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Office of Nuclear Reactor Regulation, Director

SUBJECT: Provides addl info & written comments in response to NRC 810827 ltr re Unresolved Safety Issue A-10,BWR nozzle cracking.

DISTRIBUTION CODE: A024S COPIES RECEIVED:LTR 1 ENCL 1 SIZE: 11
TITLE: BWR Feedwater Nozzles/Spargers or Control Rod Drive Return (USI A-10)

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U.S. NUCLEAR REGULATORY COMMISSION

November 3, 1981

Director of Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Washington, DC 20555

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Additional Information Related to Resolution of
Unresolved Safety Issue A-10, BWR Nozzle Cracking

The purpose of this letter is to provide the additional information and written commitments requested in a letter dated August 27, 1981 from Mr Thomas A Ippolito, Chief, Operating Reacotrs Branch #2.

As requested in Mr Ippolito's letter, we commit to:

1. Modify the Inservice Inspection Program to include visual examination of each sparger at intervals not to exceed every other refueling outage.

2. Submit a brief status report of nozzle and sparger integrity based on the visual examinations of (1) above and the installed lead detection system with the Monticello Inservice Inspection Summary Reports submitted within 90 days of the end of each refueling outage.

3. Perform a dye-penetrant examination of the entire surface area of the blend radius and bore of each nozzle prior to installation of the new sparger/thermal sleeve units.

4. Submit a post-modification report within 90 days of the end of the current maintenance outage. This report will include as-built drawings of the sparger/thermal sleeve units with weld and dimension details, installation details of the thermocouples for the leakage detection system, and a synopsis of our actions taken during the installation to meet ALARA criteria.

Also, as requested in Mr Ippolito's letter, we are providing additional information concerning isolation of the control rod drive (CRD) stabilizing assembly at Monticello. Attachment (1) is a drawing showing the modification. Attachment (2) is a summary of the test procedure and results of the April, 1981 testing. Attachment (3) is a summary of the General Electric review and acceptance of this modification.

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Please contact us if you have any questions related to the commitments we have made or the information we have provided.

L. O. Mayer

L O Mayer, PE
Manager of Nuclear Support Services

LOM/bd

cc: J G Keppler
G Charnoff
NRC Resident Inspector

Attachments

NSP-1
A

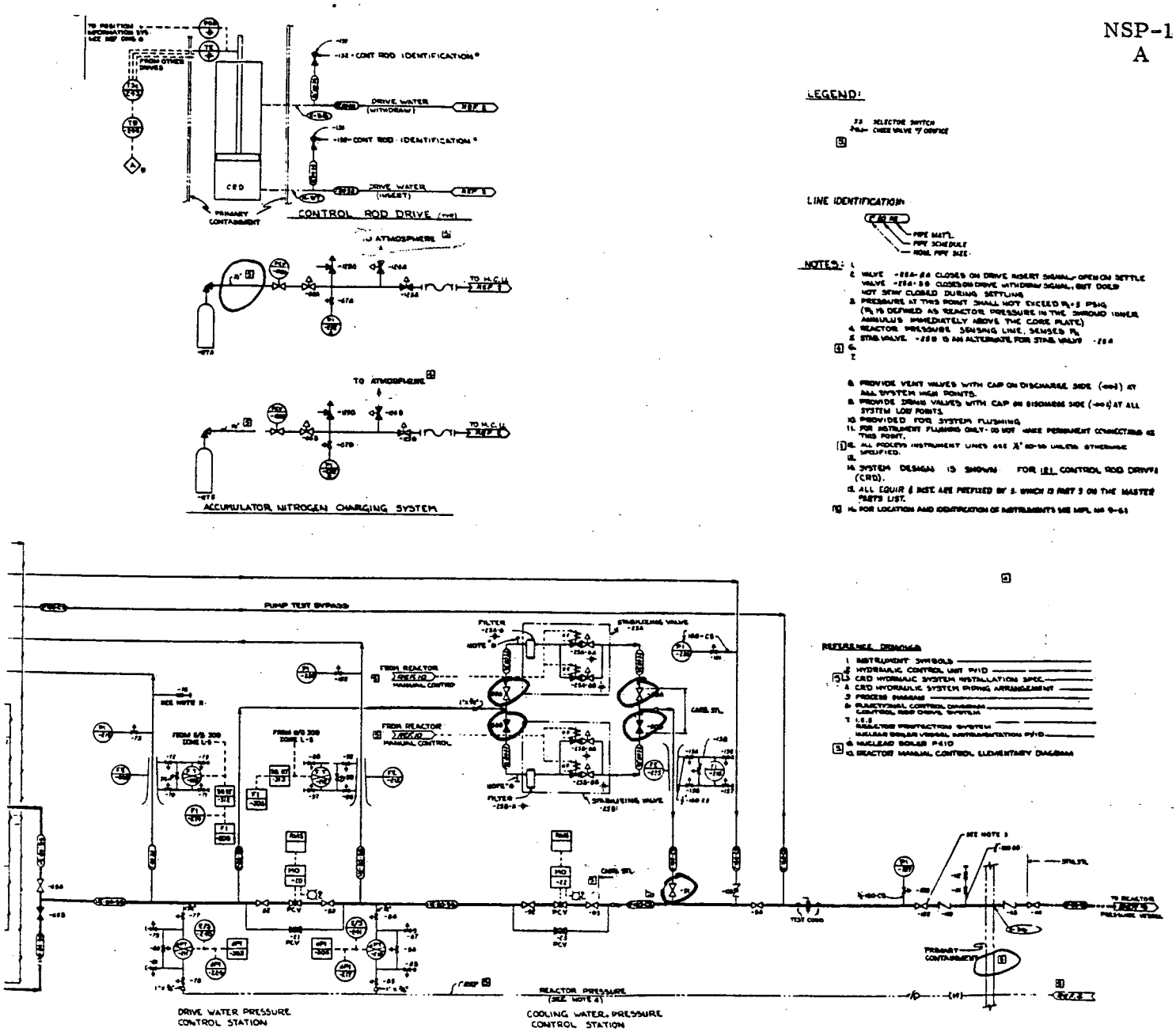


Figure 3-5-5. Hydraulic Supply Unit P & ID

○ - Indicates valve closed for isolation of stabilizing assembly Reference, FSAR Figure 3-5-5.

Director of NRR
November 3, 1981
Attachment (2)

Special Procedure #8768 - Summary
Procedure for Obtaining Data for Evaluation of
Isolated Operation of CRD Stabilizing Assembly

STEP 1 Record the pressure control data as listed on Page 4.

STEP 2 Perform CRD-Withdraw Stall Flow Test #1022 (Copy attached) on the test drives.

STEP 3 While inserting a test drive from position "48" to "00", perform the following:

A. Time the drive i.a.w. Test #1054 (copy attached).

B. *

STEP 4 While withdrawing the drive from position "00" to "48", perform the following:

A. Time the drive i.a.w. Test #1054.

B. *

STEP 5 *

STEP 6 Repeat STEP 3, STEP 4 and STEP 5 for the remaining test drives. Complete for all drives.

STEP 7 Isolate the CRD Stabilizing assembly by closing or verifying closed the following valves:

A. CRD-36-1, Inlet to "A" Stab. Assembly

B. CRD-36-2, Inlet to "B" Stab. Assembly

C. CRD-40, Flow Element 3-235 Stop (outlet from stabilizing assembly)

STEP 8 If necessary, adjust MO-3-20 to obtain approximately the same cooling and drive water pressures as recorded in STEP 1, then record the pressure control data.

Special Procedure #8768 - Summary
Procedure for Obtaining Data for Evaluation of
Isolated Operation of CRD Stabilizing Assembly

STEP 9 Perform CRD-Withdraw Stall Flow Test #1022 on each test drive.

STEP 10 While inserting a test drive from position "48" to "00" perform the following:

A. Time the drive i.a.w. Test #1054

B. *

STEP 11 While withdrawing the test drive from position "00" to "48", perform the following:

A. Time the drive i.a.w. Test #1054.

B. *

STEP 12 *

STEP 13 Repeat STEP 10, STEP 11 and STEP 12 for the remaining test drives. Complete for all drives.

STEP 14 Restore the Stabilizing Assembly to normal status by opening the following valves:

A. CRD-36-1, Inlet to "A" Stab. Assembly.

B. CRD-40, Flow Element 3-235 Stop.

STEP 15 Allow the system flow and pressure to stabilize for 2-3 minutes then record the pressure control data.

* Original procedure specified dp testing in accordance with Test #1064. Testing was not performed due to equipment problems and concurrence from General Electric that dp testing was not necessary.

Director of NRR
November 3, 1981
Attachment (2)

Test #1022 - Summary
CRD-Withdrawl Stall Flow Test

STEP 1 Disconnect the respective insert solenoid (#123) connector at the hydraulic control unit.

STEP 2 Give the selected drive an insert signal at panel C-05 and verify that the drive will not move.

NOTE: This step is to verify that the proper insert solenoid connector has been disconnected prior to giving the drive a withdraw signal.

STEP 3 Give the selected drive a withdraw signal at panel C-05 and verify that the drill will not move.

STEP 4 Read and record the respective withdraw stall flow indicated on the drive water flow indicator at panel C-05 while applying the withdraw signal.

STEP 5 Reconnect the respective insert solenoid connector at the hydraulic control unit.

Test #1054 - Summary
Normal Drive Timing Test

STEP 1 Verify that the CONTROL ROD DRIVE TEST CHECK-OFF SHEET identifies the rods to be tested and that the Engineer, Nuclear has reviewed and approved the selection.

NOTE: Testing must be performed within 24 hours of approval by the Engineer, Nuclear or as otherwise specified.

STEP 2 If this test and adjustment is being performed on a newly-installed drive, exercise the CRD over a minimum of five full strokes (from position 48 to position 00), to wear-in the internal seals before proceeding with the following tests.

STEP 3 Establish communications between the control room and the HCU serving the CRD to be tested.

STEP 4 At panel C05, select and completely withdraw the CRD to be tested to position 48 using the continuous-out mode.

STEP 5 Use the continuous-in mode to insert the control rod drive and determine by means of the stopwatch the total time required for the CRD to travel the complete stroke.

STEP 6 The CRD should insert over its full stroke in 48 (±9.6) seconds. If travel is slower or faster, manually adjust the flow control on directional control valve 123 (at the HCU). Repeat STEPS 4 and 5, above, until the correct insertion speed is attained.

STEP 7 Start at position 00 and withdraw the CRD to position 48, using the continuous-out mode and determine by means of the stopwatch the total time required for the CRD to travel the complete stroke.

STEP 8 The CRD should withdraw over the full stroke in 48 (±9.6) seconds. If travel is slower or faster, manually adjust the flow control on directional control valve 120 (at the HCU). Repeat STEP 7, above, until the correct withdrawal speed is attained.

Test #1054 - Summary
Normal Drive Timing Test

STEP 9 After final adjustment of the directional control valve, repeat STEPS 5 thru 8, above, recording the time required for insertion and withdrawal on the attached data sheet. Observe that no further adjustment of the directional control valves is required.

NOTE: If proper speed adjustments cannot be attained through adjustment of the directional control valves as described above, or if there is substantial variation in speed, notify the System Engineer.

STEP 10 Again move the CRD to its fully-inserted and fully-drawn positions, using the notch-in and notch-out modes and observe that the CRD settles and latches uniformly into each notch position over the stroke lengths, and observe that all required rod status display position readouts are energized in proper sequences.

STEP 11 Return the CRD to its previous position.

STEP 12 Acknowledge that the individual control rod drive normal drive timing test has been completed by initialing and dating in the appropriate square on the attached CONTROL ROD DRIVE TEST CHECK-OFF SHEET.

## Special Procedure #8768 Test Data

Reactor: Pressure ≅ 950 PSIG
Power ≅ 45%
Test Rods all initially in Full-Out Position.

CRD Hydraulic System:

| | Stab. Assembly In (Condition A) | Stab. Assembly Out (Condition B). |
|---|---|---|
| Main System Flow (GPM) | 45 | 47 |
| Drive Water DP (PSID) | 260 | 260 (1) |
| Cooling Water Flow (GPM) | 30 | 30 |
| Cooling Water DP (PSID) | 14 | 14 |
| Charging Water Pressure (PSIG) | 1450 | 1450 |
| Stabilizer Flow (GPM) | 4.1 | 0 |

| CRD | Withdraw-Stall Flow (GPM) A | Withdraw-Stall Flow (GPM) B | Insert Time (Seconds) (2) As Found/As Left A | Insert Time (Seconds) (2) As Found/As Left B | Withdraw Time (Seconds) (2) As Found/As Left A | Withdraw Time (Seconds) (2) As Found/As Left B |
|---|---|---|---|---|---|---|
| 06-15 | 2.7 | 2.8 | 58/44 | 45/45 | 46/46 | 44/44 |
| 06-39 | 3.0 | 2.9 | 47/47 | 50/50 | 44/44 | 44/44 |
| 10-43 | 1.9 | 2.1 | 57/51 | 54/41 | 42/42 | 43/43 |
| 14-07 | 1.1 | 1.1 | 46/46 | 49/49 | 42/42 | 42/42 |
| 14-47 | 4.1 | 4.0 | 47/47 | 44/44 | 46/46 | 46/46 |
| 38-07 | 0.8 | 0.9 | 44/44 | 47/47 | 43/43 | 42/42 |
| 38-47 | 1.1 | 1.1 | 50/50 | 53/44 | 40/40 | 41/41 |
| 42-11 | 2.4 | 2.5 | 55/55 | 56/45 | 41/41 | 41/41 |
| 46-15 | 2.8 | 3.1 | 49/49 | 52/52 | 40/40 | 39/45 |
| 46-39 | 1.8 | 1.7 | 58/46 | 46/46 | 44/44 | 44/44 |
| Average Deviation | +0.05 GPM | | +1.7 Seconds | | -0.2 Seconds | |

(1) Drive Water DP increased to approximately 310 PSID following isolation of Stabilizing Assembly. Adjusted Drive Water Control Valve to obtain 260 PSID.

(2) The change in drive speeds between normal and isolated stabilizing assembly operation is shown as the difference between the "As Left" value of Condition A and the "As Found" value of Condition B.

Director of NRR
November 3, 1981
Attachment (3)

GENERAL ELECTRIC

INSTALLATION AND SERVICE ENGINEERING DIVISION

GENERAL ELECTRIC COMPANY, 5353 GAMBLE DRIVE, MINNEAPOLIS, MN. 55416
Phone (612) 542-0200

WRITER'S DIRECT DIAL NUMBER

G- EK-9-15

February 9, 1979

cc: E. G. Leff
File B-13

Mr. S. J. Shurts
Monticello Nuclear
Generating Plant
Monticello, Minnesota 55362

SUBJECT: CRD STABILIZING ASSEMBLY
ISOLATION TEST

Dear Mr. Shurts:

This supplements letter G-EK-8-67 of 6/29/78.

We have reviewed your stabilizing assembly isolation test results and have concluded that the CRD Hydraulic System can be safely and effectively operated with the stabilizing assembly isolated.

As we have indicated before, we are curious about the 15 gpm descrepancy between the 45 gpm main system flow and the 30 gpm cooling water flow. We agree with your contention that the "lost" flow could be going through several paths including the exhaust water header, the scram insert valves, the drive header or through any combination of these routes.

The suspect components in the exhaust water header are the orificed check valve 100 and the HCU, 121 valves. Leakage through this path can be verified by measuring the affect on cooling water flow by isolating all HCU exhaust lines at the HCU's. This can be done at power if drives are not being moved. As a note of caution, please be sure that the scram discharge lines are not mistakenly being isolated instead of the exhaust lines.

Leakage through the drive header is unlikely but this can be verified on Flow Indicators 214 or 305.

Leaking insert scram valves can cause rod drive drift. However to cause a drift, at least 60 valves would have to leak to disperse the 15 gpm before rod drift occurs.

The only other advice we can offer now is to check the accuracy and calibration of the flow instruments.

Although we are puzzled about the flow discrepancy, we do not believe there is any operational concern.

If you have any further questions on this matter, please call.

Very truly yours,

G. H. Scott
Service Supervisor

GHS:WRP:jmh