

U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Reports No.: 50-454/90019(DRS); 50-455/90018(DRS)

Docket Nos.: 50-454; 50-455

Licenses No. NPF-37; No. NPF-66

Licensee: Commonwealth Edison Company

Opus West III
1400 Opus Place
Downers Grove, IL 60515

Facility Name: Byron Nuclear Power Station - Units 1 and 2

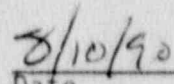
Meeting At: U. S. Nuclear Regulatory Commission
Region III Office
799 Roosevelt Road
Glen Ellyn, IL 60137

Meeting Conducted: August 2, 1990

Type of Meeting: Enforcement Conference

Approved By:


M. A. Ring, Chief
Engineering Branch


Date

Meeting Summary

Meeting on August 2, 1990 (Reports No. 50-454/90019(DRS); No. 50-455/90018(DRS))

Matters Discussed: An apparent violation of Technical Specifications for failure to ensure operability of the emergency diesel generators at both Byron units upon discovery of nonseismically-qualified switches in the overspeed trip circuitry of the diesels in December 1986. Information pertinent to the causes, safety significance and corrective actions to prevent recurrence for this event was discussed, including conclusions from an Office of Investigations Report (3-87-019) involving apparent careless disregard. Disposition of the issues discussed will be presented in subsequent communications.

DETAILS

1. Enforcement Conference Attendees

Commonwealth Edison Company (CECo)

C. Reed, Senior Vice President
M. Wallace, Vice President, Nuclear PWR Operations
L. DelGeorge, Assistant Vice President, Nuclear Engineering
and Construction
G. Wagner, Nuclear Engineering Manager
R. Querio, General Manager, Nuclear Quality Programs and Assessments
R. Pleniewicz, Byron Station Manager
M. Turbak, Performance Improvement Manager
T. Kovach, Nuclear Licensing Manager
P. Barnes, PWR Regulatory Assessment Administrator
K. Brennan, Engineering Regulatory Assurance Supervisor
K. Zittle, Byron Regulatory Assurance
T. Schuster, Nuclear Licensing Administrator
A. Haber-Kovach, Engineering and Construction Regulatory Assurance
Engineer
S. Simac, Nuclear Engineering Department - PWR Systems Design
J. Lewand, Braidwood Regulatory Assurance
J. Brynildssen, Nuclear Engineering Department - PWR Systems Design

Sargent and Lundy (S&L)

W. Cleff, Project Director

Sidley and Austin

S. Trubatch, Attorney
A. Polek, Attorney

U. S. Nuclear Regulatory Commission (NRC)

A. Davis, Regional Administrator, RIII
C. Paperiello, Deputy Regional Administrator, RIII
H. Miller, Director, Division of Reactor Safety, (DRS)
W. Forney, Deputy Director, Division of Reactor Projects (DRP)
J. Grobe, Director of Enforcement, RIII
M. Ring, Chief, Engineering Branch, DRS
W. Shafer, Chief, Projects Branch 1, DRP
B. Berson, Regional Counsel, RIII
R. Pedersen, Office of Enforcement, HQS
J. McGurren, Senior Attorney, OGL
M. Farber, Chief, Projects Section 1A, DRP
Z. Falevits, Reactor Inspector, DRP
K. O'Brien, Reactor Engineer, DRP
P. Brochman, Senior Resident Inspector (SRI), Clinton
W. Kropp, SRI, Byron
L. Olshan, Quad Cities Project Manager, NRR
T. Boyce, Byron Project Manager, NRR
C. Weil, Enforcement Specialist, RIII

2. Enforcement Conference

As a result of an apparent violation of NRC requirements related to the Byron Nuclear Power Station, an Enforcement Conference was held at the NRC's Region III Office on August 2, 1990. The preliminary findings which were the bases for the apparent violation were documented in NRC Inspection Reports No. 50-454/87027; No. 50-455/87025; and Office of Investigations (OI) Report 3-87-019. Attendees at the Conference are denoted in Paragraph 1 of this report.

The purposes of the conference were: (1) to discuss the apparent violation, the significance, cause, and the licensee's corrective actions; (2) to determine whether there were any mitigating circumstances; and (3) to obtain other information which would help determine the appropriate enforcement action.

The NRC representatives identified the apparent violation, a chronology of events, and topics to be discussed. These are detailed in the NRC Region III Enforcement Conference Presentation included as Enclosure 2 to this report. Pertinent areas included roles and responsibilities of CECO personnel and contractors upon discovery of a discrepant condition and information relative to the OI conclusion of careless disregard.

The information presented by the Commonwealth Edison Company is included as Enclosure 3 to this report.

3. Conclusion

The evaluation and disposition of the apparent violation will be presented in subsequent communications.

ENCLOSURE 2

BYRON

ENFORCEMENT CONFERENCE

OPERABILITY OF EMERGENCY DIESEL GENERATORS

AUGUST 2, 1990

REFERENCE: INSPECTION REPORTS

NO. 50-454/87027;

NO. 50-455/87025

01 3-87-019

NUCLEAR REGULATORY COMMISSION/COMMONWEALTH EDISON COMPANY

BYRON ENFORCEMENT CONFERENCE

OPERABILITY OF EMERGENCY DIESEL GENERATORS

AGENDA

AUGUST 2, 1990

OPENING REMARKS

H. J. MILLER, DIRECTOR
DIVISION OF REACTOR SAFETY

TECHNICAL ISSUES

M. A. RING, CHIEF
ENGINEERING BRANCH

LICENSEE RESPONSE

COMMONWEALTH EDISON COMPANY

CLOSING COMMENTS

H. J. MILLER, DIRECTOR
DIVISION OF REACTOR SAFETY

POTENTIAL VIOLATION

1. FOR BOTH BYRON UNITS, TECHNICAL SPECIFICATION 3/4.8.1 REQUIRES THAT WITH TWO DIESEL GENERATORS INOPERABLE (PER UNIT) IN MODES 1, 2, 3, AND 4, AT LEAST ONE OF THE DIESELS MUST BE RESTORED TO OPERABLE WITHIN 2 HOURS OR THE UNIT BE IN HOT STANDBY WITHIN 6 HOURS AND IN COLD SHUTDOWN WITHIN THE FOLLOWING 30 HOURS.

CONTRARY TO THE ABOVE, FROM THE DATE OF THE INITIAL OPERATING LICENSE (OCTOBER 31, 1984, FOR UNIT 1 AND NOVEMBER 6, 1986, FOR UNIT 2) UNTIL APPROXIMATELY 7:00 P.M. ON DECEMBER 17, 1986, BYRON UNIT 1 OPERATED IN CONDITIONS UP TO AND INCLUDING MODE 1 AND BYRON UNIT 2 OPERATED AS HIGH AS MODE 3 WITH 2 DIESELS ON EACH UNIT NOT OPERABLE UNDER CERTAIN CONDITIONS (SEISMIC EVENT). THIS LACK OF OPERABILITY WAS DUE TO NONSEISMICALLY-QUALIFIED SWITCHES IN THE OVERSPEED TRIP CIRCUITRY WHICH COULD ACTUATE IN A SEISMIC EVENT AND PREVENT THE DIESELS FROM OPERATING.

CHRONOLOGY

1. 12/04/86 - S&L REVIEW INITIALLY UNCOVERED POTENTIAL PROBLEMS WITH SWITCHES IN EDG OVERSPEED CIRCUITRY NOT SEISMICALLY QUALIFIED.
2. 12/05/86 - S&L ENGINEER CONTACTED COOPER REGARDING POTENTIAL PROBLEM.
3. 12/09/86 - S&L LETTER TO COOPER REQUESTING REVIEW OF CONCERN.
4. 12/09/86 - TESTIMONY INDICATES S&L SENT COPY OF LETTER TO CEC_o.
THRU
12/17/86 S&L ENGINEER TESTIMONY INDICATES SUBJECT DISCUSSED WITH CEC_o ENGINEER IN THIS TIME PERIOD.
5. 12/17/86 - TELECONFERENCE BETWEEN S&L AND COOPER IN WHICH THE
10:00 A.M. SWITCHES WERE CONFIRMED TO NOT BE QUALIFIED.
6. 12/17/86 - S&L ENGINEER INFORMED CEC_o ENGINEER OF RESULTS OF
11:00 A.M. TELECONFERENCE WITH COOPER.
7. 12/17/86 - NRC RESIDENT INSPECTORS INFORMED BYRON SITE MANAGEMENT
3:30 P.M. OF PART 21 REPORT FILED BY COOPER.

CHRONOLOGY

2

8. 12/17/86 - BYRON SITE REQUESTED CECo ENGINEERING ASSISTANCE ON EDG
4:30 P.M. OPERABILITY AND STARTED JUMPER INSTALLATION PATH.
9. 12/17/86 - CECo ENGINEERING NOTIFIED SITE EDGs WERE NOT OPERABLE.
7:35 P.M. SITE DECLARED ALL FOUR EDGs INOPERABLE AND ENTERED LCO.
10. 12/17/86 - JUMPER INSTALLATION COMPLETED AND LCOs EXITED.
8:55 P.M.

DISCUSSION TOPICS FOR BYRON ENFORCEMENT

CONFERENCE ON EDG OPERABILITY

1. DISCUSSION OF THE CEC₀ PROCESS (INCLUDING THE ROLE AND RESPONSIBILITIES OF CONTRACTORS SUCH AS SARGENT AND LUNDY (S&L) OR COOPER INDUSTRIES) FOR ENSURING THAT POTENTIAL OPERABILITY CONCERNS, DISCOVERED AT ANY POINT IN THE PROCESS, ARE/WERE PROMPTLY EVALUATED AND COMMUNICATED TO THE AFFECTED PLANT. THIS SHOULD INCLUDE BOTH THE PROCEDURES, PEOPLE, AND PRACTICES IN PLACE TODAY AND IN PLACE IN DECEMBER 1986.

2. DISCUSSION OF THE RESPONSIBILITY OF INDIVIDUAL CEC₀ ENGINEERS WITH RESPECT TO DETERMINING OPERABILITY UPON LEARNING OF A POTENTIAL ISSUE, FAMILIARITY WITH TECHNICAL SPECIFICATIONS AND DESIGN DRAWINGS FOR THE ENGINEER'S SYSTEMS, APPRECIATION OF THE NEED FOR PROMPT ACTION, AND DOCUMENTATION REQUIRED.

3. DISCUSSION OF ITEM 2, ABOVE, FOR S&L ENGINEERS AND COOPER ENGINEERS.

4. DISCUSS WHY A POTENTIAL EMERGENCY DIESEL GENERATOR OPERABILITY ISSUE INITIALLY DISCOVERED ON DECEMBER 4, 1986, WAS NOT COMMUNICATED TO THE BYRON AND BRAIDWOOD PLANTS UNTIL DECEMBER 17, 1986, INCLUDING THE FOLLOWING:

A. WHY THE PROCESS PERMITTED COOPER TO TAKE NO ACTION BETWEEN INITIAL NOTIFICATION ON DECEMBER 5, 1986, AND THE PRESET TELECONFERENCE DATE OF DECEMBER 17, 1986.

B. WHY CECO ENGINEERING DID NOT CONTACT THE PLANT IMMEDIATELY FOLLOWING THE 11:00 A.M. CONFERENCE CALL WHEN IT WAS ESTABLISHED THAT THE AFFECTED SWITCHES WERE NOT SEISMICALLY QUALIFIED?

*1) DISCUSSION OF THIS ISSUE NEEDS TO ADDRESS WHETHER THE CECO ENGINEER ACTED IN CARELESS DISREGARD OF THE REQUIREMENTS.

IN ADDITION, DISCUSS THE CORRECTIVE ACTIONS YOU HAVE OR SHOULD HAVE TAKEN TO PREVENT THE OCCURRENCE OF THE APPARENT VIOLATIONS.

AUGUST 2, 1990

BYRON DIESEL GENERATOR OPERABILITY DETERMINATION

ON DECEMBER 17, 1986

ENFORCEMENT CONFERENCE

AGENDA

- | | |
|---|---------------------|
| • INTRODUCTION | L. DELGEORGE |
| • EVENT CHRONOLOGY WITH RESPECT
TO PROGRAMS IN PLACE AT THE TIME | D. ELIAS |
| • ANALYSIS OF CARELESS DISREGARD | T. KOVACH |
| • CONCLUSIONS | D. ELIAS |
| • DISCUSSION OF CURRENT PROGRAMS | D. ELIAS |
| • ACTIONS TAKEN/PLANNED | D. ELIAS |
| • APPLICATION OF ENFORCEMENT POLICY | C. REED |

ISSUE

APPARENT DELAY IN DECLARING THE BYRON DIESEL GENERATORS
INOPERABLE DUE TO CARELESS DISREGARD OF A CECO ENGINEER.

RELATED NRC CONCERNS

PROGRAM IN PLACE TODAY AND IN 1986 TO ENSURE OPERABILITY
CONCERNS ARE/WERE PROMPTLY ADDRESSED INCLUDING THE
ROLE/RESPONSIBILITIES OF VENDORS AND A/E's

RESPONSIBILITY OF INDIVIDUAL CEC_o ENGINEERS UPON BEING
NOTIFIED OF POTENTIAL CONCERNS

PROCESS FOR COMMUNICATING POTENTIAL OPERABILITY
CONCERNS TO THE STATIONS

- THIS EVENT WAS VERY DIFFICULT TO ACCURATELY RECONSTRUCT GIVEN THAT:
 - IT OCCURRED ALMOST 4 YEARS AGO
 - THE DOCUMENTATION OF THE CONTENT OF TELEPHONE CONVERSATIONS WHICH WERE THE PRIMARY METHODS OF COMMUNICATION WAS INCOMPLETE
 - THE INFORMATION DISCUSSED IN THE OI REPORT WAS DERIVED FROM INTERVIEWS TAKEN ALMOST TWO YEARS AFTER THE EVENT

- DURING THIS CONFERENCE, WE WILL ATTEMPT TO COMMUNICATE TO YOU OUR REASONS FOR DRAWING THE FOLLOWING CONCLUSIONS WHICH DIFFER SOMEWHAT FROM THOSE DRAWN IN THE OI REPORT

CECO CONCLUSIONS

- THERE WAS A DELAY IN DECLARING THE DIESEL GENERATORS INOPERABLE
- THE DELAY WAS NOT DUE TO ANY INDIVIDUAL'S CARELESS DISREGARD
- THE DELAY WAS DUE TO INEFFECTIVE COMMUNICATION AND MISJUDGMENT OF THE NEED FOR PROMPT NOTIFICATION OF SUPERVISORY PERSONNEL

ANALYSIS OF EVENT WITH RESPECT TO
PROGRAMS IN PLACE IN 1986

BACKGROUND

BYRON UNIT 1 HAD A FULL POWER LICENSE

BYRON UNIT 2 HAD A 5% POWER LICENSE

BRAIDWOOD UNIT 1 HAD COMPLETED FUEL LOAD

BRAIDWOOD UNIT 2 WAS UNDER CONSTRUCTION

OFF-SITE PED WAS RESPONSIBLE FOR:

- STARTUP TEST REVIEWS FOR BYRON 2 AND
BRAIDWOOD 1 & 2
- BRAIDWOOD CONSTRUCTION ITEMS
- REVIEW AND APPROVAL OF PREOPERATIONAL TESTS
- CLOSURE OF OPEN ISSUES RELATED TO BYRON AND
BRAIDWOOD
- ENGINEERING SUPPORT FOR CONSTRUCTION RELATED
DEFICIENCIES FOR BYRON AND BRAIDWOOD
- MAINTENANCE OF CONTRACT SPECIFICATIONS

ON-SITE PED WAS RESPONSIBLE FOR:

- MODIFICATION PROCESSING
- FIELD PROBLEMS ASSOCIATED WITH CONSTRUCTION

PED HAD PRIMARY RESPONSIBILITY FOR NOTIFICATIONS UNDER PART 21 AND PART 50.55 (e)

DURING THIS TIME FRAME MANY ISSUES WERE RAISED RELATING TO DESIGN AND EQUIPMENT CONCERNS.

- MOST ISSUES WERE EQUIPMENT MALFUNCTION OR PERFORMANCE RELATED
- EQ OR SEISMIC ANALYSES

BECAUSE OF THE LARGE NUMBER OF POTENTIAL ISSUES THAT AROSE, S&L WAS EXPECTED TO EVALUATE THE ISSUES AND BRING TO CEC_o ATTENTION ONLY THOSE CONCERNS THAT PROVED TO BE VALID.

1986

A/E PROCESS FOR EVALUATING POTENTIAL CONCERNS

S&L IDENTIFIES A POTENTIAL ISSUE, INVESTIGATES THE ISSUE INTERNALLY OR REQUESTS VENDOR SUPPORT AS NECESSARY.

IF THE CONCERN CANNOT BE RESOLVED OR IS DETERMINED TO BE VALID, S&L CONTACTS CEC_o AT A LEVEL DETERMINED BY THE S&L SUPERVISOR.

THIS CONTACT WAS OFTEN MADE AT THE COGNIZANT ENGINEER LEVEL.

THIS PROCESS WAS CLEARLY UNDERSTOOD BY CEC_o AND S&L

THE PROCESS WAS NOT PROCEDURALIZED EXCEPT AS IT RELATED TO SCREENING OF CONCERNS WITH RESPECT TO 10CFR21 REQUIREMENTS

**APPLICATION OF EVALUATION PROCESS AS IT RELATES TO THIS
EVENT**

**THE POTENTIAL CONCERN WAS THE SEISMIC QUALIFICATION
OF SWITCHES IN DIESEL GENERATOR CIRCUITRY**

**S&L WAS NOT EXPECTED TO INFORM CEC_o OF THE POTENTIAL
SEISMIC QUALIFICATION CONCERN BEFORE THAT CONCERN
WAS VALIDATED.**

**S&L WAS NOT EXPECTED TO INCLUDE CEC_o IN THEIR
COMMUNICATIONS WITH COOPER-BESSEMER DURING THEIR
REVIEW OR FACT FINDING PHASE**

THE TIME WHICH S&L AND COOPER AGREED TO FOR COOPER'S REVIEW WAS BASED ON S&L'S EXPECTATION THAT COOPER WOULD HAVE QUALIFICATION DOCUMENTATION FOR THESE SWITCHES

- FOR PREVIOUS CONCERNS REGARDING SEISMIC QUALIFICATION DOCUMENTATION, COOPER HAD GENERALLY BEEN ABLE TO SUPPLY THE REQUISITE QUALIFICATION PAPERWORK.

CONCLUSION

HANDLING OF THIS ISSUE FROM 12/4/86 THROUGH THE 12/17/86 11 A.M. TELECONFERENCE WAS CONSISTENT WITH CECO'S EXPECTATIONS AND ESTABLISHED PRACTICE AT THAT TIME

1986

PROCESS FOR NOTIFYING CECO OF VALID CONCERNS

AFTER S&L VALIDATES THE CONCERN, THE S&L PROJECT
MANAGER OR DIRECTOR MAKES A DECISION TO INFORM CECO

AT THE DISCRETION OF S&L PROJECT MANAGER OR DIRECTOR,
CECO NOTIFICATION IS MADE AT THE COGNIZANT ENGINEER
LEVEL OR THE CECO SUPERVISOR LEVEL DEPENDING ON THE
SIGNIFICANCE OF THE ISSUE

IT WAS CECO'S EXPECTATION AND S&L'S UNDERSTANDING
THAT S&L WOULD NOTIFY CECO AT THE SUPERVISORY LEVEL
FOR PROBABLE PART 21 CONCERNS OR CONCERNS WHICH
IMPACT OPERABILITY

THIS PROCESS WAS GENERALLY UNDERSTOOD ALTHOUGH
NOT PROCEDURALIZED

**APPLICATION OF NOTIFICATION PROCESS AS IT RELATES TO THIS
EVENT**

THE APPROPRIATE S&L SUPERVISOR (PROJECT MANAGER) WAS INFORMED OF THE RESULTS OF THE 10 A.M. TELECONFERENCE WITH COOPER-BESSEMER

THE S&L PROJECT MANAGER DETERMINED THAT NOTIFICATION TO CEC₀ WAS REQUIRED AND COULD BE MADE AT THE COGNIZANT ENGINEER LEVEL

THE S&L COGNIZANT ENGINEER NOTIFIED THE CEC₀ PED COGNIZANT ENGINEER AT 11:00 A.M.

THE S&L ENGINEER INFORMED THE PED ENGINEER THAT:

- * THE SWITCHES WERE UNQUALIFIED
- * THE WIRING WAS IN ERROR
- * COOPER AND S&L WOULD DISCUSS PART 21 REPORTABILITY AT 1 P.M.
- * S&L WOULD CALL THE PED ENGINEER AFTER THE 1 P.M. CALL
- * S&L AND COOPER HAD AGREED THAT A SOLUTION TO THE PROBLEM WOULD BE TO JUMPER OUT THE SWITCHES.

S&L DID NOT CHARACTERIZE THE CONCERN AS POTENTIALLY IMPACTING OPERABILITY AT 11:00 A.M.

THE PED ENGINEER CONCURRED WITH S&L IN PURSUING THE DESIGN CHANGE TO JUMPER THE SWITCHES

- CEC₀ CONCURRENCE WAS LIMITED TO APPROVAL TO PROCEED WITH THE DEVELOPMENT OF A DESIGN CHANGE PACKAGE
- SUCH LIMITED CONCURRENCE WAS NORMAL PRACTICE TO ENSURE PROMPT RESOLUTION OF PROBLEMS
- CEC₀ CONCURRENCE DID NOT CONSTITUTE APPROVAL OF THE ACTUAL DESIGN CHANGE

S&L DID NOT CONTACT CEC₀ AFTER THE 1 P.M. TELECONFERENCE WITH COOPER BESSEMER CONTRARY TO THEIR EARLIER AGREEMENT

CONCLUSION

S&L IMPLEMENTATION OF THE PROCESS IN THIS EVENT DID NOT MEET GENERALLY UNDERSTOOD EXPECTATIONS FOR A CONCERN OF THIS SIGNIFICANCE BECAUSE INITIAL COMMUNICATIONS TO CEC_o WERE MADE AT THE COGNIZANT ENGINEER LEVEL AND NOT THE SUPERVISORY LEVEL

S&L's COMMUNICATIONS ADDRESSED

- EQUIPMENT CONCERNS
- REPORTABILITY UNDER PART 21

OPERABILITY WAS NOT DISCUSSED

1986

**CEC_o PROCESS FOR HANDLING NOTIFICATION OF A POTENTIAL
PART 21 CONCERN.**

UPON NOTIFICATION OF ANY DEFECT OR NONCOMPLIANCE WHICH IS POTENTIALLY REPORTABLE UNDER PART 21 THE INDIVIDUAL WAS REQUIRED BY PROCEDURE Q.40 TO NOTIFY THE SNED MANAGER OR HIS DESIGNEE (THE PED SUPERVISOR)

THE SUPERVISOR WAS REQUIRED TO ENSURE INVESTIGATION OF THE CONCERN, IDENTIFICATION OF APPROPRIATE ACTIONS AND COMMUNICATION OF THE RESULTS TO THE STATION

THE PROCEDURE ALLOWED TIME FOR REVIEW OF REPORTABILITY - 30 DAYS FOR AN INTERIM STATUS OF SAFETY SIGNIFICANCE

IF AT ANY TIME DURING THE REVIEW, IT WAS DETERMINED THAT THE ISSUE WAS REPORTABLE UNDER PART 21 NOTIFICATION TO THE NRC WAS REQUIRED WITHIN 48 HOURS

DURING THE REVIEW PHASE, THE PROCEDURE REQUIRED EVALUATION OF JUSTIFICATION FOR CONTINUED OPERATION OF AFFECTED UNITS

APPLICATION OF PROCESS AS IT RELATES TO THIS EVENT

UPON NOTIFICATION OF A POTENTIAL PART 21 CONCERN, THE PED ENGINEER MADE AN IMMEDIATE ATTEMPT TO CONTACT THE PED SUPERVISOR. CONTACT WAS NOT MADE.

THE PED ENGINEER DID NOT DISCUSS THE ISSUE HIGHER IN THE ORGANIZATION AND DID NOT LEAVE WRITTEN COMMUNICATION FOR THE PED SUPERVISOR

PED ENGINEER BELIEVED THAT APPROPRIATE PERSONNEL (S&L AND COOPER) WERE PURSUING THE REPORTABILITY ISSUE AND THAT HE WOULD BE NOTIFIED OF THE RESULTS OF THAT REVIEW PER HIS AGREEMENT WITH S&L

CONCLUSION

THE PED ENGINEER DID NOT ACT IN STRICT ACCORDANCE WITH THE PROCEDURE BECAUSE HE FAILED TO PURSUE IMMEDIATE NOTIFICATION OF THE PED SUPERVISOR AFTER THE INITIAL ATTEMPT WAS UNSUCCESSFUL

THE PED ENGINEER'S ACTIONS WERE GENERALLY CONSISTENT WITH THE INTENT OF THE PROCEDURE IN THAT HE BELIEVED APPROPRIATE REVIEWS WERE IN PROGRESS TO ASSESS REPORTABILITY

THE PED ENGINEERS ACTIONS WERE NOT AS AGGRESSIVE AS THEY SHOULD HAVE BEEN GIVEN THE INFORMATION

AVAILABLE

scl:ZPID146

CECO ROOT CAUSE ANALYSES

NRC OI INVESTIGATION DETERMINED THAT THE PED ENGINEER'S PERFORMANCE WAS IN CARELESS DISREGARD OF TECH SPEC REQUIREMENTS

DUE TO OUR CONCERN WITH THE SIGNIFICANCE OF THIS ISSUE, CECO INITIATED TWO REVIEWS OF THE OI INVESTIGATION MATERIAL

- PURPOSE WAS TO IDENTIFY ROOT AND CONTRIBUTING CAUSES
- REVIEWS DID NOT HAVE THE BENEFIT OF PERSONAL INTERACTIONS DURING THE INTERVIEWS
- REVIEWS APPLIED GENERALLY ACCEPTED ROOT CAUSE METHODOLOGIES TO THE INFORMATION CONTAINED IN THE NRC OI REPORT AND THE ACCOMPANYING EXHIBITS TRANSMITTED TO CECO BY REGION III

IN-HOUSE REVIEW

- PERFORMED BY PERSONNEL:
 - TRAINED IN MORT AND/OR HPES ROOT CAUSE ANALYSIS TECHNIQUES
 - INDEPENDENT OF THE ENGINEERING ORGANIZATION
 - NOT DIRECTLY INVOLVED IN THE EVENT
 - WITH 26 YEARS OF NUCLEAR EXPERIENCE
- PROVIDED THE BENEFIT OF REVIEWING THE EVENT KNOWING THE CECO PROGRAMS AND PRACTICES IN PLACE AT THE TIME

THIRD PARTY REVIEW

- PERFORMED BY EG&G INTERTECH
(D. CONGER AND K. ELSEA)
- UNFAMILIAR WITH CECO INTERNAL PROCESSES IN PLACE AT THE TIME

RESULTS OF CEC_o IN-HOUSE REVIEW

- COMMUNICATION BETWEEN S&L AND CEC_o WAS INADEQUATE BECAUSE THE IMPACT ON OPERABILITY WAS NOT RAISED AND CONTACT WAS AT TOO LOW A LEVEL
- PED ENGINEER'S ACTIONS WERE NOT AGGRESSIVE WITH RESPECT TO INFORMATION RECEIVED
- THERE WAS AN UNINTENTIONAL DELAY IN INVESTIGATING OPERABILITY WHICH RESULTED IN A DELAY IN DECLARING THE DIESEL GENERATORS INOPERABLE

RESULTS OF EG&G ANALYSIS

- CECo's COMMUNICATIONS WITH S&L AND COOPER BESSEMER WERE LESS THAN ADEQUATE

- THERE WAS A LACK OF URGENCY BY ALL INVOLVED PARTIES IN RESOLVING SEISMIC QUALIFICATION OF SWITCHES

- CECo INTERNAL COMMUNICATION WAS LESS THAN ADEQUATE

- THERE WAS A DELAY IN SHUTTING DOWN BYRON UNIT 1 DUE TO
 - INADEQUATE COMMUNICATION
 - UNCLEAR RESPONSIBILITIES
 - SPECIFIC PLANT CONDITIONS

**THE REVIEWS SHOWED THAT THE EVENT OCCURRED
BECAUSE:**

- S&L MISJUDGED THE NEED FOR COMMUNICATION AT A HIGHER LEVEL WITHIN CEC_o
- PED ENGINEER HAD NOT BEEN ALERTED TO THE IMPACT ON OPERABILITY AND, THEREFORE, WAS IGNORANT OF THIS CONCERN
- THE PED ENGINEER COULD NOT HAVE BEEN EXPECTED TO KNOW OF THE OPERABILITY IMPACT WITH A THE INFORMATION HE WAS GIVEN AT THE TIME BECAUSE:
 - HIS PREVIOUS EXPERIENCE AND CURRENT RESPONSIBILITIES WERE CONSTRUCTION ORIENTED AND DID NOT INVOLVE OPERABILITY ISSUES
 - CONSISTENT WITH HIS RESPONSIBILITIES, HE WAS NOT TRAINED IN IDENTIFYING OPERABILITY ISSUES
- THE PED ENGINEER MISJUDGED THE NEED FOR PROMPT NOTIFICATION OF HIS SUPERVISOR

TO CONCLUDE THAT THE PED ENGINEER EXHIBITED CARELESS DISREGARD, THE REVIEWS WOULD HAVE TO HAVE SHOWN THAT:

- HE KNEW OR SHOULD HAVE KNOWN OF THE NEED TO MAKE AN OPERABILITY DETERMINATION

- HE EXHIBITED MORE THAN MERE NEGLIGENCE IN FAILING TO PURSUE THE INFORMATION

THE REVIEWS FOUND THAT HE WAS NOT AWARE OF THE NEED TO MAKE AN OPERABILITY DETERMINATION THAT HE EXHIBITED ANY OF THE FACTORS IDENTIFIED BY THE NRC AS SHOWING CARELESS DISREGARD

- CALLOUS INDIFFERENCE
 - UTTER UNCONCERN OR
 - MORE THAN NEGLIGENCE (I.E. MORE THAN MISJUDGMENT, MISCALCULATION, IGNORNACE OR CONFUSION)
- IN PURSUING INFORMATION CONVEYED TO HIM

THEREFORE, CECo's REVIEWS CONCLUDED CARELESS DISREGARD WAS NOT EXHIBITED BY THE PED ENGINEER INVOLVED IN THIS EVENT

SUMMARY OF CONCLUSIONS

THERE WAS A DELAY IN INVESTIGATING DIESEL GENERATOR OPERABILITY FROM 11 A.M. TO ABOUT 4 P.M.

THIS DELAY WAS NOT DUE TO CARELESS DISREGARD ON THE PART OF THE PED ENGINEER

THIS DELAY WAS DUE TO INCOMPLETE COMMUNICATIONS AT INAPPROPRIATE LEVELS DURING THE IDENTIFICATION AND RESOLUTION OF THE CONCERN

COMMUNICATIONS WERE NOT COMPLETE DUE TO THE CONCERNS BEING CHARACTERIZED AS A PART 21 ISSUE AND THE QUESTION OF OPERABILITY NOT BEING RAISED BY EITHER S&L OR CEC₀ DURING THE INITIAL CONTACTS.

COMMUNICATIONS RELATIVE TO THIS EVENT WERE NOT MADE AT THE APPROPRIATE LEVEL IN THE CEC₀ ORGANIZATION. COMMUNICATIONS OF THIS TYPE WERE EXPECTED TO BE MADE AT THE S&L PROJECT ENGINEER AND THE CEC₀ PED SUPERVISOR LEVELS

THE CAUSE OF THE DELAY IN INVESTIGATING A POTENTIAL
OPERABILITY CONCERN APPEARS TO BE ISOLATED TO THIS EVENT

- A LIMITED REVIEW OF CONTEMPORANEOUS EXAMPLES INVOLVING SIMILAR ISSUES AND PERSONNEL WAS PERFORMED. THESE ISSUES WERE HANDLED BY THE APPROPRIATE LEVELS OF MANAGEMENT WITH OPERABILITY DETERMINATIONS PROPERLY ADDRESSED
- CEC_o BELIEVES THAT CONTROLS ARE CURRENTLY IN PLACE TO REDUCE THE PROBABILITY FOR REPETITION OF A SIMILAR EVENT.

CEC_o HAS COMMITTED TO ACTING ON THE RESULTS OF THE THIRD PARTY REVIEW OF THIS EVENT, RE-EVALUATING OUR PART 21 PROGRAM, PROCEDURALIZING OUR PROCESS FOR EVALUATING POTENTIAL OPERABILITY CONCERNS AND IMPROVING THE QUALITY OF A/E AND CEC_o COMMUNICATIONS

CURRENT PROGRAM IN PLACE FOR EVALUATING OPERABILITY CONCERNS

- STATIONS HAVE THE ULTIMATE RESPONSIBILITY FOR DETERMINING OPERABILITY (I.E. 50.72, 50.73)

- ENGINEERING IS RESPONSIBLE FOR INFORMING THE STATION(S) IN A TIMELY MANNER OF POTENTIAL OPERABILITY CONCERNS. ENGINEERING MAY ALSO ASSIST THE STATION(S) IN DETERMINING THE IMPACT ON OPERABILITY

- ENGINEERING BECOMES AWARE OF POTENTIAL OPERABILITY CONCERNS VIA:
 - PART 21 NOTIFICATION FROM VENDORS

 - RECEIPT OF NOTIFICATION OF POTENTIAL OPERABILITY CONCERN FROM NSSS SUPPLIERS

 - CECO IN-HOUSE DISCOVERY OR NOTIFICATION FROM AN A/E

NOTIFICATION VIA PART 21

POTENTIAL CONCERNS ARE RECEIVED AND PROCESSED PER
ENC QE-40

QE-40 REQUIRES NOTIFICATION TO NRC FOR ITEMS
DETERMINED TO BE REPORTABLE PER 10 CFR 21

FOR ITEMS PREVIOUSLY REPORTED TO NRC, ENGINEERING
DETERMINES NEED TO NOTIFY THE STATION(S) BASED UPON
AN APPLICABILITY REVIEW WHICH INCLUDES ASSESSMENT OF
IMPACT ON OPERABILITY

FOR ITEMS NOT PREVIOUSLY REPORTED TO NRC, STATION(S)
ARE NOTIFIED OF ITEM VIA TRANSMITTAL LETTER TO
CORPORATE MANAGEMENT

IF AN OPERABILITY CONCERN IS IDENTIFIED DURING THE
REVIEW OF THE PART 21, STATION(S) ARE NOTIFIED VIA
INFORMAL PROCESS (NOT ADDRESSED IN ENC-QE-40):

- ENGINEER NOTIFIES SUPERVISOR OF POTENTIAL
OPERABILITY CONCERN

- SUPERVISOR NOTIFIES STATION(S)

ENGINEERING ASSISTS STATION(S) IN ASSESSING AND
RESOLVING OPERABILITY CONCERN AS REQUIRED

CURRENT PROGRAMS

NOTIFICATION FROM NSSS SUPPLIERS

- NSSS SUPPLIERS HAVE INTERNAL PROGRAMS IN PLACE FOR NOTIFYING UTILITIES (SIL, TIL, SAL, TB, AIB, ETC).

THESE NOTIFICATIONS TYPICALLY INCLUDE A PRELIMINARY IMPACT ASSESSMENT

- UPON RECEIPT, POTENTIAL CONCERNS ARE PROCESSED PER NOD-OE.4
- ACTION ASSIGNED TO WORKING GROUP (NED, NFS, ETC.)
- APPLICABILITY/SCOPE IS DETERMINED AND ACTION PLANS DEVELOPED AS REQUIRED
- IF AN OPERABILITY CONCERN IS IDENTIFIED, STATION(S) NOTIFIED VIA INFORMAL PROCESS (NOT ADDRESSED IN NOD-OE.4):
 - ENGINEER NOTIFIES SUPERVISOR OF POTENTIAL OPERABILITY CONCERN
 - SUPERVISOR NOTIFIES STATION(S)
 - ENGINEERING ASSISTS STATION(S) IN ASSESSING AND RESOLVING OPERABILITY CONCERN

CURRENT PROGRAMS

IN-HOUSE DISCOVERY OR NOTIFICATION FROM A/E

A/E PROCEDURES REQUIRE NOTIFICATION OF CECO ONCE THEY HAVE DETERMINED THAT AN ISSUE IS A CONCERN THAT CANNOT BE RESOLVED

- S&L PROCEDURES DEFINE THE LEVELS AT WHICH THESE COMMUNICATIONS SHOULD OCCUR
- OTHER A/E PROCEDURES DO NOT SPECIFICALLY IDENTIFY THE LEVEL OF CECO MANAGEMENT TO NOTIFY
- WHEN CECO IS NOTIFIED BY AN A/E OF AN OPERABILITY CONCERN STATION(S) ARE NOTIFIED VIA INFORMAL PROCESS:
 - ENGINEER NOTIFIES SUPERVISOR OF POTENTIAL OPERABILITY CONCERN
 - SUPERVISOR NOTIFIES STATION(S)
- ENGINEERING ASSISTS STATION(S) IN ASSESSING AND RESOLVING CONCERN AS REQUIRED

CECO ACTIONS

CECO REQUIRED S&L TO PROCEDURALIZE THEIR PROCESS FOR COMMUNICATING POTENTIAL CONCERNS TO CECO REGARDING BYRON/BRAIDWOOD STATIONS IN 1987 AND WAS ADOPTED AT THE OTHER CECO SITES

CONTRACTED FOR AN INDEPENDENT REVIEW OF THE NRC OI REPORT AND EXHIBITS TO IDENTIFY ROOT AND CONTRIBUTING CAUSES

PERFORMED AN IN-HOUSE REVIEW OF THE NRC OI REPORT AND EXHIBITS TO IDENTIFY CECO PROGRAM AND PERSONNEL WEAKNESSES AS WELL AS ROOT AND CONTRIBUTING CAUSES

THE FOLLOWING ACTIONS ARE PLANNED AS A RESULT OF THESE REVIEWS:

IMMINENT

- A GUIDELINE WILL BE ISSUED TO ALL ENGINEERING AND CONSTRUCTION PERSONNEL REAFFIRMING THEIR RESPONSIBILITY TO ACT PROMPTLY ON RECEIPT OF INFORMATION OF POTENTIAL CONCERNS BY CONSIDERING THE POTENTIAL IMPACT OF THESE CONCERNS ON THE OPERABILITY OF THE NUCLEAR STATIONS AND NOTIFYING THE APPROPRIATE SUPERVISORY PERSONNEL.
- A LESSONS LEARNED WRITEUP WILL BE DEVELOPED ON THIS EVENT FOR DISTRIBUTION TO ALL NUCLEAR OPERATIONS ENGINEERING PERSONNEL

COMPLETED WITHIN 60 DAYS

- REVIEW, EVALUATE AND ACT ON THE WEAKNESSES IDENTIFIED BY EG&G

- REVISE THE A/E GUIDEBOOK TO SPECIFY THE APPROPRIATE SUPERVISORY LEVEL WITHIN CEC₀ WHICH SHOULD BE NOTIFIED FOR POTENTIAL CONCERNS AND THE NEED TO EXPLICITLY STATE WHETHER THE CONCERN AFFECTS OPERABILITY

- MODIFY THE CONTINUING TRAINING PROGRAM FOR ENGINEERING PERSONNEL TO INCLUDE DISCUSSION OF THE NEED FOR PROMPT REVIEW OF DEFICIENCIES FOR POTENTIAL IMPACT ON OPERABILITY

- RE-EVALUATE THE CEC₀ PART 21 PROGRAM TO IDENTIFY IF CHANGES ARE NECESSARY REGARDING TIMELINES AND/OR SCOPE OF OPERABILITY REVIEWS

- PROCEDURALIZE THE CEC₀ ENGINEERING PROCESS FOR EVALUATION OF NON-PART 21 CONCERNS