



nrc 1

TITLE: RESTORATION OF REACTIVITY CRITICAL SAFETY FUNCTION

RESPONSIBLE FOR	<i>M. E. Derivator</i>			
AUTHORIZED BY	<i>[Signature]</i>			
PORC REVIEW	PORC 8 7 7 APR 11 1990			EFFECTIVE DATE 4-19-90
DCCF NUMBER (S)	90-0134			

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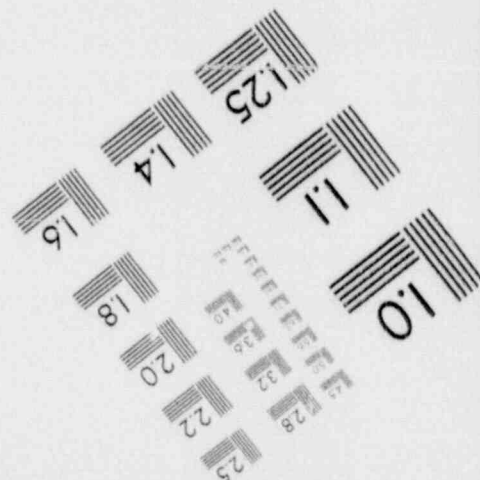
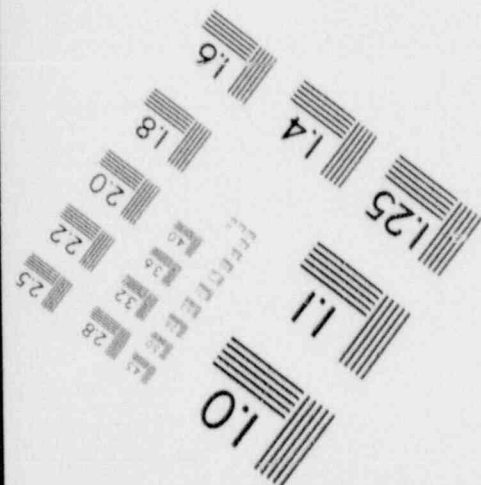
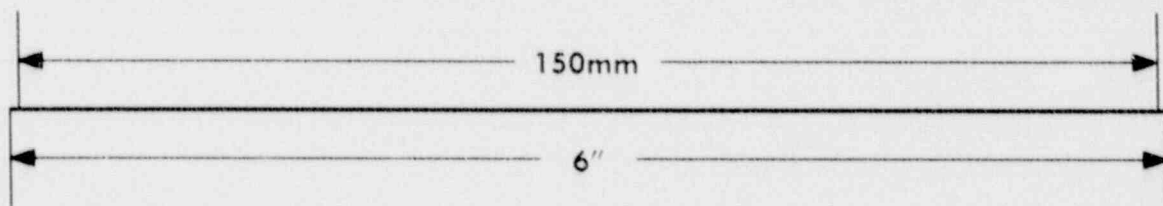
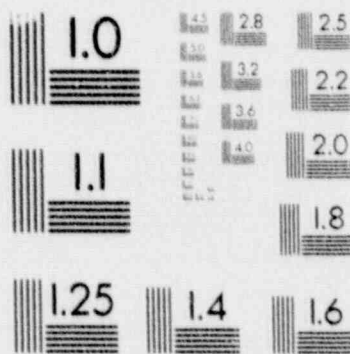
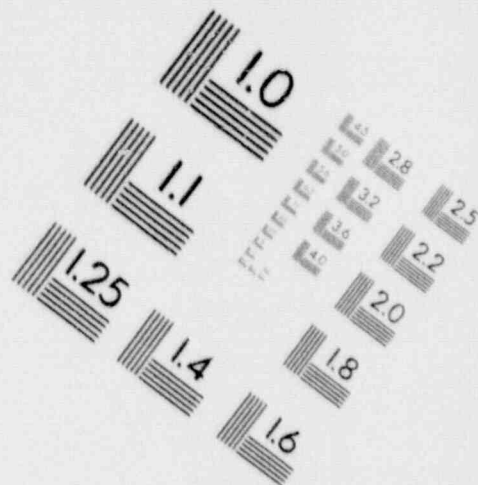
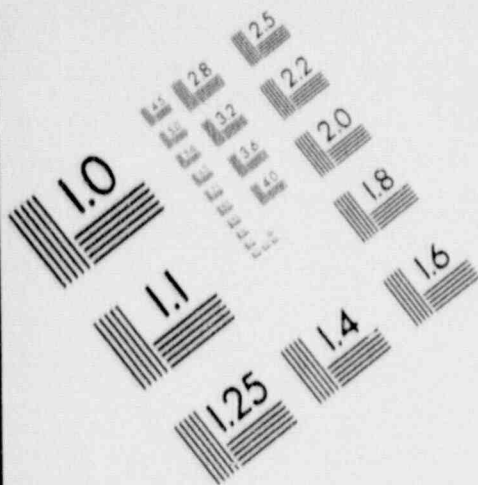


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IMAGE EVALUATION TEST TARGET (MT-3)



PHOTOGRAPHIC SCIENCES CORPORATION
770 BASKET ROAD
P.O. BOX 338
WEBSTER, NEW YORK 14580
(716) 265-1600



1.0 OBJECTIVE

##7.1## To provide detailed instructions to the plant operating personnel for restoring and maintaining the Reactivity Critical Safety Function.

2.0 SCOPE

This procedure gives instructions for ensuring and maintaining the reactor subcritical.

3.0 ENTRY CONDITIONS

Scram of the reactor is required and Control Room equipment indicates that inadequate reactivity insertion has occurred such that the health and safety of the public may be threatened.

3.1 The following conditions exist:

Control rods not inserting.

AND/OR

The following instruments on I-03 do not indicate negative rate:

NI-1133-2 CH III RATE OF CHANGE
NI-1134-2 CH IV RATE OF CHANGE
NI-1135-2 CH V RATE OF CHANGE

AND/OR

The following instruments, located on I-03, indicate that reactor power is not decreasing:

NI-1133-1 CH III LOG POWER
NI-1134-1 CH IV LOG POWER
NI-1135-1 CH V LOG POWER
NI-1133-3 LINEAR PWR CH III
NI-1134-3 LINEAR PWR CH IV
NI-1135-3 LINEAR PWR CH V
NI-1136 LINEAR PWR CH VI
NI-1137 LINEAR PWR CH VII
NI-1138 LINEAR PWR CH VIII

AND/OR

Linear Power Channel Average, SPDS screen 3201, indicates power is not decreasing

AND/OR

Linear Power Channel Average Rate of Change (ROC), SPDS screen 3201, not decreasing.



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4.0 PRECAUTIONS AND LIMITATIONS

- 4.1 More than one Critical Safety Function challenge may be addressed at the same time if adequate operations resources are available to ensure that the higher priority challenge is being addressed without introducing additional challenges.

5.0 OPERATOR ACTIONS

INSTRUCTIONS	CONTINGENCY ACTIONS
<p><u>NOTE:</u> Step 5.1 may activate MANUAL SCRAM alarms on I-03B, windows 4-5, 5-5 and 6-5.</p> <p>5.1 Manually scram the reactor.</p> <ol style="list-style-type: none"> Place HS-9330, SCRAM switch on I-03 to SCRAM position. Place HS-1216 REACTOR MODE switch on I-03 to OFF position. Remove the key from HS-1216 REACTOR MODE switch on I-03. 	
<p>5.2 Verify reactor is sub-critical.</p> <ol style="list-style-type: none"> The following instruments on I-03 indicate reactor power rate of change is negative. <ul style="list-style-type: none"> • NI-1133-2 WIDE RANGE CH III RATE OF CHANGE • NI-1134-2 WIDE RANGE CH IV RATE OF CHANGE • NI-1135-2 WIDE RANGE CH V RATE OF CHANGE <p style="text-align: center;">OR</p> The following instruments on I-03 indicate reactor power decreasing. <ul style="list-style-type: none"> • NI-1133-3 LINEAR PWR CH III • NI-1134-3 LINEAR PWR CH IV • NI-1135-3 LINEAR PWR CH V • NI-1136 LINEAR PWR CH VI • NI-1137 LINEAR PWR CH VII • NI-1138 LINEAR PWR CH VIII 	



INSTRUCTIONS	CONTINGENCY ACTIONS
5.3 IF reactor is subcritical, <u>THEN</u> proceed to Step 5.20 (page 12).	5.3 IF reactor is not subcritical, <u>THEN</u> proceed to next step (5.4).
<u>NOTE:</u> Step 5.4 will activate ACKNOWLEDGE RESERVE SHUTDOWN or CONT ROD PURGE SYSTEM LOCAL ALARM on I-01A, 1-9.	
5.4 Insert the 7-ROD GROUP reserve shutdown material. a. Simultaneously hold HS-1102-1 AND HS-1104-1, RESERVE SHUTDOWN 7-ROD GROUP switches on I-03 to OPEN for approximately 10 seconds.	
5.5 Verify reactor is sub- critical. a. The following instruments on I-03 indicate reactor power rate of change is negative. • NI-1133-2 WIDE RANGE CH III RATE OF CHANGE • NI-1134-2 WIDE RANGE CH IV RATE OF CHANGE • NI-1135-2 WIDE RANGE CH V RATE OF CHANGE <u>OR</u> b. The following instruments on I-03 indicate reactor power decreasing. • NI-1133-3 LINEAR PWR CH III • NI-1134-3 LINEAR PWR CH IV • NI-1135-3 LINEAR PWR CH V • NI-1136 LINEAR PWR CH VI • NI-1137 LINEAR PWR CH VII • NI-1138 LINEAR PWR CH VIII	



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INSTRUCTIONS	CONTINGENCY ACTIONS
<p>5.6 IF reactor is subcritical, <u>THEN</u> proceed to Step 5.20 (page 12).</p>	<p>5.6 IF reactor is not subcritical, <u>THEN</u> proceed to next step (5.7).</p>
<p><u>NOTE:</u> Step 5.7 will activate ACKNOWLEDGE RESERVE SHUTDOWN or CONT ROD PURGE SYSTEM LOCAL ALARM on I-01A 1-9.</p> <p>5.7 Insert the 30-ROD GROUP reserve shutdown material. a. Simultaneously hold HS-1102-2 AND HS-1104-2, RESERVE SHUTDOWN 30-ROD GROUP switches on I-03 to OPEN for approximately 10 seconds.</p>	
<p>5.8 Verify reactor is sub- critical. a. The following instruments on I-03 indicate reactor power rate of change is negative. • NI-1133-2 WIDE RANGE CH III RATE OF CHANGE • NI-1134-2 WIDE RANGE CH IV RATE OF CHANGE • NI-1135-2 WIDE RANGE CH V RATE OF CHANGE <u>OR</u> b. The following instruments on I-03 indicate reactor power decreasing. • NI-1133-3 LINEAR PWR CH III • NI-1134-3 LINEAR PWR CH IV • NI-1135-3 LINEAR PWR CH V • NI-1136 LINEAR PWR CH VI • NI-1137 LINEAR PWR CH VII • NI-1138 LINEAR PWR CH VIII</p>	



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INSTRUCTIONS	CONTINGENCY ACTIONS
5.9 IF reactor is subcritical, <u>THEN</u> proceed to Step 5.20 (page 12).	5.9 IF reactor is not subcritical, <u>THEN</u> proceed to next step (5.10).
5.10 Dispatch an Equipment Operator to level 10 of the reactor building to locally insert all reserve shutdown material per Section 1.0 of Attachment 1 of this procedure.	
5.11 Verify reactor is sub- critical. a. The following instruments on I-03 indicate reactor power rate of change is negative. • NI-1133-2 WIDE RANGE CH III RATE OF CHANGE • NI-1134-2 WIDE RANGE CH IV RATE OF CHANGE • NI-1135-2 WIDE RANGE CH V RATE OF CHANGE OR b. The following instruments on I-03 indicate reactor power decreasing. • NI-1133-3 LINEAR PWR CH III • NI-1134-3 LINEAR PWR CH IV • NI-1135-3 LINEAR PWR CH V • NI-1136 LINEAR PWR CH VI • NI-1137 LINEAR PWR CH VII • NI-1138 LINEAR PWR CH VIII	



INSTRUCTIONS	CONTINGENCY ACTIONS
5.12 IF reactor is subcritical, <u>THEN</u> proceed to Step 5.20 (page 12).	5.12 IF reactor is not subcritical, <u>THEN</u> proceed to next step (5.13).
5.13 Dispatch an Equipment Operator to level 10 of the Reactor Building to insert all reserve shutdown material using ACM nitrogen bottles per Section 2.0 of Attachment 1 of this procedure.	
5.14 Verify reactor is sub- critical. a. The following instruments on I-03 indicate reactor power rate of change is negative. • NI-1133-2 WIDE RANGE CH III RATE OF CHANGE • NI-1134-2 WIDE RANGE CH IV RATE OF CHANGE • NI-1135-2 WIDE RANGE CH V RATE OF CHANGE <u>OR</u> b. The following instruments on I-03 indicate reactor power decreasing. • NI-1133-3 LINEAR PWR CH III • NI-1134-3 LINEAR PWR CH IV • NI-1135-3 LINEAR PWR CH V • NI-1136 LINEAR PWR CH VI • NI-1137 LINEAR PWR CH VII • NI-1138 LINEAR PWR CH VIII	



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INSTRUCTIONS	CONTINGENCY ACTIONS
5.15 IF reactor is subcritical, <u>THEN</u> proceed to Step 5.20 (page 12).	5.15 IF reactor is not subcritical, <u>THEN</u> proceed to next step (5.16).
5.16 Initiate powered insertion of all control rods. a. IF rod 1 must be powered in, <u>THEN</u> place HS-1221, ROD SELECT-TENS, on I-03 to position 0. b. Place HS-1220, ROD SELECT- UNITS, on I-03 to position 1. c. Press and hold HS-93475, A LOGIC, and HS-93476, B LOGIC, pushbuttons on I-03. d. Place and hold HS-1245, INDIVIDUAL ROD ACTUATE, on I-03 to "IN" until rod 1 is powered in. e. IF rods 2-37 must be powered in, <u>THEN</u> place HS-1224, ODD- EVEN GROUP SELECT, on I-03 to ODD or EVEN position as appropriate. f. Place HS-1226, EVEN GROUP SELECT, or HS-1225, ODD GROUP SELECT, on I-03 to appropriate group position. g. Determine, from the operator aides mounted above XI-93475, XI-93476, XI-93477 and XI-93478, on I-03, which MCC powers the rod(s) to be power inserted. h. IF rods(s) is powered from CRD MCC 2, <u>THEN</u> press and hold HS-93475, A LOGIC, and HS-93476, B LOGIC, pushbuttons on I-03.	

INSTRUCTIONS	CONTINGENCY ACTIONS
<p>i. <u>IF</u> rod(s) is powered from CRD MCC 1, <u>THEN</u> press and hold HS-93477, A LOGIC, and HS-93478, B LOGIC, pushbuttons on I-03.</p> <p>j. Place and hold HS-1219, ROD A ACTUATE, HS-1222, ROD B ACTUATE and HS-1223, ROD C ACTUATE, on I-03 to "IN" position until appropriate rods are powered in.</p>	
<p>5.17 Verify reactor is subcritical.</p> <p>a. The following instruments on I-03 indicate reactor power rate of change is negative.</p> <ul style="list-style-type: none"> • NI-1133-2 WIDE RANGE CH III RATE OF CHANGE • NI-1134-2 WIDE RANGE CH IV RATE OF CHANGE • NI-1135-2 WIDE RANGE CH V RATE OF CHANGE <p style="text-align: center;">OR</p> <p>b. The following instruments on I-03 indicate reactor power decreasing.</p> <ul style="list-style-type: none"> • NI-1133-3 LINEAR PWR CH III • NI-1134-3 LINEAR PWR CH IV • NI-1135-3 LINEAR PWR CH V • NI-1136 LINEAR PWR CH VI • NI-1137 LINEAR PWR CH VII • NI-1138 LINEAR PWR CH VIII 	
<p>5.18 <u>IF</u> reactor is subcritical, <u>THEN</u> proceed to Step 5.20 (page 12).</p>	<p>5.18 <u>IF</u> reactor is not subcritical, <u>THEN</u> proceed to next step (5.19).</p>



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INSTRUCTIONS	CONTINGENCY ACTIONS
5.19 Declare Site Area Emergency per RERP-CR.	
5.20 Verify all Critical Safety Functions satisfied per EOP-CSFM, then go to AOP-B for followup actions.	



6.0 ATTACHMENTS

- 6.1 Attachment 1 "Local Insertion of Reserve Shutdown Material and Insertion of Reserve Shutdown Material using ACM Bottles".
- 6.2 Attachment Last, "Reactivity EOP-1" Flow Chart.

7.0 COMMITMENTS

The step(s) and section(s) listed below may not be deleted without issuance of comparable controls. The procedure itself, if initiated as a result of commitment corrective action, may not be deleted without issuance of comparable controls.

- 7.1 This procedure was prepared to meet commitments made in Nuclear Regulatory Commitment Log, Item CL-1126J.



1.0 LOCAL INSERTION OF RESERVE SHUTDOWN MATERIAL (Step 5.10)

- 1.1 Depress, and hold for approximately 10 seconds, the red button for each of the following relays. Relay actuation may be accomplished in any order:

CR 1112 and CR 1113 on I-21A
CR 1114-1 and CR 1115-1 on I-21A
CR 1114-2A and CR 1115-2A on I-21B
CR 1114-2B and CR 1115-2B on I-21B
CR 1114-3 and CR 1115-3 on I-21C
CR 1114-4A and CR 1115-4A on I-21D
CR 1114-4B and CR 1115-4B on I-21D

- 1.2 Notify Reactor Operator that the relay actuation has been accomplished.

2.0 INSERTION OF RESERVE SHUTDOWN MATERIAL USING ACM BOTTLES (Step 5.13)

- 2.1 Connect the ACM quick-disconnect fitting from the nitrogen bottle to the right side fitting at the following racks: I-21A, I-21B, I-21C, I-21D. Rack actuation may be accomplished in any order.
- 2.2 Verify the connection is securely made up by observing that the snap-ring of the connector is extended, locking the two fittings together.
- 2.3 Verify the nitrogen bottle regulators are backed off completely.
- 2.4 Open the bottle valve completely.
- 2.5 Verify the vent valves for each rack are closed:

Rack No.	
I-21A	V-821440
I-21B	V-821441
I-21C	V-821442
I-21D	V-821443

- 2.6 Adjust the nitrogen bottle regulators until the HV-1102 (-1 through -37) valves have opened.
- 2.7 Notify the Reactor Operator that the ACM actuation has been accomplished.