE 2

MANAGEMENT MEETING SUMMARY
12/28/89

A meeting was held on December 28, 1989, in the Region II office at CP&L's request with Region II staff to discuss the licensee's progress towards resolution of problems and technical concerns since Robinson's forced outage of August 1989 due to Auxiliary Feedwater Problems. The concerns which are listed below were presented to the staff in a very clear, organized manner. NRC staff concerns were addressed by the licensee in a very forthright way.

Inadequate NPSH for AFW Pumps

The licensee reviewed the NPSH problem which caused the plant to enter a forced outage in August, 1989. Corrective actions included the replacement of carbon steel piping with stainless steel piping of larger diameter, repair of cavitation damage on AFW pumps, repair of an AFW pump motor rotor, and analysis and flow testing of the AFW system to ensure adequate NPSH and system operability following corrective modifications. The licensee indicated the AFW system was fully operable. The licensee also installed a mechanical stop on the discharge flow control valve to the steam driven AFW pump to prevent overfeeding the steam generators with all three AFW pumps running. Further to prevent cavitation damage to the AFW pumps, as was previously experienced, the licensee has committed to the installation of larger mini-flow recirculation lines for the AFW pumps. The licensee responded to several of the staff's concerns which included: a commitment to reinspect the rotor repair work on the affected AFW pump motor; the wide margin between the calculated and empirical results of flow testing (due to conservative factors employed in the hydraulic calculations) and assurances from the licensee that the mechanical stop for the discharge control valve will not shift position.

Patel Conduit Seals

The licensee emphasized that the seals themselves were not defective; the installation instructions were inadequate, in that minimum insulation diameters and torque requirements were not specified. The result was the conduit seals were potentially subject to leakage in event of a LOCA. Licensee corrective actions included inspection of all Patel seals in the plant, and repair/replacement where required. In addition, all Patel seals were properly retorqued, with follow-up retorquing scheduled (due to potential relaxation). The licensee also committed to LOCA testing of the Patel seals prior to the next refueling outage.

NRC staff concerns were: was there a Part 21 notification issued by the seal manufacturer, which plants were affected, and how did the seal manufacturer set the minimum insulation sizes?

Electrical Distribution System

Corrective actions and studies relative to concerns that overlapping motor starts combined with degraded grid voltage could cause the plant to be separated from the grid and overload the emergency DG were discussed with NRC staff. The licensee indicated that the primary corrective actions were to replace imprecise pneumatic time delay DG sequencing relays with solid state units with much tighter timing tolerances, and implementation of procedures which will ensure switchyard voltage is controlled. The licensee has also embarked on dynamic analysis of the emergency DGs. The licensee indicated that the electrical distribution system was fully operable.

Other Concerns

The licensee, as a result of an extensive effort to find other potential operability concerns, identified over 200 items. The licensee staff reviewed five of these issues with NRC staff. They were: inadequate seismic supports for emergency DG exhaust piping; failure of service water piping coal tar lining; rescaling of control room instrumentation; analysis of safety injection accumulator operating levels; and service water system operation/pump runout during loss of offsite power.

ENCLOSURE 3

INTRODUCTION AND AGENDA

I. INTRODUCTION

II. PURPOSE AND OBJECTIVES

III. AGENDA

- AUXILIARY FEEDWATER SYSTEM
- PATEL CONDUIT SEALS
- ELECTRICAL DISTRIBUTION SYSTEM
- ADDITIONAL TECHNICAL CONCERNS
- SUMMARY AND CLOSING REMARKS

AUXILIARY FEEDWATER SYSTEM

I. OVERVIEW/AGENDA

A. TECHNICAL CONCERNS, ISSUES AND CORRECTIVE ACTIONS DEALT WITH SINCE 8/89

B. TESTING TO ASSURE OPERABILITY

C. LONG-TERM PLANS

D. BOTTOM LINE - H. B. ROBINSON HAS PURSUED THE ISSUES REQUIRED TO ASSURE THAT THE AFW SYSTEM IS COMPLETELY OPERABLE

AUXILIARY FEEDWATER SYSTEM

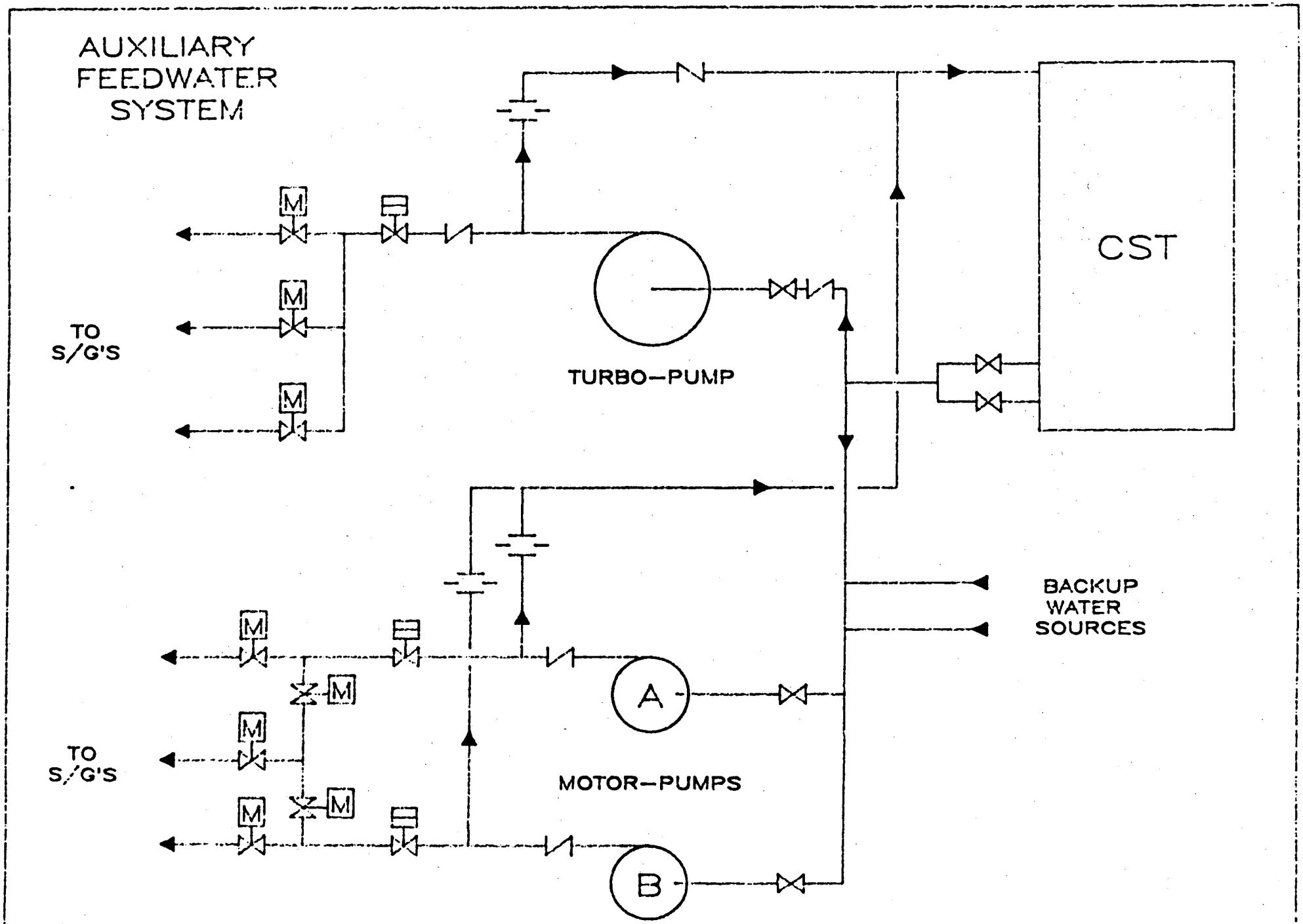
II. SYSTEM REVIEW

A. THREE AFW PUMPS

- TWO MOTOR DRIVEN
- ONE STEAM DRIVEN

B. COMMON SUCTION PIPE FROM 190,000 GAL. CONDENSATE STORAGE TANK

C. PIPING AND VALVES


AUXILIARY
FEEDWATER
SYSTEM
CST
TO
S/G'S
TURBO—PUMP
BACKUP
WATER
SOURCES
A
TO
S/G'S
MOTOR—PUMPS
B

AUXILIARY FEEDWATER SYSTEM

III. ISSUES AND TECHNICAL CONCERNS

A. MAJOR ISSUES

1. INADEQUATE NET POSITIVE SUCTION HEAD

CAUSE

SUCTION PIPING SIZE AND GENERAL CORROSION

CORRECTIVE ACTIONS

REPLACEMENT OF SUCTION PIPING - INCREASED FROM 6" TO 12"

AUXILIARY FEEDWATER SYSTEM

III. ISSUES AND TECHNICAL CONCERNS (CONTINUED)

2. SD AFW PUMP DISCHARGE FLOW CONTROL VALVE FAILURE MODE AND EFFECTS

CAUSE

SINGLE FAILURE CAN CAUSE VALVE TO FAIL FULL OPEN POTENTIALLY INVALIDATING FSAR ANALYSIS

CORRECTIVE ACTIONS

INSTALLATION OF MECHANICAL LIMITER ON DISCHARGE FLOW CONTROL VALVE

AUXILIARY FEEDWATER SYSTEM

III. ISSUES AND TECHNICAL CONCERNS (CONTINUED)

B. OTHER ISSUES DEALT WITH

1. MD AFW PUMP "A" MOTOR SPARKING

CAUSE

ROTOR BAR CRACKING

CORRECTIVE ACTIONS

INSTALLATION OF NEW BARS, SWAGING

AUXILIARY FEEDWATER SYSTEM

III. ISSUES AND TECHNICAL CONCERNS (CONTINUED)

2. MD AFW PUMP "B" ROTOR OUT OF ROUND

CAUSE

PREVIOUS ROTOR WORK

CORRECTIVE ACTIONS

REFURBISHMENT

3. INTERNAL PUMP EROSION (ALL AFW PUMPS)

CAUSE

LESS THAN OPTIMUM MINI-FLOW RECIRCULATION FLOW

CORRECTIVE ACTIONS

REBUILD/REPLACE WORN PARTS (LONG TERM ISSUE)

III. ISSUES AND TECHNICAL CONCERNS (CONTINUED)

4. VORTEXING AT CST SUCTION PIPING

CAUSE/CONCERN

POTENTIAL FOR VORTEXING AS CST IS DRAWN DOWN

CORRECTIVE ACTIONS

NONE REQUIRED. SWITCHOVER POINT OF 10% IS ADEQUATE

AUXILIARY FEEDWATER SYSTEM

IV. SYSTEM TESTING

A. COLD SHUTDOWN

- MD AFW PUMP OPERATION TO EVALUATE SUCTION PIPING REPLACEMENT (2 PUMPS)
  - NPSH ADEQUATE
- INITIAL SETTING OF MECHANICAL LIMITER ON SD AFW PUMP DISCHARGE FLOW CONTROL VALVE
- PERFORMANCE TESTING OF INDIVIDUAL MD AFW PUMPS
  - PUMP CURVES REPRESENTATIVE OF VENDOR CURVES BUT NOT THE SAME
- SPECIAL PERFORMANCE TESTING
  - ASSURED PUMPS DELIVER REQUIRED HEAD & FLOW TO MEET FSAR

AUXILIARY FEEDWATER SYSTEM

IV. SYSTEM TESTING (CONTINUED)

B. HOT CRITICAL OPERATION

- SD AFW PUMP OPERATION TO VERIFY AND REFINE SETTING OF FLOW CONTROL VALVE MECHANICAL LIMITER
- PERFORMANCE TESTING OF SD AFW PUMP

C. POWER OPERATION (80-90% POWER)

- THREE PUMP FULL FLOW OPERATION TO EVALUATE SUCTION PIPE REPLACEMENT
- NPSH ADEQUATE

AUXILIARY FEEDWATER SYSTEM

V. ENHANCEMENTS AND FUTURE ACTIONS

A. MD AFW PUMP "A" MOTOR INSPECTION

B. INCREASED PREVENTATIVE MAINTENANCE SURVEILLANCE

C. RESTORE SD AFW PUMP TO 600 GPM CAPACITY

D. PROCEDURE CHANGES - MINIMIZE OR ELIMINATE RECIRC TIME

E. MODIFY AFW RECIRC LINES

AUXILIARY FEEDWATER SYSTEM

VI. SUMMARY

A. A NUMBER OF ISSUES INVESTIGATED

B. SYSTEM IS FULLY OPERABLE

PATEL CONDUIT SEALS

AGENDA

I. DESCRIPTION OF THE CONDUIT SEAL

II. BACKGROUND

III. FINDINGS AND CORRECTIVE ACTIONS

IV. SAFETY SIGNIFICANCE

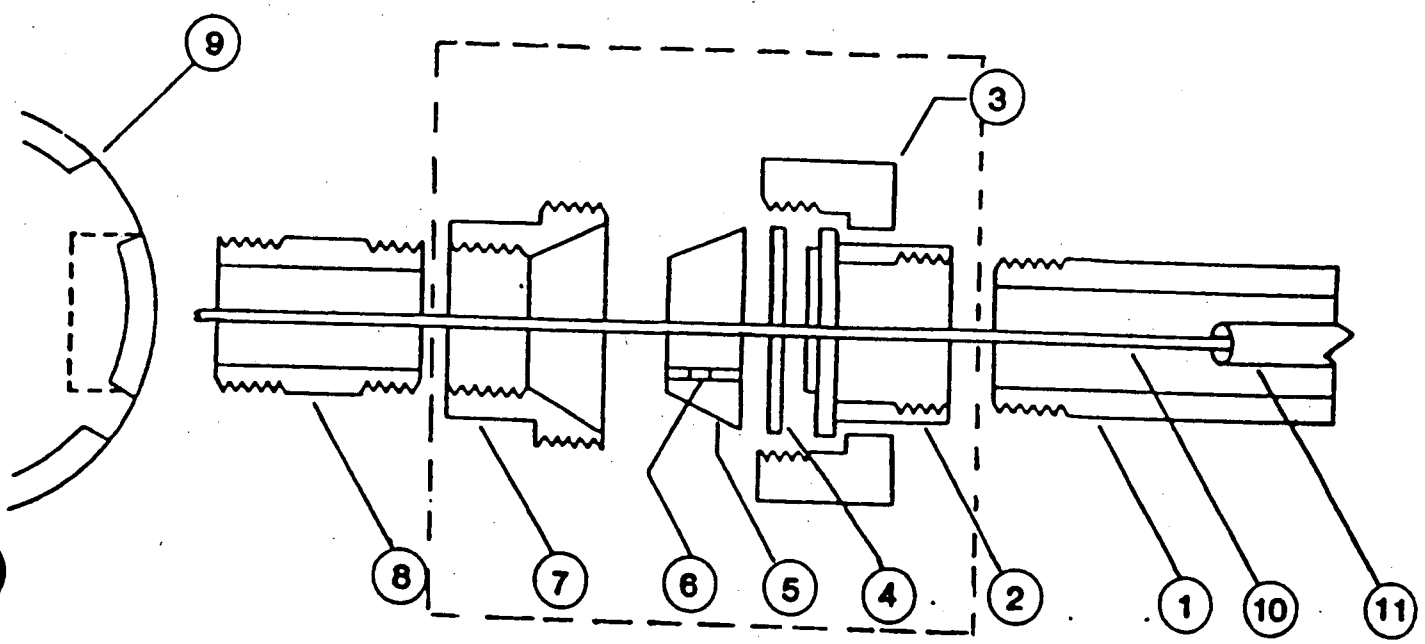
V. ROOT CAUSE

VI. OTHER ISSUES

VII. CONCLUSIONS

PATEL CONDUIT SEALS

I. DESCRIPTION OF THE CONDUIT SEAL



PARTS LIST

1 FIELD CONDUIT	8. PIPE NIPPLE
2 HOUSING, HIGH PRESSURE	9 INSTRUMENT HOUSING
3 UNION NUT	10 SINGLE INSULATED CABLE
4 FLAT WASHER	11 CABLE JACKET
5 RUBBER GROMMET	
6 STEEL BALL	
7 HOUSING, LOW PRESSURE	

PATEL CONDUIT SEALS

II. BACKGROUND

A. INITIAL INSTALLATION

B. NRC AUDIT OF ENVIRONMENTAL QUALIFICATION IN 1987

C. NRC CLOSEOUT INSPECTION IN 10/89 FOR OPEN ITEMS FROM 1987 INSPECTION

- WIRE SIZE
- TORQUE

GROMMET SELECTION CRITERIA FROM MANUFACTURER'S INSTALLATION DRAWING

GROMMET	MAX. INSULATION DIAMETER
GR-12	.170"
GR-14	.150"
GR-16	.135"
GR-18	.120"

PATEL CONDUIT SEALS

III. FINDINGS AND CORRECTIVE ACTIONS

A. WIRE USE RANGE

- 98 SEALS INSTALLED
- 57 GROMMETS REPLACED
- 31 INSTALLATIONS MODIFIED
- 10 ACCEPTABLE AS FOUND

B. TORQUING

- 100% VERIFICATION
- APPROXIMATELY 1/2 SHOWED SLIGHT MOVEMENT (LESS THAN 1/4 INCH OF ARC)
- ONE MOVED APPROXIMATELY 1/4 TURN
- FOLLOW UP TORQUE VERIFICATION SCHEDULED

PATEL CONDUIT SEALS

III. FINDINGS AND CORRECTIVE ACTIONS (CONTINUED)

C. ADDITIONAL CORRECTIVE ACTIONS

- MANUFACTURER HAS NOTIFIED OTHER USERS CONCERNING BOTH ISSUES
- NUCLEAR NETWORK NOTIFICATION MADE
- INSTALLATION PROCEDURES CORRECTED
- ADDITIONAL EQ PROCEDURAL CONTROL PROVIDED
  - MODIFICATIONS REQUIRE EQ REVIEW
  - NEW EQ EQUIPMENT MUST BE EVALUATED PRIOR TO MOD RELEASE
  - PROCEDURES ADDED AND REVAMPED
- ADDITIONAL EQ ENGINEERING SUPPORT
- EQ PROGRAM ASSESSMENT CONDUCTED IN 1988

PATEL CONDUIT SEALS

IV. SAFETY SIGNIFICANCE

CONDUIT SEALS ARE USED IN BOTH TRAINS OF INSTRUMENTATION REQUIRED TO MITIGATE THE CONSEQUENCES OF AN ACCIDENT.

AFFECTED SYSTEMS INCLUDE:

- CHEMICAL AND VOLUME CONTROL
- MAIN STEAM
- CONTAINMENT HVAC
- PRESSURIZER
- STEAM GENERATORS
- SAFETY INJECTION ACCUMULATORS
- POST ACCIDENT SAMPLING
- REACTOR COOLANT SYSTEM
- CONTAINMENT PRESSURE

PATEL CONDUIT SEALS

V. ROOT CAUSE

A. MANUFACTURER'S INSTALLATION INSTRUCTIONS

B. INADEQUATE EQ REVIEW OF CONDUIT SEAL DESIGN

PATEL CONDUIT SEALS

VI. OTHER ISSUES

A. SUBMERGENCE

- QUALIFIED AS IS
- COMMITTED ACTIONS
  - TESTING PRIOR TO NEXT REFUELING OUTAGE

B. TEST ANOMALIES

- DUE TO ORIGINAL DESIGN
  - UNDERSIZED STEEL BALLS
  - OVERSIZED WASHER
  - NIPPLE DAMAGED GROMMET
- QUALIFIED AS IS

C. ACTIVATION ENERGY

- SUPPORTING DOCUMENTATION SUBMITTED

D. TEST DURATION

- 10 DAYS VS. 30 DAYS
- SUPPORTING DOCUMENTATION SUBMITTED

PATEL CONDUIT SEALS

VII. CONCLUSIONS

A. PHYSICAL DEFICIENCY CORRECTED

B. EQ PROGRAM UPGRADED

C. ISOLATED EVENT

ELECTRICAL DISTRIBUTION SYSTEM

I. PROBLEM EVOLUTION

A. DIESEL GENERATOR DYNAMIC ANALYSIS

B. AUXILIARY FEEDWATER MOTOR ACCELERATION

C. SEQUENCE RELAY TOLERANCE

D. OFFSITE POWER SEQUENCE

E. OFFSITE POWER VOLTAGE

ELECTRICAL DISTRIBUTION SYSTEM

II. TECHNICAL CONCERN

DURING THE SAFETY INJECTION SEQUENCE, OVERLAPPING MOTOR STARTING COULD CAUSE OPERATION OF THE DEGRADED GRID VOLTAGE RELAY AND SEPARATE THE PLANT FROM THE OFFSITE POWER SOURCE.

THIS CONDITION IS A RESULT OF:

- MOTOR ACCELERATION TIMES LONGER THAN EXPECTED

- SEQUENCE RELAYS +/- 2 SECONDS

- SWITCHYARD VOLTAGES

ELECTRICAL DISTRIBUTION SYSTEM

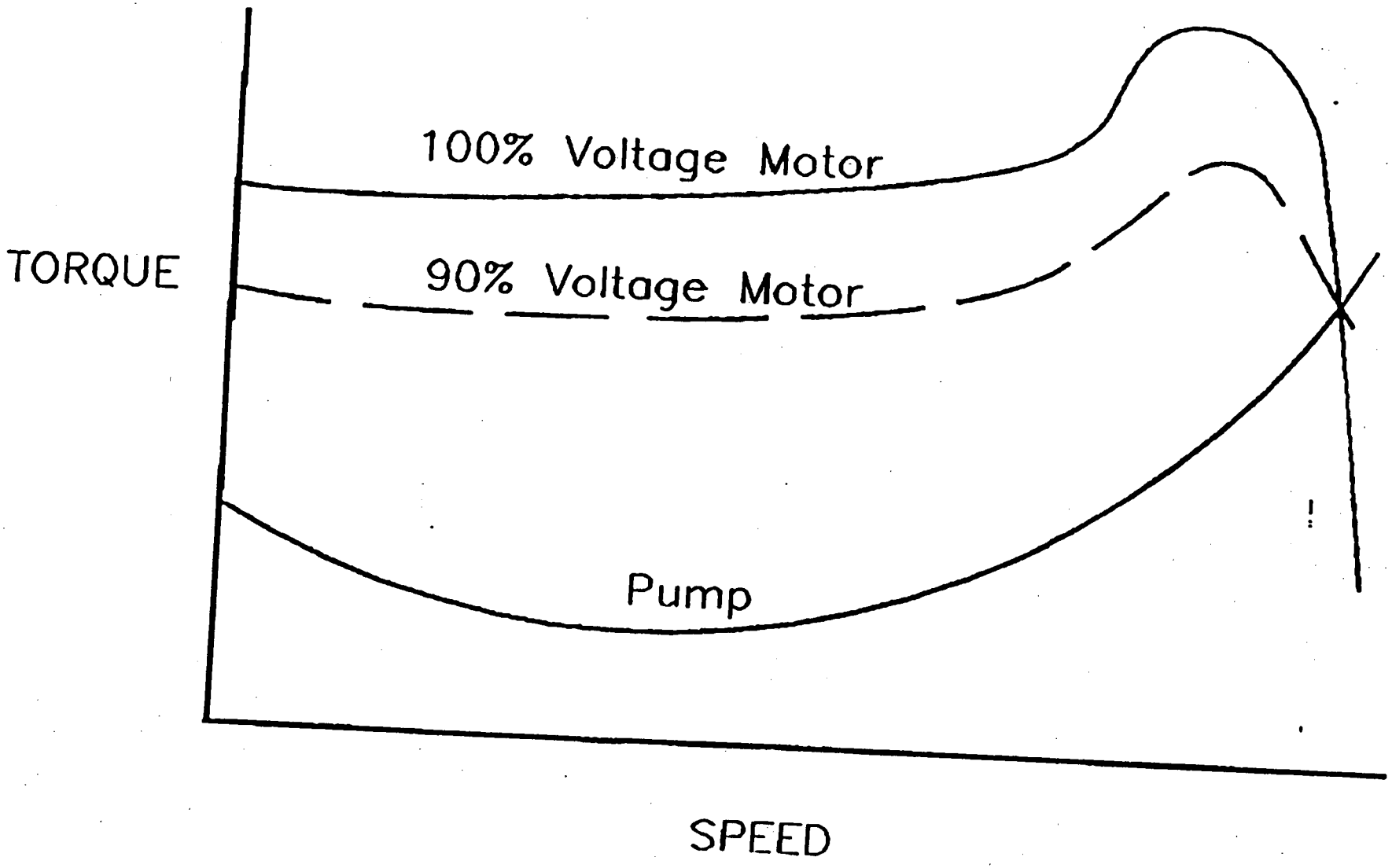
III. TECHNICAL CONCEPTS

A. MOTOR ACCELERATION

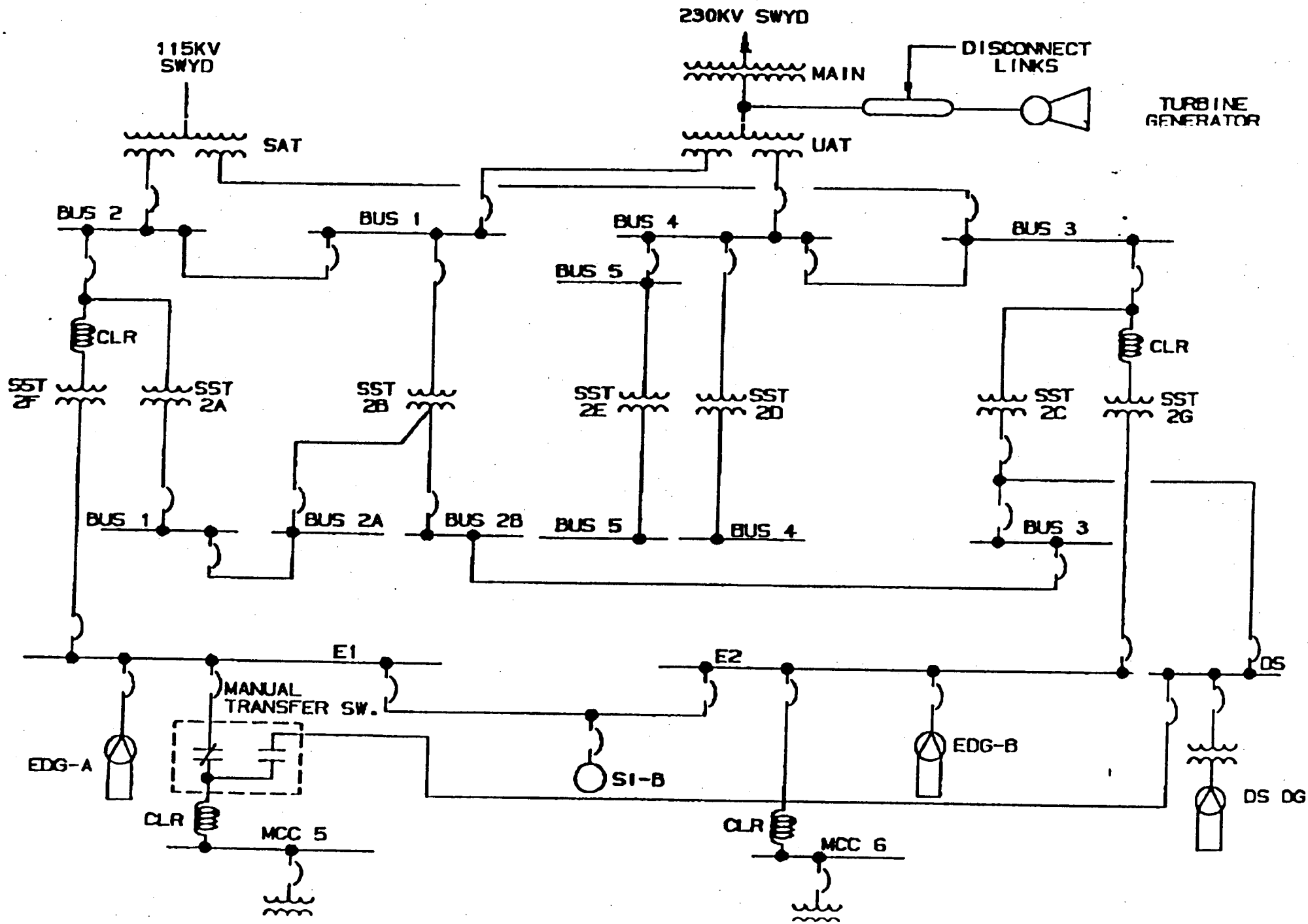
B. MOTOR VOLTAGE/BUS VOLTAGE

C. DEGRADED GRID RELAY ACTUATION AND TIME-OUT

CAROLINA POWER & LIGHT
H.B. ROBINSON – UNIT 2



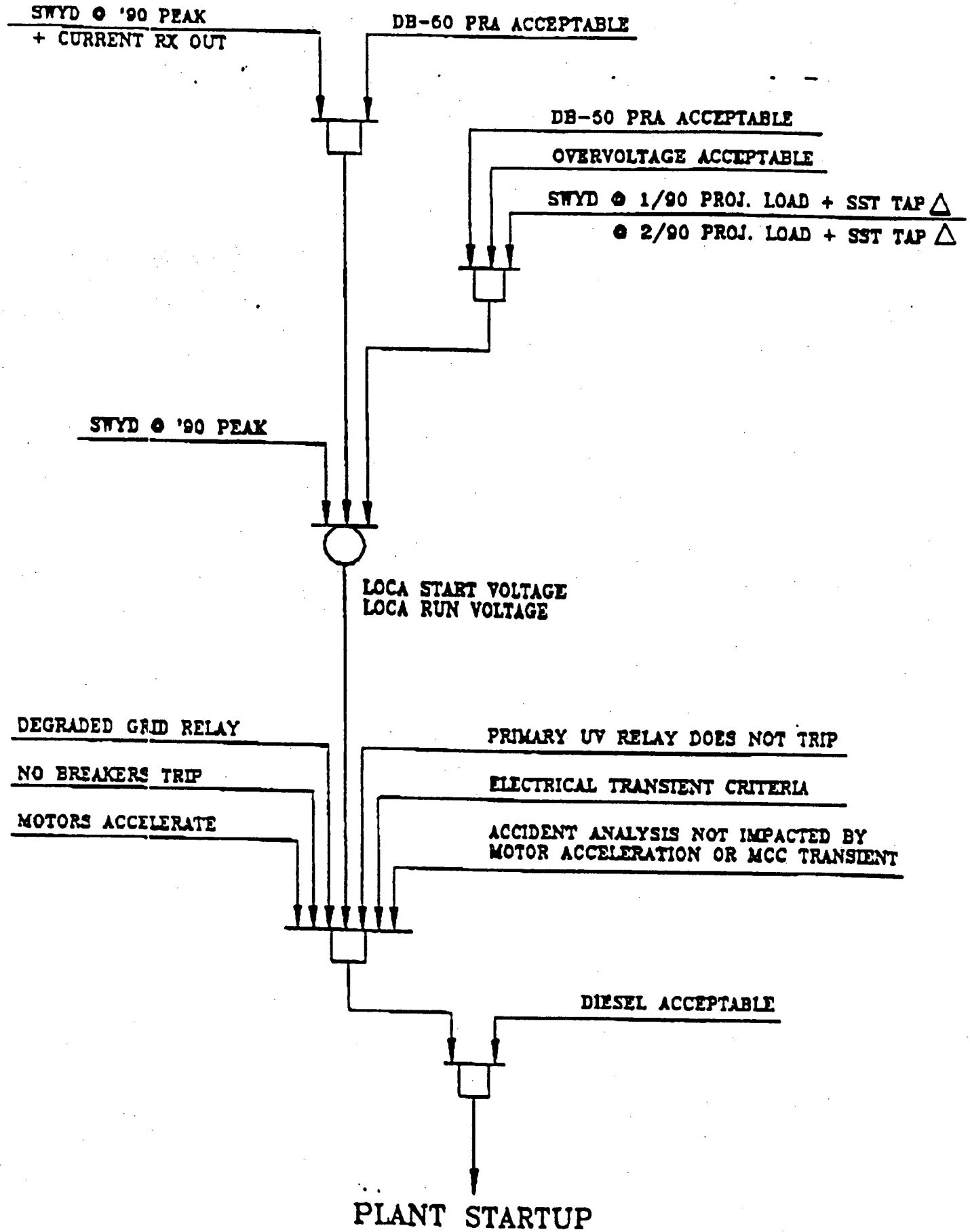
CAROLINA POWER & LIGHT COMPANY
H.B.ROBIN UNIT 2



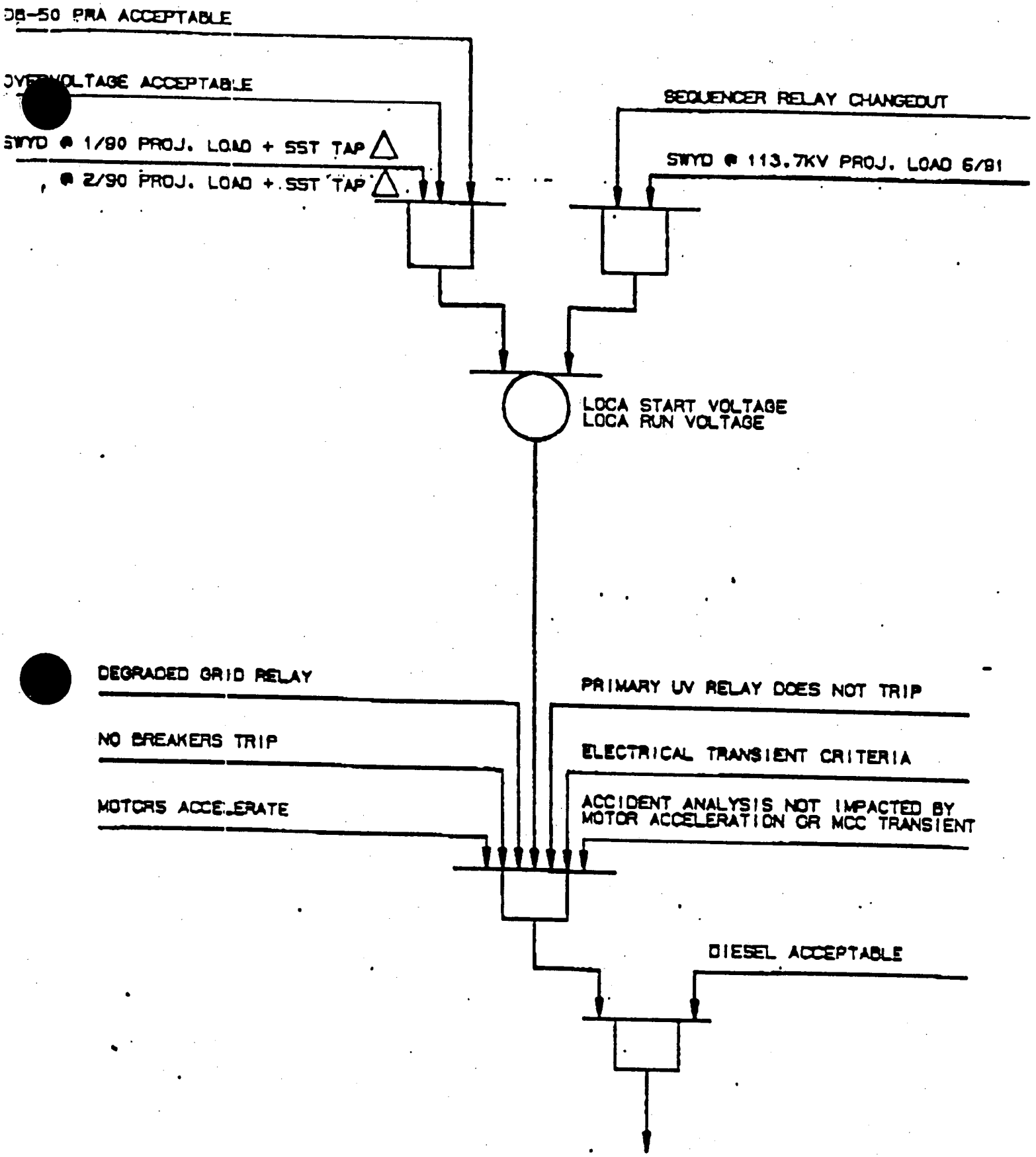
ELECTRICAL DISTRIBUTION SYSTEM

V. H. B. ROBINSON SCENARIO

- NORMAL SCHEDULE 116.5 - 117.5KV
- IF AN ACCIDENT OCCURS, THE LOSS OF UNIT 2 CAUSES THE 115KV SWITCHYARD VOLTAGE TO DROP TO 113.7KV INITIALLY (LOCA START) RECOVERING TO 114.3KV (LOCA RUN)
- SEQUENCE RELAY TOLERANCE +/- 2 SEC.
- MOTOR OVERLAPPING COULD ACTUATE THE DEGRADED GRID RELAY. IT WILL NOT RESET AND WILL TIME OUT


SWYD @ '90 PEAK
+ CURRENT RX OUT
DB-60 PRA ACCEPTABLE
DB-50 PRA ACCEPTABLE
OVERVOLTAGE ACCEPTABLE
SWYD @ 1/90 PROJ. LOAD + SST TAP △
@ 2/90 PROJ. LOAD + SST TAP △
SWYD @ '90 PEAK
LOCA START VOLTAGE
LOCA RUN VOLTAGE
DEGRADED GRID RELAY
NO BREAKERS TRIP
MOTORS ACCELERATE
PRIMARY UV RELAY DOES NOT TRIP
ELECTRICAL TRANSIENT CRITERIA
ACCIDENT ANALYSIS NOT IMPACTED BY
MOTOR ACCELERATION OR MCC TRANSIENT
DIESEL ACCEPTABLE
PLANT STARTUP

UNIT - 2


DB-50 PRA ACCEPTABLE
OVERVOLTAGE ACCEPTABLE
SWYD @ 1/80 PROJ. LOAD + SST TAP
@ 2/90 PROJ. LOAD + SST TAP
SEQUENCER RELAY CHANGEOUT
SWYD @ 113.7KV PROJ. LOAD 6/81
LOCA START VOLTAGE
LOCA RUN VOLTAGE
DEGRADED GRID RELAY
NO BREAKERS TRIP
MOTORS ACCELERATE
PRIMARY UV RELAY DOES NOT TRIP
ELECTRICAL TRANSIENT CRITERIA
ACCIDENT ANALYSIS NOT IMPACTED BY MOTOR ACCELERATION OR MCC TRANSIENT
DIESEL ACCEPTABLE
PLANT STARTUP

ELECTRICAL DISTRIBUTION SYSTEM

VI. CORRECTIVE ACTIONS

- SEQUENCER RELAY CHANGE-OUT +/- 0.5 SECONDS
- OPERATIONAL CONSTRAINTS
- SYSTEM VOLTAGE CONTROLS

ELECTRICAL DISTRIBUTION SYSTEM

VII. RESULTS

NEW SEQUENCER RELAYS WITH TIGHTER TOLERANCE REDUCES OR ELIMINATES OVERLAPPING MOTOR STARTING AND AS A RESULT, THE DEGRADED GRID VOLTAGE RELAY WILL NOT OPERATE AND SEPARATE THE PLANT FROM OFFSITE POWER.

ELECTRICAL DISTRIBUTION SYSTEM

VIII. SUMMARY

- MORE DEPENDABLE (STATE OF THE ART) DEVICES
- LONGER TERM FIX
- SUPPORTS UPCOMING DYNAMIC ANALYSIS OF DIESEL GENERATOR
- IMPROVE PERFORMANCE OF THE ELECTRICAL POWER DISTRIBUTION SYSTEM

ADDITIONAL TECHNICAL CONCERNS

I. METHOD OF IDENTIFICATION

- A. EXHAUSTIVE SEARCH TO IDENTIFY OPERABILITY ISSUES
- B. IN EXCESS OF 200 ISSUES EXAMINED

II. EXAMPLES OF CONCERNS IDENTIFIED

- A. INADEQUATE SEISMIC SUPPORTS FOR EMERGENCY DIESEL GENERATOR EXHAUST PIPING
- B. FAILURE OF SERVICE WATER PIPING COAL TAR LINING
- C. RESCALING OF CONTROL ROOM INSTRUMENTATION
- D. ANALYSIS OF SAFETY INJECTION ACCUMULATOR OPERATING LEVELS
- E. SERVICE WATER SYSTEM OPERATION AND POSSIBLE PUMP RUNOUT DURING LOSS OF OFFSITE POWER

ADDITIONAL TECHNICAL CONCERNS

III. DIESEL GENERATOR EXHAUST SEISMIC SUPPORTS

PROBLEM: EDG EXHAUST PIPING WAS NOT ADEQUATELY SUPPORTED FROM A SEISMIC STANDPOINT.

CAUSE: PREVIOUS EVALUATION UNDER IEB 79-14 HAD USED CHART METHOD & WAS FOUND ADEQUATE BASED ON DESIGN RECORDS. INTERNAL RE-REVIEW SHOWED THAT PIPING ENDS WERE NOT RESTRAINED AND THAT PIPING COULD FAIL.

CORRECTIVE ACTION: NEW SUPPORTS WERE ADDED

ADDITIONAL TECHNICAL CONCERNS

IV. FAILURE OF SERVICE WATER PIPING COAL TAR LINING

PROBLEM: EPOXY LINING FROM THE SERVICE WATER PIPING MELTED AND COLLECTED IN THE CONTAINMENT FAN COOLERS.

CAUSE: DURING THE 1988 REFUELING OUTAGE SERVICE WATER PIPING TO CONTAINMENT WAS STRENGTHENED DUE TO SEISMIC CONCERNS. THE HEAT FROM THIS WELDING AFFECTED THE HEADER AND MELTED THE LINER.

CORRECTIVE ACTION: LOOSE LINING WAS STRIPPED. SERVICE WATER PIPING WAS FLUSHED. PIPING IS ADEQUATE AS IS. NO OPERABILITY CONCERNS.

ADDITIONAL TECHNICAL CONCERNS

V. RESCALING OF CONTROL ROOM INSTRUMENTS

PROBLEM: 48 CONTROL ROOM INDICATORS HAD SCALE CHANGES WHICH POTENTIALLY INVALIDATED THEIR CALIBRATION. (IDENTIFIED BY MANAGEMENT INTERVIEW)

CAUSE: DURING THE 1988 REFUELING OUTAGE 48 CONTROL ROOM INSTRUMENTS HAD HUMAN FACTORS SCALE EXPANSIONS. UPON REVIEW, IT WAS DISCOVERED THAT THESE SCALE EXPANSIONS WERE BEYOND THE CAPABILITY OF THE INSTRUMENT TO BE PROPERLY CALIBRATED.

CORRECTIVE ACTION: ORIGINAL OR DUPLICATES OF THE ORIGINAL METER FACES WERE RESTORED TO THE INSTRUMENTS. ALL INSTRUMENTS WERE RECALIBRATED.

NOTE: METER FACES DO NOT AFFECT ANY AUTOMATIC OR SAFETY FUNCTIONS OF THE INSTRUMENTS INVOLVED. A REVIEW OF THE INSTRUMENTS CONCLUDED THAT NO INAPPROPRIATE ACTIONS WOULD HAVE BEEN DONE BY THE OPERATORS BASED ON METER READINGS DURING AN ACCIDENT

ADDITIONAL TECHNICAL CONCERNS

VI. ANALYSIS OF SI ACCUMULATOR OPERATING LEVELS

PROBLEM: DESIGN RECORDS (CIRCA 1974) AND THE TECHNICAL SPECIFICATIONS DID NOT AGREE ON THE PROPER LEVELS TO MAINTAIN IN THE SI ACCUMULATORS.

CAUSE DESIGN RECORDS FROM WESTINGHOUSE BASED THE PROPER LEVELS ON CALCULATED VALUES. TECHNICAL SPECIFICATION VALUES ARE BASED ON MEASURED VALUES FROM A PLANT MODIFICATION.

CORRECTIVE ACTION: THE TWO SETS OF VALUES WERE RECTIFIED. NO CHANGES WERE REQUIRED.

ADDITIONAL TECHNICAL CONCERNS

VII. SERVICE WATER SYSTEM OPERATION DURING A LOSS OF OFFSITE POWER

PROBLEM: PRA IDENTIFIED CONDITION BEYOND DESIGN BASIS WHICH HAD UNACCEPTABLE PROBABILITY FOR LOSS OF SERVICE WATER.

CAUSE: FSAR ASSUMES MANUAL ISOLATION OF TURBINE BUILDING IF INSUFFICIENT SERVICE WATER AVAILABLE. PREVIOUS MOD ENHANCED THAT FUNCTION BY AUTOMATICALLY ISOLATING TURBINE BUILDING ON LOSS OF EMERG. BUSS WITH AN SI. PRA SHOWED A LOSS OF OFFSITE POWER WITHOUT AN SI COULD HAVE UNACCEPTABLE RESULTS.

CORRECTIVE ACTION: AUTOMATIC ISOLATION WAS CHANGED TO ISOLATE TURBINE BUILDING ON REACTOR TRIP AND SUSTAINED LOW SERVICE WATER PRESSURE.

ADDITIONAL TECHNICAL CONCERNS

SUMMARY

MANAGEMENT INITIATED EXHAUSTIVE SEARCH TO IDENTIFY ISSUES WHICH COULD AFFECT OPERABILITY

ALL ISSUES WERE DISPOSITIONED OR RESOLVED

ASSURED PLANT READY FOR RETURN TO SERVICE

SUMMARY AND CLOSING REMARKS

PLANT INVESTIGATIONS WENT AND CONTINUE TO GO FAR BEYOND IMMEDIATE OUTAGE CONCERNS.

AN ATMOSPHERE CONDUCIVE TO ASKING THE TOUGH QUESTIONS HAS BEEN FOSTERED.

PHILOSOPHY IS TO FIX PROBLEMS, NOT ANALYZE THEM AWAY.

CHALLENGE FOR THE FUTURE IS TO CONTINUE TO FOSTER A QUESTIONING ATTITUDE AND TO MANAGE THE RESULTS OF ASKING THOSE QUESTIONS.

OUR INTENTION IS TO CONTINUE TO DEMONSTRATE OUT COMMITMENT TO EXCELLENCE THROUGH AUDITABLE RESULTS.