



UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, D. C. 20555

October 30, 1985

MEMORANDUM TO: J. Ebersole
C. Wylie
C. Michelson
G. Reed
D. Ward

FROM: Paul Boehnert, Senior Staff Engineer *B*

SUBJECT: ACRS COMBINED COMBUSTION ENGINEERING PLANTS/PALO
VERDE SUBCOMMITTEE MEETING, NOVEMBER 5, 1985,
WASHINGTON, DC

The combined Combustion Engineering Plant/Palo Verde Subcommittee will hold a meeting on November 5, 1985 in Washington, DC. The purpose of the meeting is to: (1) review Arizona Nuclear Power's test program experience on Palo Verde Unit 1, including recent transient events, and (2) discuss the issue of rapid depressurization for CE reactors without PORVs, given the recent operating experience with the auxiliary pressurizer spray system on Unit 1. A Tentative Presentation Schedule and Project Status Report is attached for your perusal.

Please note that there will not be any NRC Staff documentation available on the licensing issues involving Palo Verde for this meeting. The Subcommittee needs to consider what future action (if any) is needed at the Subcommittee level, and what recommendations it will have for disposition of this issue at the Committee level (see the Project Status Report).

Hotel reservations have been made for the following individuals as noted below for the night of November 4, 1985. Please call Ms. Barbara White (202/634-1406) if you need to change or cancel these reservations.

Mr. Ebersole	Carlyle
Mr. Wylie	Days Inn
Mr. Michelson	Days Inn
Mr. Reed	Days Inn
Mr. Ward	None

I can be reached on 202/634-3267 if you have any questions or comments.

Attachments: As Stated

cc: M. W. Libarkin
G. R. Quittschreiber
D. Houston

8604030602 860311
PDR FOIA
SCOTT86-45 PDR

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10/29/85

ACRS SUBCOMMITTEE MEETING ON
CESSAR/PALO VERDE NUCLEAR GENERATING STATION
NOVEMBER 5, 1985
WASHINGTON, D.C.

- Tentative Presentation Schedule -

- | | | |
|---|--------------------------|-----------------|
| I. Introduction | J. Ebersole/
C. Wylie | 8:30 - 8:40 am |
| ° Subcommittee Chairmen's
Comments | | |
| II. Palo Verde Review | | |
| A. NRC Assessment of PVNGS
Unit 2 Licensing Status | NRC | 8:40 - 9:00 am* |
| 1. Regulatory Position
on Unit 2 Licensing | | |
| 2. Position on Accept-
ability of Unit 1
Operating Experience
vis-a-vis Units 2&3
Licensing | | |
| B. Unit 1 Power Ascension
Testing Experience | ANPP | 9:00 - 9:45 am |
| 1. General Operating
Performance | | |
| 2. Experience with Main
Feedwater and Auxiliary
Feedwater Systems | | |
| 3. Experience with the
Power Runback System | | |
| ° Load Rejection Test
Experience | | |

* Times Shown Include Time For Subcommittee Questions

November 5, 1985

4. NRC Staff Comments on Unit 1 Power Ascension Test Experience NRR/
Region V 9:45 - 10:15 am
- a. Region V Report on Power Experience
- ° Overall Experience
 - ° Potential Concern with Use of Contract People for Startup
 - ° 9/17/85 CAL-Rational for Resuming Power Operation
- b. NRR/Region V Comments on NRC PAT and SALP for Palo Verde

*** Break ***

10:15 - 10:25 am

- C. Auxiliary Pressure Spray System (APSS) 10:25 - 12:45 pm
1. September 12, 1985 Event ANPP
2. APSS Design and Operation ANPP/CE
3. SGTR Analyses ANPP
4. Results of NRC Staff Review - Regulatory Position on APSS (Detail) NRC

*** Lunch ***

12:45 - 1:45 pm

D. Offsite Power Reliability

1:45 - 3:30 pm

1. October 3 and October 7, 1985 Events ANPP
2. Switchyard to Power Block Interface ANPP
3. Results of NRC Staff Review - Regulatory Position on Offsite Power Reliability (Detail) NRC

E. Auxiliary Feedwater System Reliability

1. AFW Reliability Study Bechtel
 - ° Consideration of Davis Besse Experience
2. NRC Staff Review of Acceptability of PV AFW Reliability NRC

*** Break ***

3:30 - 3:40 pm

III. Rapid Depressurization Capabilities for CE Plants Without PORV's

A. Unresolved Safety Issue A-45 Resolution NRC

3:40 - 5:00 pm

1. Status of Resolution vis-a-vis CE Plants without PORV's
2. Rapid Depressurization Capabilities Provided at Foreign PWRs

B. Impact of Current APSS Issues on Previous Rapid Depressurization Evaluations, and 3410 MW Plant APSS Design

CEOG

IV. Subcommittee Discussion

5:00 - 5:30 pm

A. Decision to Bring Discussion to Full Committee

° Specific Discussion Items

B. Consideration of Commissioner Asselstine's Request to ACRS vis-a-vis Licensing of Unit 2

V. Adjourn

5:30 pm

10/30/85

ACRS COMBINED PALO VERDE PLANT/CE REACTORS
SUBCOMMITTEE MEETING
NOVEMBER 5, 1985
WASHINGTON, DC

PURPOSE: The purpose of the meeting is to review the startup test experience of Palo Verde Unit 1, including recent transient events, and discuss the issue of rapid depressurization for CE reactors without PORVs given recent operating experience with the auxiliary pressurizer spray (APS) system on Unit 1.

BACKGROUND: In its December 15, 1981 Letter report on the OL for the three Palo Verde Units (Attachment I), the Committee conditioned its approval on receipt of two reports from the Staff. The first report requested a description of significant construction deficiencies and their disposition, effectiveness of the quality assurance program, and results of the preoperational test program. The Committee reviewed the information pertaining to the above items during its May 1985 meeting and in effect expressed approval of the disposition of these issues (Attachment II). The second request of the Committee was for a review of the startup experience on Unit 1 (by the NRC Staff) prior to fuel load of Unit 2.

Unit 2 is projecting fuel load for November 1985. At the September ACRS meeting, the NRC Staff proposed to supply the Committee with a written report on the Unit 1 startup experience between 0-50% of full power, with an oral report on power operation between 50-100% full power. A copy of the written report on the 0-50% power experience is attached (Attachment III).

In the last two months, Unit 1 of Palo Verde has experienced some problems during startup testing. In particular two issues of concern have surfaced:

1. The appropriate design criteria for the auxiliary pressurizer spray (APS) system, i.e., is the system fully safety grade and in conformance with the plant's licensing basis?
2. Unit 1 experienced a complete loss of offsite power event due to the malfunctioning of a multiplexer system associated with the switchyard common to all three PV units.

Attachment IV provides details of what is known regarding the above two concerns. NRC issued a 10 CFR 50.54f letter (see Attachment IV) in order to address their concern with the APS system. As for the problem with the multiplexer, I understand that APS intends to modify the device in order to preclude any similar malfunction causing a loss of offsite power. Because of the above problems, Unit 1 has not yet exceeded 80% of full power.

MEETING DISCUSSION: For this Subcommittee meeting, it is important to note the following: the NRC Staff will not be providing us with any written documentation of their regulatory positions on the above issues. They will spell out their positions during the meeting presentations but, other than vu-graph slides, there will be no detailed written report from the Staff on resolution of the above issues. In addition, the Staff's review is not complete. The Applicant needs to provide additional analyses concerning the steam generator tube rupture accident in order to close out the APS concern. NRC will detail the status of this item at the meeting.

Because of the above, I have constructed a detailed agenda in order to assure our concerns will be addressed by the Staff and Arizona Power. I

wish to request however that Subcommittee Members question the Staff and Applicant closely to assure all relevant concerns are discussed. In addition, the Subcommittee needs to discuss ultimate disposition of this item vis-a-vis the full Committee (see below).

The "CE portion" of the meeting will begin at ~ 3.45 p.m. with NRC Staff discussion of the status of USI A-45 resolution vis-a-vis the issue of rapid depressurization capability for CE plants without PORVs. The CE Owners Group will review the impact of the current APS issue on previous analyses of rapid depressurization capability for the 3800 MW(t) (CESSAR) plants. The Owners Group will also discuss this issue vis-a-vis the APS configuration for the 3410 MW(t) plants. (Note: the 3410 MW plants - SONGS, Waterford - have a supposedly greater reliance of the APS to mitigate transient events, therefore the system is supposedly a true safety grade design.)

OUTCOME: I believe the Subcommittee should consider the following questions in regard to this issue:

- ° Should the full Committee consider Palo Verde at its November Meeting? If yes - what items should be discussed?
- ° Does the Subcommittee have any concern with continued operation of Palo Verde Unit 1 given the operational history noted to date and/or the current APS design configuration?
- ° Should the Subcommittee make a recommendation to the ACRS regarding the expected licensing schedule of Unit 2 vis-a-vis the problems seen at Unit 1 and the present status of the NRC Staff's review of the above-noted licensing issues for Unit 1?

- ° Does the Subcommittee have a recommendation(s) for the ACRS regarding Commissioner Asselstine's request to the Committee vis-a-vis licensing of Unit 2 (Attachment V)?
- ° Are there any other issues/topics of concern to the Subcommittee that require further action?

Time has been scheduled at the conclusion of presentations for the Subcommittee to discuss the above, or other topics, as it sees fit. Time (~ 3 hours) has also been reserved for discussion of Palo Verde at the November ACRS meeting, again, as the Subcommittee deems necessary.

Attachments: As Stated

TELETYPE

12-5-85

TO:

George Knighton

FROM:

Bill Guion

APF

FIRST
DRAFT

ANPP-

December 5, 1985

ATTACHMENT

- A. As discussed in Reference (B), we do not believe it is necessary to declare a charging pump inoperable based solely on the indication of a cracked block. However, to address the concern of the potential adverse effects of gas binding of a charging pump with a thru-wall cracked block, we will declare the charging pump inoperable within 72 hours of the apparent thru-wall crack discovery. This period of time will allow a thorough examination of the affected charging pump to verify a thru-wall crack does exist or allow the restoration of an inoperable charging pump, if necessary, to meet the Technical Specification requirements. If, at the end of this 72 hour period, the discovered crack has been confirmed to be a thru-wall crack, and less than the required number of charging pumps are operable, Unit 2 will follow the action statement of Technical Specification 3.1.2.3 or 3.1.2.4, depending upon the plant mode. This condition will be effective starting with initial criticality, and remain in effect until the evaluation of the effect of gas binding an operating charging pump which has a pre-existing block crack, committed to in Reference (B) (Item E of the Attachment), has been satisfactorily resolved with the NRC.
- B. As discussed in Reference (B) we do not believe it is necessary to perform a non-destructive examination (NDE) of the charging pumps on Unit 2. However, to collect baseline data, we will obtain the pump manufacturer's NDE records, if available, and verify the validity of the data, or in lieu of valid baseline data from previous NDE's, we will perform an external surface examination on the Unit 2 charging pumps utilizing the appropriate NDE technique. This examination will be completed prior to Unit 2 initially exceeding 5% power.
- C. The interim operation of the charging system requires procedures for venting of hydrogen from a charging pump(s) which has become gas bound. The hydrogen will not be vented into the charging pump cubicle, so that it will not pose a hazard to the operators performing the venting, nor will it result in an uncontrolled or unmonitored radioactive release. Procedures will be submitted for staff approval and a demonstration of the venting procedure will be performed prior to Unit 2 initial criticality.

While the proposed enhancements to the VCT level indicator and outlet valve of the VCT lessen the likelihood of the charging pumps becoming gas bound, a long-term solution to reduce this potential hazard to the pumps will be considered to achieve an appropriate level of system reliability. The long-term solution will be established by an engineering evaluation considering alternative hardware changes necessary to eliminate the need for venting hydrogen from the suction of the charging pumps. The engineering evaluation will include the schedules for procurement and installation of the selected solution. The evaluation and schedules for implementation will be submitted for staff approval by June 30, 1986.

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Actions, Agreements, Assignments, Requests
December 18, '85

ACRS Review of the Palo Verde Nuclear Generating Station, Units 1, 2 and
3

11. The Committee discussed the need for a supplemental report to document its review of the results of the start-up test program, up to 80 percent power, of Unit 1 and the operational status of Unit 2. The members concluded that its position on these units remains as noted in previous reports applicable to this station and that a supplementary report was not necessary.

Blm

AUXILIARY PRESSURIZER SPRAY SYSTEM

- APSS FUNCTIONS IMPORTANT TO SAFETY
 - APSS IS REQUIRED TO FUNCTION FOR PLANT SHUTDOWN PER THE REQUIREMENTS OF BTP RSB 5-1
 - APSS IS REQUIRED TO FUNCTION FOR MITIGATION OF A POSTULATED SGTR EVENT
 - APSS FUNCTION WAS FACTORED IN THE STAFF'S PORV STUDY
- SAFETY CLASSIFICATION OF APSS
 - THE CURRENT APSS DESIGN MEETS BTP RSB 5-1 REQUIREMENTS FOR CLASS 2 PLANT IMPLEMENTATION (DOES NOT REQUIRE SYSTEM TO BE COMPLETELY SAFETY GRADE)
 - THE DESIGN OF THE APSS WATER SUPPLY SYSTEM DOES NOT MEET THE SAFETY GRADE REQUIREMENTS

• APSS WATER SUPPLY SYSTEMS VULNERABILITY

- VOLUME CONTROL TANK (VCT) LEVEL INSTRUMENTS ARE VULNERABLE TO SINGLE FAILURE
- VCT ISOLATION VALVE UV-501 IS VULNERABLE TO SINGLE FAILURE
- WATER SUPPLY LINE FROM THE REFUELING WATER TANK (RWT) VIA VALVE HV 536 IS VULNERABLE TO SINGLE FAILURE
- GRAVITY WATER SUPPLY LINE VALVE NO. ⁵³²~~524~~ AND CONTAINMENT ISOLATION VALVE HV ⁵²⁴~~532~~ ARE VULNERABLE TO SINGLE FAILURE
- POWER SUPPLIES TO VCT LEVEL INSTRUMENTS AND VALVES UV-501 AND HV 536 ARE NOT RELIABLE
- CHARGING PUMPS ARE VULNERABLE TO GAS ^I~~B~~OUNDING DUE TO A FAILURE OF VCT ISOLATION

STAFF POSITION

- REANALYSIS REQUIRED TO SUPPORT LICENSING BASIS
 - SGTR EVENT SHOULD BE REANALYZED ASSUMING WORST SINGLE ACTIVE FAILURE AND USING ONLY SAFETY GRADE SYSTEMS AND COMPONENTS FOR RCS DEPRESSURIZATION FOLLOWING THE EVENT
- SYSTEMS ENHANCEMENTS AND VERIFICATION REQUIRED
 - PROVIDE POWER TO CH-501 AND 536 FROM AN IE MOTOR CONTROL CENTER FOLLOWING A LOSS-OF-OFFSITE POWER AND/OR A SAFETY INJECTION ACTUATION SIGNAL
 - ENHANCE THE RELIABILITY OF THE VOLUME CONTROL TANK (VCT) LEVEL INDICATION
 - PROVIDE AUTOMATIC REALIGNMENT OF CH-501 AND 536 ON LO-LO VCT LEVEL AND LOSS-OF-OFFSITE POWER, TO ALIGN CHARGING PUMP TO TAKE SUCTION FROM THE REFUELING WATER TANK

STAFF POSITION (CONT'D)

- MAINTAIN THE VALVE HV 532 AT A LOCKED OPEN POSITION
- VERIFY THAT THE WATER VOLUME IN THE PWT ABOVE THE UPPER CONNECTION OF WATER SUPPLY LINE HAS SUFFICIENT INVENTORY TO SATISFY THE AMOUNT OF WATER REQUIRED FOR THE APSS
- REMOVE POWER AND LOCK OPEN VALVE 524 TO PREVENT A SPURIOUS VALVE MOTION OR OPERATOR ERROR FROM DEFEATING THE FUNCTION OF THE AUXILIARY PRESSURIZER SPRAY SYSTEM
- VERIFY THE PALO VERDE EQUIPMENT QUALIFICATION PROGRAM TO ENSURE THE COMPONENTS ASSOCIATED IN THE FLOW PATH OF APSS ARE PROPERLY ENVIRONMENTALLY QUALIFIED
- PROPOSE APPROPRIATE TECHNICAL SPECIFICATIONS TO ENSURE OPERABILITY OF ALL SYSTEM COMPONENTS OF THE APSS INCLUDING ITS WATER SOURCES

Auxiliary Pressurizer Spray System Comparison

	San Onofre	Waterford	Palo Verde
1. APSS used in Chapter 15 Analysis	no	no	yes - original no - revised
2. APSS used for RSB 3-1 to reach cold shutdown	yes	yes	yes
3. APSS safety grade ¹⁾	yes	yes	yes
4. Components + valves of +20 supply - charging systems to APSS safety grade	yes	yes	no (control grade)
5. APSS description	manually operated valve outside containment, 1 motor operated valve inside containment, 1 check valve for both	2 solenoid valves inside containment, 1 check valve for each	2 solenoid valves inside containment, 1 with a check valve, 1 with a 7/32" orifice
6. safety grade VCT level indication	yes	yes	no ²⁾

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Sol. Onofre and Waterford

Palo Verde

- | | | |
|---|---|--|
| 7. Following a safety injection | Automatic realignment from BMT to charging pumps via both gravity feed and BHM pumps. VCT bypassed. | No automatic action. With proposed modifications, power to valves 501 and 531 will not be shed thereby allowing gravity feed from RWST to charging pumps |
| 8. Following 10 to VCT level indication | Automatic realignment from RWST to charging pumps via gravity feed | w/o loss of offsite power, automatic realignment of charging pumps to BHM pump flow path and bypassing VCT. Proposed modification allows automatic realignment to the RWST gravity feed line on loss of offsite power. |

1) APSS begins at branch from charging system and ends at pressurizer spray nozzles

2) The proposed modification of having a wet and dry reference leg will give indication with diverse redundancy, however, it is still not safety grade

INSPECTION REPORT 85-32

- b. (Closed) Inspector Followup Item (50-528/85-13-03): "Outdated Nonconformance Report (NCR) Tags on Equipment."

The inspector verified that the licensee had walked down the system and removed the closed out NCR tags as well as any other similar tags which were no longer applicable. During subsequent walkdowns of the various plant systems, no further outdated tags were identified by the inspector. This item is closed.

- c. (Closed) Inspector Followup Item (50-529/84-51-01): "Plant Review Board and Standing Committee Training"

The licensee committed to prepare a formal training session discussing the details of 10 CFR 50.59 for all Plant Review Board and standing committee members by February 1, 1985. The inspector verified that the training session was implemented by the required time. This item is closed.

No violations of NRC requirements or deviations were identified.

a. Unit 1

- 1) During the reporting period, Unit 1 continued with power ascension testing at the 50% and 80% power plateaus. The unit tripped from 55% on September 12, during a load rejection test. The generator output breakers were opened to simulate a loss of load. This caused offsite electric loads, approximately 600 MW, to be tripped, and approximately 70 MW of in-house loads remained connected to the generator through the auxiliary transformer. The turbine electro-hydraulic control system could not maintain control due to a design deficiency. The generator tripped, causing a loss of power to the reactor coolant pumps, and a subsequent reactor trip on loss of reactor coolant flow. A relatively low amount of decay heat, increased steam flow through the opening of the main steam line drains, and a slight overfeeding of the steam generators by the auxiliary feedwater pumps, overcooled the reactor coolant system (RCS), and caused a low pressurizer pressure safety injection actuation (SIAS) and a containment isolation actuation (CIAS). A Notification of Unusual Event (NOUE) was declared because of the reactor trip and SIAS.

During the recovery, a malfunction in the Volume Control Tank (VCT) level instrumentation caused the charging pumps to become gas bound as the VCT was emptied. A loss of non-class 1E power occurred when the auxiliary transformer failed to fast transfer loads to the startup transformers. This complicated the licensee's efforts to restore charging flow. Operators attempted to switch the charging pump suction manually from the VCT to the Refueling Water Tank (RWT), but the gas pressure at the pump suction was greater than the static head from the RWT and in-line check valves seated, preventing flow to the

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charging pumps. This problem was corrected when non-class power 1E was restored, the boric acid makeup (BAM) pumps were operated, and overcame the charging pump suction pressure. The licensee implemented appropriate corrective actions to assure reliability of the charging pumps prior to returning to power.

The unit was restarted on September 15. The load rejection test was reperformed successfully following incorporation of the necessary procedure changes. These included revision to the method of test initiation to ensure the fast transfer of house loads to offsite power was maintained, as well as a modification to remove the open signal to the main steam line drain valves on a turbine trip.

Subsequent review of the loss of charging pumps by the NRC revealed that capabilities to use the pressurizer auxiliary spray were lost when the charging pumps were gas bound. On September 16, power was reduced to 20%, and a shutdown outside control room test was successfully completed on September 16. On September 17 a Confirmatory Action Letter (CAL) was issued by Region V based on concerns about the potential loss of auxiliary spray capabilities (details are documented in paragraph 7). The unit remained in Mode 3 until the requirements of the CAL were accomplished, and the unit restarted on September 21. On September 24, a power level of 60% was achieved, and on September 26, power was increased to 80%.

- 2) On October 3, the unit tripped from 52% power on low reactor coolant flow, when offsite power from the two normal startup transformers was interrupted by a malfunction in the computer assisted plant multiplexer (PMUX) system. This system controls the 13.8 KV electrical breakers located in the switchyard. An NOUE was declared by the shift supervisor following the reactor trip and loss of offsite power. The diesel generators automatically started and supplied the class 1E 4160 volt busses. Offsite power was restored locally from the switchyard and plant parameters were stabilized at no-load conditions. The unit remained shutdown while troubleshooting the PMUX computer system. On October 7, another loss of power occurred with the unit shutdown while troubleshooting the electrical system. The shutdown control element assembly (CEA) banks had been withdrawn to the upper electrical limit, when these rods tripped when power was lost. Control of the breakers for Unit 1 was removed from the PMUX computer system and hard wired and tested prior to restarting the reactor.
- 3) The unit was restarted on October 12. Power ascension resumed at the 80% plateau until the reactor tripped following a scheduled load rejection test from 80% on October 24. When the turbine tripped for the test, an apparent spurious low steam generator level signal caused a reactor trip. A malfunction in the steam bypass control system overcooled the RCS, resulting in a low pressurizer pressure SIAS and CIAS. A NOUE was

- o 41ST-12213 Containment Integrity Penetrations,
October 21, 1985.

No violations of NRC requirements or deviations were identified.

6. Plant Maintenance - Unit 1

- a. During the inspection period, the inspector observed and reviewed documentation associated with maintenance and problem investigation activities to verify compliance with regulatory requirements, compliance with administrative and maintenance procedures, required QA/QC involvement, proper use of safety tags, proper equipment alignment and use of jumpers, personnel qualifications, and proper retesting. The inspector verified reportability for these activities was correct.
- b. The inspector witnessed portions of the following maintenance activities:
 - o Boric Acid Makeup Pump "A" motor/pump alignment under Work Order (WO) 107598 on September 19, 1985.
 - o Preventive maintenance on the movable air monitoring radiation monitor (RV-1) performed under WO number 107459 on October 1, 1985.
 - o Running of wiring for Design Change Package 01-E-NA-054 for the Unit 1 13.8 KV breaker controls under WO number 112435 on October 9, 1985.
 - o Troubleshooting Plant Multiplexer under WO number 111710 on October 9, 1985.
 - o Troubleshooting switchyard 13.8 KV switchgear under WO number 111860 on October 10.
 - o Steam Bypass Control System set point verification under WO number 99133 on October 23, 1985.

No violations of NRC requirements or deviations were identified.

- [REDACTED]
- a. Region V issued confirmatory action letters (CAL) to the licensee on September 17 and 20, 1985, to confirm the licensee's commitment that Unit 1 would not be restarted following the September 16 shutdown until short term compensatory measures were taken to address concerns by the NRC relating to the auxiliary spray system. These measures included:

- (1) Monitor the reference leg of the Volume Control Tank (VCT) level indicator on a daily basis.

- (2) Revise the appropriate procedures to require alignment of the Refueling Water Tank (RWT) to the charging pump suction promptly on loss of offsite power.
 - (3) Institute procedural cautions on restart of the charging pumps.
 - (4) Examine the post-trip review process in light of the September 12, 1985, event to assure that off-normal events are adequately evaluated, particularly with respect to their potential safety significance.
 - (5) Examine the process for vendor reviews of the remaining power ascension tests to assure that, for equipment particularly sensitive to the test being conducted, appropriate vendor input has been provided in the test development.
 - (6) Review the shift complement for the remaining power ascension tests to determine if additional staffing may be appropriate.
- b. The inspector verified that the licensee's actions associated with the confirmatory action letters were properly implemented. In particular, the numbers in parentheses below directly correspond to the compensatory measures listed above.
- (1) The inspector, through the review of completed daily preventive maintenance work orders from September 21 through October 14, 1985, verified that the VCT reference leg level was being monitored by the licensee. No change in VCT reference leg level was observed.
 - (2) Procedures 41AO-1ZZ12, Degraded Electrical Power; 41AO-1ZZ13, Natural Circulation Cooldown; and 41RO-1ZZ14 Loss of Forced Circulation, had procedure change notices (PCNs) issued that incorporated a note to the operator that upon a loss of offsite power the charging pump suction should be swapped from the VCT to the RWT. The inspector verified that the swap was performed in a timely manner during the subsequent October 3 loss of offsite power event.
 - (3) Procedure 41EP-1ZZ01, Emergency Operations; and 41RO-1ZZ10, Function Recovery; had PCNs issued to include a precaution that, should a charging pump trip, the cause of the trip should be isolated, and it should be ensured that no common mode failure would prevent charging pump operation. Based on comments from the inspector, the licensee stated that other off-normal procedures would be re-reviewed for possible inclusion of the procedural caution, if applicable. Specific procedures for re-review included 41RO-1ZZ04, 41AO-1ZZ12 and 41AO-1ZZ13. The inspector will follow the licensee's actions (50-528/85-32-01).
 - (4) The Technical Support Manager issued a memorandum that designated several individuals from the various sub-units within his department to form a post trip review team,

responsible for the review of post trip data and information. The licensee's performance associated with post trip reviews has shown steady improvement as experience has been gained.

- (5) A letter was issued by the licensee that requested that Combustion Engineering (CE) and General Electric (GE) review the remaining tests associated with the power ascension program to insure that the test method does not lend itself to creating any unnecessary challenges to the plant safety features, or put the plant in an unsafe condition. CE had a representative involved in procedure reviews of all tests since low power licensing; however, the reviews now include concurrence from the Windsor office prior to test approval. GE, which was not formally involved in the procedure reviews previously, now will review those test procedures associated with the performance of the main turbine (i.e. load rejection) prior to test approval.
- (6) The Operations Manager has reviewed the shift complement for the remaining tests and has increased manning levels for tests which could result in a significant transient. This action was evident during the October 24, loss of load test from 80% power.

No violations of NRC requirements or deviations were identified.

8. Review of Preoperational Testing Activities - Unit 2

a. Major Test Activities

During the inspection period, the Integrated Test of Engineered Safety Features (ESF) was completed following 22 days of testing. The testing was intended to confirm that the ESF functioned as designed. With minor exception, the systems performed as required. Corrective actions were taken to resolve identified deviations. The plant is currently engaged in the completion of design changes, corrective work items, and surveillance tests needed as a prerequisite to licensing.

b. Preoperational Test Witnessing

The inspector witnessed portions of the Integrated Test of Engineered Safety Features, 93PE-2SA01.

The inspector verified that an approved procedure was used, test personnel were knowledgeable of the test requirements, and data was properly collected. Procedure changes and test exceptions were identified and significant events were recorded in the test log. Other test related activities such as the use of calibrated measuring and test equipment (M&TE), and completion of test prerequisites, were also verified to have been accomplished in accordance with administrative control procedures.