

TEMPORARY CHANGE

306

SIDE 1

1001
Figure 1001-5

Three Mile Island Nuclear Station
Temporary Change Notice (TCN)

NOTE: Instructions and guidelines in AP 1001 must be followed when completing this form.

TCN NO. 2-79-059
(From TCN Log Index)
Unit No. 2
Date 3-9-79

1. Procedure 2303-MI4C Emerg. Feed Sys Valve Line up
No. 1 Title Ver. 1.0 OP. Test EF-P-1
2. Change (Include page numbers, paragraph numbers, and exact wording of change.)
pg. 15.0 Sec. 6.3.1 Change to read: "On Data
3. Reason for Change Sheet C" instead of: "On Data Sheet A"

4. Recommended by [Signature] 3-8-79 5. [Signature] 3-9-79
Date Supervisor's Signature Date

6. Duration of TCN - No longer than ninety days from effective date of TCN or as in (a) or (b) below whichever occurs first.

(a) TCN will be cancelled by a procedure revision issued as a result of a Procedure Change Request to be submitted by [Signature] (Submit PCR as soon as possible) ☒

(b) TCN is not valid after _____

(fill in circumstances which will result in TCN being cancelled)

7. (a) Is the procedure on the Nuclear Safety Related Procedure List? (Sec. AP 1001 - Appendix B)
If "Yes", complete Nuclear Safety Evaluation. (Side 2 of this Form) Yes ☒ No ☐
(b) Is the procedure on the Environmental Impact Procedure List? (Sec. AP 1001 - Appendix B)
If "Yes", complete Environmental Evaluation. (Side 2 of this Form) Yes ☐ No ☒
(c) Does the change effect the intent of the original procedure? Yes ☐ No ☒

E: If all answers are "no" the change may be approved by the Shift Supervisor. If question (c) is answered "yes", the change must be reviewed by the PORC and approval by the Station/Unit Superintendent prior to implementation. If the answer to question (c) is "no" the change may be approved by two members of the plant management staff at least one of whom holds a senior reactor operators license on the unit affected in accordance with paragraph 3.6.4.2 of AP 1001.

8. Review and Approval

Block (c) "yes"

Approved _____
Shift Supervisor/Foreman Date
Reviewed _____
Members _____
Of PORC _____
Contacted _____
PORC Members Date
Approved _____
Unit Superintendent Date

Block (c) "no"

Approved [Signature] 3-9-79
SRO License Date
[Signature] 3/9/79
Member Plant Mrg. Staff Date
Reviewed _____
Chairman of PORC Date
Approved _____
Unit Superintendent Date

NOTE The block (c) "Yes" review and approval chain may be followed at anytime.

9. Approval
Manager, Generation Quality Assurance _____ Date _____

NOTE MGQA approval required only on certain Administrative Procedures listed in Enclosure 7 of AP 1001

10. TCN is Cancelled _____
Shift Supervisor/Shift Foreman

Date

"EVALUATION"

2-3001

Three Mile Island Nuclear Station

SIDE 2

Figure 1001-4

Nuclear Safety/Environmental Impact Evaluation

2-79-059

1. Procedure 2303-M14C

No.

Emergency Feed System Valve Linkage Verification & G.F.P.I. TEST

Title

Temporary Change Notice No.

2. Nuclear Safety Evaluation

Does the attached procedure change:

- (a) increase the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety? yes ☐ no ☒
- (b) create the possibility for an accident or malfunction of a different type than any evaluated previously in the safety analysis report? yes ☐ no ☒
- (c) reduce the margin of safety as defined in the basis for any technical specification? yes ☐ no ☒

Details of Evaluation (Explain why answers to above questions are "no". Attach additional pages if required.)

This change corrects a typographical error only, has no adverse effect on nuclear safety

Evaluation By C. Cohen

Date 3-5-79

3. Environmental Impact Evaluation

Does the attached procedure change:

- (a) possibly involve a significant environmental impact? yes ☐ no ☐
(if 3(a) is "yes", answer questions (b) and (c) and fill in "Details of Evaluation" below.
If "no", state why by filling in the "Details of Evaluation" below) yes ☐ no ☒
- (b) have a significant adverse effect on the environment? yes ☐ no ☐
- (c) involve a significant environmental matter or question not previously reviewed and evaluated by the N.R.C. yes ☐ no ☐

Details of Evaluation (Attach additional pages if required)

NH

Evaluation By _____

Date _____

4. Unit Superintendent requests PORC review ☐ Check if YES.

5. Approval

Evaluation Accompanying PCR

Evaluation Accompanying TCN

Approval

SRO Licensee

Date

Reviewed

Member of Plant Staff

Date

Approval

Unit Superintendent

Date

NOTE The Evaluation Accompanying a PCR evaluation and approval chain may be followed at anytime.

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11/21/78

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THREE MILE ISLAND NUCLEAR STATION

UNIT #2 SURVEILLANCE PROCEDURE 2303-M14A/B/C/D/E

EMERGENCY FEEDWATER SYSTEM VALVE LINE-UP VERIFICATION & OPERABILITY TEST;
& TURBINE DRIVEN EMERGENCY FEEDPUMP OPERABILITY TEST

Table of Effective Pages

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1.0	12/30/78	3	26.0	11/21/78	8	51.0		
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3.0	03/03/78	5	28.0	11/21/78	8	53.0		
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11.0	11/21/78	8	36.0			61.0		
12.0	11/21/78	8	37.0			62.0		
13.0	11/21/78	8	38.0			63.0		
14.0	11/21/78	8	39.0			64.0		
15.0	11/21/78	8	40.0			65.0		
16.0	11/21/78	8	41.0			66.0		
17.0	11/21/78	8	42.0			67.0		
18.0	11/21/78	8	43.0			68.0		
19.0	11/21/78	8	44.0			69.0		
20.0	11/21/78	8	45.0			70.0		
21.0	11/21/78	8	46.0			71.0		
22.0	11/21/78	8	47.0			72.0		
23.0	11/21/78	8	48.0			73.0		
24.0	11/21/78	8	49.0			74.0		
25.0	11/21/78	8	50.0			75.0		

Unit 1 Staff Recommends Approval

Approval

NA
Cognizant Dept. Head

Date

Unit 2 Staff Recommends Approval

Approval

NA
Cognizant Dept. Head

Date

Unit 1 PORC Recommends Approval

Approval

NA
Chairman of PORC

Date

Unit 2 PORC Recommends Approval

Approval

RP Warren
V - Chairman of PORC

Date

11/21/78

Unit 1 Superintendent Approval

Approval

NA

Date

Unit 2 Superintendent Approval

Approval

J. L. Linger

Date

11/21/78

Manager Generation Quality Assurance Approval

NA

Date

THREE MILE ISLAND NUCLEAR STATION
UNIT #2 SURVEILLANCE PROCEDURE 2303-M14A/B/C/D/E
EMERGENCY FEEDWATER SYSTEM VALVE LINE-UP
VERIFICATION AND OPERABILITY TEST; AND
TURBINE DRIVEN EMERGENCY FEEDPUMP OPERABILITY TEST

1.0 PURPOSE

- 1.1 To insure compliance with TMI Unit #2 Technical Specifications,
Section 4.7.1.2.a which states:

Each auxiliary feedwater system shall be demonstrated OPERABLE
at least once per 31 days on a STAGGERED TEST BASIS by:

1. Verifying the steam turbine driven pump develops a discharge
pressure of ≥ 1070 psig when the secondary steam supply
pressure is greater than 200 psig.
2. Verifying that each valve in the flow path that is not
locked, sealed, or otherwise secured in position, is in
its correct position.

- 1.2 To test the Turbine Driven Emergency Feedpump per Tech. Spec.
Section 4.0.5 which references ASME Section XI for testing of
pumps. ASME Section XI specifies test quantities to be measured,
and acceptable range for those quantities.

- 1.3 To insure compliance with TMI Unit #2 Technical Specifications,
Section 4.0.5.a., which states:

Inservice testing of ASME Code Class 1, 2, and 3 valves shall
be performed in accordance with Section XI of the ASME Boiler
and Pressure Vessel Code and applicable addenda as required by
10 CFR50, Section 50.55a(g).

The above inservice testing will confirm the operation of the following ASME Code Class 2 and 3 valves:

MS-V11 A&B, MS-V12 A&B, MS-V14, MS-V207, EF-V11 A&B, EF-V26, EF-V32 A&B, EF-V33 A&B, CO-V81 A&B, and CO-V215 A&B.

2.0 APPLICABLE SURVEILLANCE FREQUENCY AND MODES

2.1 Surveillance Frequency

31 days (M) for the pump test and valve line up verification on a staggered test basis.

92 days (Q) for the valve operability tests.

NOTE:

When the procedure is scheduled as	PERFORM Subsection	Which includes
2303-M14A	6.1	EF-P1 op. test, valve lineup verification, and "A" valve op. test
2303-M14B	6.2	EF-P1 op. test, valve lineup verification, and "B" valve op. test
2303-M14C	6.3	EF-P1 op. test & valve lineup verification
2303-M14D	6.4	EF-P-2A valve lineup verification
2303-M14E	6.5	EF-P-2B valve lineup verification

Tests will be scheduled on a staggered basis as follows. (The schedule repeats every 3 months)

	<u>Month 1</u>	<u>Month 2</u>	<u>Month 3</u>
1st third-	2303-M14A	2303-M14B	2303-M14C
2nd third-	2303-M14D	2303-M14D	2303-M14D
3rd third-	2303-M14E	2303-M14E	2303-M14E

- 2.2 Modes - 1, 2, and 3 when the OTSG steam pressure is greater than 800 psig.

NOTE: If sufficient steam pressure does not exist, perform Section 6.1 (6.2, 6.3) of this procedure when steam pressure increases to > 200 psig.

Mode- 5 and 6, Testing of Turbine Driven Emergency Feed Pump is optional per ASME Section XI.

3.0 LIMITATIONS AND PRECAUTIONS

- 3.1 When a reference value or set of values may have been affected by repair or routine servicing of the pump, a new reference value or set of values shall be determined, or the previous value reconfirmed by an inservice test run prior to or within 96 hours after return of the pump to normal service. Deviations between the previous and new set of reference values shall be identified and verification that the new values represent acceptable pump operation shall be placed in the pump record.
- 3.2 An inservice test shall be run on each pump nominally each month during normal plant operation. It is recommended that this test frequency be maintained during cold shutdown periods where this can reasonably be accomplished, although this is not mandatory.

- 3.3 Pumps that are operated more frequently than every month need not be run or stopped for a special test provided the quantities specified were measured, observed, and analyzed.
- 3.4 All pump test data must be analyzed within 96 hours after test completion.
- 3.5 Pump bearing temperatures are only required to be measured once every year. When measurement of bearing temperature is not required, each pump shall be run for at least five minutes under conditions as stable as the system permits. At the end of this time at least one measurement of each of the quantities specified shall be made and recorded.
- 3.6 The vibration probe must be placed in the same position each test to insure repeatable measurements.
- 3.7 RECORD identification of the instruments used on the data sheet.
- 3.8 Instruments used for measuring quantities shall not have a scale range exceeding four times the reference value.
- 3.9 During valve function testing, it is necessary to record the time for power operated valves to open or close. In order to assure the valve operating time measured is consistent for all tests, the time required for the tested valve to fully open (or close) shall be established as the time from pushing the local or remote OPEN (or CLOSE) button until only the red OPEN (or green CLOSE) light is energized on the local or control room panel.
- 3.10 If a valve is in an out of service system, it need not be exercised until immediately prior to return of the system to service.
- 3.11 After a valve or its control system has either been replaced, repaired, or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested

as necessary to demonstrate that the performance parameters which could be affected are within acceptable limits. Adjustment of stem packing; removal of the bonnet, stem assembly, or actuator: or disconnection of hydraulic or electrical lines are examples of maintenance that could affect valve performance parameters.

3.12 Maximum continuous safe operating speed of EF-P1 is 4500 rpm. Maximum safe intermittent operating speed of EF-P1 is 4900 rpm.

4.0 LOCATION OF SYSTEM

4.1 Emergency feedwater pumps and associated valves are located in the Control Building Area.

- 4.2 Controls for the emergency feedwater pumps are located in the Control Room on Panel 4. Local controls are also available.

5.0 EQUIPMENT REQUIRED

- 5.1 The following equipment is needed for performance of 2303-M14A,B,C, only:

5.1.1 IRD Vibration Analyzer, Model 306 or equivalent. (with magnetic probe if possible)

5.1.2 Vibratach or strobatach mounted to monitor EF-P-1 speed.

- 5.2 The following equipment is needed for the performance of 2303-M14 A and B only:

5.2.1 Stop Watch -- To monitor valve closing and opening time.

6.0 PROCEDURE

NOTE: For 2303-M14A, perform 6.1
For 2303-M14B, perform 6.2
For 2303-M14C, perform 6.3
For 2303-M14D, perform 6.4
For 2303-M14E, perform 6.5

Initial each step after satisfactory completion.

- 6.1 EF-P-1 Operating Test, Valve Line-Up Verification and "A" Valve Operability Test.

6.1.1 On Data Sheet C, RECORD the "As Found" position of the listed valves.

CAUTION: If valves are not in their "Required Position" notify the Shift Foreman/Supervisor and do not continue with the procedure until the discrepancy is resolved.

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- ___ 6.1.2 DRAIN EF-U-1 exhaust via MS-V104 and MS-V192.
- ___ 6.1.3 INSURE EF-U-1 and EF-P-1 bearing oil level is normal and initial Data Sheet C.
- ___ 6.1.4 INSURE EF-U-1 governor oil level is normal.
- ___ 6.1.5 DRAIN EF-U-1 main steam inlet line by opening steam trap MS-U22 dripleg valves (MS-V90 and 93) and trap MS-U65 dripleg valves (MS-V309 and 314). CLOSE the dripleg valves after the steam line is thoroughly drained.
- ___ 6.1.6 DEPRESS the local pushbutton to OPEN MS-V11A and at the same time start the stopwatch to determine valve opening time. Stop the stopwatch when only the red OPEN light is illuminated and RECORD time on Data Sheet A.
- ___ 6.1.7 WARM the steam lines by blowing down steam traps MS-U22 and MS-U65 for 10 minutes.
- ___ 6.1.8 Verify that the red OPEN light for MS-V11A is energized on Panel 4, Panel 15, and locally.
- ___ 6.1.9 From its local control station, OPEN EF-V26 and time it until it is fully OPEN. Record time on Data Sheet A and then CLOSE EF-V26.
- ___ 6.1.10 CLOSE EF-V12 A and B.
- ___ 6.1.11 CLOSE CO-V85, EF suction from condensate pumps. Close EF-V-5A and B, EF Discharge header isolation valves.
- ___ 6.1.12 Perform the following valve line-up:
 - 1. Unlock and CLOSE CO-V98B, CO-T-1B outlet valve.

2. CLOSE CO-V82B, condensate tanks to EF suction header.
3. CLOSE EF-V7C, recirc. to condenser and open EF-V8C, recirc. to condensate storage tank.
4. Verify that CO-V98A is locked open, and CO-V82A is open.

_____ 6.1.13 INSURE CO-V125, pump suction valve, is OPEN.

Panel 2-79-042
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_____ 6.1.14 RECORD on Data Sheet C the pump idle inlet pressure from CO-PI-2027.

_____ 6.1.15 START EF-P-1 by opening MS-V207 from Panel 4 in the Control Room.

_____ 6.1.16 INSURE:

1. EF-P-1 STARTS
2. EF-V26 automatically OPENS to supply bearing cooling water.
3. MS-V207 indicating light on Panel 4 functions properly.

_____ 6.1.17 OBSERVE the steam supply pressure on MS-PI-2006 and RECORD on Data Sheet C.

_____ 6.1.18 Measure turbine speed with the Strobotac. Adjust turbine speed to maintain 4250 rpm ^{+50 rpm} (- 0 rpm) Record turbine speed on Data Sheet C.

_____ 6.1.19 Allow pump to run 5 minutes or longer until system stabilizes

NOTE: Perform the following step only the first time this test is run each calendar year.

_____ 6.1.20 ALLOW pump to run until three successive bearing temperature measurements (as indicated by Computer Group 16, or Computer pts. 1651 and 1654) taken at 10 minute intervals, change by less than 3%. RECORD temperatures and times taken on Data Sheet C.

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- ____ 6.1.21 READ and RECORD the pump running inlet pressure from CO-PI-2027.
- ____ 6.1.22 READ and RECORD the pump running discharge pressure from EF-PI-2003.
- ____ 6.1.23 CALCULATE differential pressure across the pump (Step 6.1.22 minus Step 6.1.21). Record differential pressure on Data Sheet C.
- ____ 6.1.24 MEASURE and RECORD the pump inboard bearing vibration in the horizontal and vertical plane perpendicular to the shaft. Insure the probe is on the painted orange dots. INDICATE the higher of the two vibration amplitudes and designate whether in the horizontal (H) or vertical (V) plane.

NOTE: Proper functioning of the steam driven emergency feed pump turbine indicates that check valves MS-V12A, CO-V81A and CO-V215A have opened as required.

- ____ 6.1.25 RECORD on Data Sheet A that MS-V12A, CO-V81A, and CO-V215A have opened as required.

NOTE: In addition, proper functioning of the steam driven emergency feed pump turbine indicates that MS-V14, the steam pressure regulating valve, is functioning as required.

- ____ 6.1.26 RECORD on Data Sheet A that MS-V14 functions as required. (There is no valve stroke time associated with the functioning of MS-V14).

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5/24/79
____ 6.1.27 CLOSE MS-V207 and OBSERVE the following:

1. MS-V207 green closed light energized and red open light de-energized.

- ___ 6.1.29 OBSERVE the following locally: EF-V26 green closed light energized and red open lights de-energized.
- ___ 6.1.29 CLOSE MS-V11A using Panel 4 control switch and leave in the AUTO position.
- ___ 6.1.30 Depress the local OPEN pushbutton for MS-V207 and at the same time start the stopwatch to determine valve opening time. Time until only the red OPEN light is illuminated.
- ___ 6.1.31 RECORD the time to open MS-V207 on Data Sheet A.
- ___ 6.1.32 CLOSE MS-V207 and observe the green CLOSED light is energized and the red OPEN light is de-energized.
- ___ 6.1.33 VERIFY MS-V207's control switch is in the AUTO position.
- ___ 6.1.34 Have an instrument tech go to cabinet 167 and read the voltage between ICS terminals 1-8-2-4 and 1-8-2-3 for EF-V11A. The terminal polarities for the test are: +1-8-2-4 and -1-8-2-3.
- ___ 6.1.35 Lift the external wire on 1-8-2-4.
- NOTE: Valve will cycle part way open.
- ___ 6.1.36 Connect a battery powered power supply to the wire lifted from 1-8-2-4 and 1-8-2-3 (ground) such that it has the same voltage (+ 0.1VDC) as found in step 6.1.39 above.
- NOTE: Valve will cycle closed after restoring voltage.
- ___ 6.1.37 Inform control room of readiness to time valve.
- ___ 6.1.38 When ready to time valve, reverse leads (polarity) at the power supply and start timing.
- ___ 6.1.39 Measure the opening time by observing stem movement and record the time for EF-V11A to open on Data Sheet A.
- ___ 6.1.40 Close EF-V11A and reconnect external wire to original position.

- ___ 6.1.41 Lock open CO-V98B, CO-T-1B outlet valve.
- ___ 6.1.42 Open CO-V82B, EF header inlet valve from condensate tank.
- ___ 6.1.43 Open CO-V85, EF header inlet valve from condensate pumps.
Open EF-V-5A and B, EF discharge header isolation valves.
- ___ 6.1.44 Open EF-VSA exhaust via MS-V104 and MS-V192.
- ___ 6.1.45 Drain EF-U-1 main steam inlet line by opening steam trap
MS-U22 dripleg valves (MS-V90 and 93) and trap MS-U65
dripleg valves (MS-V309 and 314). CLOSE the dripleg
valves after the steam line is thoroughly drained.
- ___ 6.1.46 DEPRESS the local Open pushbutton for EF-V32A and at the
same time start the stopwatch to determine valve opening
time.
- ___ 6.1.47 RECORD the time to open EF-V32A on Data Sheet A.
- ___ 6.1.48 CLOSE EF-V32A.
- ___ 6.1.49 DEPRESS the local OPEN pushbutton of EF-V33A and at the
same time start the stopwatch to determine valve opening
time.
- ___ 6.1.50 RECORD the time to open EF-V33A on Data Sheet A.
- ___ 6.1.51 CLOSE EF-V-33A.
- ___ 6.1.52 Reopen EF-V12 A and B.

6.2 EF-P-1 Operating Test, Valve Line-Up Verification and "B" Valve
Operability Test.

- ___ 6.2.1 On Data Sheet C, RECORD the "As Found" position of the
listed valves.

CAUTION: If valves are not in their "Required
Position", notify the Shift Foreman/
Supervisor and do not continue with this
procedure until the discrepancy is resolved.

- Handwritten:* 6.2.2-6.2.11 11/21/78
- ___ 6.2.2 DRAIN EF-U-1 exhaust via MS-V104 and MS-V192.
 - ___ 6.2.3 INSURE EF-U-1 and EF-P-1 bearing oil level is normal and initial Data Sheet C.
 - ___ 6.2.4 Insure EF-U-1 governor oil level is normal.
 - ___ 6.2.5 DRAIN EF-U-1 main steam inlet line by opening steam trap MS-U22 dripleg valves (MS-V90 and 93) and trap MS-U65 dripleg valves (MS-V309 and 314). CLOSE the dripleg valves after the steam line is thoroughly drained.
 - ___ 6.2.6 DEPRESS the local-pushbutton to OPEN MS-V11B and at the same time start the stopwatch when only the red OPEN light is illuminated. Record time to open MS-V11B on Data Sheet B.
 - ___ 6.2.7 WARM the steam lines by blowing down steam traps MS-U22 and MS-U65 for 10 minutes.
 - ___ 6.2.8 Verify that the red OPEN light for MS-V11B is energized on Panel 4, Panel 15, and locally.
 - ___ 6.2.9 CLOSE EF-V12 A and B
 - 10 Close CO-V85, EF Suction from condensate pumps. Close EF-V-5A and B, EF discharge header isolation valves.
 - ___ 6.2.11 Perform the following valve line up:
 - 1. Unlock and CLOSE CO-V98A, CO-T-1A outlet valve.
 - 2. CLOSE CO-V82A, condensate tanks to EF suction header.
 - 3. CLOSE EF-V7C, recirc. to condenser, and open EF-V8C, recirc. to condensate storage tank.
 - 4. Verify CO-V76A and B are open.
 - 5. Verify CO-V98B is locked open, and CO-V82B is open.

- ____ 6.2.12 INSURE CO-V125, pump suction valve, is OPEN.
- ____ 6.2.13 RECORD on Data Sheet C the pump idle inlet pressure from CO-PI-2027.
- ____ 6.2.14 START EF-P-1 by opening MS-V207 from Panel 4 in the Control Room.
- ____ 6.2.15 INSURE:
1. EF-P-1 STARTS.
 2. EF-V26 OPENS to supply bearing cooling water.
 3. MS-V207 indicating light on Panel 4 functions properly.
- ____ 6.2.16 OBSERVE the steam supply pressure on MS-PI-2006 and RECORD on Data Sheet C.
- ____ 6.2.17 Measure turbine speed with the Strobotac. Adjust turbine speed to maintain 4250 rpm ^{+50 rpm} (- 0 rpm) Record turbine speed on Data Sheet C.
- ____ 6.2.18 ALLOW pump to run 5 minutes or longer until system stabilizes.
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Final 2-78-441 0205
____ 6.2.19 RECORD on Data Sheet C the pump running inlet pressure from CO-PI-2027.
- ____ 6.2.20 RECORD on Data Sheet C the pump running discharge pressure from EF-PI-2003.

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6.2.21 CALCULATE differential pressure across the pump (Step 6.2.20 minus Step 6.2.19). RECORD differential pressure on Data Sheet C.

6.2.22 MEASURE and RECORD the pump inboard bearing vibration in the horizontal and vertical plane perpendicular to the shaft. Insure the probe is on the painted orange dots. INDICATE the higher of the two vibration amplitudes and designate whether in the horizontal (H) or vertical (V) plane.

NOTE: Proper functioning of the steam driven emergency feed pump turbine indicates that check valves MS-V12B, CO-V81B, and CO-V215B have opened as required.

6.2.23 RECORD on Data Sheet B that MS-V12B, CO-V81B and CO-V215B have opened as required.

6.2.24 CLOSE MS-V207 and OBSERVE the following:

1. MS-V207 green closed light energized and red open light de-energized.

6.2.25 OBSERVE the following locally: EF-V26 green closed light energized and red open lights de-energized.

6.2.26 CLOSE MS-V11B using Panel 4 control switch and leave in the AUTO position.

6.2.27 VERIFY MS-V207's control switch is in the AUTO position.

6.2.28 Have an instrument tech go to cabinet 167 and read the voltage between ICS terminals 1-8-2-8 and 1-8-2-7 for EF-V11 B. The terminal polarities for the test are: +1-8-2-8 and -1-8-2-7.

- ____ 6.2.29 Lift the external wire on 1-8-2-8.
- NOTE: Valve will cycle part way open.
- ____ 6.2.30 Connect a battery powered power supply to external wire lifted from 1-8-2-8 and 1-8-2-7 (ground) set at the same voltage (+ 0.1VDC) as found in step 6.2.35 above.
- NOTE: Valve will cycle closed after restoring voltage.
- ____ 6.2.31 Inform the control room of readiness to time valve.
- ____ 6.2.32 When ready to time valve, reverse leads (polarity) at the power supply and start timing.
- ____ 6.2.33 Measure the opening time for EF-V11B by observing stem movement and record time on Data Sheet B.
- ____ 6.2.34 Close EF-V11B and reconnect external wire to original position.
- ____ 6.2.35 Lock open CO-V98A, CO-T-1A outlet valve.
- ____ 6.2.36 Open CO-V82A, EF header inlet valve from condensate tanks.
- ____ 6.2.37 Open CO-V82A, EF header inlet valve from condensate pumps. Open EF-V-31A and B, EF discharge header isolation valves.
- ____ 6.2.38 Drain EF-U-1 exhaust via MS-V104 and MS-V192.
- ____ 6.2.39 Drain EF-U-1 main steam inlet line by opening steam trap MS-V22 dripleg valves (MS-V90 and 93) and trap MS-V65 dripleg valves (MS-V309 and 314). CLOSE the dripleg valves after the steam line is thoroughly drained.
- ____ 6.2.40 DEPRESS the local Open pushbutton for EF-V32B and at the same time start the stopwatch to determine valve opening time.

- ____ 6.2.41 RECORD the time to open EF-V32B on Data Sheet B.
- ____ 6.2.42 CLOSE EF-V32B.
- ____ 6.2.43 DEPRESS the local OPEN pushbutton of EF-V33B and-at the same time start the stopwatch to determine valve opening time.
- ____ 6.2.44 RECORD the time to open EF-V33B on Data Sheet B.
- ____ 6.2.45 Close EF-V33B.
- ____ 6.2.46 Reopen EF-V12 A and B.

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6.3 EF-P-1 Operating Test and Valve Line-Up Verification.

- ____ 6.3.1 On Data Sheet ^C A, RECORD the "As Found" position of the listed valves.

CAUTION: If valves are not in their "Required Position" notify the Shift Foreman/Supervisor and do not continue with this procedure until the discrepancy is resolved.

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- ____ 6.3.2 DRAIN EF-U-1 exhaust via MS-V104 and MS-V192.
- ____ 6.3.3 INSURE EF-U-1 and EF-P-1 bearing oil level is normal and initial Data Sheet C.
- ____ 6.3.4 Insure EF-U-1 governor oil level is normal.
- ____ 6.3.5 DRAIN EF-U-1 main steam inlet line by opening steam trap MS-U22 dripleg valves (MS-V90 and 93) and trap MS-U65 dripleg valves (MS-V309 and 314). CLOSE the dripleg valves after the steam line is thoroughly drained.
- ____ 6.3.6 Fully OPEN MS-V11A or MS-V11B with the local pushbutton, and OBSERVE that the red OPEN light is energized on Panel 4, Panel 15, and locally.

6.3.7 WARM the steam lines by blowing down steam traps MS-U22
and MS-U65 for 10 minutes.

6.3.8 CLOSE EF-V12 Aand B.

6.3.9 INSURE EF-V8C, Recirc to Condensate Storage Tank is
CLOSED, and EF-V7C, Recirc to Condenser, is OPEN.

NOTE: If pump is taking suction from the condensate
storage tank, line up recirc path back to the
storage tank.

6.3.10 INSURE CO-V125, pump suction valve, is OPEN.

6.3.11 RECORD on Data Sheet C the pump idle inlet pressure from
CO-PI-2027.

6.3.12 START EF-P-1 by opening MS-V207 from Panel 4
in the Control Room.

6.3.13 INSURE:

1. EF-P-1 STARTS.
2. EF-V26 automatically OPENS to supply bearing cooling
water.
3. MS-V207 indicating light on Panel 4 function properly.

6.3.14 OBSERVE the steam supply pressure on MS-PI-2006 and
RECORD on Data Sheet C.

6.3.15 Measure turbine speed with the Strobotac. Adjust turbine
speed if necessary to maintain 4250 rpm ^{+50 rpm} (0 rpm) Record
turbine speed on Data Sheet C.

6.3.16 ALLOW pump to run 5 minutes or longer until system stabilizes.

6.3.17 RECORD on Data Sheet C the pump running inlet pressure
from CO-PI-2027.

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- ____ 6.3.18 RECORD on Data Sheet C the pump running discharge pressure from EF-PI-2003.
- ____ 6.3.19 CALCULATE differential pressure across the pump (Step 6.3.18 minus Step 6.3.17). RECORD differential pressure on Data Sheet C.
- ____ 6.3.20 MEASURE & RECORD the pump inboard bearing vibration in the horizontal and vertical plane perpendicular to the shaft. Insure the probe is on the painted orange dots. INDICATE the higher of the two vibration amplitudes and designate whether in the horizontal (H) or vertical (V) plane.
- ____ 6.3.21 CLOSE MS-V207 and OBSERVE the following:
1. MS-V207 green closed light energized and red open light de-energized.
- ____ 6.3.22 OBSERVE the following locally: EF-V26 green closed light energized and red open lights de-energized.
- ____ 6.3.23 CLOSE MS-V11A/11B using Panel 4 control. Have in the AUTO position.
- ____ 6.3.24 VERIFY MS-V207's control switch is in the AUTO position.
- ____ 6.3.25 PERFORM steps 6.3.2 thru 6.3.5.
- ____ 6.3.26 Insure EF-V8C in Open and EF-V7C is closed.
- ____ 6.3.27 Reopen EF-V12 A and B.
- 6.4 Motor Driven Emergency Feedpump EF-P-2A Valve-Line Up Verification.
- ____ 6.4.1 RECORD the "As Found" position of the valves listed on Data Sheet D.
- 6.5 Motor Driven Emergency Feedpump EF-P-2B Valve Line-Up Verification.

- 6.5.1 RECORD the "AS Found" position of the valves listed on Data Sheet E.

7.0 ACCEPTANCE CRITERIA

- 7.1 For performance of 2303-M14A, Data Sheets A and C filled out and the below acceptance criteria met.
- 7.2 For performance of 2303-M14B, Data Sheets B and C filled out and the below acceptance criteria met.
- 7.3 For performance of 2303-M14C, Data Sheet C filled out, and the below acceptance criteria met.
- 7.4 For performance of 2303-M14D, Data Sheet D filled out, and the below acceptance criteria met.
- 7.5 For performance of 2303-M14E, Data Sheet E filled out, and the below acceptance criteria met.
- 7.6 Data Sheets A and B.
- 7.6.1 Review the valve operability test results for valves MS-V11 A&B, MS-V207, EF-V11 A&B, EF-V32 A&B, and EF-V33 A&B and ensure that the stroke time limits in the data sheets are not exceeded. Also compare the valve stroke times with those from the previous performance of this test. If an increase in stroke time of 25% or more from the previous test for valves with stroke times greater than ten seconds, or 50% or more for valves with stroke times less than or equal to ten seconds is observed; test frequency shall be increased for those valves to once each month until corrective action is taken.
- 7.6.2 Each of the valves which has been functionally tested shall have been observed to function as required on the data sheet. If a valve fails to exhibit the required change of valve stem

or disc position during the test, or if the valve stroke time limit is exceeded, corrective action shall be initiated immediately. If the condition is not or can not be corrected within 24 hours, the valve shall be declared inoperative.

When corrective action is required as a result of tests made during cold shutdown, the condition shall be corrected before startup. A retest showing acceptable operation shall be run following any required corrective action before the valve is returned to service

7.6.3 The containment isolation valves shall be OPERABLE with isolation times as shown or proceed with ACTION statement of Technical Specification 3.6.3.1.

7.6.4 When valve testing is performed, the analysis portion of the data sheet must be filled out and signed by the Lead Mechanical Engineer/ISI Coordinator.

7.7 Data Sheet Acceptance Criteria.

7.7.1 If valves fall within the Acceptable Range, and valve testing was not performed Analysis portion of the data sheet shall be filled out and signed by the Shift Supervisor/Shift Foreman within 96 hours.

7.7.2 If deviations fall within the Alert Range, the frequency of testing shall be doubled until the cause of the deviation is determined and the condition corrected. Analysis portion of the data sheet shall be filled out and signed by the Lead Mechanical Engineer/ISI Coordinator.

7.7.3 If deviations fall within the Required Action Range, the pump shall be declared inoperative and not returned to service

until the cause of the deviation has been determined and the condition corrected. Analysis portion of the data sheet shall be filled out and signed by the Lead Mechanical Engineer/ISI Coordinator.

NOTE: Correction can be replacement or repair or an analysis to demonstrate that the condition does not impair pump operability and that the pump will still fulfill its function. A new set of reference values shall be established after such analysis.

7.7.4 EF-P-1 developed a discharge pressure \geq 1070 psig with a steam supply header > 200 psig.

7.7.5 The "As Found" position of the valves on Data Sheet C is the same as the "Required Position".

EXCEPTION: EF-V8C may be closed ONLY if EF-V7C is open.

7.8 Data Sheet D Motor Driven Emergency Feedpump, EF-P-2A.

7.8.1 The "As Found" position of the valves on Data Sheet D is the same as the "Required Position".

EXCEPTION: EF-V8A may be closed ONLY if EF-V7A is open.

7.9 Data Sheet E Motor Driven Emergency Feedpump, EF-P-2B.

7.9.1 The "As Found" position of the valves on Data Sheet E is the same as the "Required Position".

EXCEPTION: EF-V8B may be closed ONLY if EF-V7E is open.

NOTE: If acceptance criteria is not met, proceed with ACTION statement 3.7.1.2.

DATA SHEET A

<u>Valve No.</u>	<u>Valve Operating Time</u>	<u>Maximum Stroke Time</u>
MS-V11A	(OPEN)	29 sec.
MS-V207	(OPEN)	29 sec.
EF-V11A	(OPEN)	12 sec.
EF-V32A	(OPEN)	50 sec.
EF-V33A	(OPEN)	61 sec.
EF-V26	(OPEN)	5 sec.

<u>Valve No.</u>	<u>Valve Function Requirement</u>	<u>Date/Initial</u>
MS-V14	(Regulating valve) OPEN	
MS-V12A	(Check valve) OPEN	
CO-V81A	(Check valve) OPEN	
CO-V215A	(Check valve) OPEN	

PERFORMED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

DATA SHEET 8

<u>Valve No.</u>	<u>Valve Operating Time</u>	<u>Maximum Stroke Time</u>
MS-V11B	(OPEN)	29 sec
EF-V11B	(OPEN)	12 sec.
EF-V32B	(OPEN)	50 sec.
EF-V33B	(OPEN)	61 sec

<u>Valve No.</u>	<u>Valve Function Requirement</u>	<u>Date/Initial</u>
MS-V12B	(Regulating valve) OPEN	
CO-V81B	(Check valve) OPEN	
CO-V215B	(Check valve) OPEN	

PERFORMED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

DATA SHEET C

2303-M14A/B/C/D/E
Revision 8
11/21/78

Turbine Driven Emergency Feedpump Valve Line-Up Verification and Operability Test

Valve	Description	Required Position	As Found Position	Initials
CO-V192	Vent on Header From Condensate Pumps	CL	_____	_____
CO-V85	Iso. Valve on Header From Condensate Pumps	OP	_____	_____
CO-V82A	Iso. Valve From Cond. Storage Tanks	OP	_____	_____
CO-V82B	Iso. Valve From Cond. Storage Tanks	OP	_____	_____
CO-V235	Drain on Header From Cond. Storage Tanks	CL	_____	_____
CO-V8;"	EF Suction Header Isolation Valve	OP	_____	_____
CO-V92C	EF-P-1 Inlet Strainer Hose Connection	CL	_____	_____
CO-V93C	EF-P-1 Inlet Strainer Drain	CL	_____	_____
EF-V30	EF-P-1 Turbine Cooling Water Outlet	OP	_____	_____
EF-V26	Cooling Water Isolation Valve (Automatically Opens on EF-P-1 Start)	CL	_____	_____
EF-V28	Cooling Water to Turbine Drive	OP	_____	_____
EF-V25	EF-U-1 Cooling Water Outlet	OP	_____	_____
EF-V38	Recirc. Line	CL	_____	_____
EF-V18	Vent	CL	_____	_____
EF-V19	Vent	CL	_____	_____
EF-V5A	EF Discharge Header Isolation Valve	OP	_____	_____
EF-V5B	EF Discharge Header Isolation Valve	OP	_____	_____
EF-V11A	EF to "A" Steam Generator	CL	_____	_____
EF-V12A	EF to "A" Steam Generator	OP	_____	_____
EF-V32A	EF to "A" Steam Generator	CL	_____	_____
EF-V33A	EF to "A" Steam Generator	CL	_____	_____
EF-V11B	EF to "B" Steam Generator	CL	_____	_____
EF-V12B	EF to "B" Steam Generator	OP	_____	_____
EF-V32B	EF to "B" Steam Generator	CL	_____	_____
EF-V33B	EF TO "B" Steam Generator	CL	_____	_____
EF-V16	EF Header Drain	CL	_____	_____

Turbine Driven Emergency Feedpump Valve Line-Up Verification and Operability Test

Valve	Description	Required Position	As Found Position	Initials
EF-V7C	Recirc to Condenser	CL	_____	_____
EF-V8C	Recirc to CO-T-1A	OP	_____	_____
EF-V9	CO-T-1A ISO valve	OP	_____	_____
EF-V17	EF Header Drain	CL	_____	_____
EF-V36	OTSG "B" EF Header Drain	CL	_____	_____
EF-V37	OTSG "B" EF Header Drain	CL	_____	_____

EXCEPTION: EF-V8C may be closed if EF-V7C is Open.

Steam Pressure _____ psig (MS-PI-2006) Acceptable: > 200 psig

1. Pump idle inlet pressure (CO-PI-2027) _____ psig.
2. Pump running inlet pressure (CO-PI-2027) _____ psig.
3. Pump running discharge pressure (EF-PI-2003) _____ psig.
4. Calculate differential pressure (#3 - #2) _____ psi
5. Turbine speed _____ rpm. (Acceptable: 4250 +50 - C)
6. Lube oil level, Pump and Turbine. (Initial if satisfactory) _____
7. Pump Inboard Bearing Vibration (mils)
 H _____
 V _____

QUANTITY	MEASURED VALUE	ACCEPTABLE RANGE	ALERT RANGE		REQUIRED ACTION RANGE		REFERENCE VALUE
			LOW	HIGH	LOW	HIGH	
PUMP IDLE INLET PRESSURE (PSIG)		7.8	NA	NA	<10.8	NA	15.0
PUMP RUNNING INLET PRESSURE (PSIG)		>10.8	NA	NA	<10.8	NA	15.0
PUMP DISCHARGE PRESSURE (PSIG)		≥1070	NA	NA	<1070	NA	1640.0
PUMP DIFF PRESS (PSI)		1511. to 1658.	1463. to 1511.	1658. to 1674.	<1463.	>1674.	1625.0
PUMP INBOARD BEARING TEMP (°F)	*	<180	NA	NA	NA	≥180	114.0
PUMP OUTBOARD BEARING TEMP (°F)	*	<180	NA	NA	NA	≥180	106.0
MAX VIBRATION (MILS)		0.0 to 1.0	NA	1.0 to 1.5	NA	>1.5	.4

*Measurements taken only during the first test run each calendar year.

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DATA SHEET C (cont'd)

Bearing Temperatures

NOTE: To be measured yearly.

<u>Time</u>	<u>Inboard Bearing Temp.</u>	<u>Outboard Bearing Temp.</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

NOTE: Three consecutive measurements taken at 10 minute intervals must change by less than 3%.

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DATA SHEET C

5/20/79
Flux 2-7-79
pss

	CO-PI-2027	EF-PI-2003	Vibration Instrument	Turbine Speed Instrument
Manufacture				
Model				
Serial No.				
Scale Range				

Performed by: _____ Date: _____ Time: _____

Approved by: _____ Date: _____

ANALYSIS:

Analysis by: _____ Date: _____ Time: _____

Analysis performed within 96 hours? Yes _____ No _____

DATA SHEET D

Motor Driven Emergency Feedpump, EF-P-2A, Valve Line-Up Verification

Valve	Description	Required Position	As Found Position
CO-V192	Vent on Header From Cond. Pumps	CL	_____
CO-V85	Iso. Valve on Header From Cond. Pumps	OP	_____
CO-V82A	Iso. Valve From Cond. Storage Tanks	OP	_____
CO-V62B	Iso. Valve From Cond. Storage Tanks	OP	_____
CO-V235	Drain on Header From Cond. Storage Tanks	CL	_____
CO-V87	EF Suction Header Isolation Valve	OP	_____
CO-V92A	Inlet Strainer Hose Connection	CL	_____
CO-V93A	Inlet Strainer Drain	CL	_____
EF-V27A	Cooling Water Inlet Isolation Valve (Automatically Opens On Pump Start)	CL	_____
EF-V29A	Cooling Water Isolation Valve	OP	_____
EF-V31A	Cooling Water Outlet Isolation	OP	_____
EF-V39	Recirc. Line	CL	_____
EF-V4A	Discharge Valve	OP	_____
EF-V5A	EF Discharge Header Isolation Valve	OP	_____
EF-V5B	EF Discharge Header Isolation Valve	OP	_____
EF-V11A	EF to "A" Steam Generator	CL	_____
EF-V12A	EF to "A" Steam Generator	OP	_____
EF-V32A	EF to "A" Steam Generator	CL	_____
EF-V33A	EF to "A" Steam Generator	CL	_____
EF-V11B	EF to "B" Steam Generator	CL	_____
EF-V12B	EF to "B" Steam Generator	OP	_____

DATA SHEET D

Motor Driven Emergency Feedpump, EF-P-2A, Valve Line-Up Verification

Valve	Description	Required Position	As Found Position
EF-V7A	Recirc Line to Condenser	CL	_____
EF-V8A	Recirc Line to Condensate Storage Tank	OP	_____
EF-V9	CO-T-1A isolation valve	OP	_____
EF-V32B	EF to "B" Steam Generator	CL	_____
EF-V33B	EF to "B" Steam Generator	CL	_____
EF-V16	EF Header Drain	CL	_____
EF-V17	EF Header Drain	CL	_____
EF-V36	OTSG "B" EF Header Drain	CL	_____
EF-V37	OTSG "B" EF Header Drain	CL	_____

EXCEPTION: EF-8A may be closed if EF-V7A is OPEN.

Performed by: _____ Date: _____

Approved by: _____ Date: _____

DATA SHEET E

Motor Driven Emergency Feedpump, EF-P-2B, Valve Line-Up Verification

Valve	Description	Required Position	As Found Position
CO-V192	Vent on Header From Cond. Storage Tank	CL	_____
CO-V85	Iso. Valve on Header From Cond. Pumps	OP	_____
CO-V82A	Iso. Valve From Cond. Storage Tanks	OP	_____
CO-V82B	Iso. Valve From Cond. Storage Tanks	OP	_____
CO-V235	Drain on Header From Cond. Storage Tanks	CL	_____
CO-V87	EF Suction Header Isolation Valve	OP	_____
CO-V92B	Inlet Strainer Hose Connection	CL	_____
CO-V93B	Inlet Strainer Drain	CL	_____
EF-V27B	Cooling Water Inlet Isolation Valve (Automatically Opens on Pump Start)	CL	_____
EF-V29B	Cooling Water Isolation Valve	OP	_____
EF-V31B	Cooling Water Outlet Isolation	OP	_____
EF-V40	Relief Valve	CL	_____
EF-V4B	Discharge Valve	OP	_____
EF-V5A	EF Discharge Header Isolation Valve	OP	_____
EF-V5B	EF Discharge Header Isolation Valve	OP	_____
EF-V11A	EF to "A" Steam Generator	CL	_____
EF-V12A	EF to "A" Steam Generator	OP	_____
EF-V32A	EF to "A" Steam Generator	CL	_____
EF-V33A	EF to "A" Steam Generator	CL	_____
EF-V11B	EF to "B" Steam Generator	CL	_____
EF-V12B	EF to "B" Steam Generator	OP	_____

DATA SHEET E

Motor Driven Emergency Feedpump, EF-P-2B, Valve Line-Up Verification

Valve	Description	Required Position	As Found Position
EF-V7B	Recirc to Condenser	CL	_____
EF-V8B	Recirc to Condensate Storage Tank	OP	_____
EF-V9	CO-T-1B isolation valve	OP	_____
EF-V32B	EF to "B" Steam Generator	CL	_____
EF-V33B	EF to "B" Steam Generator	CL	_____
EF-V16	EF Header Drain	CL	_____
EF-V17	EF Header Drain	CL	_____
EF-V36	OTSG "B" EF Header Drain	CL	_____
EF-V37	OTSG "B" EF Header Drain	CL	_____

EXCEPTION: EF-V8B may be closed if EF-V7B is OPEN.

Prepared by: _____ Date: _____

Approved: _____ Date: _____

TMI DOCUMENTS

DOCUMENT NO: TM-0655

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