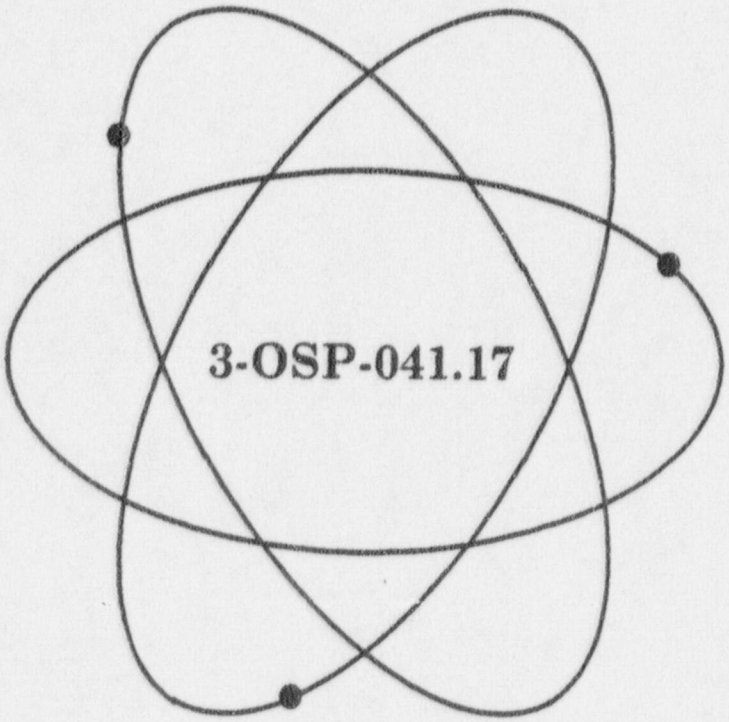
Florida Power & Light Company

Turkey Point Nuclear Plant

Unit 3



Title:

RCS Pressure Boundary Valves MOV-3-750 and/or MOV-3-751 Leak Test

Safety Related Procedure	
Responsible Department:	Technical
Reviewed by PNSC:	86-248
Approved by Plant Manager-N:	9/23/86

RTS 86-1503P

* JAC:dt/em

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1.0 PURPOSE

This procedure provides instructions for performing leak tests on the RHR Loop 3C Suction Stop Valves, MOV-3-750 and MOV-3-751. These test shall be performed during Unit 3 heatup as directed by OP-0202.1, Reactor Startup - Cold Conditions to Hot Standby Conditions. This surveillance satisfies the requirements of reference 2.1.2 and 2.1.3, for the valves tested.

2.0 REFERENCES/RECORDS REQUIRED

2.1 References

2.1.1 Technical Specification

1. Section 3.16 Reactor Coolant System Pressure Isolation Valves.

2. Section 4.17 Reactor Coolant System Pressure Isolation Valves.

2.1.2 Technical Specification (Interim) Section 4.4.6.2.2, RCS Operational Leakage.

2.1.3 Letter L-85-350, Revision to the Inservice Test Program for Pumps and Valves.

2.1.4 3-OP-050, Residual Heat Removal System.

2.1.5 OP-0202.1, Reactor Startup - Cold Conditions to Hot Standby Conditions.

2.2 Records Required

2.2.1 The date, time and section started and the date, time and section completed shall be logged in the Reactor Control Operator (RCO) logbook. Also, any problems encountered while performing the procedure should be logged (i.e., malfunctioning equipment, delays due to changes in plant conditions, etc.).

2.2.2 Completed copies of the below listed section(s), enclosure(s) and/or attachment(s) document the compliance with Technical Specification surveillance requirements and shall be transmitted to the Quality Control Department for review prior to being sent to Document Control for retention for the lifetime of the plant in accordance with Quality Assurance records requirements:

1. Section 7.0

2. Attachments 1, 2 and 3

2.2.3 Completed copies of the below listed section(s), enclosure(s), and/or attachment(s) shall be retained in the Plant Supervisor - Nuclear's file until the next performance of that section, enclosure, or attachment.

1. None

3.0 PREREQUISITES

3.1 Performance of this procedure has been directed by OP-0202.1, Reactor Startup - Cold Conditions to Hot Standby Conditions.

3.2 Personnel who will perform this procedure have reviewed it and understand their responsibilities.

3.3 Technical Department personnel have calculated the maximum allowable leak rate from previous test data, and recorded it on Attachments 1 and 2.

3.4 The Plant Supervisor - Nuclear has authorized performance of this test.

4.0 PRECAUTIONS/LIMITATIONS

4.1 All work performed in Radiation Controlled Areas shall be performed in accordance with the requirements of the Radiation Work Permit and the ALARA program.

4.2 The Plant Supervisor - Nuclear shall be notified immediately if any acceptance criteria is not met or any malfunction or abnormal conditions occur.

4.3 If either MOV is declared inoperable due to this test Technical Specification Section 3.16 should be referred to for required actions.

4.4 All RCS and RHR pressure gauges used during the performance of this procedure shall have been calibrated within 18 months of the test date.

4.5 During the performance of this procedure it may be required to drain pressurized pipe lines containing high temperature radioactive water. Ensure that the lines are drained by use of a properly secured drain going to the containment sump or the waste hold up tank.

4.6 The differential pressure across each valve being tested shall be at least 150 psig throughout the test.

4.7 The observed leak rate shall be corrected to normal system pressure to obtain actual leak rate.

5.0 SPECIAL TOOLS/EQUIPMENT

5.1 Tygon tubing of sufficient length to reach floor drain from system attachment point.

5.2 A graduated container

5.3 Stopwatch

6.0 ACCEPTANCE CRITERIA

6.1 MOV-3-750 and MOV-3-751 leak rates are considered acceptable if when tested with a minimum of 150 psig differential pressure the:

6.1.1 Corrected leak rate is less than or equal to 1.0 GPM

OR

6.1.2 Corrected leak rate is greater than 1.0 gpm but less than or equal to 5.0 gpm and the latest measured rate has not exceeded the rate determined by the previous test by an amount that reduces the margin between measured leakage rate and the maximum permissible rate of 5.0 gpm by 50% or greater.

NOTE

Acceptance Criteria 6.1.2 can be calculated with the formula;

$$L-P \leq \frac{5-L}{2}$$

where; L = Latest corrected leakage and,
P = Previous corrected leakage.

7.0 PROCEDURE

7.1 MOV-3-751 Leak Test

INIT. Date/Time Started: _____

___ 7.1.1 Obtain permission from the Plant Supervisor - Nuclear to perform this test

___ 7.1.2 If an on-shift Quality Control Inspector is available, notify prior to performing this test.

NOTE

RCS pressure shall be maintained less than 515 psig during the performance of this test to prevent auto closure of RHR Loop 3C Suction Stop, MOV-3-750.

___ 7.1.3 Verify that the RHR System has been removed from cooldown operation as per 3-OP-050, Residual Heat Removal System.

7.1.4 Have Operations personnel unlock and close the following breakers:

___ 1. 30615 MOV-3-750

___ 2. 30720 MOV-3-862A

7.1.5 Have Operations personnel place both RHR pump control switches in Pull to Lock.

___ 1. RHR Pump A

___ 2. RHR Pump B

___ 7.1.6 Have Operations personnel close the RHR Pump RWST Suction Stop, MOV-3-862A

___ 7.1.7 Connect a piece of Tygon tubing at the RHR Recirc Line Vent, 3-741C, and route the tubing to a floor drain.

___ 7.1.8 Slowly open the RHR Recirc Line Vent, 3-741C to depressurize the line.

___ 7.1.9 When the line is depressurized, elevate the end of the tubing above the RHR Recirc Line Vent, 3-741C.

___ 7.1.10 Place the end of the tubing in a graduated container to allow measuring of leak rate.

___ 7.1.11 Have Operations personnel open the RHR Loop 3C Suction Stop, MOV-3-750.

INIT.

7.1.12 Record the following on Attachment 1, MOV-3-751 Leak Test Data Sheet:

____ 1. Time test started

____ 2. RCS pressure

____ 3. RCS temperature

____ 4. RHR pressure

____ 5. RCS/RHR ΔP

____ 7.1.13 After a leak rate is determined, or a minimum of 10 minutes, if no leakage is noted, record the volume of leakage collected and time collecting is stopped on Attachment 1.

____ 7.1.14 Have Operations personnel close the RHR Loop 3C Suction Stop, MOV-3-750.

____ 7.1.15 Return the loose tubing end to the floor drain.

____ 7.1.16 Determine and record the corrected leak rate for the RHR Loop 3C Suction Stop, MOV-3-751 by using the formula on Attachment 1.

____ 7.1.17 If the RHR Loop 3C Suction Stop, MOV-3-750 requires leak testing perform Section 7.2. (N/A if MOV-3-750 is not to be tested)

____ 7.1.18 If the RHR loop 3C Suction Stop, MOV-3-750 does not require leak testing at this time perform Section 7.3, to restore system alignment. (N/A if MOV-3-750 is to be tested)

7.2 MOV-3-750 Leak Test

INIT.

___ 7.2.1 Obtain permission from the Plant Supervisor - Nuclear to perform this test.

___ 7.2.2 If an on-shift Quality Control Inspector is available, notify prior to performing this test.

NOTE

RCS pressure shall be maintained less than 515 psig during the performance of this test to prevent auto closure of RHR Loop 3C Suction Stop, MOV-3-751.

___ 7.2.3 Verify that the RHR System has been removed from cooldown operation as per 3-OP-050, Residual Heat Removal System.

7.2.4 Have Operations personnel unlock and close the following breakers:

___ 1. 30731 MOV-3-751

___ 2. 30616 MOV-3-862B

7.2.5 Have Operations personnel place or verify both RHR pump control switches in Pull to Lock.

___ 1. RHR Pump A

___ 2. RHR Pump B

___ 7.2.6 Have Operations personnel close the RHR Pump RWST Suction Stop, MOV-3-862B

NOTE

Steps 7.2.6 and 7.2.7 may be marked N/A if their required action has already been completed by performance of Section 7.1.

___ 7.2.7 Connect a piece of Tygon tubing at the RHR Recirc Line Vent, 3-741C, and route the tubing to a floor drain.

___ 7.2.8 Slowly open the RHR Recirc Line Vent, 3-741C to depressurize the line.

___ 7.2.9 When the line is depressurized, elevate the end of the tubing above the RHR Recirc Line Vent, 3-741C.

___ 7.2.10 Place the end of the tubing in a graduated container to allow measuring of leak rate.

INIT.

____ 7.2.11 Open the RHR Loop 3C Suction Stop, MOV-3-751.

____ 7.2.12 Record the following on Attachment 2, MOV-3-750 Leak Test Data Sheet:

1. Time test started
2. RCS pressure
3. RCS temperature
4. RHR pressure
5. RCS/RHR ΔP

____ 7.2.13 After a leak rate is determined, or a minimum of 10 minutes, if no leak rate is noted, record the volume of leakage collected and time collecting is stopped on Attachment 2.

____ 7.2.14 Close the RHR Loop 3C Suction Stop, MOV-3-751.

____ 7.2.15 Return the loose tubing end to the floor drain.

____ 7.2.16 Determine and record the corrected leak rate for MOV-3-750 by using the formula on Attachment 2.

____ 7.2.17 Restore system alignment by completing Section 7.3.

7.3 MOV-3-750 and/or MOV-3-751 Leak Test Restoration

INIT.

____ 7.3.1 Close the RHR Recirc Line Vent, 3-741C.

____ 7.3.2 Remove the tubing and replace the cap on the RHR Recirc Line Vent, 3-741C

7.3.3 Open or verify open the following valves:

____ 1. RHR Pump RWST Suction Stop, MOV-3-862A

____ 2. RHR Pump RWST Suction Stop, MOV-3-862B

7.3.4 Place both RHR pump control switches in AUTO.

____ 1. RHR Pump A

____ 2. RHR Pump B

7.3.5 Open and lock or verify open and locked the following breakers:

____ 1. 30731 MOV-3-751

____ 2. 30615 MOV-3-750

____ 3. 30720 MOV-3-862A

____ 4. 30616 MOV-3-862B

____ 7.3.6 Perform independent verification of system restoration by completing Attachment 3, MOV-3-750 and/or MOV-3-751 Leak Test Restoration Verification.

____ 7.3.7 Notify the Plant Supervisor - Nuclear that the Leak test of MOV-3-750 and/or MOV-3-751 is complete and inform the PS-N of any problems or abnormal conditions. Ensure these conditions are noted on the associated attachment.

____ 7.3.8 Verify all log entries specified in Section 2.2 have been recorded.

Date/Time Completed: _____

PERFORMED BY (Print)	INITIALS
_____	_____
_____	_____
_____	_____

REVIEWED BY: _____
Plant Supervisor - Nuclear or SRO Designee

END OF TEXT

ATTACHMENT 1
(Page 1 of 2)

MOV-3-751 LEAK TEST DATA SHEET

Ref Step No.	Data Required		
7.1.12	Time test started	_____	
	RCS pressure	_____ psig	
	RCS temperature	_____ °F	
	RHR pressure	_____ psig	
	RCS/RHR ΔP	_____ psig	(Acceptance Criteria) (150 psig minimum)
7.1.13	Leakage collected	_____ ml	Stopwatch MTE No._____
	Time test stopped	_____	Cal Date_____
	Total test time	_____ mins	

7.1.15 MOV-3-751 Leak Rate Calculation

$$\frac{\text{\_\_\_\_\_ ml (collected)}}{\text{3785.43 ml/gal}} = \text{\_\_\_\_\_ gals (collected)}$$

$$\frac{\text{\_\_\_\_\_ gals (collected)}}{\text{\_\_\_\_\_ mins (total test time)}} = \text{\_\_\_\_\_ gpm at test pressure}$$

Leak rate corrected to 2235 psig:

$$\sqrt{\frac{2235 \text{ psig}}{\text{\_\_\_\_\_ psig (Test } \Delta P)}} \times \text{\_\_\_\_} = \text{Leak Rate at test pressure} = \boxed{\text{\_\_\_\_\_ GPM}}$$

Corrected Leak Rate

Acceptance Criteria:

_____ GPM Maximum as determined by Tech Dept.

Calculation Independent Verification

Performed By:_____ Date _____

ATTACHMENT 1
(Page 2 of 2)

MOV-3-751 LEAK TEST DATA SHEET

Remarks: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Test Performed by: _____ Date _____

_____ Date _____

Test and Data Reviewed by: _____ Date _____
Plant Supervisor - Nuclear

Evaluation Completed by: _____ Date _____
Tech Dept Representative

QC Reviewed by: _____ Date _____
QC Surveillance Technician

ATTACHMENT 2
(Page 1 of 2)

MOV-3-750 LEAK TEST DATA SHEET

Ref Step No.	Data Required		
7.2.12	Time test started	_____	
	RCS pressure	_____psig	
	RCS temperature	_____°F	
	RHR pressure	_____psig	
	RCS/RHR ΔP	_____psig	(Acceptance Criteria) (150 psig minimum)
7.2.13	Leakage collected	_____ml	Stopwatch MTE No._____
	Time test stopped	_____	Cal Date_____
	Total test time	_____mins	

7.2.16 MOV-3-750 Leak Rate Calculation

$$\frac{\text{\_\_\_\_\_ ml (collected)}}{\text{3785.43 ml/gal}} = \text{\_\_\_\_\_ gals (collected)}$$

$$\frac{\text{\_\_\_\_\_ gals (collected)}}{\text{\_\_\_\_\_ mins (total test time)}} = \text{\_\_\_\_\_ gpm at test pressure}$$

Leak rate corrected to 2235 psig:

$$\sqrt{\frac{\text{2235 psig}}{\text{\_\_\_\_\_ psig (Test } \Delta P)}} \times \text{\_\_\_\_}$$

Leak Rate at test pressure = _____GPM

Corrected Leak Rate

Acceptance Criteria:

_____ GPM Maximum as determined by Tech Dept.

Calculation Independent Verification

Performed By:_____Date _____

*IIACitem

ATTACHMENT 2
(Page 2 of 2)

MOV-3-750 LEAK TEST DATA SHEET

Remarks: ____

____

____

____

____

____

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____

____

____

Test Performed by: ______________________ Date ____________

______ ______________________ Date ____________

Test and Data Reviewed by: ______________________ Date ____________
Plant Supervisor - Nuclear

Evaluation Completed by: ______________________ Date ____________
Tech Dept Representative

QC Reviewed by: ______________________ Date ____________
QC Surveillance Technician

ATTACHMENT 3
(Page 1 of 1)

MOV-3-750 and/or MOV-3-751 LEAK TEST RESTORATION VERIFICATION

Component No.	Component Description	Required Position	Ind. Ver. (Initials)
RHR Pump A	Control Switch	AUTO	
RHR Pump B	Control Switch	AUTO	
	VALVES		
3-741C	RHR Recirc Line Vent	CLOSED and CAPPED	
MOV-3-750	RHR Loop 3C Suction Stop	CLOSED	
MOV-3-751	RHR Loop 3C Suction Stop	CLOSED	
MOV-3-862A	RHR Pump RWST Suction Stop	OPEN	
MOV-3-862B	RHR Pump RWST Section Stop	OPEN	
	BREAKERS		
30731	MOV-3-751	LOCKED OFF	
30615	MOV-3-750	LOCKED OFF	
30720	MOV-3-862A	LOCKED OFF	
30616	MOV-3-862B	LOCKED OFF	

Remarks: _____

_____

_____

_____

Independent Verification Performed by: _____ Date _____

Reviewed by: _____ Date _____

Plant Supervisor - Nuclear or Designee _____ Date _____

FINAL PAGE