

NOTICE OF VIOLATION
AND
PROPOSED IMPOSITION OF CIVIL PENALTIES

Tennessee Valley Authority
Browns Ferry Nuclear Plant,
Units 1, 2 and 3

Docket Nos. 50-259, 50-260, and 50-296
License Nos. DPR-33, DPR-52, and DPR-68
EA 84-136

As a result of the special inspection conducted on October 22 through November 1, 1984, several violations of NRC requirements were identified. The inspection was conducted to review the circumstances associated with the Unit 3 reactor startup that occurred on October 22, 1984, after completion of a long refueling outage. Violations of Technical Specification and procedural requirements, as well as other failures to comply with NRC regulatory requirements, were identified during this inspection.

Violations I and II involve failures to satisfy the Browns Ferry Technical Specification requirements associated with the Rod Worth Minimizer (RWM) during reactor startup. The Technical Specification requires that the correct rod withdrawal sequence be verified prior to reactor startup. An incorrect rod withdrawal sequence was programmed into the RWM. Due to inadequate verification of the program, the errors in the control rod programming were not discovered until 31 control rods had been fully withdrawn from the core. It is significant in that when these errors in the control rod programming were discovered, the licensee failed to recognize that the RWM was inoperable. With the RWM inoperable and without a second licensed operator stationed at the reactor console, when the reactor is less than 20 percent rated power, your Technical Specifications require that the reactor be brought to a shutdown condition immediately. However, the reactor remained in the startup mode while the correct withdrawal sequence was input into the process computer.

Violations III and IV involve the licensee's failure to adhere to Technical Specification and procedural requirements prior to taking the reactor critical. Violation III involves the failure to satisfy Technical Specification requirements that the jet pumps be demonstrated to be operable in the startup mode. Violation IV involves various procedural steps of several different procedures that were not accomplished and were required to be completed prior to criticality. Several examples of procedural violations as well as two examples of inadequate procedures are also described in the enclosed Notice.

To emphasize the need for the licensee to strengthen management controls to ensure compliance with the Technical Specifications and procedures, the Nuclear Regulatory Commission proposes to impose a civil penalty in the amount of One Hundred and Fifty Thousand Dollars (\$150,000). In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C, as revised, 49 FR 8583 (March 8, 1984), and pursuant to Section 234 of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2282, PL 96-295, and 10 CFR 2.205, the particular violations and associated civil penalties are set forth below:

- I. Technical Specification 4.3.B.3.c requires that the capability of the Rod Worth Minimizer (RWM) be verified before reactor startup by assuring the correctness of the control rod withdrawal sequence input to the RWM computer.

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Contrary to the above, on October 22, 1984, the capability of the RWM was not verified before reactor startup in that the required RWM withdrawal sequence required by Refuel Test Instruction (RTI) 4, Table 4.1.B was incorrectly entered into the RWM computer and inadequately verified prior to use of the RWM program.

- II. Technical Specification (TS) 3.3.B.3.c requires that whenever the reactor is in the startup or run modes below 20 percent rated power, the Rod Worth Minimizer (RWM) shall be operable. A second licensed operator may verify that the operator at the reactor console is following the control rod program in lieu of an operable RWM. Furthermore, TS 3.3.B.3.d requires that if TS 3.3.B.3.a through 3.3.B.3.c cannot be met, the reactor shall not be started; or if the reactor is in the run or startup modes at less than 20 percent rated power, it shall be brought to a shutdown condition immediately.

Contrary to the above, on October 22, 1984, the RWM was not operable and the reactor was not shut down nor was a second licensed operator stationed at the reactor console.

Collectively, the above Violations I and II have been evaluated as a Severity Level III problem (Supplement I).
(Cumulative Civil Penalty \$75,000 assessed equally among the violations.)

- III. Technical Specification (TS) 3.6.E.1 requires that whenever the reactor is in the startup mode, all jet pumps shall be demonstrated to be operable. TS 1.0.E defines operable as attendant instrumentation is capable of performing its related support function(s).

Contrary to the above, on October 22, 1984, during the Unit 3 reactor startup, two jet pumps were not demonstrated to be operable. Jet pump differential pressure flow instruments Flow Transmitter (FT) 68-19 and 68-40 were inoperable due to valve misalignment errors. This valve misalignment prevented verifying operability of the jet pumps. This violation pertains to Unit 3 only.

- IV. Technical Specification 6.3.A.1 requires that detailed written procedures including applicable checkoff lists, covering normal startup, operation and shutdown of the reactor, and all systems and components involving nuclear safety of the facility, shall be prepared, approved, and adhered to.

- A. Browns Ferry Procedure BF GOI 100-1, Cold Startup Preparation for Approach to Critical, requires Section II.A to be completed prior to taking the reactor critical. Deviation from the procedural sequence to account for unit conditions is allowed with the consent of and under the direction of the shift engineer.

Contrary to the above, on October 22, 1984, the reactor was critical without steps II.A.9, II.A.10, and II.A.14 of BF GOI 100-1 having been completed, nor had the shift engineer consented to deviations from the procedural sequence.

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- B. Browns Ferry Procedure, Master Refueling Test Instruction (MRTI), requires all testing within each major power test plateau be completed before proceeding to the next plateau, except for justifiable exceptions approved by the Plant Superintendent. In addition, MRTI step 28 and step 29 are designated as critical steps. These steps are required to be completed prior to taking the reactor critical for the shutdown margin determination.

Contrary to the above, on October 22, 1984, step 27 of the MRTI for the first test plateau was not completed as indicated by the fact that it was not signed or approved before proceeding to the second test plateau for initial criticality, nor was an exception approved by the Plant Superintendent. MRTI step 28 and step 29 were not completed prior to taking the reactor critical for the shutdown margin determination.

- C. Browns Ferry Procedure BF GOI 100-1, Pre-startup Checklist, in Step I.B.2, requires that drywell equipment hatch trolley cranks be locked prior to startup. Deviation from the procedural sequence to account for unit conditions is allowed with the consent of and under the direction of the shift engineer.

Contrary to the above, on October 22, 1984, the drywell equipment hatch trolley cranks were found without locks installed on Unit 3 during the reactor startup, and the shift engineer had not consented to such deviation.

- D. Browns Ferry Procedure BF GOI 100-1, Pre-startup Check List, in Step I.B.2 requires a graph of K-eff as a function of rods withdrawn to be attached to Surveillance Instruction (SI) 4.3.B.1.a data sheet.

Contrary to the above, the graph of K-eff was not attached to SI 4.3.B.1.a data sheet dated October 22, 1984.

- E. Browns Ferry Procedure OI 77, Radwaste System Instrument Checklist, requires that the drywell floor drain sump transmitter 3-LT-77-1A for Unit 3 be in service prior to reactor power operation.

Contrary to the above, on October 22, 1984, the Unit 3 transmitter 3-LT-77-1A was discovered to be out of service in that its power was secured during the Unit 3 reactor startup.

- F. Criterion V of Appendix B to 10 CFR Part 50 requires that activities be prescribed by procedures of a type appropriate to the circumstances. These procedures shall include appropriate criteria for determining that the activities have been accomplished.

Contrary to the above, Browns Ferry Procedure OI 77, Radwaste Instrument Checklist, was inappropriate in that it did not specify individual unit lineups for floor drain level transmitter checks. This violation pertains to Unit 3 only.

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- G. Browns Ferry Surveillance Instruction (SI) 4.6.E.1 for demonstrating jet pump operability requires in step 20 that the results comply with Technical Instruction (TI) 52 and that any exceptions be noted and explained in the remarks section.

Contrary to the above, SI. 4.6.E.1 was performed on Unit 3 on October 21, 1984, with results that did not meet the acceptance criteria of TI 52. This exception was neither noted nor explained in the remarks section of S.I. 4.6.E.1. This violation pertains to Unit 3 only.

- H. Technical Specification (TS) 4.6.E. requires that individual jet pump differential pressures be within 10 percent of the mean of all jet pump differential pressures when certain conditions exist. Technical Instruction (TI) 52 requires that individual jet pump differential pressures be within 10 percent of the established baseline data. The 10 percent criterion is a historical percent deviation from the mean of all jet pump differential pressures.

Contrary to the above, Browns Ferry Surveillance Instruction (SI) 4.6 E, Jet Pumps, is inadequate in that it does not demonstrate compliance with Technical Specification 4.6.E. S.I. 4.6.E states that completion of Section S.I. 4.6.E.1 fulfills the requirements of T.S. 4.6.E; however, it provides a different acceptance criteria from that given in TI 52. The TI 52 criterion would actually allow individual jet pump differential pressures in excess of 10 percent of the mean of all jet pump differential pressures. (Figure 12 of TI 52 shows that up to 15 percent deviation from the mean would be acceptable).

Collectively, Violations III and IV have been evaluated as a Severity Level III problem (Supplement I).

(Cumulative Civil Penalty \$75,000 assessed equally among the violations.)

Pursuant to the provisions of 10 CFR 2.201, Tennessee Valley Authority is hereby required to submit to the Director, Office of Inspection and Enforcement, USNRC, Washington D.C. 20555, and a copy to the Regional Administrator, USNRC, Region II, 101 Marietta Street, Suite 2900, Atlanta, Georgia 30323, within 30 days of the date of this Notice a written statement or explanation including for each alleged violation: (1) admission or denial of the alleged violations, (2) the reasons for the violations if admitted, (3) the corrective steps which have been taken and the results achieved, (4) the corrective steps which will be taken to avoid further violations, and (5) the date when full compliance will be achieved. Consideration may be given to extending the response time for good cause shown. Under the authority of Section 182 of the Act, 42 U.S.C. 2232, the response shall be submitted under oath or affirmation.

Within the same time as provided for the response required above under 10 CFR 2.201, Tennessee Valley Authority may pay the civil penalty in the amount of One Hundred and Fifty Thousand Dollars (\$150,000) for the violations, or may protest imposition of the civil penalties in whole or in part, by a written answer. Should Tennessee Valley Authority fail to answer within the time specified, the Director, Office of Inspection and Enforcement, will issue an

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order imposing the civil penalties proposed above. Should Tennessee Valley Authority elect to file an answer in accordance with 10 CFR 2.205 protesting the civil penalties, such answer may: (1) deny the violations listed in this Notice in whole or in part, (2) demonstrate extenuating circumstances, (3) show error in this Notice, or (4) show other reasons why the penalties should not be imposed. In addition to protesting the civil penalties in whole or in part, such answer may request remission or mitigation of the penalties. In requesting mitigation of the proposed penalties, the five factors addressed in Section V(B) of 10 CFR Part 2, Appendix C, should be addressed. Any written answer in accordance with 10 CFR 2.205 should be set forth separately from the statement or explanation in reply pursuant to 10 CFR 2.201, but may incorporate by specific reference (e.g., citing page and paragraph numbers) to avoid repetition. Tennessee Valley Authority's attention is directed to the other provisions of 10 CFR 2.205, regarding the procedure for imposing a civil penalty.

Upon failure to pay the penalties due which has subsequently been determined in accordance with the applicable provisions of 10 CFR 2.205, this matter may be referred to the Attorney General, and the penalty, unless compromised, remitted, or mitigated may be collected by civil action pursuant to Section 234c of the Act, 42 U.S.C. 2282.

FOR THE NUCLEAR REGULATORY COMMISSION

J. Nelson Grace
Regional Administrator

Dated at Atlanta, Georgia
this 17th day of February 1985



UNITED STATES
 NUCLEAR REGULATORY COMMISSION
 REGION II
 101 MARIETTA STREET, N.W.
 ATLANTA, GEORGIA 30323

Report Nos.: 50-259/84-45, 50-260/84-45 and 50-296/84-45

Licensee: Tennessee Valley Authority
 500A Chestnut Street
 Chattanooga, TN 37401

Docket Nos.: 50-259, 50-260 and 50-296 License Nos. DPR-33, DPR-52 and DPR-68

Facility Name: Browns Ferry Units 1, 2, and 3

Inspection Conducted: October 22 - November 1, 1984

Inspectors: <u>L. W. Garner For</u>	<u>2-8-85</u>
G. L. Paulk, Senior Resident Inspector	Date Signed
<u>L. W. Garner For</u>	<u>2-8-85</u>
C. A. Patterson, Resident Inspector	Date Signed
<u>W. K. Poertner</u>	<u>2-8-85</u>
W. K. Poertner, Regional Inspector	Date Signed
<u>C. Julian for</u>	<u>2/8/85</u>
P. D. Wagner, Regional Inspector	Date Signed
Approved by: <u>F. S. Cantrell</u>	<u>2/8/85</u>
F. S. Cantrell, Section Chief Division of Reactor Projects	Date Signed
<u>C. Julian</u>	<u>2/8/85</u>
C. A. Julian, Section Chief, Division of Reactor Safety	Date Signed

SUMMARY

Scope: This special inspection involved 170 inspector-hours in the area of Unit 3 startup activities on October 22, 1984.

- Results: 1. 84-45-01, Violation of Technical Specification 6.3.A.1.
- Failure to put floor drain sump level transmitter 3-LT-77-1A in service prior to reactor operation.
 - Failure to lock drywell equipment hatch trolley cranks per Procedure BF GOI 100-1.
 - Failure to complete test Plateau I of the MRTI Procedure prior to going to test Plateau II.
 - Failure to complete MRTI Procedure Steps 28 and 29 prior to performance of MRTI Procedure Step 30.

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- e. Failure to complete Section II.A of Procedure BF GOI 100-1 prior to taking the reactor critical.
 - f. Failure to attach a graph of Keff to S.I 4.3.B.1.a per Procedure BF GOI 100-1.
 - g. Procedure SI 4.6.E inadequate in that acceptance criteria would permit jet pump differential pressures in excess of Technical Specification requirements.
 - h. Failure to note and explain any exceptions for jet pump operability surveillance per Procedure SI 4.6.E.1.
2. 84-45-02, Violation of Technical Specification 3.3.B.3/4.3.B.3
- a. Violation of Technical Specification 3.3.B.3.c in that:
 - (1) The RWM was not operable due to errors in control rod sequence input.
 - (2) Failure to station a second operator when the RWM was inoperable.
 - b. Violation of Technical Specification 4.3.B.3.c for failure to adequately verify the correctness of the RWM computer input.
 - c. Violation of Technical Specification 3.3.B.3.d for failure to take the reactor to a shutdown condition when the RWM was inoperable.
3. 84-45-03, Violation of Technical Specification 3.6.E.1 for failure to have all jet pumps operable when in the startup mode.

REPORT DETAILS

1. Licensee Employees Contacted

J. A. Coffey, Site Director
G. T. Jones, Plant Manager
J. E. Swindell, Superintendent - Operations/Engineering
J. R. Pittman, Superintendent - Maintenance
J. H. Rinne, Modifications Manager
J. D. Carlson, Quality Engineering Supervisor
D. C. Mims, Engineering Group Supervisor
R. Hunkapillar, Operations Group Supervisor
C. G. Wages, Mechanical Maintenance Supervisor
T. D. Cosby, Electrical Maintenance Supervisor
R. E. Burns, Instrument Maintenance Supervisor
A. W. Sorrell, Health Physics Supervisor
R. E. Jackson, Chief Public Safety
T. L. Chinn, Technical Services Manager
T. F. Ziegler, Site Services Manager
J. R. Clark, Chemical Unit Supervisor
B. C. Morris, Plant Compliance Supervisor
A. L. Burnette, Assistant Operations Group Supervisor
R. R. Smallwood, Assistant Operations Group Supervisor
T. W. Jordan, Assistant Operations Group Supervisor
S. R. Maehr, Planning/Scheduling Supervisor
C. R. Hall, Design Services Manager
W. C. Thomison, Engineering Section Supervisor
A. L. Clement, Radwaste Group Controller

Other licensee employees contacted included licensed reactor operators, senior reactor operators, auxiliary operators, craftsmen, technicians, public safety officers, quality assurance, quality control and engineering personnel.

2. Exit Interview

The inspection scope and findings were summarized on November 1, 1984, with the Plant Manager and/or Assistant Plant Managers and other members of his staff.

The licensee acknowledged the findings and took no exceptions.

3. This special report covers the Nuclear Regulatory Commission's concerns during the startup of the Unit 3 reactor on October 22, 1984 after completion of a refueling outage which lasted over four hundred days.

An Enforcement Conference was held at the Browns Ferry site on November 7, 1984 (See Inspection Report 50-259/84-46, 50-260/84-46 and 50-296/84-46).

a. Unit 3 Startup on October 22, 1984

The inspector toured the Unit 3 control room on the morning of October 22, 1984, after the unit had been taken critical to determine the shutdown margin. The unit had been taken critical using a "B" rod sequence since the most reactive rod in the core was a "B" rod. After completion of the shutdown margin determination the reactor was again to be brought critical using an "A" rod sequence since the unit was loaded with a controlled cell core configuration which requires the "A" sequence. The inspector noted that the unit was in shutdown cooling. A review of records indicated the reactor had been started in a single loop mode.

During a tour of the Unit 3 reactor building on October 22, 1984, the inspector noted that the LT-77-1A power On/Off toggle switch was in the "OFF" position. The instrument checklist for the drywell floor drain sump level transmitter LT-77-1A is contained in plant operating instruction 77. A review of the OI-77-1A instrument checklist indicated that a lineup was conducted on the drywell floor drain sump level transmitter LT-77-1A between February 6, 1984 and April 10, 1984. The inspector could not ascertain which unit had been lined up since the data sheet was for common (Units 1, 2 and 3) equipment; however, each unit has its own separate drywell floor drain sump system. The OI-77 procedure did not adequately specify which unit alignment had been verified. Also, the drywell shield plug trolley chain was not padlocked as required by procedure BF GOI 100-1. Technical Specification 6.3.A.1 requires that detailed written procedures be prepared, approved and adhered to. Failure to have the drywell floor drain sump level transmitter 3-FT-77-1A in service is a violation of Technical Specification 6.3.A.1 (50-296/84-45-01). Failure to have the drywell shield plug trolley chain padlocked as required by BF GOI 100-1 is a second example of violation 84-45-01. The inspector noted numerous people in the reactor building around the residual heat removal piping used for shutdown cooling. The inspector returned to the control room and discussed his concerns with the shift engineer. Of particular concern was the fact that activated reactor coolant had been circulated outside primary containment through unshielded piping and the possible exposure concern to personnel in the reactor building from nitrogen-16 decay. See paragraph 3.f for further discussion.

b. Sequence of Events (From operators log)

October 21, 1984

2025	Mode Switch to Startup
2100	"A" Recirculation Pump In Service
2215	"B" Recirculation Pump Out of Service
2230	Loop I RHR In Service - Shutdown Cooling

October 22, 1984

0600	Pulling Rods For Shutdown Margin Test
0635	Pulling Group II Rods
0640	RWM Problems
0730	Resolved Sequence Problems
0752	Resumed Pulling Rods
0844	Reactor Critical
0900	Back Subcritical
0910	Pushing Rods
1100	All Rods Fully Inserted
1140	Shutdown Cooling Secured
1415	Computer Inoperable

October 23, 1984

0900	Computer Operable
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October 24, 1984

October 25, 1984

1540	Mode Switch To Refuel
2145	Mode Switch To Shutdown

c. Event Description

The root cause of the startup problem stems from not following the plant procedures. A Master Refueling Test Instruction (MRTI) coordinates unit operational and test activities following a refueling outage. The three test plateaus specified in the procedure are as follows:

Plateau I	Open Vessel
Plateau II	Initial heatup to 55% of rated power
Plateau III	55-100% of rated power

The following outline summarizes certain steps in the procedure:

Plateau I	Step 27	Authorized to go to Plateau II
Plateau II	Step 28	GOI-100-1 Sections I.A and II.A complete
Plateau II	Step 29	Plant Superintendent permission to go critical
Plateau II	Step 30	Perform RTI-4 per GOI-100-1 Section II.B and C.

MRTI Steps 27, 28, 29 and 30 were not signed as being completed. MRTI Step 28 requires that GOI-100 Section I.A., Pre-Startup Checklist, and Section II.A, Preparation for Approach to Criticality be complete.

GOI-100 Section II.A, step 9 secures shutdown cooling, step 10 starts the recirculation pumps, and step 14 secures head vents.

MRTI Steps 27, 28, 29 and 30 are identified in the procedure as critical steps. A critical step is defined as one which confirms proper operation of a system necessary to plant safety or which confirms any assumptions made in the safety analysis report, or one that must be completed prior to proceeding to the next test plateau.

Had these steps been completed prior to performing Refueling Test Instruction 4 (RTI-4), Full Core Shutdown Margin-Closed Vessel, the shutdown cooling system would have been secured and the residual heat removal (RHR) system would have been operable. Failure to follow plant procedures was identified as a violation of Technical Specification 6.3.A. Failure to complete step 27 of test plateau I prior to proceeding to test plateau II is a third example of violation 50-296/84-45-01. Also, failure to complete MRTI critical steps 28 and 29 prior to the performance of step 30 is a fourth example of violation 50-296/84-45-01. Further, BF GOI 100-1, Cold Startup Preparation for approach to Critical, requires that section II.A be completed prior to taking the reactor critical. The failure to complete steps II.A.9, II.A.10 and II.A. 14, which was another check prior to criticality, is the fifth example of violation 50-296/84-45-01. BF/GOI/100-1, Pre-startup Checklist step I.R.2 requires a graph of Keff, as a function of rods withdrawn, be attached to S.I.4.3.B.1.a data sheet. The graph of Keff was not attached to S.I.4.3.B.1.a data sheet dated October 22, 1984. This is the sixth example of violation 50-296/84-45-01. The Plant Manager was informed of these violations at the exit meeting.

d. Rod Worth Minimizer (RWM) Problems

Discussions with plant personnel revealed that during the reactor startup numerous changes were made to the rod pull sheets and the RWM was bypassed in order to correct the errors in the computer program. Thirty-one rods were withdrawn when selection of the next rod revealed the rod was not in the correct group. At this time it was discovered that several errors had occurred during the preparation of the rod pull sheets.

Technical Specification 3.3.B.3.c requires that the RWM be operable whenever the reactor is in the startup or run mode or a second licensed operator must be stationed at the reactor console to verify compliance with the control rod program. The RWM was not operable due to the computer program errors. This is a violation of Technical Specification 3.3.B.3.c (50-296/84-45-02). A second licensed operator was not stationed while the RWM was bypassed after identification of the errors.

Further it was subsequently discovered during a review of plant logs that the mode switch remained in "STARTUP" from 8:25 p.m., on October 21, 1984 to 3:40 p.m., on October 25, 1984 with the RWM inoperable from 2:15 p.m., on October 22, 1984 to 9:00 a.m., on October 23, 1984, due to a computer malfunction. Failure to post a second licensed operator when the RWM was inoperable is the second part of the first example of violation 50-296/84-45-02.

The errors in the RWM program resulted from loading an incorrect withdrawal sequence into the RWM computer. The correct withdrawal sequence was listed in Table 4.1.B of RTI-4. Technical Specification 4.3.B.3.c requires the correct sequence be verified before reactor startup. This is a violation for the reactor startup conducted October 22, 1984 with errors in the RWM computer due to an inadequate verification of the correct program. These errors were not detected until after 31 control rods had been withdrawn. This is the second example of violation 50-296/84-45-02.

Furthermore, once these errors were detected the reactor was not shutdown immediately. Technical Specification 3.3.B.3.d states that if Specifications 3.3.B.3.a through 3.3.B.3.c cannot be met the reactor shall not be started; or if the reactor is in the run or startup modes at less than 20% rated power, it shall be brought to a shutdown condition immediately. The reactor remained in the startup mode while the correct withdrawal sequence was input into the computer and then the approach to criticality was continued. This is the third example of violation 50-296/84-45-02.

These violations were discussed with the plant manager in the exit meeting.

e. Jet Pump Operability

On October 22, 1984, Surveillance Instruction 4.6.E.1 (Jet Pump Operability) was conducted on Unit 3. During the conduct of the surveillance the operator identified several suspect jet pump delta-pressure readings. Further investigation revealed that jet pump flow transmitter 3-FT-68-40 was incorrectly valved out and transmitter 3-FT-68-19 had the equalizer valve open. The equalizer valve being open would affect eight jet pump output instruments on the "B" recirculation loop. FT-68-40 is on the "A" recirculation loop and affected only one of the ten pumps in that loop. The surveillance had been conducted the previous day but the incorrect jet pump readings were incorrectly attributed to low flow conditions. During the surveillance process the shift technical advisor is required to evaluate the test results in accordance with Technical Instruction 52 (Jet Pump Operability). The evaluation conducted on October 21, 1984, was inadequate in that it did not note that several jet pumps were outside the 10% tolerance band with no electronic noise present on the

delta-pressure instruments. Surveillance Instruction (S.I.) 4.6.E, Jet Pumps, is inadequate in that it does not fulfill the requirements of Technical Specification 4.6.E. Technical Specifications require that individual jet pump differential pressures be within 10% of the mean of all jet pump differential pressures when certain conditions exist. S.I. 4.6.E which states that completion of Section S.I. 4.6.E-1 fulfills the requirements of T.S. 4.6.E; however, provides a different acceptance criteria which is given in Technical Instruction (TI) 52. TI-52 requires that individual jet pump differential pressures be within 10% of its established baseline data (which is an historical percent deviation from the mean of all jet pump differential pressures). The TI-52 criterion would actually allow individual jet pump differential pressures in excess of 10% of the mean of all jet pump differential pressures. (Figure 12 of TI-52 shows that up to 15% deviation from the mean would be acceptable.) This is the seventh example of violation 50-296/84-45-01.

Step 20 of S.I. 4.6.E.1 for Jet Pump Operability requires that the results comply with TI-52 with any exceptions noted and explained in the Remarks Section. S.I. 4.6.E.1 was performed on Unit 3 on October 21, 1984 and the fact that step 6.7 (deviation from jet pump baseline by more than 10%) of TI-52 did not pass the acceptance criteria was not noted or explained in the remarks section of S.I. 4.6.E.1. This is the eighth example of violation 50-296/84-45-01.

Technical Specification 3.6.E.1 requires that all jet pumps be operable whenever the reactor is in the startup mode. The reactor was taken critical on October 22, 1984, without having all jet pumps fully operable. This is a violation (50-296/84-45-03).

The plant manager was informed of these violations at the exit meeting.

f. Radiological Hazards During Event:

The radiation levels around the unshielded RHR piping in the reactor building were estimated by the health physics staff based on a power level of 0.5%. The RHR pump corner room, containing the "A" and "C" RHR pumps, contains a radiation monitor mounted on the wall. This monitor was found to have increased by 5 mr/hr. Estimates of the piping on the 519' elevation were 20 mr/hr on contact and 541' elevation at 30 mr/hr on contact. The radiation levels would have been directly proportional to power level and would have increased by a factor of 200 for 100% power. The principle source of radiation in these estimates was from the short-lived decay gammas of nitrogen-16 from the activation of reactor coolant. The radiation levels posed no undue threat to the public health and safety.