TEST RESULTS REPORT

PROCEDURE NO. 91PE-1SI08

PROCEDURE TITLE SAFETY INJECTION FULL FLOW VERIFICATION TEST

REVISION AT THE COMMENCEMENT OF TESTING 1 DATE 05/29/84

REVISION AT COMPLETION OF TESTING 1 DATE 07/20/84

LATEST TEST CHANGE NOTICE NO. 9 DATE 09/12/84

DATES OF TEST PERFORMANCE 05/31/84 through 07/20/84

Review and Approval of Test Results

PREPARED BY: Christopher M. Crane DATE 9-19-84

TECHNICAL REVIEW: Hal Johnson DATE 9-19-84

GROUP SUPERVISOR REVIEW: Carl Hermann DATE 9/19/84

TEST WORKING GROUP MEETING NUMBER: P Brandyberry (96-84) DATE 9/25/84

PLANT REVIEW BOARD MEETING NUMBER: N/A DATE

QUALITY ASSURANCE REVIEW: N/A DATE
(Required for Test Results Reports not reviewed by TWG)

STARTUP MANAGER APPROVAL: J L Kirby DATE 9-27-84

8.15.53 All steps in this section (18.15.1 through 8.15.52) have been completed or are documented as exceptions per Startup Administrative Procedure 90AC-0ZZ02.

J C McCullough / 6-1-84
Signature Date

8.16 Safety Injection Combined Pump Operation Train A

JCM 6-6-84
8.16.1 VERIFY HPSI Train A safety injection piping is filled and vented.

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*                                                                    *
*                          CAUTION                                   *
*                                                                    *
*  1.  ENSURE PROPER OIL LEVEL IN THE HPSI PUMP.                     *
*                                                                    *
*  2. PUMP CASING AND SUCTION LINES MUST BE COMPLETELY               *
*     FILLED PRIOR TO STARTING.                                      *
*                                                                    *
*  3.IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL              *
*      NOISE OR EXCESSIVE VIBRATION IS DETECTED.                     *
*                                                                    *
*  4. DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW             *
*     RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED.                *
*                                                                    *
*  5. BEFORE STARTING HPSI PUMP, VERIFY THAT THE SUCTION             *
*      PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG.                 *
*                                                                    *
*  6. DO NOT OPERATE THE PUMP LONGER THAN 1 HOUR WITH                *
*   ONLY MINIMUM FLOW.                                               *
*                                                                    *
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* CAUTION *

* LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING WHEN OPERATING THE PUMP: *

* 1. MOTOR COLD - 2 CONSECUTIVE STARTS. *

* 2. MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE START. *

* 3. TIME BETWEEN ADDED STARTS: *

* A. MOTOR RUNNING - 15 MINUTES APART. *

* B. MOTOR NOT RUNNING - 45 MINUTES APART. *

****

JCM 6-6-84 8.16.2 VERIFY that there is a minimum of 10 PSIG on SIA-P02 suction pressure gauge at SIA-V009.

Suction Pressure 42 psig.

JCM 6-6-84 8.16.3 START SIA-P02 by POSITIONING SIA-HS-1 to the START position and RELEASE.

8.16.4 VERIFY SIA-P02 is running by observing the following:

JCM 6-6-84 (1) SIA-P02 running by local observation.

JCM 6-6-84 (2) RED indicating light at SIA-HS-1 is ON.

JCM 6-6-84 (3) GREEN indicating light at SIA-HS-1 is OFF.

JCM 6-6-84 (4) WHITE indicating light at SIA-HS-1 is OFF.

JCM 6-6-84 (5) RECORD current indicated at SIA-HS-1 ammeter 80 AMPS.

JCM 6-6-84 (6) Motor Current PBA-S03E ammeter
ØA 60.5 AMPS, ØB 62 AMPS, ØC 61 AMPS

JCM 6-6-84 (7) SIA-P02 recirculation flow is 85 gpm minimum.

SIN-FI-300 170 GPM Serial No 13110

8.16.5 RECORD the following HPSI Pump A operating parameters:

JCM 6-6-84 (1) Suction Pressure at SIA-V009 42 psig

JCM 6-6-84 (2) Discharge Pressure at SIA-V028 1900 psig

JCM 6-6-84 (3) RWT Water Temperature (CHN-TI-200) 94 °F

JCM 6-6-84 (4) RWT Level (CHN-LI-200) 815 %

8.16.6 VERIFY the following conditions before starting SIA-P01:

JCM 6-6-84 (1) Refueling Water Tank (RWT) has a minimum level of 80% as read CHN-LI-200.

JCM 6-6-84 8.16.7 VERIFY LPSI Train A safety injection piping is filled and vented.

****

CAUTION

LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING WHEN OPERATING THE PUMP:

1. MOTOR COLD - 2 CONSECUTIVE STARTS.

2. MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE START.

3. TIME BETWEEN ADDED STARTS:

A. MOTOR RUNNING - 15 MINUTES APART.

B. MOTOR NOT RUNNING - 45 MINUTES APART.

****

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*
* CAUTION
*
* ENSURE PROPER OIL LEVEL IN THE LPSI PUMP.
*
* PUMP CASING AND SUCTION LINES MUST BE COMPLETELY FILLED
* PRIOR TO STARTING.
*
* IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL
* NOISE OR EXCESSIVE VIBRATION IS DETECTED.
*
* DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW
* RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED.
*
* BEFORE STARTING LPSI PUMP, VERIFY THAT THE SUCTION
* PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG.
*
* ENSURE THE LPSI PUMP HAS A MINIMUM FLOW OF 100 GPM
* WHENEVER THE PUMP IS OPERATING.
*
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JCM 6-6-84

8.16.8 VERIFY that there is a minimum of 10 PSIG on SIA-P01 suction pressure gauge at SIA-V959.

SUCTION PRESS 36 PSIG

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*
* CAUTION
*
* CLOSELY MONITOR PUMP MOTOR CURRENT TO ENSURE THAT MOTOR
* CURRENT OF 62 AMPS IS NOT EXCEEDED.
*
* DO NOT EXCEED A PUMP FLOWRATE OF 5000 GPM, AS INDICATED
* BY FLOWMETER SIA-FI-306.
*
****

NOTE

Closely monitor all important pump and motor parameters, including discharge pressure, suction pressure, motor current, vibration and bearing temperatures, whenever pump is running, to ensure proper operation of equipment as per N001-9.02-1-6.

JCM 6-6-84
8.16.9 START SIA-P01 by POSITIONING SIA-HS-3 to the START position and RELEASE.

8.16.10 VERIFY SIA-P01 is running by observing the following:

JCM 6-6-84 (1) SIA-P01 running by local observation.

JCM 6-6-84 (2) RED indicating light at SIA-HS-3 is ON.

JCM 6-6-84 (3) GREEN indicating light at SIA-HS-3 is OFF.

JCM 6-6-84 (4) WHITE RAS override indicating light at SIA-HS-3 is OFF.

JCM 6-6-84 (5) WHITE SIAS override indicating light at SIA-HS-3 is OFF.

JCM 6-6-84 (6) RECORD current indicated at SIA-HS-3 ammeter 39 AMPS.

JCM 6-6-84 (7) RECORD current indicated at PMA-S03F BLOC 6/4/84
ØA 36 AMPS, ØB 38 AMPS, ØC 37 AMPS

****

CAUTION

DO NOT OPERATE THE PUMP ON MINIMUM RECIRCULATION ALONE, FOR A PERIOD EXCEEDING ONE (1) HOUR. FOR PERIODS LONGER THAN ONE (1) HOUR MAINTAIN A MINIMUM OF 1000 GPM AND MONITOR PUMP TEMPERATURES.

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JCM 6-6-84
8.16.11 VERIFY LPSI pump SIA-P01 minimum recirculation flowrate is established by observing an indicated flowrate of at least 100 gpm above the HPSI Recirculation flow recorded in step 8.16.4(7) as indicated on flowmeter SIN-FI-300.

(1) Actual Flowrate
SIN-FI-300 (Serial No. 13110) 370 gpm

(2) HPSI Recirculation Flowrate (from 8.16.4(7) 170 gpm

(3) LPSI Recirculation Flowrate ((1)-(2)) 6-6-84 B 200 gpm

8.16.12 RECORD the following LPSI Pump A operating parameters:

(1) Suction Pressure at SIA-V959 JCM 6-6-84 36 psig

(2) Discharge Pressure at SIA-V840 JCM 6-6-84 230 psig

(3) RWT Water Temperature (CHN-TI-200) JCM 6-6-84 94 F

(4) RWT Level (CHN-LI-200) JCM 6-6-84 81.5 %

8.16.13 VERIFY the following conditions before starting SIA-P03:

(1) CSS Train A safety injection piping is filled and vented. JCM 6-6-84

(2) That there is a minimum of 10 PSIG on SIA-P03 suction pressure gauge at SIA-V960. JCM 6-6-84

Suction Pressure 38 psig.

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* CAUTION *

* ENSURE PROPER OIL LEVEL IN THE CSS PUMP. *

* PUMP CASING AND SUCTION LINES MUST BE COMPLETELY FILLED PRIOR TO STARTING. *

* IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL NOISE OR EXCESSIVE VIBRATION IS DETECTED. *

* DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED. *

* BEFORE STARTING CSS PUMP, VERIFY THAT THE SUCTION PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG. *

* ENSURE THE CSS PUMP HAS A MINIMUM FLOW OF 150 GPM WHENEVER THE PUMP IS OPERATING. *

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*
* CAUTION
*
* CLOSELY MONITOR PUMP MOTOR CURRENT TO ENSURE THAT MOTOR
* CURRENT OF 99 AMPS IS NOT EXCEEDED.
*
* DO NOT EXCEED A PUMP FLOWRATE OF 5000 GPM, AS INDICATED
* BY FLOWMETER SIA-FI-338.
*
* MONITOR RWT LEVEL TO ENSURE LEVEL DOES NOT DROP BELOW
* 10% LEVEL.
*
****

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*
* CAUTION
*
* LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING WHEN
* OPERATING THE PUMP:
*
* 1.MOTOR COLD - 2 CONSECUTIVE STARTS.
*
* 2. MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE
* START.
*
* 3.TIME BETWEEN ADDED STARTS:
*
* A.MOTOR RUNNING - 15 MINUTES APART.
*
* B.MOTOR NOT RUNNING - 45 MINUTES APART.
*
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8.16.14 VERIFY the following conditions to prevent water from being introduced to the Containment Spray Header.

JCM 6-6-84 (1) SIA-UV-672 is CLOSED

JCM 6-6-84 (2) SIA-V500 blank flange is REMOVED

JCM 6-6-84 (3) SIA-V500 is OPEN

JCM 6-6-84 (4) E-PHA-M3511 is OFF

JCM 6-6-84

8.16.15 VERIFY that there is at least a level of 80% in the RWT as read on CHN-LI-200 to support the operation of SIA-P03.

JCM 6-6-84

8.16.16 START SIA-P03 by POSITIONING SIA-HS-5 to the START position and RELEASE.

8.16.17 VERIFY SIA-P03 is running by observing the following:

JCM 6-6-84 (1) SIA-P03 running by local observation.

JCM 6-6-84 (2) RED indicating light at SIA-HS-5 is ON.

JCM 6-6-84 (3) GREEN indicating light at SIA-HS-5 is OFF.

JCM 6-6-84 (4) WHITE indicating light at SIA-HS-5 is OFF.

JCM 6-6-84 (5) RECORD current indicated at SIA-HS-5 ammeter 39 AMPS.

JCM 6-6-84 (6) RECORD current indicated at PBA-S03D
ØA 32 AMPS, ØB 36 AMPS, ØC 36 AMPS

JCM 6-6-84 (7) SIA-P03 recirculation flow is 150 gpm (minimum). (SIN-FI-300 reading less HPSI pump and LPSI pump recirculation flow recorded in step 8.16.11(1))

Instrument	Step 8.16.11(1) Flow	SIA-P03 Flowrate
SIN-FI-300 Serial No 13110		

625 gpm - 370 gpm = 255 gpm

****

CAUTION

DO NOT OPERATE THE PUMP ON MINIMUM RECIRCULATION ALONE, FOR A PERIOD EXCEEDING ONE (1) HOUR. FOR PERIODS LONGER THAN ONE (1) HOUR MAINTAIN A MINIMUM OF 1000 GPM AND MONITOR PUMP TEMPERATURES.

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8.16.18 RECORD the following CS Pump A operating parameters:

JCM 6-6-84 (1) Suction Pressure at SIA-V960 38 psig

JCM 6-6-84 (2) Discharge Pressure at SIA-V016 324 psig

JCM 6-6-84 (3) RWT Water Temperature (CHN-TI-200) 94 F

JCM 6-6-84 (4) RWT Level (CHN-LI-200) 815 %.

****

* CAUTION *

* DO NOT EXCEED 1130 GPM TOTAL HPSI PUMP FLOW TO REACTOR COOLANT SYSTEM.

* THE FOLLOWING STEPS WILL PUMP LARGE VOLUMES OF WATER INTO THE REACTOR VESSEL. THE VESSEL WILL OVERFLOW INTO THE REFUELING POOL. ENSURE ALL PERSONNEL ARE CLEAR.

* REACTOR VESSEL LEVEL SHOULD BE MAINTAINED GREATER THAN COLD LEG CENTER LINE.

****

JCM 6-6-84 8.16.19 OPEN SIA-UV-617 by POSITIONING SIA-HS-617 to JOG OPEN and HOLD until position indication ZI-617 indicates OPEN then RELEASE SIA-HS-617.

JCM 6-6-84 8.16.20 OPEN SIA-UV-627 by POSITIONING SIA-HS-627 to JOG OPEN and HOLD until position indication ZI-627 indicates OPEN then RELEASE SIA-HS-627.

JCM 6-6-84 8.16.21 OPEN SIA-UV-637 by POSITIONING SIA-HS-637 to JOG OPEN and HOLD until position indication ZI-637 indicates OPEN then RELEASE SIA-HS-637.

JCM 6-6-84 8.16.22 OPEN SIA-UV-647 by POSITIONING SIA-HS-647 to JOG OPEN and HOLD until position indication ZI-647 indicates OPEN then RELEASE SIA-HS-647.

8.16.23 RECORD the Header 1 Flows as follows:

JCM 6-6-84 (1) SIB-FI-311 275 GPM (272 gpm to 282 gpm)

JCM 6-6-84 (2) SIB-FI-321 272 GPM (272 gpm to 282 gpm)

JCM 6-6-84 (3) SIA-FI-331 275 GPM (272 gpm to 282 gpm)

JCM 6-6-84 (4) SIA-FI-341 272 GPM (272 gpm to 282 gpm)

8.16.24 RECORD the following operating parameters:

JCM 6-6-84 (1) Suction Pressure at SIA-V009 41.2 psig

JCM 6-6-84 (2) Discharge Pressure at SIA-V028 850 psig

JCM 6-6-84 (3) Recirculation Flow (SIN-FI-300) 535 gpm
Serial No 13110

JCM 6-6-84 (4) Motor Current SIA-HS-1 ammeter 115 amps

JCM 6-6-84 (5) Motor Current PBA-S03E ammeter
ØA 110 AMPS, ØB 114 AMPS, ØC 113 AMPS

JCM 6-6-84 (6) RWT Level (LT-200) 80.5 %

****

* CAUTION *

* CLOSELY MONITOR PUMP MOTOR CURRENT TO ENSURE THAT LPSI MOTOR CURRENT OF 62 AMPS IS NOT EXCEEDED. *

* DO NOT EXCEED A PUMP FLOWRATE OF 5000 GPM, INCLUDING 100 GPM RECIRCULATION FLOW, AS INDICATED BY FLOWMETER SIA-FI-306. *

* MONITOR RWT LEVEL TO ENSURE LEVEL DOES NOT DROP BELOW 10% LEVEL. *

****

JCM 6-6-84 8.16.25 PLACE SIA-HS-306 to the JOG OPEN position until SIA-HV-306 is 25% OPEN as indicated on ZI-306 and RELEASE SIA-HS-306.

JCM 6-6-84 (1) ZI-306 position indication 25 % OPEN.

NOTE

Maintain Reactor Vessel Water Level above the coldleg nozzle center line at all times when operating the LPSI pump, CS pump and/or HPSI pump.

JCM 6-6-84 8.16.26 PLACE SIA-HS-645 to the JOG OPEN position and slowly OPEN SIA-UV-645 until SIA-UV-645 is FULLY OPEN and then RELEASE SIA-HS-645.

JCM 6-6-84 8.16.27 PLACE SIA-HS-635 to the JOG OPEN position and slowly OPEN SIA-UV-635 until SIA-UV-635 is FULLY OPEN and then RELEASE SIA-HS-635.

JCM 6-6-84 8.16.28 Slowly adjust SIA-HV-306 by POSITIONING SIA-HS-306 to the JOG OPEN position until a flow rate of 4900 (4800-5000) gpm is indicated on SIA-FI-306, located on J-RMA-BO2E.

8.16.29 RECORD SIA-FI-306 flowrate.

Instrument	Nominal Flowrate	Actual Flowrate
SIA-FI-306	4800 to 5000 gpm	4900 gpm

8.16.30 RECORD the following LPSI Pump A operating parameters:

JCM 6-6-84 (1) Suction Pressure at SIA-V959 305 psig

JCM 6-6-84 (2) Discharge Pressure at SIA-V840 168 psig

JCM 6-6-84 (3) Recirculation Flow (SIN-FI-300) ~~(100-200 gpm)~~ 545 gpm TCN 007
Serial No 13110

JCM 6-6-84 (4) Motor Current (SIA-HS-3 ammeter) 60 amps

JCM 6-6-84 (5) Motor Current (PBA-S03F ammeter)
ØA 57 AMPS, ØB 60 AMPS, ØC 59 AMPS

JCM 6-6-84 (6) RWT Level (CHN-LT-200) 78 %

JCM 6-6-84 8.16.31 PLACE SIA-HS-678 to the JOG OPEN position until SIA-HV-678 is 25% OPEN then RELEASE SIA-HS-678

JCM 6-6-84 (1) ZI-678 position indication 25 % OPEN.

JCM 6-6-84 8.16.32 CLOSE or VERIFY CLOSED SIA-HV-688.

6-6-84 8.16.33 OPEN or VERIFY OPEN SIA-HV-684 by placing SIA-HS-684 to the OPEN position and RELEASE.

6-6-84 8.16.33.1 PLACE SIA-HS-678 to the JOG OPEN position, HOLD until GREEN indicating light at SIA-HS-678 goes OFF then RELEASE.

6-6-84 8.16.34 ADJUST SIA-HV-657 until a reading of 4900 (4800 to 5000) gpm is indicated on SIA-FI-338 and 9600-10000 gpm is indicated on SIA-FI-306. TE 044

8.16.35 RECORD the following parameters:

6-6-84 (1) SIA-HV-657 position (ZI-657) 100 % OPEN

6-6-84 (2) SIA-HV-678 position (ZI-678) 45 % OPEN

6-6-84 (3) SDCHX (SIA-E01) Inlet Press. (SIA-PI-303X) 125 psig

6-6-84 (4) SIA-FI-338 (CSS PMP flow) 4900 gpm

6-6-84 (5) SIA-FI-306 (Total flow) 8600 gpm

6-6-84 (6) LPSI PMP flow (SIA-FI-306 minus SIA-FI-338 flow) 3700 gpm

8.16.36 RECORD the following SIA-P01 operating parameters:

6-6-84 (1) Suction Pressure at SIA-V959 25 psig

6-6-84 (2) Discharge Pressure at SIA-V840 182 psig

6-6-84 (3) Recirculation Flow (SIN-FI-300) 500 gpm
Serial No 13110

6-6-84 (4) LPSI A Flow (SIA-FI-306 minus SIA-FI-338) 3700 gpm

6-6-84 (5) Motor Current SIA-HS-3 ammeter 57 amps

6-6-84 (6) Motor Current PBA-S03F ammeter
ØA 54 AMPS, ØB 56 AMPS, ØC 55 AMPS

6-6-84 (7) RWT Water Temperature (CHN-TI-200) 94° F

JCM 6-6-84 (8) Refueling Water Tank Level (CHN-LI-200) 58 %

JCM 6-6-84 (9) Reactor Vessel Water Level above Cold Leg Nozzle Centerline (as measured in feet using tape measure) 19.7 ft

8.16.37 RECORD the following SIA-P03 operating parameters:

JCM 6-6-84 (1) Suction Pressure at SIA-V960 30 psig

JCM 6-6-84 (2) Discharge Pressure at SIA-V016 228 psig

JCM 6-6-84 (3) Recirculation Flow (SIN-FI-300) 500 gpm
Serial No 13110

JCM 6-6-84 (4) Indicated Flow (SIA-FI-338) 4850 gpm

JCM 6-6-84 (5) Motor Current SIA-HS-5 ammeter 89 amps

JCM 6-6-84 (6) Motor Current PBA-S03D ammeter
ØA 82 AMPS, ØB 85 AMPS, ØC 84 AMPS

JCM 6-6-84 (7) Refueling Water Tank Level (CHN-LI-200) 56 %

JCM 6-6-84 (8) Reactor Vessel Water Level Above Cold Leg Nozzle Centerline (as measured in feet using tape measure) 21 ft

8.16.38 RECORD the following SIA-P02 operating parameters: TE 49

JCM 6-6-84 (1) Suction Pressure at SIA-V009 314 psig

JCM 6-6-84 (2) Discharge Pressure at SIA-V028 850 psig

JCM 6-6-84 (3) Indicated Flow (SIB-FI-311) 225 gpm
(SIB-FI-321) 272 gpm
(SIA-FI-331) 275 gpm
(SIA-FI-341) 272 gpm

JCM 6-6-84 (4) HPSI INJECTION FLOW TOTAL 1094 gpm

JCM 6-6-84 (5) Motor Current SIA-HS-1 ammeter 115 amps

JCM 6-6-84 (6) Motor Current PBA-S03E ammeter
ØA 110 AMPS, ØB 114 AMPS, ØC 113 AMPS

ACCEPTANCE CRITERIA: 118 amps maximum

JCM 6-6-84 (7) Refueling Water Tank Level (CHN-LI-200) 53 %

JCM 6-6-84 8.16.39 CLOSE SIA-HV-657 by POSITIONING SIA-HS-657 to JOG CLOSE, MAINTAIN until ZI-657 indicates 15% OPEN.

JCM 6-6-84 8.16.40 CLOSE SIA-HV-678 by POSITIONING SIA-HS-678 to JOG CLOSE, MAINTAIN until ZI-678 shows FULLY CLOSED.

8.16.41 STOP flow to the Reactor Vessel as follows:

JCM 6-6-84 8.16.41.1 CLOSE SIA-UV-635 by POSITIONING SIA-HS-635 to the JOG CLOSE position and MAINTAIN until SIA-UV-635 indicates CLOSED, then RELEASE SIA-HS-635.

JCM 6-6-84 8.16.41.2 CLOSE SIA-UV-645 by POSITIONING SIA-HS-645 to the JOG CLOSE position and MAINTAIN until SIA-UV-645 indicates CLOSED, then RELEASE SIA-HS-645.

~~JCM 6-6-84~~ 6/6/84 8.16.41.3 CLOSE SIA-UV-617 by POSITIONING SIA-HS-617 to the JOG CLOSE position and MAINTAIN until SIA-UV-617 indicates CLOSED, then RELEASE SIA-HS-617.

~~JCM 6-6-84~~ 6/6/84 8.16.41.4 CLOSE SIA-UV-627 by POSITIONING SIA-HS-627 to the JOG CLOSE position and MAINTAIN until SIA-UV-627 indicates CLOSED, then RELEASE SIA-HS-627.

~~JCM 6-6-84~~ 6/6/84 8.16.41.5 CLOSE SIA-UV-637 by POSITIONING SIA-HS-637 to the JOG CLOSE position and MAINTAIN until SIA-UV-637 indicates CLOSED, then RELEASE SIA-HS-637.

~~JCM 6-6-84~~ 6/6/84 8.16.41.6 CLOSE SIA-UV-647 by POSITIONING SIA-HS-647 to the JOG CLOSE position and MAINTAIN until SIA-UV-647 indicates CLOSED, then RELEASE SIA-HS-647.

TE 026

JCM 6-6-84 8.16.42 CLOSE SIA-HV-657 by POSITIONING SIA-HS-657 to the JOG CLOSE position and MAINTAIN until SIA-HV-657 indicates CLOSED, then RELEASE SIA-HS-657.

JCM 6-6-84 8.16.43 POSITION SIA-HS-3 to the STOP position, RELEASE and VERIFY:

JCM 6-6-84 (1) SIA-P01 stops running.

JCM 6-6-84 8.16.44 POSITION SIA-HS-5 to the STOP position, RELEASE and VERIFY:

JCM 6-6-84 (1) SIA-P03 stops running.

JCM 6-6-84 8.16.45 POSITION SIA-HS-1 to the STOP position, RELEASE and VERIFY:

JCM 6-6-84 (1) SIA-P02 stops running.

HES 6/11/84 8.16.46 Using data recorded in step 8.16.36 CALCULATE NPSH in accordance with Appendix P and VERIFY value is equal to or greater than design NPSH for SIA-P01.

ACCEPTANCE CRITERIA	Calculated NPSH	LPSI FLOW (Step 8.16.36 (4))
22 Ft.(Minimum)	72.2 Ft.	3700 gpm(4800 to 5000gpm)

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HES 6/11/84 8.16.47 Using data recorded in step 8.16.37 CALCULATE NPSH in accordance with Appendix P and VERIFY value is equal to or greater than design NPSH for SIA-P03.

ACCEPTANCE CRITERIA	Calcuated NPSH	CS FLOW (Step 8.16.37(4))
22 Ft. (Minimum)	85.6 Ft.	4850 gpm (4800 to 5000gpm)

HES 6/11/84 8.16.48 Using data recorded in step 8.16.38 CALCULATE NPSH in accordance with Appendix P and VERIFY value is equal to or greater than design NPSH for SIA-P02.

ACCEPTANCE CRITERIA	Calculated NPSH	HPSI FLOW (Step 8.16.38(4))
22 Ft. (Minimum)	82.5 Ft.	1094 gpm (1088 to 1130 gpm)

8.16.49 All steps in this section (18.16.1 through 8.16.48) have been completed or are documented as exceptions per Startup Administrative Procedure 90AC-0ZZ02.

HE Sullivan / 6/11/84
Signature Date

8.17 Safety Injection Combined Pump Operation Train B

JAM 6-8-84

8.17.1 VERIFY HPSI Train B Safety Injection piping is filled and vented.

CAUTION

1. ENSURE PROPER OIL LEVEL IN THE HPSI PUMP.
2. PUMP CASING AND SUCTION LINES MUST BE COMPLETELY FILLED PRIOR TO STARTING.
3. IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL NOISE OR EXCESSIVE VIBRATION IS DETECTED.
4. DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED.
5. BEFORE STARTING HPSI PUMP, VERIFY THAT THE SUCTION PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG.
6. DO NOT OPERATE THE PUMP LONGER THAN 1 HOUR WITH ONLY MINIMUM FLOW.

CAUTION

LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING WHEN OPERATING THE PUMP:

1. MOTOR COLD - 2 CONSECUTIVE STARTS.
2. MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE START.
3. TIME BETWEEN ADDED STARTS:
   A. MOTOR RUNNING - 15 MINUTES APART.
   B. MOTOR NOT RUNNING - 45 MINUTES APART.

JCM 6-8-84 8.17.2 VERIFY that there is a minimum of 10 PSIG on SIB-P02 suction pressure gauge at SIB-V011.

SUCTION PRESS 45 PSIG

JCM 6-8-84 8.17.3 START SIB-P02 by POSITIONING SIB-HS-2 to the START position and RELEASE.

8.17.4 VERIFY SIB-P02 is running by observing the following:

JCM 6-8-84 (1) SIB-P02 running by local observation.

JCM 6-8-84 (2) RED indicating light at SIB-HS-2 is ON.

JCM 6-8-84 (3) GREEN indicating light at SIB-HS-2 is OFF.

JCM 6-8-84 (4) WHITE indicating light at SIB-HS-2 is OFF.

JCM 6-8-84 (5) RECORD current indicated at SIB-HS-2 ammeter 80 AMPS.

JCM 6-8-84 (6) RECORD current indicated at PBB-S04E ammeter.
ØA 75 AMPS, ØB 78 AMPS, ØC 78 AMPS

JCM 6-8-84 (7) SIB-P02 recirculation flow is 85 gpm. Minimum.

SIN-FI-300 160 GPM Serial No. 13110

8.17.5 RECORD the following HPSI Pump B operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V011 45 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V030 1900 psig

JCM 6-8-84 (3) RWT Water Temperature (CHN-TI-200) 96 F

JCM 6-8-84 (4) RWT Level (CHN-LI-200) 95 %

JCM 6-8-84 8.17.6 VERIFY the following conditions before starting SIB-P01:

(1) Refueling Water Tank (RWT) has a minimum level of 80% as read CHN-LI-200.

JCM 6-8-84 8.17.7 VERIFY LPSI Train B safety injection piping is filled and vented.

****

* CAUTION *

* LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING WHEN OPERATING THE PUMP:

1. MOTOR COLD - 2 CONSECUTIVE STARTS.
2. MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE START.
3. TIME BETWEEN ADDED STARTS:

A. MOTOR RUNNING - 15 MINUTES APART.
B. MOTOR NOT RUNNING - 45 MINUTES APART.

****

JCM 6-8-84

8.17.8 VERIFY that there is a minimum of 10 PSIG on SIB-P01 suction pressure gauge at SIB-V962.

SUCTION PRESS 42.17 PSIG

****

* CAUTION *

ENSURE PROPER OIL LEVEL IN THE LPSI PUMP.

PUMP CASING AND SUCTION LINES MUST BE COMPLETELY FILLED PRIOR TO STARTING.

IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL NOISE OR EXCESSIVE VIBRATION IS DETECTED.

DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED.

BEFORE STARTING LPSI PUMP, VERIFY THAT THE SUCTION PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG.

ENSURE THE LPSI PUMP HAS A MINIMUM FLOW OF 100 GPM WHENEVER THE PUMP IS OPERATING.

****

****

*

CAUTION

CLOSELY MONITOR PUMP MOTOR CURRENT TO ENSURE THAT MOTOR CURRENT OF 62 AMPS IS NOT EXCEEDED.

DO NOT EXCEED A PUMP FLOWRATE OF 5000 GPM, AS INDICATED BY FLOWMETER SIB-FI-307.

*

****

NOTE

Closely monitor all pump and motor parameters, including discharge pressure, suction pressure, motor current vibration and bearing temperatures, whenever pump is running, to ensure proper operation of equipment as per LPSI Pump Technical Manual, Ingersoll-Rand, N001-9.02-1-6.

JCM 6-8-84 8.17.9 START SIB-P01 by positioning SIB-HS-4 to the START position and RELEASE.

8.17.10 VERIFY SIB-P01 is running by observing the following:

JCM 6-8-84 (1) SIB-P01 running by local observation.

JCM 6-8-84 (2) RED indicating light at SIB-HS-4 is ON.

JCM 6-8-84 (3) GREEN indicating light at SIB-HS-4 is OFF.

JCM 6-8-84 (4) WHITE RAS override indicating light at SIB-HS-4 is OFF.

JCM 6-8-84 (5) WHITE SIAS override indicating light at SIB-HS-4 is OFF.

JCM 6-8-84 (6) RECORD current indicated at SIB-HS-4 28 AMPS.

JCM 6-8-84 (7) RECORD Current indicated at PBB-S04F
ØA 32 AMPS, ØB 35 AMPS, ØC 35 AMPS

****

CAUTION

DO NOT OPERATE THE PUMP ON MINIMUM RECIRCULATION ALONE, FOR A PERIOD EXCEEDING ONE (1) HOUR. FOR PERIODS LONGER THAN ONE (1) HOUR MAINTAIN A MINIMUM OF 1000 GPM AND MONITOR PUMP TEMPERATURES.

****

JCM 6-8-84 8.17.11 VERIFY LPSI pump SIB-P01 minimum recirculation flowrate is established by observing an indicated flowrate of at least 100 gpm above the HPSI recirculation flow recorded in step 8.17.4.(7) as indicated on SIN-FI-300.

(1) Actual Flowrate SIN-FI-300 (Serial No. 13110) 360 gpm

(2) HPSI Recirculation Flowrate (from 8.17.4.(7)) 160 gpm

(3) LPSI Recirculation Flowrate ((1) - (2)) 200 gpm

8.17.12 RECORD the following LPSI Pump B operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V962 4218 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V842 222 psig

JCM 6-8-84 (3) RWT Water Temperature (CHN-TI-200) 96 °F

JCM 6-8-84 (4) RWT Level (CHN-LI-200) 95 %

8.17.13 VERIFY the following conditions before starting SIB-P03:

JCM 6-8-84 (1) VERIFY CSS Train B safety injection piping is filled and vented.

JCM 6-8-84 (2) That there is a minimum of 10 PSIG on SIB-P03 suction pressure gauge at SIB-V961.

SUCTION PRESS 43.2 PSIG

```
**********************************************************************
*                                                                    *
*                          CAUTION                                   *
*                                                                    *
*   LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING               *
*   WHEN OPERATING THE PUMP:                                         *
*                                                                    *
*   1.  MOTOR COLD - 2 CONSECUTIVE STARTS.                           *
*                                                                    *
*   2.  MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE               *
*       START.                                                       *
*                                                                    *
*   3.  TIME BETWEEN ADDED STARTS:                                   *
*                                                                    *
*   A.MOTOR RUNNING - 15 MINUTES APART.                              *
*   B.MOTOR NOT RUNNING - 45 MINUTES APART.                          *
*                                                                    *
**********************************************************************
```

8.17.14 VERIFY the following conditions to prevent water from being introduced to the Containment Spray Header.

JCM 6-8-84 (1) SIB-UV-671 is CLOSED

JCM 6-8-84 (2) SIB-V501 blank flange is REMOVED

JCM 6-8-84 (3) SIB-V501 is OPEN

JCM 6-8-84 (4) E-PHB-M3612 is OFF

JCM 6-8-84 8.17.15 VERIFY that there is at least a level of 80% in the RWT as read on CHN-LI-200 to support the operation of SIB-P03.

****

*

CAUTION

*

ENSURE PROPER OIL LEVEL IN THE CSS PUMP.

PUMP CASING AND SUCTION LINES MUST BE COMPLETELY FILLED PRIOR TO STARTING.

IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL NOISE OR EXCESSIVE VIBRATION IS DETECTED.

DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED.

BEFORE STARTING CSS PUMP, VERIFY THAT THE SUCTION PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG.

ENSURE THE CSS PUMP HAS A MINIMUM FLOW OF 150 GPM WHENEVER THE PUMP IS OPERATING.

*

****

****

*

CAUTION

*

CLOSELY MONITOR PUMP MOTOR CURRENT TO ENSURE THAT MOTOR CURRENT OF 99 AMPS IS NOT EXCEEDED.

DO NOT EXCEED A PUMP FLOWRATE OF 5000 GPM, AS INDICATED BY FLOWMETER SIB-FI-348.

*

****

NOTE

Closely monitor all important pump and motor parameters, including discharge pressure, suction pressure, motor current, vibration and bearing temperatures, whenever pump is running, to ensure proper operation of equipment as per CSS Pump Technical Manual, Ingersoll Rand, N001-15.02-11.3.

JEM 6-8-84 8.17.16 START SIB-P03 by POSITIONING SIB-HS-6 to the START position and RELEASE.

8.17.17 VERIFY SIB-P03 is running by observing the following:

JCM 6-8-84 (1) SIB-P03 running by local observation.

JCM 6-8-84 (2) RED indicating light at SIB-HS-6 is ON.

JCM 6-8-84 (3) GREEN indicating light at SIB-HS-6 is OFF.

JCM 6-8-84 (4) WHITE indicating light at SIB-HS-6 is OFF.

JCM 6-8-84 (5) RECORD current indicated at SIB-HS-6 ammeter 37 AMPS.

JCM 6-8-84 (6) RECORD current indicated at PBB-S04D
ØA 33 AMPS, ØB 36 AMPS, ØC 36 AMPS

JCM 6-8-84 (7) SIB-P03 recirculation flow is 150 gpm minimum above that recorded as indicated flow in step 8.17.11(1).

Instrument	Step 8.17.11(1) Flowrate	SIB-P03 Flowrate
SIN-FI-300		
Serial No. 13110		
555 gpm	- 360 gpm	= 195 gpm

****

CAUTION

DO NOT OPERATE THE PUMP ON MINIMUM RECIRCULATION ALONE, FOR A PERIOD EXCEED ONE (1) HOUR. FOR PERIODS LONGER THAN ONE (1) HOUR MAINTAIN A MINIMUM OF 1000 GPM AND MONITOR PUMP TEMPERATURES.

****

8.17.18 RECORD the following CSS Pump B operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V961 43.5 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V017 320 psig

JCM 6-8-84 (3) RWT Water Temperature (CHN-TI-200) 96 °F

JCM 6-8-84 (4) RWT Level (CHN-LI-200) 95 %

```
**********************************************************************
*                                                                    *
*                            CAUTION                                 *
*                                                                    *
*   DO NOT EXCEED 1130 GPM TOTAL HPSI PUMP FLOW TO THE               *
*   REACTOR VESSSEL                                                  *
*                                                                    *
*   THE FOLLOWING STEPS WILL PUMP LARGE VOLUMES OF WATER             *
*   INTO THE REACTOR VESSEL.  THE VESSEL WILL OVERFLOW INTO          *
*   THE REFUELING POOL.  ENSURE ALL PERSONNEL ARE CLEAR.             *
*                                                                    *
*   REACTOR VESSEL LEVEL SHOULD BE MAINTAINED GREATER THAN           *
*   COLD LEG CENTER LINE.                                            *
*                                                                    *
**********************************************************************
```

JCM 6-8-84 8.17.19 OPEN SIB-UV-616 by POSITIONING SIB-HS-616 to JOG OPEN and HOLD until position indication ZI-616 indicates OPEN then RELEASE SIB-HS-616.

JCM 6-8-84 8.17.20 OPEN SIB-UV-626 by POSITIONING SIB-HS-626 to JOG OPEN and HOLD until position indication ZI-626 indicates OPEN then RELEASE SIB-HS-626.

JCM 6-8-84 8.17.21 OPEN SIB-UV-636 by POSITIONING SIB-HS-636 to JOG OPEN and HOLD until position indication ZI-636 indicates OPEN then RELEASE SIB-HS-636.

JCM 6-8-84 8.17.22 OPEN SIB-UV-646 by POSITIONING SIB-HS-646 to JOG OPEN and HOLD until position indication ZI-646 indicates OPEN then RELEASE SIB-HS-646.

8.17.23 RECORD the Header 2 flows as follows:

TE 035

JCM 6-8-84 (1) SIB-FI-311 290 GPM (272 gpm to 282 gpm)

JCM 6-8-84 (2) SIB-FI-321 280 GPM (272 gpm to 282 gpm)

JCM 6-8-84 (3) SIA-FI-331 280 GPM (272 gpm to 282 gpm)

JCM 6-8-84 (4) SIA-FI-341 275 GPM (272 gpm to 282 gpm)

8.17.24 RECORD the following operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V011 43 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V030 850 psig

JCM 6-8-84 (3) Recirculation Flow (SIN-FI-300) 500 gpm

Serial No. 13110

JCM 6-8-84 (4) Motor Current SIB-HS-2 ammeter 117 amps

JCM 6-8-84 (5) Motor Current E PBB-S04E ammeter
A 108 AMPS, B 112 AMPS, C 111 AMPS

JCM 6-8-84 (6) Refueling Water Tank Level (CHN-LT-200) 94.5 %

****

* CAUTION *

* CLOSELY MONITOR PUMP MOTOR CURRENT TO ENSURE THAT LPSI MOTOR CURRENT OF 62 AMPS IS NOT EXCEEDED. *

* DO NOT EXCEED A PUMP FLOWRATE OF 5000 GPM, INCLUDING 100 GPM RECIRCULATION FLOW, AS INDICATED BY FLOWMETER SIB-FI-307. *

* MONITOR RWT LEVEL TO ENSURE LEVEL DOES NOT DROP BELOW 10% LEVEL. *

****

JCM 6-8-84 8.17.25 PLACE SIB-HS-307 to the JOG OPEN position until SIB-HV-307 is 25% OPEN as indicated on ZI-307 and RELEASE SIB-HS-307.

JCM 6-8-84 (1) ZI-307 position indication 25 % OPEN.

NOTE

Maintain Reactor Vessel Water Level above the coldleg nozzle center line at all times when operating the LPSI pump, CS pump and/or HPSI pump.

JCM 6-8-84 8.17.26 PLACE SIB-HS-615 to the JOG OPEN position and slowly OPEN SIB-UV-615 until SIB-UV-615 is FULLY OPEN and then RELEASE.

JCM 6-8-84 8.17.27 PLACE SIB-HS-625 to the JOG OPEN position and slowly OPEN SIB-UV-625 until SIB-UV-~~645~~ 625 is FULLY OPEN and then RELEASE. CDC 6/14/84

JCM 6-8-84 8.17.28 Slowly ADJUST SIB-HV-307 by POSITIONING SIB-HS-307 to the JOG OPEN position until a flow rate of 4900 (4800-5000) gpm is indicated on SIB-FI-307, located on J-RMB-B02E.

JCM 6-8-84 8.17.29 RECORD SIB-FI-307 flowrate:

Instrument	Nominal Flowrate	Actual Flowrate
SIB-FI-307	4800 to 5000 gpm	4900 gpm

8.17.30 RECORD the following LPSI pump B (BLDC 6/14/84) operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V962 3614 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V842 168 psig

JCM 6-8-84 (3) Recirculation Flow (SIN-FI-300) 475 gpm

Serial No. 13110

JCM 6-8-84 (4) Motor Current SIB-HS-4 ammeter 55 amps

JCM 6-8-84 (5) Motor Current PBB-S04F ammeter
A 56 AMPS, B 59 AMPS, C 58 AMPS

JCM 6-8-84 (6) RWT Level (CHN-LT-200) 92.5 %

JCM 6-8-84 8.17.31 PLACE SIB-HS-679 to the JOG OPEN position until SIB-HV-679 is 25% OPEN then RELEASE SIB-HS-679.

JCM 6-8-84 (1) SIB-HV-679 position (ZI-679) 25 % OPEN.

JCM 6-8-84 8.17.32 CLOSE or VERIFY CLOSED SIB-HV-693.

JCM 6-8-84 8.17.33 OPEN or CHECK OPEN SIB-HV-689 by placing SIB-HS-689 to the OPEN position and RELEASE.

JCM 6-8-84 8.17.33.1 PLACE SIB-HS-679 to the JOG OPEN position until SIB-HV-679 indicating light at SIB-HS-679 goes OFF then RELEASE.

JCM 6-8-84

JCM 8.17.34 ADJUST SIB-HV-658 until a reading of 4900 (4800 to 5000) gpm is indicated on SIB-FI-348 and 9600 to 10000 gpm is indicated on SIB-FI-307. TE 036

8.17.35 RECORD the following parameters:

JCM 6-8-84 (1) SIB-HV-658 position (ZI-658) 30 % OPEN.

JCM 6-8-84 (2) SIB-HV-679 position (ZI-679) 100 % OPEN.

JCM 6-8-84 (3) SDCHX (SIB-E01) Inlet Press. (SIB-PI-303Y) 188 psig.

JCM 6-8-84 (4) SIB-FI-348 (CSS PMP flow) 4900 gpm.

JCM 6-8-84 (5) SIB-FI-307 (Total flow) 8700 gpm.

JCM 6-8-84 (6) LPSI PMP flow (SIB-FI-307 minus SIB-FI-348 flow) 4000 gpm.

8.17.36 RECORD the following SIB-P01 operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V962 32 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V842 180 psig

JCM 6-8-84 (3) Total Recirculation Flow (SIN-FI-300) 440 gpm

Serial No. 13110

JCM 6-8-84 (4) LPSI B Flow (SIB-FI-307 minus SIB-FI-348) 4000 gpm

JCM 6-8-84 (5) Motor Current SIB-HS-4 ammeter 50 amps

JCM 6-8-84 (6) Motor Current PBB-S04F ammeter ØA 52 AMPS, ØB 56 AMPS, ØC 55 AMPS

JCM 6-8-84 (7) RWT Level (CHN-LI-200) 82.5 %

JCM 6-8-84 (8) RWT Temperature (CHN-TI-200) 96 °F

JCM 6-8-84 (9) Reactor Vessel Water Level above Cold leg nozzle centerline (as measured in feet using tape measure) 20.7 ft CMS 9-14-84

8.17.37 RECORD the following SIB-P03 operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V961 35 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V017 219 psig

JCM 6-8-84 (3) Indicated Flow (SIB-FI-348) 4900 gpm

JCM 6-8-84 (4) Motor Current SIB-HS-6 ammeter 90 amps

JCM 6-8-84 (5) Motor Current PBB-S04D ammeter
A 83 AMPS, B 86 AMPS, C 86 AMPS

JCM 6-8-84 (6) Refueling Water Tank Level (CHN-LI-200) 79.5 % CMT 2-10-84
21.7 ft

JCM 6-8-84 (7) Reactor Vessel Water Lead above Cold Leg Nozzle Centerline (as measured in feet using tape measure)

8.17.38 RECORD the following SIB-P02 operating parameters:

JCM 6-8-84 (1) Suction Pressure at SIB-V011 35 psig

JCM 6-8-84 (2) Discharge Pressure at SIB-V030 850 psig

JCM 6-8-84 (3) Indicated Flow (SIB-FI-311) 295 gpm
(SIB-FI-321) 285 gpm
(SIA-FI-331) 275 gpm
(SIA-FI-341) 272 gpm

JCM 6-8-84 (4) HPSI Injection Flow TOTAL 1127 gpm

JCM 6-8-84 (5) Motor Current SIB-HS-2 ammeter 114 amps

JCM 6-8-84 (6) Motor Current PBB-S04E ammeter
ØA 108 AMPS, ØB 112 AMPS, ØC 111 AMPS
ACCEPTANCE CRITERIA: 118 amps (Maximum)

JCM 6-8-84 (7) Refueling Water Tank Level (CHN-LI-200) 76 %

JCM 6-8-84 8.17.39 CLOSE SIB-HV-658 by POSITIONING SIB-HS-658 to JOG CLOSE, MAINTAIN until ZI-658 indicates 15% OPEN.

JCM 6-8-84 8.17.40 CLOSE SIB-HV-679 by POSITIONING SIB-HS-679 to JOG CLOSE, MAINTAIN until SIB-HV-679 is FULLY CLOSED then RELEASE.

8.17.41 STOP flow to the Reactor Vessel as follows:

JCM 6-8-84 8.17.41.1 CLOSE SIB-UV-615 by POSITIONING SIB-HS-615 to the JOG CLOSE position and MAINTAIN until SIB-UV-615 indicates CLOSED, then RELEASE SIB-HS-615.

JCM 6-8-84 8.17.41.2 CLOSE SIB-UV-625 by POSITIONING SIB-HS-625 to the JOG CLOSE position and MAINTAIN until SIB-UV-625 indicates CLOSED, then RELEASE SIB-HS-625.

JCM 6-8-84 8.17.41.3 CLOSE SIB-UV-616 by POSITIONING SIB-HS-616 to the JOG CLOSE position and MAINTAIN until SIB-UV-616 indicates CLOSED, then RELEASE SIB-HS-616.

JCM 6-8-84 8.17.41.4 CLOSE SIB-UV-626 by POSITIONING SIB-HS-626 to the JOG CLOSE position and MAINTAIN until SIB-UV-626 indicates CLOSED, then RELEASE SIB-HS-626.

JCM 6-8-84 8.17.41.5 CLOSE SIB-UV-636 by POSITIONING SIB-HS-636 to the JOG CLOSE position and MAINTAIN until SIB-UV-636 indicates CLOSED, then RELEASE SIB-HS-636.

JCM 6-8-84 8.17.41.6 CLOSE SIB-UV-646 by POSITIONING SIB-HS-646 to the JOG CLOSE position and MAINTAIN until SIB-UV-646 indicates CLOSED, then RELEASE SIB-HS-646.

JCM 6-8-84 8.17.42 CLOSE SIB-HV-658 by POSITIONING SIB-HS-658 to the JOG CLOSE position and MAINTAIN until SIB-HV-658 indicates CLOSED, then RELEASE SIB-HS-658.

JCM 6-8-84 8.17.43 POSITION SIB-HS-4 to the STOP position, RELEASE and VERIFY:

JCM 6-8-84 (1) SIB-PO1 stops running.

JCM 6-8-84 8.17.44 POSITION SIB-HS-6 to the STOP position, RELEASE and VERIFY:

JCM 6-8-84 (1) SIB-PO3 stops running.

JCM 6-8-84 8.17.45 POSITION SIB-HS-2 to the STOP position, RELEASE and VERIFY:

JCM 6-8-84 (1) SIB-PO2 stops running.

HES 6/11/84 8.17.46 Using data recorded in step 8.17.36 CALCULATE NPSH in accordance with Appendix P and VERIFY value is equal to or greater than design NPSH for SIB-PO1.

ACCEPTANCE CRITERIA NPSH	Calculated NPSH	LPSI Flow (Step 8.17.36(4)
22 Ft. minimum	73.7 Ft.	4000 gpm (4800 to 5000gpm)

HEB 6/11/84 8.17.47 Using data recorded in step 8.17.37 CALCULATE NPSH in accordance with Appendix P and verify value is equal to or greater than design NPSH for SIB-P03.

ACCEPTANCE CRITERIA NPSH	Calculated NPSH	CS Flow (Step 8.17.37(3)
22 Ft. minimum	82.9 Ft.	4900 gpm(4800 to 5000gpm)

HEB 6/11/84 8.17.48 Using data recorded in step 8.17.38 CALCULATE NPSH in accordance with Appendix P and VERIFY value is equal to or greater than design NPSH for SIB-P02.

ACCEPTANCE CRITERIA NPSH	Calculated NPSH	HPSI Flow Step 8.17.38(4)
22 Ft.(minimum)	77.7 Ft.	1127 gpm(1088 to 1130gpm)

8.17.49 All steps in this section (18.16.1 through 8.16.48) have been completed or are documented as exceptions per Startup Administrative Procedure 90AC-0ZZ02.

HE Sullivan / 6/11/84
Signature Date

8.18 Safety Injection Tanks 2B, 2A, 1A and 1B

****
* *
* CAUTION *
* *
* INSTRUMENTS RCA-PT-103 AND RCB-PT-104 PROVIDE SIGNALS *
* WHICH AUTOMATICALLY OPERATE SIT DISCHARGE VALVES. PRIOR *
* TO COMMENCING THIS SECTION ENSURE THAT RCA-PT-103 AND *
* RCB-PT-104 ARE NOT PRESSURIZED. THIS CAN BE CONFIRMED *
* BY OBSERVING CONTROL ROOM INDICATORS RCA-PI-103 AND *
* RCB-PI-104. *
* *
****

8.18.1 Tank Filling and Pressurizing

JDR 6/7/84 8.18.1.1 VERIFY the Valve Checklist - Appendix C has been completed.

JDR 6/7/84 8.18.1.2 VERIFY the Electrical Checklist - Appendix A has been completed.

Net Positive Suction Head Calculations

$H_{NPSH} = P_S * C_H * C_B + H_{Atm} - C_{RAS} + C_{ELEV}$

H_{NPSH} = Net Positive Suction Head (Ft.)

P_S = Suction Pressure (PSIG).

C_H = PSIG to Head Conversion (App N)

H_{Atm} = 34 Ft.

C_B = Boron Concentration Correction Factor (App M)

C_{RAS} = Correction to RWT level (%) to simulate RWT at RAS set point (Ft.) (Column D on App R) (Ft.)

C_{ELEV} = Correction in feet for gage height above pump suction.

LPSI "A" (SIA-P01)

Step 8.1.25.2

H_{NPSH} = 32.6 PSIG * 2.3218 * .9974 + 34 Ft. - 39.25 Ft. + 9.5 Ft.

8.1.23(1) App N App M App R 5.7(1) cmc 9-14-84

H_{NPSH} = 79.7 Ft.

Step 8.16.46

H_{NPSH} = 25 PSIG * 2.320 * .9974 + 34 Ft. - 29.15 Ft. + 9.5 Ft. = 72.2 Ft.

8.16.36(1) App N App M App R 5.7(1) cmc 9-14-84

LPSI "B" (SIB-P01)

Step 8.3.25

cmc 9-14-84

H_{NPSH} = 30.8 PSIG * 2.320 * .9974 + 34 Ft. - 35.4 Ft. + 9.3 Ft.

8.3.23(1) App N App M App R 5.7(2) cmc 9-14-84

H_{NPSH} = 79.2 Ft.

Step 8.17.46

H_{NPSH} = 32 PSIG* 2.3205* .9974 + 34 Ft. - 43.68 Ft. + 9.3 Ft. cmc 9-14-84

8.17.36(1) App N App M App R 5.1(2) 5

H_{NPSH} = 73.7 Ft.

CS "A" SIA-P03

Step 8.14.42

H_{NPSH} = 3615 PSIG* 2.3205 * .9975 + 34 Ft. - 49.85 Ft. + 10.2 Ft. 5 cdc 6/1/84

8.14.39(1) App N App M App R 5.1(5) #9-24-84

H_{NPSH} = 78.84 Ft.

Step 8.14.46

H_{NPSH} = 35 PSIG* 2.3205 * .9975 + 34 Ft. - ~~78.08~~ 48.08 Ft. + 10.2 Ft.

8.14.44(1) App N App M App R 5.1(5) 5 cdc 6/1/84

H_{NPSH} = 77.13 Ft.

Step 8.16.47

H_{NPSH} = 30 PSIG* 2320 * .9974 + 34 Ft. - 27.97 Ft. + 10.2 Ft.

8.16.37(1) App N App M App R 5.1(5) cmc 9-14-84 5

H_{NPSH} = 85.6 Ft.

CS "B" SIB-P03

Step 8.15.42

H_{NPSH} = 32.5 PSIG * 2.3205 * .9975 + 34 Ft. - 50.44 Ft. + 9.8 Ft.
5 LDC 6/1184

8.15.39(1). App N App M App R 5.7(6)

H_{NPSH} = 82.47 Ft.

Step 8.15.46

H_{NPSH} = 37 PSIG * 2.3205 * .9975 + 34 Ft. - 50.44 Ft. + 9.8 Ft.
5
8.15.44(1) App N App M App R 5.7(6) LDC 6/1184

H_{NPSH} = 79 Ft.

Step 8.17.47

H_{NPSH} = 35 PSIG * 2.3205 * .9974 + 34 Ft. - 41.9 Ft. + 9.8 Ft.
5 conc
8.17.37(1) App N App M App R 5.7(6) 9.14-84

H_{NPSH} = 82.9 Ft.

HPSI "A" SIA-P02

Step 8.7.13

H_{NPSH} = 41 PSIG * 2.320 * .9974 + 34 Ft. - 40.1 Ft. + 2 Ft.

8.7.11(1) App N App M App R 5.7(9) cmc 9-14-84

H_{NPSH} = 90.5 Ft.

Step 8.7.17

H_{NPSH} = 41.2 PSIG * 2.320 * .9974 + 34 Ft. - 41 Ft. + 2 Ft.

8.7.15(1) App N App M App R 5.7(9) cmc 9-14-84

H_{NPSH} = 90.3 Ft.

Step 8.16.48

H_{NPSH} = 31.4 PSIG * 2.320 * .9974 + 34 Ft. - 26.18 Ft. + 2 Ft.

8.16.38(1) App N App M App R 5.7(9) cmc 9-14-84

H_{NPSH} = 82.5 Ft.

HPSI "B" SIB-P02

Step 8.11.13

H_{NPSH} = 40 PSIG * 2.3196 * .9974 + 34 Ft. - 41.62 Ft. + 2.5 Ft.

8.11.11(1) App N App M App R 5.7(10) cmc 9-14-84

H_{NPSH} = 87.4 Ft.

Step 8.11.17

H_{NPSH} = 40 PSIG * 2.3196 * .9974 + 34 Ft. - 41.03 Ft. + 2.5 Ft.

8.11.15(1) App N App M App R 5.7(10) cmc 9-14-84

H_{NPSH} = 88 Ft.

Step 8.17.48

H_{NPSH} = 35 PSIG * 2.3205 * .9974 + 34 Ft. - 39.8 Ft. + 2.5 Ft.

8.17.38(1) App N App M App R 5.7(10) cmc 9-14-84

H_{NPSH} = 77.7 Ft.