FEB 2 1993

Docket No. 50-302
License No. DPR-72

Florida Power Corporation
Mr. Percy M. Beard, Jr.
Senior Vice President, Nuclear
Operations
ATTN: Manager, Nuclear Operator
Licensing
P. O. Box 219-NA-21
Crystal River, FL 34423-0219

Gentlemen:

SUBJECT: MEETING SUMMARY - CRYSTAL RIVER UNIT 3

This letter refers to the meeting conducted at your request at the NRC Region II offices in Atlanta, Georgia, on January 22, 1993. The purpose of the meeting was a Florida Power Corporation presentation on operations enhancements at Crystal River. A list of the attendees and handouts from the presentation are enclosed.

It is our opinion that this meeting was beneficial and provided a better understanding of your organization's performance and goals.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 1, 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 letter, please let us know.

Sincerely,

Original signed by

Ellis W. Mershoff, Director
Division of Reactor Projects

Enclosures:
1. List of Attendees
2. Presentation Summary

120036

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Vice President, Nuclear Production
Florida Power Corporation
P. O. Box 219-SA-2C
Crystal River, FL 34423-0219

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IE01

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A. Long, RII
H. Silver, NRR
Document Control Desk

NRC Resident Inspector
U.S. Nuclear Regulatory Commission
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Crystal River, FL 34428

RII:DRP	RII:DRP	RII:DRP
ALong	KLandis	MSinkule
02/ /93	02/ /93	02/ /93

ENCLOSURE 1

LIST OF ATTENDEES

U. S. Nuclear Regulatory Commission

S. D. Ebneter, Regional Administrator, Region II (RII)
L. A. Reyes, Deputy Regional Administrator, RII
A. F. Gibson, Director, Division of Reactor Safety (DRS)
J. J. Johnson, Deputy Director, Division of Reactor Projects (DRP)
H. N. Berkow, Director, Project Directorate II-2, Office of Nuclear Reactor Regulation (NRR)
H. Silver, Project Manager, Crystal River, Project Directorate II-2, NRR
T. A. Peebles, Chief, Operations Branch, DRS
M. V. Sinkule, Chief, Branch 2, DRP, RII
K. D. Landis, Chief, Section 2B, DRP, RII
R. P. Schin, Project Engineer, DRP, RII
A. R. Long, Project Engineer, DRP, RII

Florida Power Corporation

P. M. Beard, Jr., Senior Vice President, Nuclear Operations
G. L. Boldt, Vice President, Nuclear Production
B. J. Hickle, Director, Nuclear Plant Operations

ENCLOSURE 2

HANDOUTS

- Example of STAR
- Example of trends from operator logs
- Example of flow charts from VP-580
- Example of revised Annunciator Procedures

The recent incident involving BSV-3 serves to remind us all of the importance of attention to detail and the necessity of self-checking when manipulating plant equipment. We need to re-emphasize carrying out of all plant evolutions in a thoughtful, deliberate manner, using self-checking techniques.

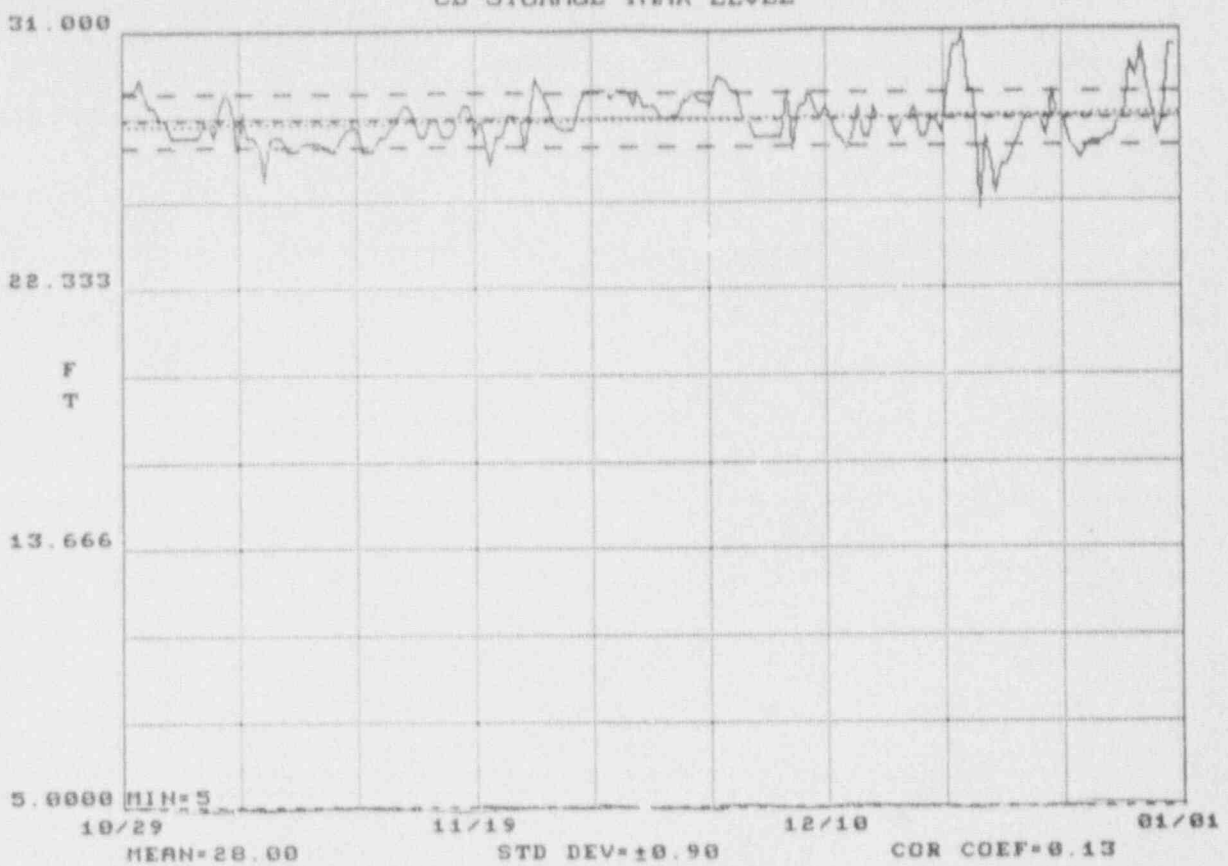
STOP: Organize thoughts & concentrate on details of task.

THINK: Locate the correct components & procedures. Verify instructions, equipment locations, & time limits. Anticipate the expected response when the task is performed.

ACT: Confirm the correct unit, train, and/or component. Perform the task carefully & safely.

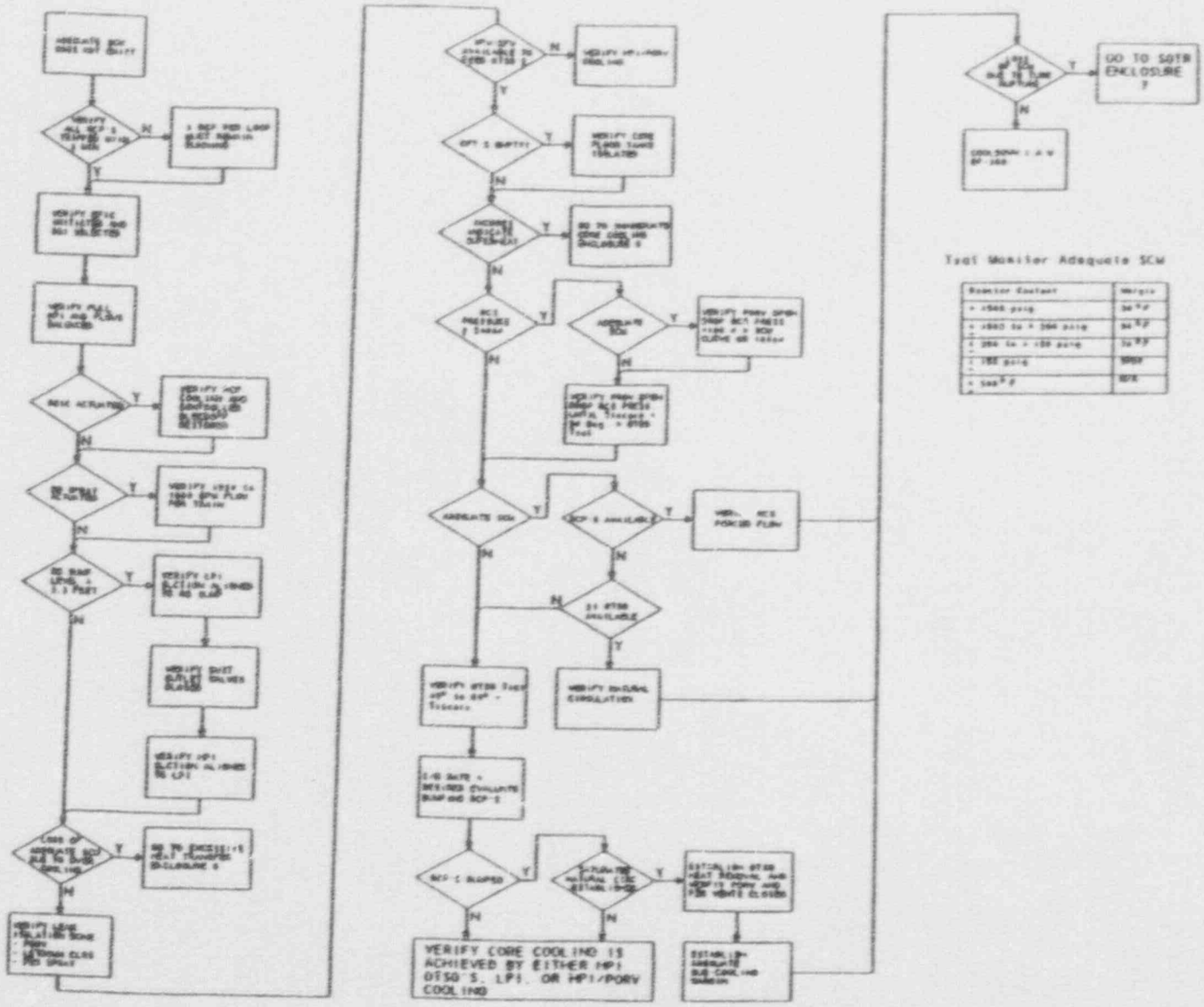
REVIEW: Observe & verify that the task was performed correctly, that the actual response is as expected, and that the component/system is in the desired configuration to support intended plant operations.

In summary: Although it is recognized that plant operations & procedures must be performed in a timely manner, we must also take time to incorporate self-checking techniques into all our tasks.


CD STORAGE TANK LEVEL
31.000
22.333
F
T
13.666
5.0000
MIN=5
10/29
11/19
12/10
01/01
MEAN=28.00
STD DEV=±0.90
COR COEF=0.13

ENCLOSURE 4

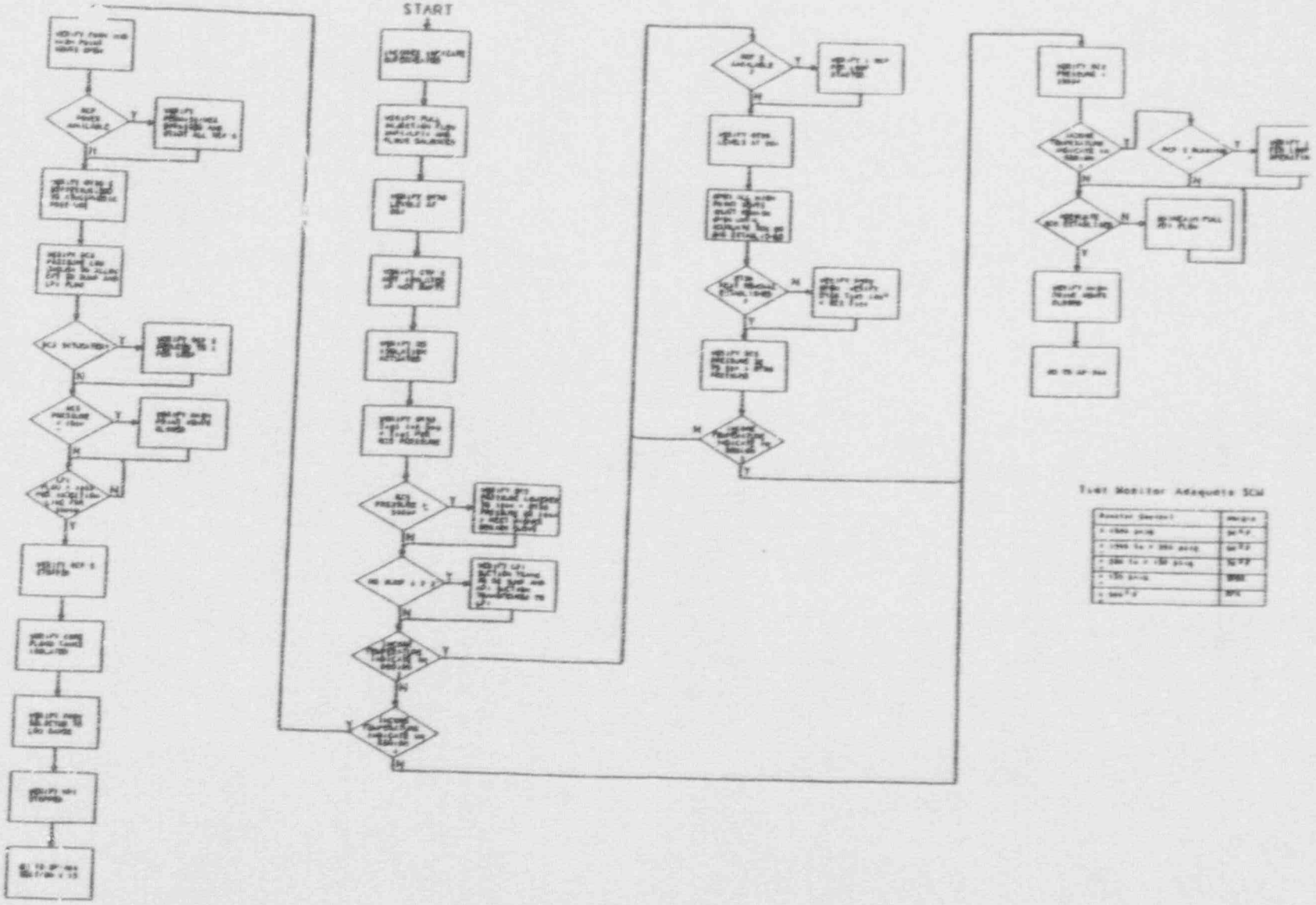
Loss of Subcooling Margin



Reactor Coolant	Margin
> 1565 psig	34 °F
> 1565 to > 1365 psig	44 °F
> 1365 to > 1165 psig	54 °F
> 1165 psig	MMSM
> 540 °F	NOT

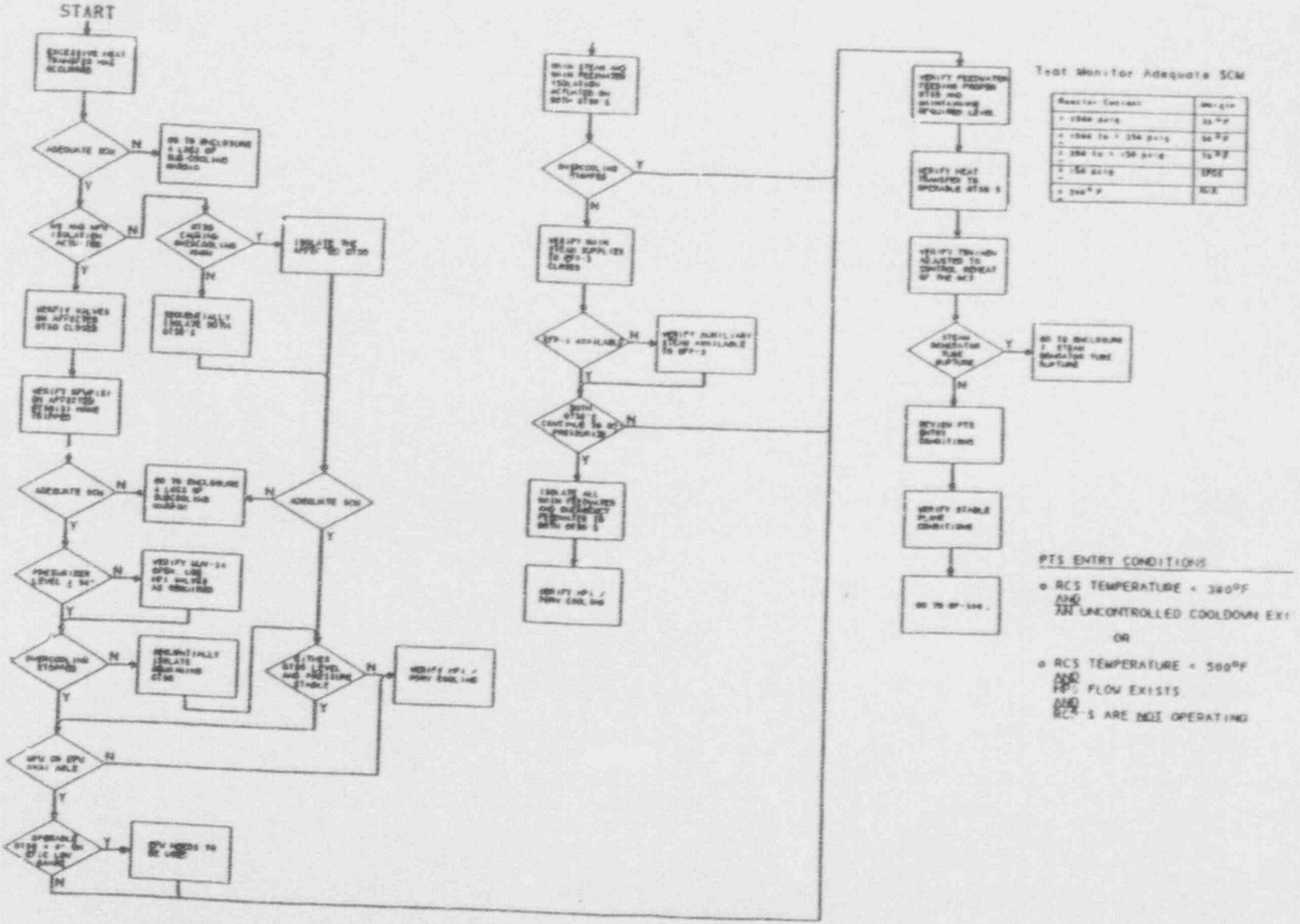
ENCLOSURE 5

Inadequate Core Cooling

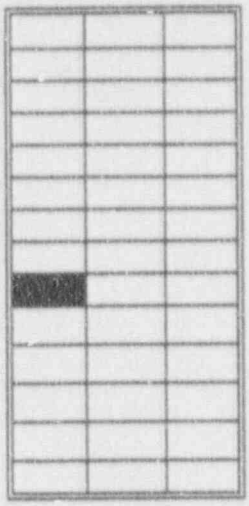


VP-580	REV 20	PAGE 17 of 19	PSVP

Excessive Heat Transfer



ESAB-A ANNUNCIATOR RESPONSE	ESAB-A-01-09	C-01-09



SW SURGE TANK PRESS HIGH/LOW

EVENT POINT 1838

INDICATED CONDITION:

- SW SURGE TANK PRESSURE **<75 PSIG** AS SENSED BY SW-134-PS.

REDUNDANT INDICATION WHICH WILL VERIFY ALARM:

- LOW INDICATED TANK PRESSURE.
- LOW SW SURGE TANK LEVEL.
- SW SYSTEM PRESS LOW.

OPERATOR ACTION FOR A VALID ALARM:

- REFER TO AP-330.
- CHECK FOR TANK GAS SPACE LEAKS.
- CHECK TANK PRESSURE CONTROL BYPASS VALVE (SWV-198) CLOSED.
- CHECK TANK PRESSURE CONTROL VALVE (SWV-281) NOT LEAKING BY.
- IF PRESSURE ALARM CAUSED BY LOW LEVEL, RESTORE LEVEL TO NORMAL BAND.

DISCUSSION:

IT IS POSSIBLE TO CHECK FOR SWV-281 LEAK BY CLOSING VALVE SWV-282 AND OBSERVING FOR TANK PRESSURE TO RECOVER.

REFERENCES: DRAWING 208-056 SHEET SW-31

SENSING ELEMENT: SW-134-PS

PAST ISSUES

Changes Since Self-Assessment of 1991

- Self assessment performed in December of 1991 "Generic Implications of Reactor Trip Events"
- Resulted in recommendations in the following areas:

  Operations
  Maintenance
  Training
  Engineering

KEY ACTIONS
TAKEN IN OPERATIONS

- Trained operators on lessons learned from the December 1991 trips.
- Established guidance for bypassing ES systems.
- Reviewed and balanced shift composition.
- Increased the number of Chief Nuclear Operators to assure experienced operators remained at the controls. Many of the CNO's are SRO licensed.
- Provide startup training to operating crews prior to plant startups from midcycle or refueling outages.

KEY ACTIONS
(Continued)

- Reinforced the roles of the:
  - Shift supervisor (SRO) - command and control
  - Manager on Call - backup resources/approvals
  - Shift technical advisor - technical advice and event oversight to assist the shift supervisor
- Added new position of Shift Manager
  - Currently on two shifts/day, 5 days/week
  - Department head level managers, current or ex-SRO
- Placed shift technical advisors on-shift

KEY ACTIONS
(Continued)

- Revised annunciator response procedures (ARP's) and emphasized their proper use
- Completed revision to emergency operating procedures (EOP's) - implementation to occur in 1993
- Made changes to the production organization to:
  A. Flatten layers and improve communication
  B. Improve maintenance support for operations
  C. Improve engineering support for operations
  D. Improve outage support for operations

OPERATIONS

SALP Finding

"Operator performance during routine operations was good; however, on occasion, operators failed to require a sufficiently detailed review to properly control maintenance and surveillance evolutions and operator performance during responses to transient conditions was inconsistent."

OPERATIONS ANOMALIES

April 1991 to Present

November 1991	Reactor Trip: Inadequate deaerator level control
December 1991	Reactor Trip: Adjusted overpower trip with failed NI channel
December 1991	Reactor Trip: RCS pressure transient; Inappropriate bypass of ES
March 1992	Reactor Trip: Inverter trouble shooting with deficient relay design
June 1992	Inadvertent isolation of decay heat removal system
October 1992	Inadvertent reactor building spray initiation
November 1992	Weakness in Requalification Program

EVALUATION OF OPERATIONS PERFORMANCE

- Overall performance has been inconsistent and needs improvement
- Root causes and contributing causes of operations anomalies vary and have no common theme
- Thorough corrective actions have been identified and taken which should prevent recurrence in each case
- Most of these anomalies could have been prevented by improved human performance
  - Attention to detail
  - Questioning attitude/judgment
  - Command and control

FUTURE FOCUS: IMPROVE OPERATOR PERFORMANCE

1. Identify Earlier, Indicators of Deteriorating Performance

   - Increase management involvement in operator rounds (2/93)
   - Assess crew performance on first day of simulator requal training (6/39)
   - Lower threshold for action on performance deficiencies (12/93)
   - Enhance evaluation depth and consistency of human performance problems (6/93)

2. Enhance Training in Selected Areas

   - Good human performance practices (3/93)
   - Specific training to address noted deficiencies (on-going)
   - Increase peer evaluator contact hours with new operators (3/93)

3. Review and Clarify Operating Standards

   - AI-500 (3/93)

4. Improve Tools Operators Use To Do Jobs

   - Procedures: EOPs (8/93), VPs (6/93), ARs (3/93)
   - Computerized log taking and trending (on-going)

5. Improve Operator Support

   - OTA effectiveness and availability (on-going)
   - Shift Manager full shift coverage (6/93)

REACTOR TRIP

December 29, 1992

Description: RCS high pressure trip when feedwater flow rapidly decreased to "B" steam generator

Cause: Dirt and crud buildup in feedwater pump governor actuator

Lessons Learned:

- Operator response during transient and startup was appropriate
- Overall System performance adequate
- Preventive maintenance routines for control oil and governor require reassessment
- Shift Managers and OTAs added value to recovery efforts
- Trouble-shooting could have been better controlled
- System engineers demonstrated comprehensive system knowledge
- Secondary leakage in RB from inspection cover on "A" steam generator

Florida Power
CORPORATION

INTEROFFICE CORRESPONDENCE

NUCLEAR COMPLIANCE	NA 2D	240-3375
Office	MAC	Telephone

SUBJECT: Status of Corrective Actions -
Reactor Trip Events - December 1991

TO: P. M. Beard, Jr.

DATE: December 8, 1992
SNC92 0152

The attached report provides the most recent revision of the status of corrective actions to our previous report, "Generic Implications of Reactor Trip Events in December 1991". This revision includes the most current updates as well as corrections to minor discrepancies identified by QPER 92-19, "Corrective Action Program Review - Follow-up to December 1991 Reactor Trips".

G. L. Boldt

JAF:mag

Att.

xc: R. C. Widell

5/85

GENERIC IMPLICATIONS OF REACTOR TRIP EVENTS IN DECEMBER 1991
STATUS OF CORRECTIVE ACTIONS - DECEMBER 1992

ITEM		ITEM STATUS
OPERATIONS		
A1	Training for shift which will restart the plant	**Complete.** Training was provided through the Licensed Operator Requalification program using Lesson Plan ROT-9-26.
A2	OSB entries for all three trips	**Complete.** Operations Study Book (OSB) entries 9112.01, 9112.02, and 9112.03 addressed the reactor trips on 11/25/91, 12/03/91, and 12/08/91 respectively.
A3	Refresher S/U training for available operators	**Complete.** Training was provided through the Licensed Operator Requalification program using Lesson Plan ROT-9-26. This training included all available operators and SOTAs, specifically including those doing the startup. This training was also conducted for the crew doing the restart from the April 1992 reactor trip recovery outage and for operating crews prior to restart from 8R.
B1	Reinforce Man-On-Call concurrence for required actions (especially work in systems that can trip the plant)	**Complete.** The policy of utilizing the Man-On-Call as a resource during any unusual or off-normal occurrence or plant evolution has been established and the practice is being reinforced during simulator training. A plant management commitment has been made to make the Man-On-Call available for training purposes. Additionally, a dedicated telephone line has been installed at the simulator site so that simulator crews can practice communication with the Man-On-Call during selected practice sessions.

ITEM		ITEM STATUS
B2	Reinforce SRO concurrence for required actions (especially bypassing "ES")	Complete. Operations Study Book (OSB) entry 9112.04 addressed Engineered Safeguards (ES) Guidance, and the need to notify the SSOD prior to bypassing any ES actuation. This guideline further provides details regarding under which conditions bypassing ES is/is not acceptable. Procedure AI-500, Conduct of Operations, has been revised to include a section on bypassing safety systems actuations and approvals required prior to such bypasses (Revision 73, paragraph 4.1.2).
B3	Correct any information resource deficiencies	Complete. Revision 65 to procedure OP-203, "Plant Startup", has been completed. This revision addresses the topics to be discussed by the operators at a pre-job meeting (paragraph 4.1.11); condensate control operations (paragraph 4.2.9); and turbine generator start-up, including the requirements for auto or manual breaker closure actions (paragraph 4.2.21 and 4.3.28).
B4	Balance shift staffing	Complete. Procedure AI-500, Conduct of Operations, includes the requirement for a balance in shift staffing under "Responsibilities" of the Nuclear Operations Superintendent. This requirement specifically addresses consideration of experience levels, personnel behavioral compatibility, and overall management styles in achieving a cohesive operating team (Revision 73, paragraph 3.2.1).
B5	Review "Shift Manager" concept	Complete. The Shift Manager concept has been reviewed and appropriate recommendations for this position have been made. The Shift Manager will be an additional position on shift and will currently hold (or have held in the past) an active SRO license. When fully staffed, there will be five Shift Managers working a 12 hour shift rotation. This program will be partially implemented by December 1992. Full staffing will occur following completion of the 1993 SRO license class pending successful results. To date, all five prospective shift managers have

ITEM		ITEM STATUS
		been named, two of which are currently in SRO training.
C1	Additional CNOs on shift	**Complete.** Six Nuclear Operator positions have been reclassified to Chief Nuclear Operator and filled.
MAINTENANCE		
A1	Review other 8M work	**Complete.** A review of work completed during the Midcycle 8 outage was performed to identify potential maintenance items that could cause plant transients. This review was completed prior to start-up and included a review of AHF-2A/2B work, work performed by contractors, MOVATS work, and work on equipment critical to plant operations which included equipment critical to pressure, temperature, and reactivity control. Following the review, a list of actions to be completed prior to start-up was developed and these actions completed.
A2	Revise SP-324	**Complete.** SP-324, Containment Inspection, was revised to require a visual observation to ensure that a three inch gap exists between the fuel transfer canal seal plate and the fuel transfer canal floor, with a sign-off specific for that observation (Revision 26, Data Sheet I).
B1	Evaluate methods for review of PMT when WR scope expands	**Complete.** Revision 8 to CP-113A, Work Request Initiation and Work Package Control, includes changes to paragraph 4.4.2.1 for the work supervisor to assure the work request is re-evaluated for adequacy of post-maintenance testing if work scope must be revised. Paragraph 4.1.1 (of Revision 10) of CP-113B, Work Request Evaluation, provides guidance to the planners for re-evaluation and post-maintenance test review when the work scope changes from the original evaluation. Additionally, training has been provided (and documented by attendance sheets) to the First-Line supervisors and Senior Shop Supervisors on the need to have work packages reviewed for post-maintenance

ITEM		ITEM STATUS
		test changes when the work scope changes from the original evaluation.
B2	Evaluate methods to involve System Engineers more closely in maintenance	Complete. An evaluation of methods to involve system engineers more closely with maintenance and post-maintenance testing on their systems has been completed during the Spring 1992 outage. The Systems Engineering Manual (Rev. 4) has been revised to address these issues, and its requirements will be applied in appropriate cases. Revision 0 of AI-255, System Outage Scheduling and Implementation, has been developed by the Scheduling department incorporating a "System Manager" concept which provides for leadership of the Pre-outage (system) Planning team and for technical oversight. The above action completes the intent of this recommendation. However, further enhancement in this area will be considered as an ongoing activity with additional corrective actions as described in the current revision to the Key Plant and Equipment Problem List under "Control and coordination of system/component maintenance". Maintenance/Component engineering has become the first point of contact for all shop questions.
C1	Improve documentation of work performed	Open. A review and evaluation of work package documentation was performed and the concern for proper documentation has been recognized. This review also revealed that this same documentation problem exists in shop logs. To raise the quality level for work package documentation and shop log keeping, written standards for both will be developed following the review of work packages currently in process. Information derived from the Refuel 8 outage is being factored into these standards, which are expected to be completed during December 1992. Personnel will be trained on the content of the new guidance once developed.

ITEM		ITEM STATUS
C2	Monitor quality of work package completion	Open. (Ongoing periodic reviews of work package documentation have been conducted in the past). Following the issuance, in December 1992, of written standards for both work package documentation and shop logs, maintenance department personnel will develop acceptance criteria to be used by Quality Auditing personnel and Work Controls in reviewing a sample of work packages prior to closure. These routine, periodic reviews will be directed toward adequacy of work package descriptive information, proper identification and disposition of identified problems, and adequate control/application of material used in the work activity. The Planning Department is currently monitoring the work package closure documentation by reviewing selected work packages and the review of closure information on selected work packages on MACS. The results of these reviews will be evaluated and identified deficiencies will be corrected. Additionally, Quality Programs has committed to the inclusion of work package reviews as a standard part of the audit program. The frequency of such audits will be adjusted based on indicated need.
D1	Reduce maintenance overtime in future outages	Complete. The maintenance department reviewed the excessive overtime issue and established a policy which limits scheduling of personnel to a maximum of 60 hours per week, and does not permit working more than 72 hours per week.
TRAINING		
A1	Provide S/U training prior to S/U in future outages	Complete. Restart training is an on-going activity and has been conducted for at least the last three outages. FPC intends to apply this practice to other selected outages as follows: FPC management designates the crew(s) to start the plant and trains them in the restart. This approach was most

ITEM		ITEM STATUS
		recently applied during the restart from the 8R outage.
A2	Supplement operating crews during S/U's	Complete. Revision 73 to AI-500, Conduct of Operations, explains the Shift Supervisor's authority to supplement the operating crew with additional personnel during plant startups and other off normal evolutions in paragraphs 3.2.2 and 4.2.1. The Shift Manager concept and Shift Technical Advisors "on shift" (discussed elsewhere in this report) will provide additional assistance to the operating crew.
B1	Remedial training for shift on duty during trip #3	Complete. The crew manning the control room during the 12/8/91 reactor trip was given remedial training in the classroom as well as the simulator. The classroom training consisted of training on how to distinguish between LOCAs, overcooling, and inadequate heat transfer. This training was completed under Lesson Plan ROT 3-20, Symptom Oriented Procedure Philosophy. Simulator training consisted of upsets in RCS pressure control under ROT 9-9, Variable Size LOCAs, and diagnostic skill development during different plant upsets under ROT 8-24, Instrument Failures. Additionally, the crew was trained on faulted reactor startups, including a demonstration of the 12/8/91 trip under ROT 9-100. To ensure that the crew understood all three reactor trips, special training was conducted during the first requalification cycle of 1992. This special training was conducted under ROT 5-49, Special Training, which constituted a case study of all three reactor trips. This training investigated the sequence of events, what went wrong, what actions the operators took, what actions they should have taken, what procedures were revised as a result of these trips, and new guidance on bypassing any safeguards system.

ITEM		ITEM STATUS
C1	Develop guideline for bypassing safety functions	Complete. Paragraph 4.1.2 of Revision 73 of AI-500, Conduct of Operations, includes guidance on bypassing of safety system actuations, including ES actuations. The CR-3 policy states that it is contrary to the policy to bypass or prevent automatic safety functions from performing their intended function. This policy does allow bypassing of automatic safety system actuation provided that such placement is appropriately approved (by the SRO) prior to placing the system in bypass and, further, that such placement is directed by an approved plant procedure.
C2	Train operators on guideline	Complete. In order to ensure that all licensed operators were aware of the 12/8/91 reactor trip, as well as the reactor trips on 11/25/91 and 12/2/91, special training was conducted for all operating crews during the first requalification cycle of 1992. As part of this training, ROT 5-49, Special Training, was used to conduct a case study of the three reactor trips. This training investigated the sequence of events, what went wrong, what actions the operators took, what actions they should have taken, and what procedures were revised as a result of these trips. The procedure changes included new guidance on bypassing any safeguards system. This guidance is specified in Operations Study Book entry #9112.04, and AI-500, Conduct of Operations. Training on this new guidance on bypassing any safeguards system was also conducted during this Special Training.

ITEM		ITEM STATUS
D1	Enhance operator training in "normal operations"	**Complete.** This action was intended to create a commitment to expand training in this area in the future. As a result, some sessions have been conducted and others will be as an on-going activity. In addition to classroom training in normal operations, simulator training will be increased in this area. To assure a continued balance between normal operations and severe accident interests, management involvement in training has also increased, including more frequent participation by Directors in the observation and evaluation of training in both maintenance and operations.
D2	Review/approval of lessons learned	**Complete.** This is an ongoing activity by means of the continued free flow and feedback of information between operations and training. A review and approval of "lessons learned" by operations personnel from the three reactor trips was conducted by the Training Department and the information derived was used to prepare ROT 5-49 Special Training, addressing the three reactor trips.
E1	Restructure composition of crew on duty during trip #3	**Complete.** Following appropriate evaluations, the operating crew that was on shift during the third trip was restructured. The Shift Supervisor and Assistant Shift Supervisor were placed on different crews and the licensed operators were likewise reassigned to take advantage of varied experience levels.
E2	Review shift composition practices	**Complete.** The methods utilized in determining shift crew composition have been reviewed and a requirement for the Nuclear Operations Superintendent to consider experience levels, personnel behavioral compatibility and management styles in balancing shift complements has been included in Revision 73, paragraph 4.2.1 of AI-500, Conduct of Operations.

ITEM		ITEM STATUS
F1	Develop questioning attitude	Complete. Paragraph 4.2.2 of AI-500, Conduct of Operations, was revised to include a general responsibility for all Operations personnel to develop and maintain a questioning attitude. The AI-501, Conduct of Nuclear Operations Proficiency Assessments, process is being utilized to stress a questioning attitude as part of the management overview. Additionally, management continues to stress the need for a "questioning attitude". At a recent Operations Crew dinner, the Vice President, Nuclear Production presented cards to the members of the Operations Crews, which present a simple six step plan: defining the problem; consulting the resources; deciding on the course of action; considering the consequences of being wrong; mitigating or eliminating the consequences; and acting to implement the decision. The questioning approach was also used during the April 1992 outage and electrical troubleshooting evolution to evaluate and make appropriate changes to available electrical power supplies.
F2	Involve MOC/SOTA/Engineer on call in simulator exercises	Complete. Direct involvement of the MOC/SOTA/Engineer required no change in the conduct of simulator training other than the installation of a live telephone in the simulator control room. This phone has been installed. Simulator requalification training includes full participation by the SOTAs and instructors role playing as the MOC or Engineer, as required. The plant staff has committed to enhance the involvement of the MOC/Engineer in simulator exercises by having the actual MOC respond to calls from the simulator during selected scenarios, reinforcing policy and practice to keep senior management informed and involved in operating decisions.

ITEM		ITEM STATUS
F3	Emphasize use of annunciator response procedures	Complete. Criteria regarding use of annunciator response procedures is included in AI-501, Conduct of Nuclear Operations Proficiency Assessments, Revision 3, paragraph 4.2.2.2.) and in AI-500, Conduct of Operations (Revision 73, paragraph 4.1.3). Emphasis is placed on the use of these procedures during the training sessions given to operations personnel.
G1	Define role of the SOTA	Complete. The role of the SOTA has been described to act as an advisor to the shift supervisor relative to plant status and to recommend mitigation actions on the strategic level, as appropriate. As an advisor, the SOTA must remain independent of other members of the shift by maintaining a questioning attitude. After the plant status is either stable or predictably trending, the SOTA may assist the shift supervisor in other activities.
G2	Improve training on SOTA diagnostic skills	Complete. SOTA diagnostic skills improvements has been addressed on a variety of fronts. SOTAs attend Licensed Operator classroom and simulator requalification training; participation in this training serves to improve the SOTAs' knowledge level and allows them to hone their diagnostic skills. SOTA-specific simulator training concentrating on the improvement of diagnostic skills has also been completed. In addition to the original intent of this recommendation, the purchase of an operational "see-through" reactor model in 1993 will further provide a training tool to reinforce thermodynamic theory with visual/physical evidence.
G3	Enhance operational experience and teamwork opportunities for SOTAs	Complete. The SOTAs attended the recent INPO Team Training course. The SOTA role has been better defined and operations personnel have been made more aware of how and where the SOTA fits on the operating crew team. The SOTAs were

ITEM		ITEM STATUS
		also placed "on shift" as opposed to their former "on-call" status effective October 19, 1992. This action is expected to have an additional positive impact on the teamwork between the SOTAs and the operating crew.
G4	Ensure verification procedures do not dilute OTA ability to "get the big picture"	Open. A prior revision to VP-540, Runback Verification Procedure, approved on September 9, 1991, was reviewed and assessed to adequately address this concern in the overall tone of the revision. A revision to VP-580, Plant Safety Verification Procedure, has been submitted for final review with an expected issuance date of December 1992. This procedure will include flow charts for diagnosing symptoms of inadequate heat transfer. An effort to totally reassess the needs of the SOTA in terms of verification procedures has commenced. This effort is expected to result in one or more totally new verification procedures. The expected issuance date for these new verification procedures is January 1993.
G5	Develop diagnostic aids for OTA's	Open. Diagnostic aids for the SOTAs have seen substantial improvement since the three 1991 reactor trips. A revision to VP-580, Plant Safety Verification Procedure, has been submitted for review and approval. This procedure will include a flow chart for diagnosing symptoms of inadequate heat transfer. The expected issuance date for VP-580 is December 1992. A temporary recall system has been installed on the simulator to improve the diagnostic aids available to the SOTAs during training. This system will eventually be replaced by the new PICS (Plant Integrated Computer System). When installed, the PICS in combination with the safety parameter display system, should provide the desired diagnostic aids for the SOTA.

ITEM		ITEM STATUS
ENGINEERING		
A1	Define Root Cause for RCV-14	Complete. Failure Analysis 91-RCV-14-01 was performed for the RCV-14 failure, and the root causes for the depressurization of the RCS on 12/8/91, the failure of RCV-14 to close, and the false RCV-14 position indication are included in the Failure Analysis report.
A2	Evaluate RCV-14 history	Complete Failure Analysis 91-RCV-14-01 was performed for the RCV-14 failure, and the RCV-14 Maintenance History was included as Attachment 3 of this report. The history included thirty-six entries extending from January 1980 through November 1991.
A3	Accelerate failure history review for other equipment	Complete. An improved program for Failure Analysis, the Maintenance Precursor Program, Root Cause Analysis correction, and the Repetitive Failure and Equipment Reliability Program all act to accelerate the identification process for equipment which may be susceptible to repetitive failure. Examples of the success of the improved program for Failure Analysis include three recent failure analyses addressing DHP-1A/B, AHF-1A, and SWP-1C. The maintenance Precursor Program is a pilot program which is intended to identify minor problems which may then be remedied prior to their development into major deficiencies. Root Cause Analysis corrective actions are an integral part of the Failure Analysis program, wherein recommended corrective actions for the root cause and contributing causes are assigned to the appropriate department for resolution. The Repetitive Failure and Equipment Reliability Program has been developed to include all CR-3 components. Selected information from both CMIS (Configuration Management Information System) and MACS (Maintenance Activity Control System) is being extracted and placed in a database for subsequent data reduction and report preparation. Additionally, a new procedure, CP-143, Repeat Maintenance

ITEM		ITEM STATUS
		Program Identification Evaluation and Tracking, provides additional data relative to this issue.
B1	Time study System Engineering activities	Complete. A time study of the System Engineer's daily activities is necessary for successful implementation of the System Manager concept. Progress is being tracked by both the Key Plant Problem List and NOTES (Nuclear Operations Tracking and Expediting System). Nuclear Plant System Engineering provided monthly reports of tracked manhours through September 1992. A final report addressing the analysis of this data and providing recommendations to senior management has been developed. The report is being studied for additional realignment of duties of the system engineer.
B2	Take Corrective action on the recommendations of the time study	Open. Action for this item follows completion of recommendations of the time study of the System Engineer's daily activities. The System Manager concept was implemented on a trial basis during the April Mode 5 outage and will continue to be applied to other significant system projects on a case basis. Additional actions are being considered such as transferring procedure writing duties to a dedicated writers group.
B3	Establish performance indicators for vital functions	Open. The Systems Engineering Manual (Rev. 4) establishes the mechanism by which vital engineering functions are tracked by performance indicators visible to senior management. Data and trending graphs are being prepared monthly on thirteen key items, including: REAs received, processed, and backlog; Problem Report backlog; NOTES items received, processed, backlog, and overdue; Procedure reviews; manhour accounting; and procedure revisions. Tracking of system walkdowns is currently being accomplished. Reporting of this indicator will start in the January 1993 monthly report.

ITEM		ITEM STATUS
C1	Establish Root Cause criteria	**Complete.** Establishment of "root cause threshold" criteria enables personnel to determine when the preparation of a failure analysis and root cause determination is appropriate. NOD-40, Root Cause/Failure Analysis, in concert with CP-144, Root Cause Analysis, establish the desired criteria.
C2	Establish "brainstorming" practices	**Complete.** Brainstorming practices are addressed in the Systems Engineering Manual (Rev. 4). This manual provides guidance for aggressive failure analysis utilizing a team approach. The team may contain personnel from any department who can provide a needed expertise. Plant management has endorsed the concept. The AHF-1A as well as the DHP-1A/B failure analyses were examples of the effectiveness of the program. Additionally, the FPC PACE (People Achieving Corporate Excellence) program provides excellent training, guidance, and recommendations in "brainstorming" practices as well as a variety of other problem solving tools.
C3	Establish single point of accountability	**Complete.** A new plant procedure, AI-255, System Outage Scheduling and Implementation establishes a system manager as the single point of accountability for troubleshooting and corrective maintenance practices. A system manager maintains the overall project lead and is accountable for technical direction, root cause determination, and coordination of remaining activities to correct the problem. The outage implementor (usually the lead shop supervisor) is accountable to the system manager for the implementation of the troubleshooting plan. The lead planner is accountable to the system manager for planning and evaluation of the troubleshooting work package.

ITEM		ITEM STATUS
C4	Establish method to issue troubleshooting/ correction action plans	Open. MP-531, Troubleshooting Plant Equipment, currently controls plant troubleshooting evolutions. A written troubleshooting plan must be prepared prior to performing the work. This plan must consider if the troubleshooting may adversely affect equipment whose operation is vital to the plant, (including entry into a Technical Specification action statement), initiation of a plant transient, or limitation of power production. Additional planning actions must be taken when the troubleshooting task will include more than one crew, more than one discipline, or expertise beyond that normally available to the shop. MP-531, Troubleshooting Plant Equipment, is outdated and currently in the revision review cycle, with an expected issuance date of December 1992. In the interim, additional emphasis has been placed on control of troubleshooting and other system work activities through the system manager concept described in Revision 0 of AI-255, System Outage Scheduling and Implementation.