



1.0 PURPOSE

This procedure provides instructions for the checkout, installation and removal of the Steam Generator Nozzle Dams.

2.0 PRECAUTIONS AND LIMITATIONS

- 2.1 If only portions of the procedure are required:
- 2.1.1 Contact the Maintenance Foreman.
  - 2.1.2 Use only the steps that apply.
  - 2.1.3 Document the steps used in the "Comments" section of the "Completion" or "Data" Sheet.
  - 2.1.4 N/A the steps that were not used.
- 2.2 Steps in this procedure may be performed out of sequence only:
- 2.2.1 With prior approval of the Maintenance Foreman.
  - 2.2.2 If they do not violate the intent of the procedure.
  - 2.2.3 Are documented in the "Comments" section of the "Completion" Sheet.
- 2.3 Take appropriate action to minimize entry of foreign material into:
- 2.3.1 Steam generator channel head.
- 2.4 Prior to entering a vessel ensure Procedure 00258-C, "Safe Work Procedures For Closed Vessels And Wet Locations" is followed.
- 2.5 For areas or zones requiring documented accountability, see Procedure 00254-C, "Plant Housekeeping And Cleanliness Control".
- 2.6 Maintain area cleanliness in accordance with Procedure 20427-C, "Maintenance Cleanliness And Housekeeping Control".

- 2.7 The nozzle dam may be in a radiation area, or may be radioactively contaminated. IF SO FOLLOW THE INSTRUCTIONS ON THE RADIATION WORK PERMIT.
- 3.0 PREREQUISITIES AND INITIAL CONDITIONS
- 3.1 Prior to beginning work, notify QC if:
- 3.1.1 Hold points are indicated on the "Completion" AND/OR "Data" Sheet.
- 3.1.2 The MWO/Work Package has a QC hold point.
- 3.2 Manway covers and diaphragms removed.
- 3.3 RCS has been drained to mid loop and clearance is in place in accordance with Procedure 00304-C, "Equipment Clearance And Tagging".
- 3.4 Ensure secondary side is drained as necessary to keep tube leakage to a minimum.
- 3.5 Ensure channel head has been drained.
- 3.6 Ensure the atmosphere is sampled per Procedure 00258-C, "Safe Work Procedures For Enclosed Vessels, Confined Spaces, Wet Locations and Systems".
- 3.7 Ensure cleanliness class is marked on MWO.
- 3.8 Ensure nozzle dams have been hydro tested within the 90 days prior to use.
- 3.9 Ensure Section 4.1 has been completed prior to installation.
- 4.0 CHECKOUT, INSTALLATION AND REMOVAL
- 4.1 CHECKOUT
- 4.1.1 \*/\* Perform pre-installation hydro test of the nozzle dam as follows:
- a. Place nozzle dam onto test fixture and torque (see installation step 4.2.8) to  $175 \pm 25$  ft.lbs.

## NOTES

- a. Steps b thru h are recommended for filling the test fixture with water.
  - b. These steps may be deviated from provided the test fixture is not overpressurized and is completely filled.
  - b. Open relief valve next to pressure gage at top of test fixture.
  - c. Connect water source at bottom of test fixture and turn water supply on (Hydrotest inlet valve closed).
  - d. Close the bottom drain valve and open inlet valve at bottom of test fixture to fill fixture with water.
  - e. When water has filled test fixture and begins to overflow through top relief valve:
    - (1) Close inlet valve at bottom first.
    - (2) Close relief valve at top.
  - f. Open inlet valve at bottom as needed to bring pressure to 26 psig.
  - g. Close inlet valve and hold pressure for 5 minutes.
    - (1) Note any loss of pressure on Data Sheet.
  - h. Open bottom drain valve.
  - i. Open top relief valve.
  - j. Remove nozzle dam from fixture and inspect gasket for any damage.
  - k. Test results are acceptable provided test pressure drop is less than 2 psig in 5 minutes.
- 4.1.2      Visually check for missing parts.  
\*/\*
- 4.1.3      Check cover surface for major defects such as holes,  
\*/\*      cracks, and obvious warpage.

4.1.4  
\*/\*

Visually check hold down bolts.

- a. Hold down bolts will thread freely through retaining blocks in both directions and will be positioned with upper thread engaged in the block prior to installation.
- b. Bolts #6 and #16 are not to be engaged but instead will be loose in retainer to allow easier insertion through manway.

4.1.5  
\*/\*

Check retaining blocks to ensure that they move freely on cover surface, and are oriented as shown on figure 1.

4.1.6  
\*/\*

Check Belleville washers to ensure that they are intact and positioned two per bolt with convex sides facing.

4.1.7  
\*/\*

Check nozzle dam gasket for large cuts, cracks, and ply separations.

NOTE

Bolt holes may be cleaned with stainless steel brush by rotating the brush counterclockwise.

4.1.8  
\*/\*

Check hold down ring for damaged or dirty bolt holes. Clean as necessary.

4.1.9  
\*/\*

Check to verify that the gasket is bonded to the dam, to prevent separation while handling, with the following exceptions:

- a. The gasket will not be bonded within 1 to 5 inches of each inside straight edge.
- b. The gasket will not be bonded to the hinge area.

4.2

NOZZLE DAM INSTALLATION

NOTE

Cold leg nozzle dam must be installed before installing hot leg nozzle dam.

4.2.1  
\*/\*

Verify that Prerequisites and Initial Conditions have been met.

- 4.2.2 Notify Shift Supervisor of work to be performed.  
\*/\*
- 4.2.3 Ensure a vent path for the hotlegs is provided prior to  
\*/\* installing the hot leg paths. (Commitment 15738)
- 4.2.4 Fold folding cover as shown in figure 2, ensuring  
rubber gasket is folded inward.
- 4.2.5 Place folding cover through manway into channel head  
and position against divider plate with hinges up.
- 4.2.6 Unfold cover and position it on hold down ring while  
aligning the bolt holes.
- 4.2.7 Start bolts in holes 3, 9, 13, and 19 but do not  
tighten.
- 4.2.8 Start remaining bolts in folding section but do not  
tighten.
- 4.2.9 Pass center piece of nozzle dam into the channel head  
and position on hold down ring.
- a. Engage remaining bolts in hold down ring.

## NOTE

It is not necessary to torque  
all bolts. A seal may be  
obtained by torquing every  
other bolt.

- 4.2.10 Starting with bolt number 1 and moving clockwise torque  
\*/\* bolts to  $175 \pm 25$  ft. lbs. overlapping back to 1.
- a. Although the nozzle dam is typically installed  
with all twenty bolts torqued, only every other  
one is needed for proper installation.
- b. No two adjacent bolts will be left untorqued.  
(See Figure 1)

## NOTE

Actual torque is to be  
determined by Maintenance  
Foreman based on gasket  
thickness, site conditions  
and prior experience.

4.2.11 Check nozzle dams for leakage  
\*\* immediately following reactor cavity flooding

- a. Some leakage is acceptable provided it does not exceed channel head draining capability.

4.3 NOZZLE DAM REMOVAL

NOTE

Hot leg nozzle dam must be removed before removing cold leg nozzle dam.

4.3.1 Verify that all tools and debris are removed from  
\*\* channel head prior to nozzle dam removal.

4.3.2 Verify that the primary system has been drained to mid  
\*\* loop.

4.3.3 Loosen all hold down bolts so that they are completely disengaged from the nozzle ring but still retained on the dam.

4.3.4 Verify that all parts are intact and will not fall into  
\*\* the nozzle upon nozzle dam removal.

4.3.5 Pass center section of the nozzle dam out of the channel head.  
Fold folding cover as shown in figure 2 ensuring rubber gasket is folded inward.

4.3.6 Remove the folding cover from the channel head.

4.3.7 Visually check the channel head to ensure that all  
\*\* tools and materials have been removed.

4.4 Notify Shift Supervisor that required maintenance is  
\*\* complete.

5.0 ACCEPTANCE CRITERIA

5.1 Maintenance performed using this procedure is acceptable when:

5.1.1 The "Completion" Sheet is properly filled out.

5.1.2 Deviations from the procedure data and recommended settings have been reviewed on a case-by-case basis with the Maintenance Foreman.

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5.1.3 Deviations have been identified in the "Comments" section of the "Completion" Sheet.

5.1.4 The "Completion" Sheet has been approved.

5.1.5 Maintenance Work Orders have been written and submitted for conditions evaluated as needing attention.

6.0 REFERENCES

6.1 PROCEDURES

6.1.1 20427-C, "Maintenance Cleanliness And Housekeeping Control"

6.1.2 00258-C, "Safe Work Procedures For Enclosed Vessels, Confined Spaces, Wet Locations And Systems"

6.1.3 00304-C, "Equipment Clearance And Tagging"

6.1.4 00254-C, "Plant Housekeeping And Cleanliness Control"

6.2 WESTINGHOUSE PROCEDURES

6.2.1 X6AB11-43 "Steam Generator Primary Nozzle Dam Instruction Manual"

6.2.2 X6AB11-44 "Pre-Installation Hydro-Test Of Steam Generator Nozzle Dam"

6.2.3 X6AB11-45 "Steam Generator Primary Nozzle Dam Installation/Removal Procedure"

6.3 Commitment 15378 - IEN 88-36)

END OF PROCEDURE TEXT



FIGURE 1

NOZZLE DAM

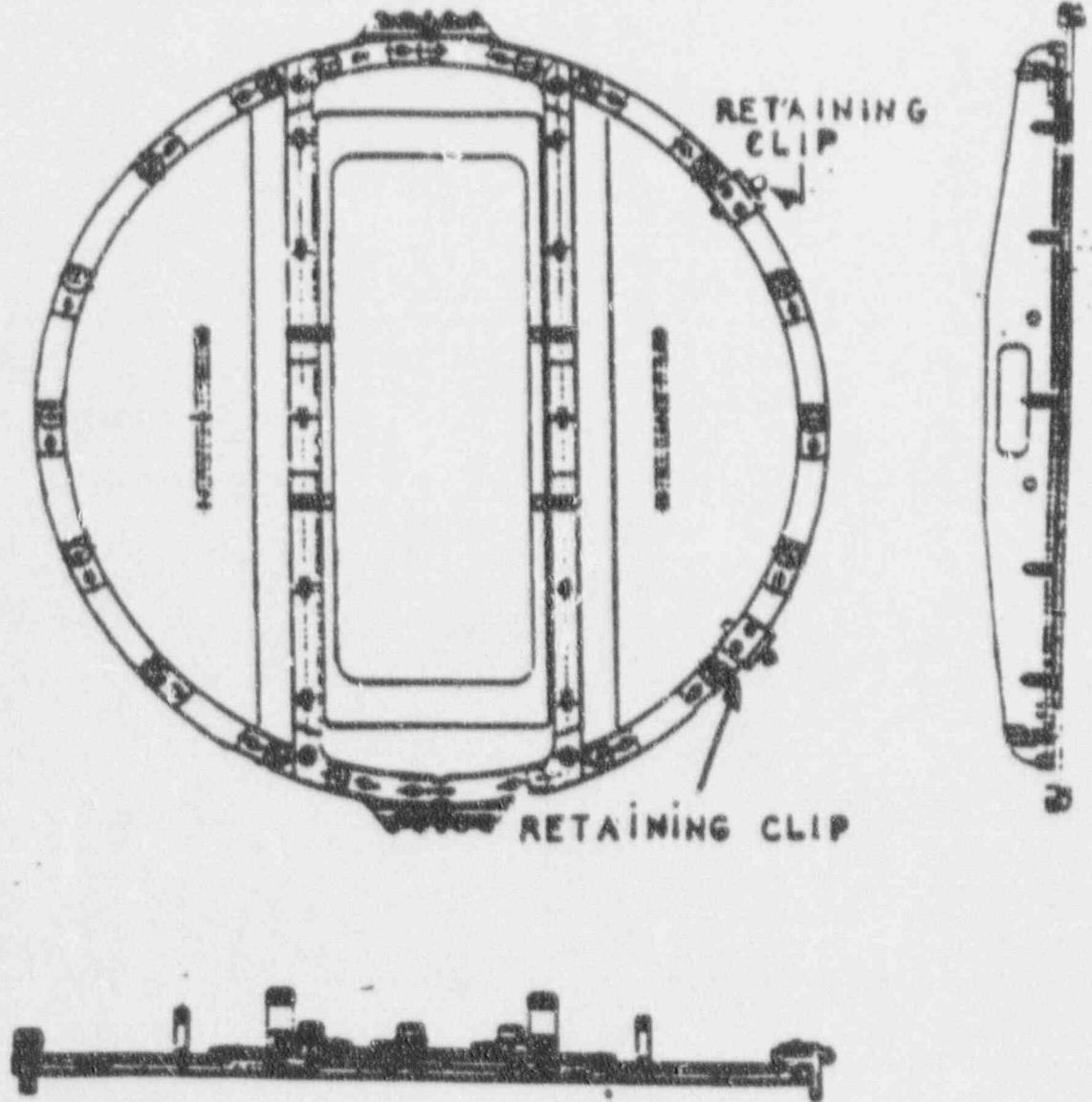
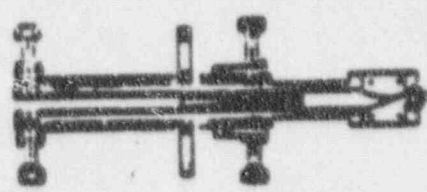
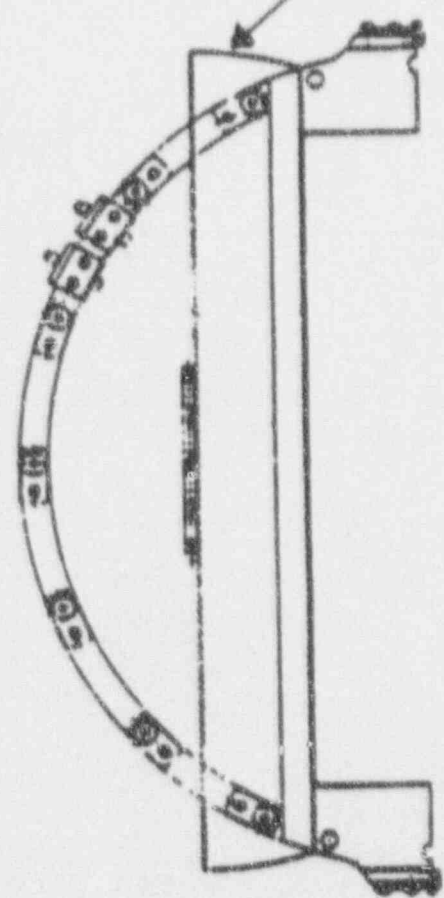


FIGURE 2

FOLDED NOZZLE DAM

RUBBER FOLDED INWARD



DATA SHEET 1

NOZZLE DAM HYDROTEST DATA SHEET

1.0 STATIC TEST

The following Nozzle Dams were pressurized and stabilized to 26/psig. Pressure loss did not exceed 2 psig in 5 minutes.

	INITIAL/DATE	INITIAL/DATE
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____

2.0 COMMENTS/RESOLUTIONS

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3.0 SIGN-OFF

The Nozzle Dams identified above were hydrotested in accordance with Procedure 25270-C. Any exceptions/problems are noted above.

PERSON PERFORMING TEST \_\_\_\_\_

FOREMAN \_\_\_\_\_

DATA SHEET 1

NOZZLE DAM HYDROTEST DATA SHEET

1.0 STATIC TEST

The following Nozzle Dams were pressurized and stabilized to 26/psig. Pressure loss did not exceed 2 psig in 5 minutes.

	INITIAL/DATE	INITIAL/DATE
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
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Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____
Nozzle Dam # _____	OK _____ / _____	Failed _____ / _____

2.0 COMMENTS/RESOLUTIONS

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3.0 SIGN-OFF

The Nozzle Dams identified above were hydrotested in accordance with Procedure 25270-C. Any exceptions/problems are noted above.

PERSON PERFORMING TEST \_\_\_\_\_

FOREMAN \_\_\_\_\_

COMPLETION SHEET 1

COLD LEG		
PROCEDURE 25270-C	REVISION 6	SHEET 1 of 2
TAG NO.	DESCRIPTION Steam Generator Nozzle Dam	
SERIAL NO.	MANUFACTURER	COLD LEG
TEST EQUIPMENT USED	M&TE	<input type="checkbox"/> Safety Related/QC Hold Points <input type="checkbox"/> Non-Safety Related

<u>PROCEDURE STEP</u>	<u>DESCRIPTION</u>	<u>MAINT. INIT/DATE</u>	<u>HOLD POINT (Yes/No)</u>	<u>QC INIT/DATE</u>
4.1.1	Pre-installation hydro test	/		/
4.1.2	Check for missing parts	/		/
4.1.3	Check for defects	/		/
4.1.4	Check hold down bolts	/		/
4.1.5	Check retaining blocks	/		/
4.1.6	Check Belleville washers	/		/
4.1.7	Check gasket	/		/
4.1.8	Check hold down ring	/		/
4.1.9	Verify gasket bonded	/		/
4.2.1	Prerequisites met	/		/
4.2.2	Notify Shift Supervisor	/		/
4.2.10	Torque to 175 ± 25 ft-lbs	/		/
4.2.19	Check for leaks	/		/

\*\*\*COLD LEG\*\*\*  
COMPLETE SHEET 1

Sheet 2 of 2

COLD LEG

PROCEDURE STEP	DESCRIPTION	MAINT. INIT/DATE	HOLD POINT (Yes/No)	QC INIT/DATE
4.3.1	Tools and debris removed	/		/
4.3.2	Primary system drained to mid loop	/		/
4.3.4	Verify parts intact	/		/
4.3.7	Visually check channel head	/		/
4.4	Notify Shift Supervisor	/		/

Comments/additional hold points: \_\_\_\_\_  
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QC has reviewed this procedure for hold points \_\_\_\_\_  
Signature

APPROVED ( ) DISAPPROVED ( )	
FOREMAN	DATE
_____	_____

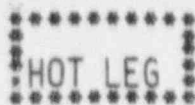
COMPLETED BY	DATE
_____	_____

.....  
 :HOT LEG:  
 .....

## COMPLETION SHEET 2

HOT LEG		
PROCEDURE 25270-C	REVISION 6	SHEET 1 of 2
TAG NO.	DESCRIPTION Steam Generator Nozzle Dam	
SERIAL NO.	MANUFACTURER	HOT LEG
TEST EQUIPMENT USED	M&TE	<input type="checkbox"/> Safety Related/QC Hold Points <input type="checkbox"/> Non-Safety Related

<u>PROCEDURE STEP</u>	<u>DESCRIPTION</u>	<u>MAINT. INIT/DATE</u>	<u>HOLD POINT (Yes/No)</u>	<u>QC INIT/DATE</u>
4.1.1	Pre-installation hydro test	/	/	/
4.1.2	Check for missing parts	/	/	/
4.1.3	Check for defects	/	/	/
4.1.4	Check hold down bolts	/	/	/
4.1.5	Check retaining blocks	/	/	/
4.1.6	Check Belleville washers	/	/	/
4.1.7	Check gasket	/	/	/
4.1.8	Check hold down ring	/	/	/
4.1.9	Verify gasket bonded	/	/	/
4.2.1	Prerequisites met	/	/	/
4.2.2	Notify Shift Supervisor	/	/	/
4.2.3	Ensure vent path	/	/	/
4.2.9	Torque to 175 ± 25 ft-lbs	/	/	/
4.2.10	Check for leaks	/	/	/



COMPLETION SHEET 2

HOT LEG

PROCEDURE 25270-C	REVISION 6	SHEET 1 of 2
TAG NO.	DESCRIPTION Steam Generator Nozzle Dam	
SERIAL NO.	MANUFACTURER	HOT LEG
TEST EQUIPMENT USED	M&TE	<input type="checkbox"/> Safety Related/QC Hold Points <input type="checkbox"/> Non-Safety Related

<u>PROCEDURE STEP</u>	<u>DESCRIPTION</u>	<u>MAINT. INIT/DATE</u>	<u>HOLD POINT (Yes/No)</u>	<u>QC INIT/DATE</u>
4.1.1	Pre-installation hydro test	/		/
4.1.2	Check for missing parts	/		/
4.1.3	Check for defects	/		/
4.1.4	Check hold down bolts	/		/
4.1.5	Check retaining blocks	/		/
4.1.6	Check Belleville washers	/		/
4.1.7	Check gasket	/		/
4.1.8	Check hold down ring	/		/
4.1.9	Verify gasket bonded	/		/
4.2.1	Prerequisites met	/		/
4.2.2	Notify Shift Supervisor	/		/
4.2.3	Ensure vent path	/		/
4.2.9	Torque to 175 ± 25 ft-lbs	/		/
4.2.10	Check for leaks	/		/



