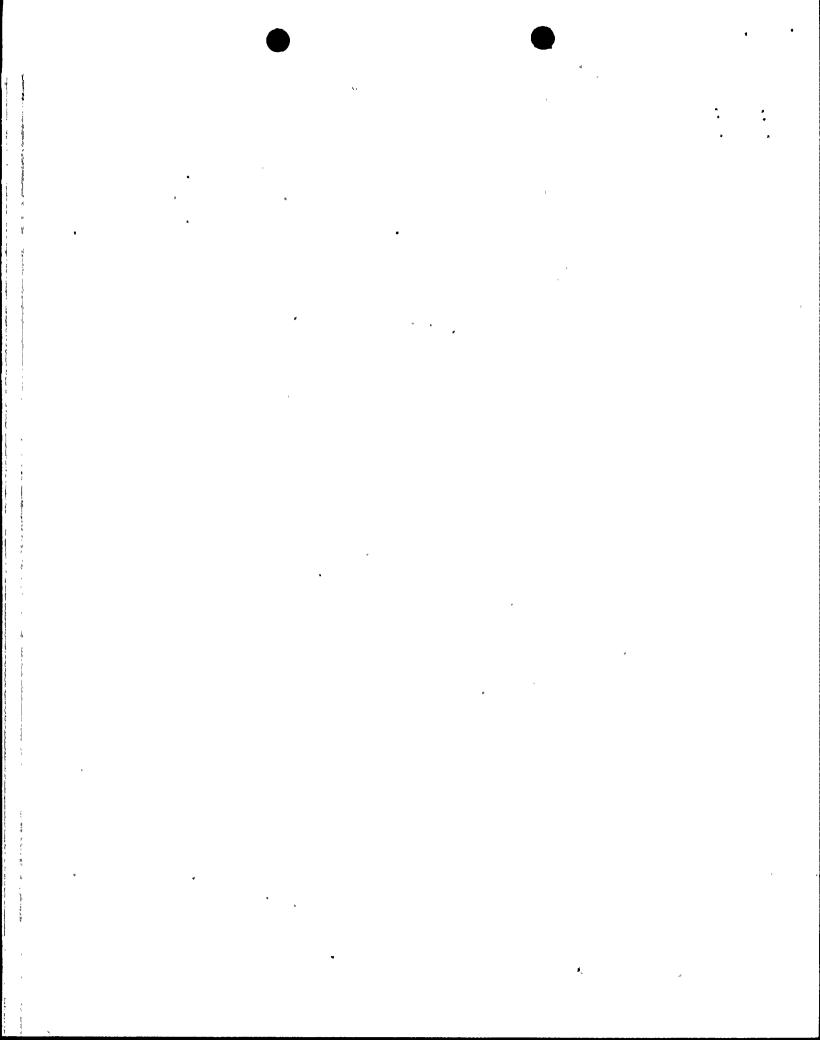
Test Results Report 91PE-1SI08 Rev. 1 TCN 9 Page 1 of 22

TEST RESULTS REPORT

PROCEDURE NO. 91	PE-1SI08		•
PROCEDURE TITLE SAFETY	INJECTION FULL FLOW	VERIFICATION TEST	<u>r</u>
REVISION AT THE COMMENCEM	ENT 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 0	7/20/84 .	<u>-</u>
			*
	Review and Approval of Test Re	sults	
PREPARED BY Kuntop	her M		DATE <u>9-/9-8</u> 4
TECHNICAL REVIEW:	al folia		DATE 9-1984
GROUP SUPERVISOR REVIEW:_	Marl Horeisa	19~	DATE 9/19/84
TEST WORKING GROUP MEETING	G NUMBER: Blow	ilpos (91-89)	DATE <u>9/25/84</u>
PLANT REVIEW BOARD MEETING	G NUMBER:	NA	DATE
QUALITY ASSURANCE REVIEW: (Required for Test Results			DATE
STARTUP MANAGER APPROVAL:	Il Herb	4	DATE <u>9-27-8</u> 9

DN-0136m



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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.

Signature Date

8.16 Safety Injection Combined Pump Operation Train A

//M 6-6-84 8.16.1

*

VERIFY HPSI Train A 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. *

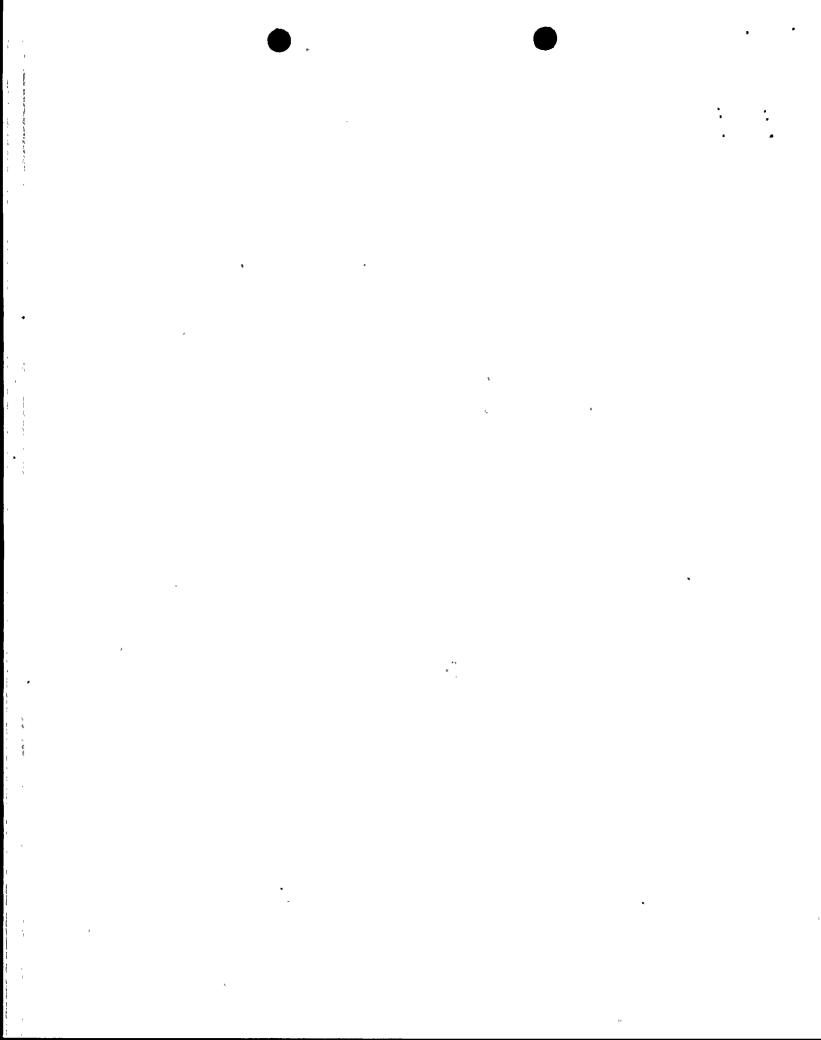
6. DO NOT OPERATE THE PUMP LONGER THAN 1 HOUR WITH ONLY MINIMUM FLOW.

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CAUTION LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING WHEN OPERATING THE PUMP: MOTOR COLD - 2 CONSECUTIVE STARTS. MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE START. TIME BETWEEN ADDED STARTS: MOTOR RUNNING - 15 MINUTES APART. MOTOR NOT RUNNING - 45 MINUTES APART. VERIFY that there is a minimum of 10 PSIG on SIA-PO2 suction pressure gauge at SIA-V009. Suction Pressure 42 psig. START SIA-PO2 by POSITIONING SIA-HS-1 to the START position and RELEASE. VERIFY SIA-P02 is running by observing the following: SIA-P02 running by local observation. (2) RED indicating light at SIA-HS-1 is ON. GREEN indicating light at SIA-HS-1 is OFF. WHITE indicating light at SIA-HS-1 is OFF. RECORD current indicated at SIA-HS-1 ammeter 80 AMPS. (5) Motor Current PBA-SO3E ammeter ØA 60.5 AMPS, ØB 62 AMPS, ØC 6/AMPS SIA-PO2 recirculation flow is 85 gpm minimum. SIN-FI-300 /7U GPM Serial No /3//

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8.16.5 RECORD the following HPSI Pump A operating parameters:

<u>Alm</u> 6-6-84 <u>Alm</u> 6-6-84 <u>Alm</u> 6-6-84 <u>Alm</u> 6-6-84

(1) Suction Pressure at SIA-V009

42 psig

(2) Discharge Pressure at SIA-V028

900 psig

(3) RWT Water Temperature (CHN-TI-200)

(4) RWT Level (CHN-LI-200)

<u>8/15</u>%

8.16.6 VERIFY the following conditions before starting SIA-P01:

Jan 6-6-84

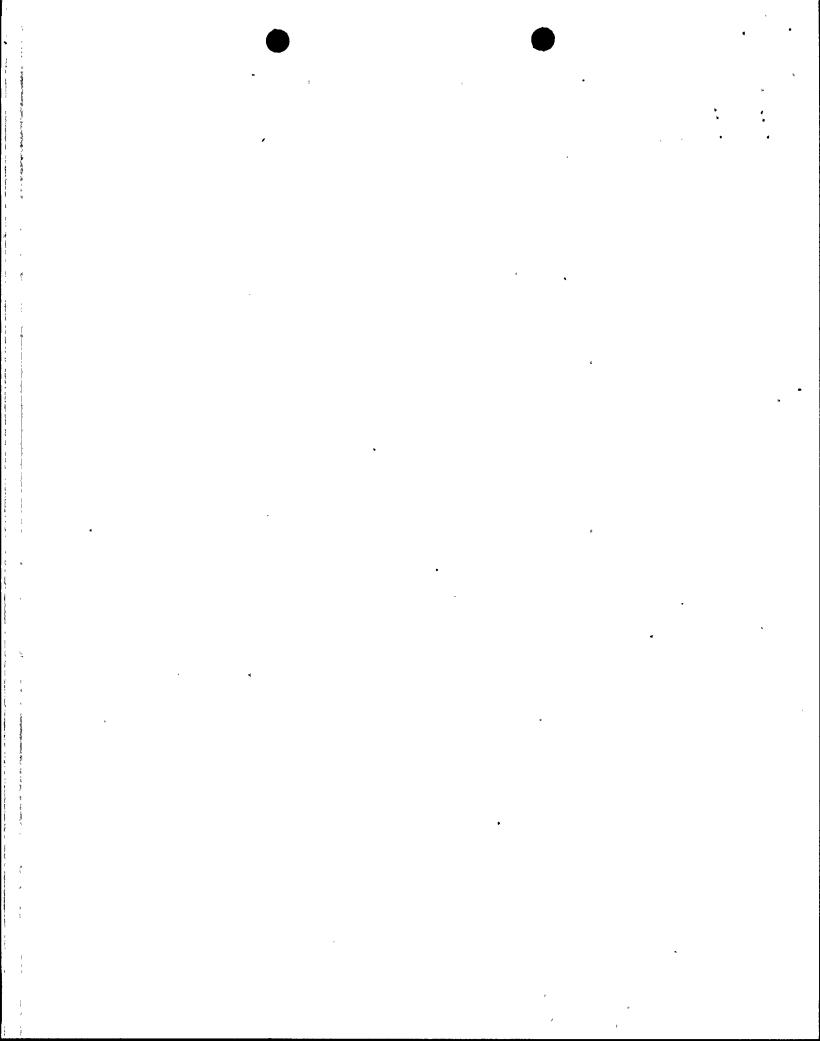
(JM) 6-6-84 8.16.7 (1) Refueling Water Tank (RWT) has a minimum level of 80% as read CHN-LI-200.

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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alerate the alerate alterate a * CAUTION ÷ ENSURE PROPER OIL LEVEL IN THE LPSI PUMP. PUMP CASING AND SUCTION LINES MUST BE COMPLETELY FILLED مإي PRIOR TO STARTING. * • IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL * NOISE OR EXCESSIVE VIBRATION IS DETECTED. * DO NOT OPERATE THE PUNP 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 PUNP HAS A MINIMUM FLOW OF 100 GPM WHENEVER THE PUMP IS OPERATING.

Jen 6-6-84 8.16.8

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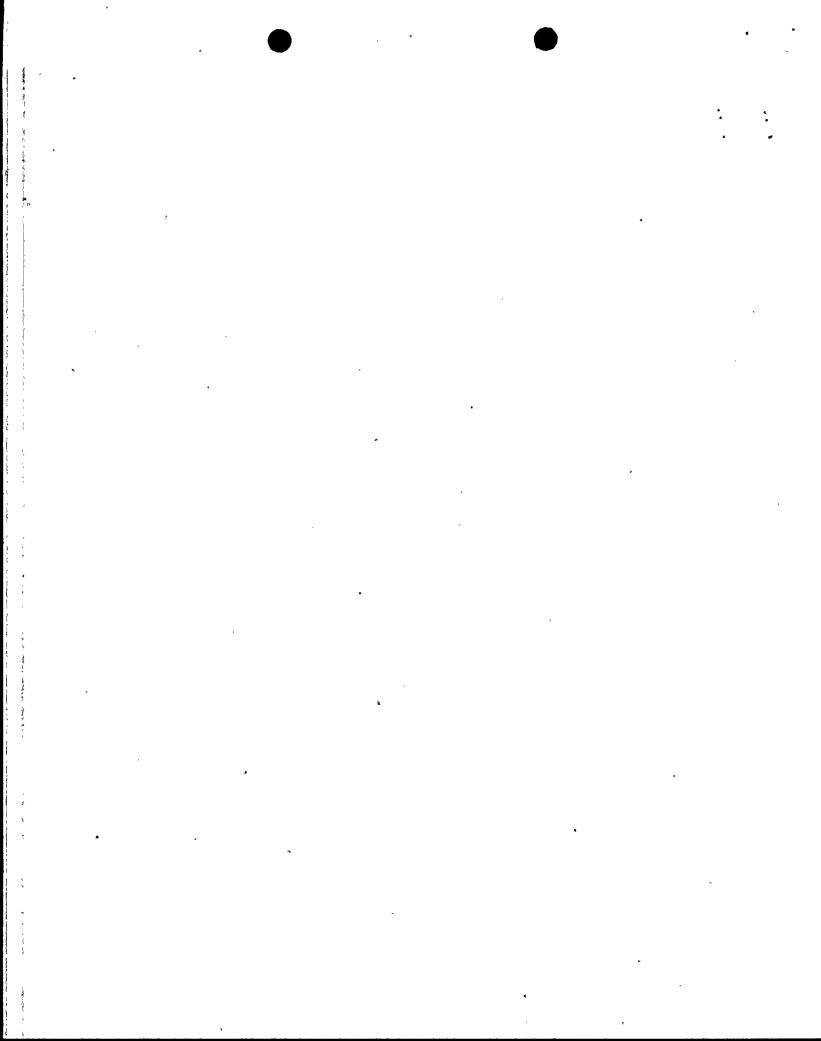
VERIFY that there is a minimum of 10 PSIG on SIA-P01 suction pressure gauge at SIA-V959.

SUCTION PRESS __ 36 PSIG

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.



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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.

START SIA-PO1 by POSITIONING SIA-HS-3 to the START position and RELEASE.

8.16.10 VERIFY SIA-PO1 is running by observing the following:

(1)SIA-P01 running by local observation.

- (2) RED indicating light at SIA-HS-3 is ON.
- GREEN indicating light at SIA-HS-3 is OFF.
- WHITE RAS override indicating light at SIA-HS-3 is OFF.
- WHITE SIAS override indicating light at SIA-HS-3 is OFF.
- RECORD current indicated at SIA-HS-3 ammeter 37 AMPS. (6)
- BLOC 6/4/84 (7) RECORD current indicated at PMA-S03F 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.

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./3/10)

*

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

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

8.16.12 RECORD the following LPSI Pump A operating parameters:

<u>Jem</u> 6-6-24 <u>Jem</u> 6-6-84 <u>Jem</u> 6-6-84 <u>Jem</u> 6-6-84

(1) Suction Pressure at SIA-V959

(2) Discharge Pressure at SIA-V840

(3) RWT Water Temperature (CHN-TI-200)

(4) RWT Level (CHN-LI-200)

94 F

8.16.13 VERIFY the following conditions before starting SIA-P03:

<u>Jem</u> 6-6-84 <u>Jem</u> 6-6-84

(1) CSS Train A safety injection piping is filled and vented.

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(2) That there is a minimum of 10 PSIG on SIA-PO3 suction pressure gauge at SIA-V960.

Suction Pressure 38 psig.

* 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. *

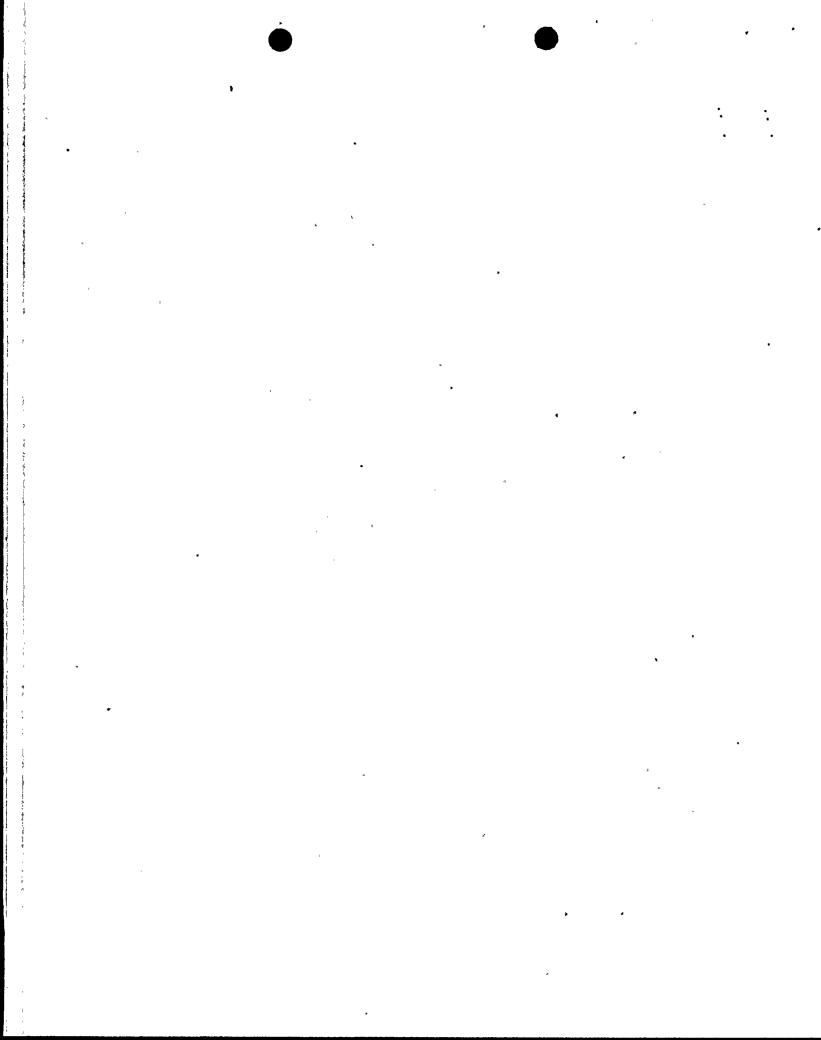
* BEFORE STARTING CSS PUMP, VERIFY THAT THE SUCTION *

* 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.

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

(16m) 6-6-84 (16m) 6-6-84

(1) SIA-UV-672 is CLOSED

- (2) SIA-V500 blank flange is REMOVED
- (3) SIA-V500 is OPEN

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(4) E-PHA-M3511 is OFF

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ACM 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.

(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:

(1) SIA-P03 running by local observation.

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

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

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

MI 6-6-84 (6) RECORD current indicated at PBA-SO3D ØA 32 AMPS, ØB 36 AMPS, ØC 36 AMPS

ØA 32 AMPS, ØB 36 AMPS, ØC 36 AMPS

Will 6-6-84 (7) SIA-PO3 recirculation flow is 150 cmm

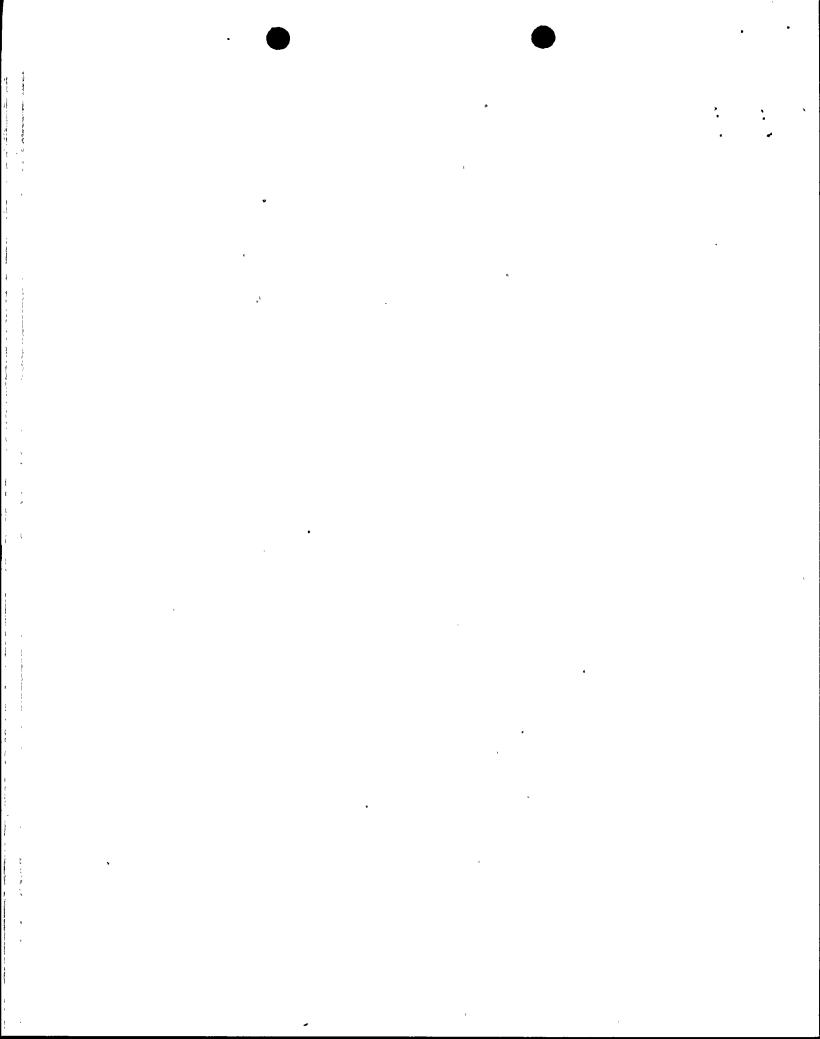
(7) SIA-PO3 recirculation flow is 150 gpm (minimum). (SIN-FI-300 reading less HPSI pump and LPSI pump recirculation flow recorded in step 8.16.11(1))

Instrument Step 8.16.11(1) Flow SIA-PO3 Flowrate
SIN-FI-300
Serial No /3/10

625 gpm - 370 gpm = 255 gpm

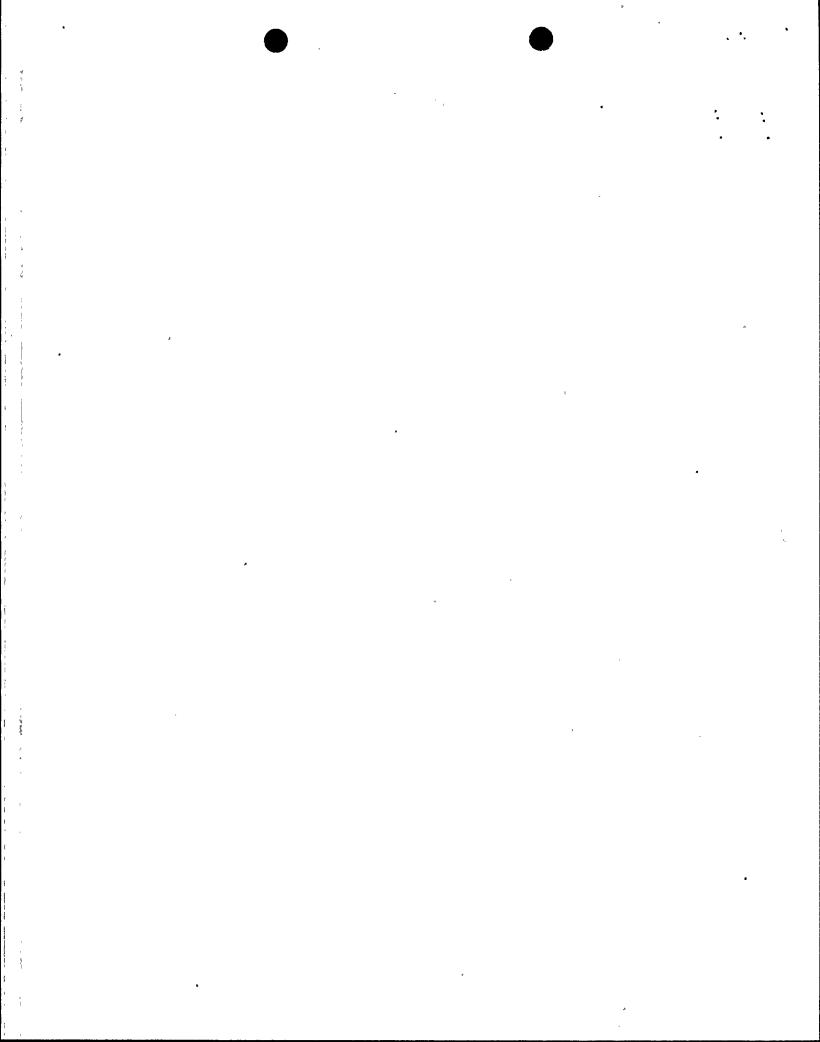
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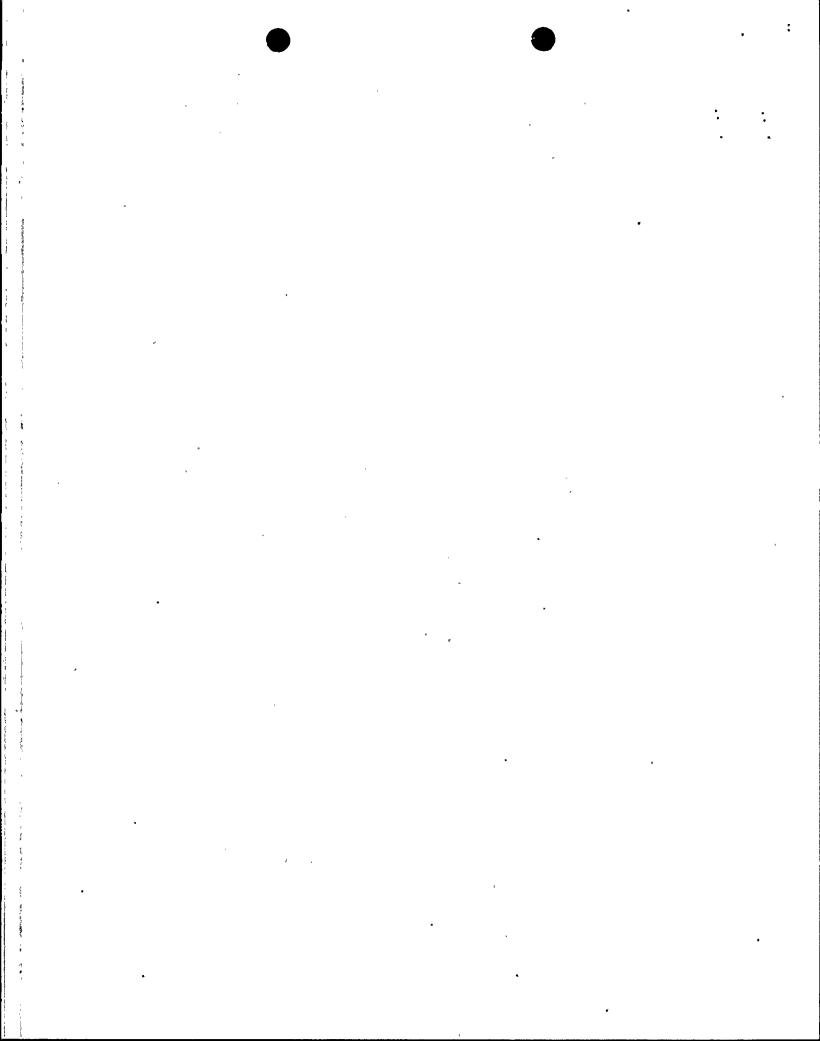


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8.16.18	RECORD the following CS Pump	A operating param	neters:
Alm 6-6-84	(1) Suction Pressure at SIA-V9	060	38 psig
JAM 6-6-882	(2) Discharge Pressure at SIA-		324 psig
JAM 6.6.84	(3) RWT Water Temperature (CHN	I-TI-200)	74 [F
(Chris 6.6.54	(4) RWT Level (CHN-LI-200)	81	<u>/15_%.</u>
•	સંજ લેવી લઈ લેવી લેવી તાલું કે લેવી લુંગ લેવી લુંગ લેવી લેવી લોકો લેવી લોકો સ્ટાર્ટ કરે છે. જો તાલું કરો છે છે જો	**********************	testestestestestestestestestestestestest
•	* <u>CAU</u>	TION	يې د -
	* DO NOT EXCEED 1130 GPM TO COOLANT SYSTEM.	TAL HPSI PUMP FLO	OW TO REACTOR **
	* THE FOLLOWING STEPS WILL * INTO THE REACTOR VESSEL. * THE REFUELING POOL. ENSU	THE VESSEL WILL PERSONNEL	ES OF WATER ** OVERFLOW INTO ** ARE CLEAR. **
	* REACTOR VESSEL LEVEL SHOU * COLD LEG CENTER LINE. *	JLD BE MAINTAINED	GREATER THAN **
10.01.684	alerkeitenkeilerkeitenkeitenkeilerkeilerkeilerkeilerkeilerkeilerkeilerkeilerkeilerkeilerkeilerkeilerkeilerkei		e de
MM 6.6.84 8.16.19	OPEN SIA-UV-617 by POSITIONIN HOLD until position indicatio RELEASE SIA-HS-617.	G SIA-HS-617 to J on ZI-617 indicate	OG OPEN and es OPEN then
AM 6-8-84 8.16.20	OPEN SIA-UV-627 by POSITIONIN HOLD until position indication RELEASE SIA-HS-627.	G SIA-HS-627 to J on ZI-627 indicate	OG OPEN and es OPEN then
	OPEN SIA-UV-637 by POSITIONIN HOLD until position indication RELEASE SIA-HS-637.		
(10) 6-6-84 8.16.22	OPEN SIA-UV-647 by POSITIONIN HOLD until position indicatio RELEASE SIA-HS-647.		
<i>n</i> .	RECORD the Header 1 Flows as	follows:	· -
(Mem 6-6-84	(1) STB-FT-311 2/5 GP	M (272 apm to 283	enm)



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1				
7	(2)	SIB-FI-321 272 G	PM (272 gpm to 28	2 gpm)
y	(3)	SIA-FI-331 275 G	PM (272 gpm to 28	2 gpm)
JAM 6.6.84 ((4)	SIA-FI-341 272 G	PM (272 gpm to 28	2 gpm) `
8.16.24	RECO	ORD the following operation	ng parameters:	•
96M 6-6-24	(1)	Suction Pressure at SIA-	V009	4/12 psig
(MM 6-6-84	(2)	Discharge Pressure at SI	A-V028	<i>850</i> psig
		Recirculation Flow (SIN- ial No	FI-300)	.575 gpm
JUM. 6.6.84 ((4)	Motor Current SIA-HS-1 a	mmeter	//5_amps
1/16/10 6-6-84 ((5)	Motor Current PBA-S03E as ØA //O AMPS, ØB //// AMPS	mmeter , ØC <u>//3</u> AMPS	
<u>Glm</u> 6-6.84 ((6)	RWT Level (LT-200)	-	80,5%
7	र्रश्रीतर्भक्त	irakenierierierierierierierierierierierierieri	*****************************	` **********
	*			*
	ric ric	CA	UTION	*
	*	CLOSELY MONITOR PUMP MOT	OR CURRENT TO ENS	
	*	MOTOR CURRENT OF 62 AMPS	IS NOT EXCEEDED.	*
	*			بل **
	*	DO NOT EXCEED A PUMP FLOW GPM RECIRCULATION FLOW,		•
	*	SIA-FI-306.	WO INDICATED DI L	LOWIETER *
	*	-		*
	*	MONITOR RWT LEVEL TO ENS	URE LEVEL DOES NO	T DROP BELOW *
	*	10% LEVEL.		*
	alegicales.	Herioteskeskeskeskeskeskeskeskeskeskeskeskeske	yko alpoglo a fo alpoglo a foa foa foa ko aloo doodo aloo doodo aloo do	off also also also also also also also also
1 Den 1-10-84			01 01 01 01 01 01 01 01 01 01 01 01 01	
		CE SIA-HS-306 to the JOG (25% OPEN as indicated on 1		
JEM 6-6-84	(1)	ZI-306 position indication	ori <u>25</u> % OPE	N



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SI FULL FLOW	VERIFICATION TEST		Page 194 of 380	
	<u> </u>	NOTE		
Am 6-6.84	Maintain Reactor Vessel Water center line at all times when and/or HPSI pump.	r Level above the n operating the LF	coldleg nozzle 'SI pump, CS pump	
(100 8.16.26	PLACE SIA-HS-645 to the JOG (SIA-UV-645 until SIA-UV-645 SIA-HS-645.	OPEN position and is FULLY OPEN and	slowly OPEN then RELEASE	
1 Cm 1.6.84	PLACE SIA-HS-635 to the JOG (SIA-UV-635 until SIA-UV-635 SIA-HS-635.	OPEN position and is FULLY OPEN and	slowly OPEN then RELEASE	
(100 6.04 8.16.28	Slowly adjust SIA-HV-306 by I OPEN position until a flow ra indicated on SIA-FI-306, loca	ate of 4900 (4800-	-5000) gpm is	
8.16.29	RECORD SIA-FI-306 flowrate.			
	Instrument Nominal F	lowrate Actual	l Flowrate	
	SIA-FI-306 4800 to 5	5000 gpm <u>4</u>	1900 gpm	
8.16.30	RECORD the following LPSI Pur	mp A operating par	ameters:	
(10M 6.6-84	(1) Suction Pressure at SIA	-V959 _	30,5 psig	
Man 6-6-84	(2) Discharge Pressure at S	IA-V840	168 psig	
<u>Jelm</u> 6.6-84	(3) Recirculation Flow (SIN- Serial No <u>/3//0</u>	-FI-300) (100-200-8	spm) <u>545</u> gpm	TEN 007
Allen 6-6-84	(4) Motor Current (SIA-HS-3	ammeter)	60 amps	
<u>Jem</u> 6-6-84 <u>Jem</u> 6-6-84	(5) Motor Current (PBA-S03F pA 57 AMPS, pB 60 AMPS	ammeter) 3, OC J AMPS		
(1/1:11 6-6-84	(6) RWT Level (CHN-LT-200)		78 4	

(5) Motor Current (PBA-SO3F ammeter)

PA SZAMPS, ØB 60 AMPS, ØC 57 AMPS

(6) RWT Level (CHN-LT-200)

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

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

8.16.32 CLOSE or VERIFY CLOSED SIA-HV-688.

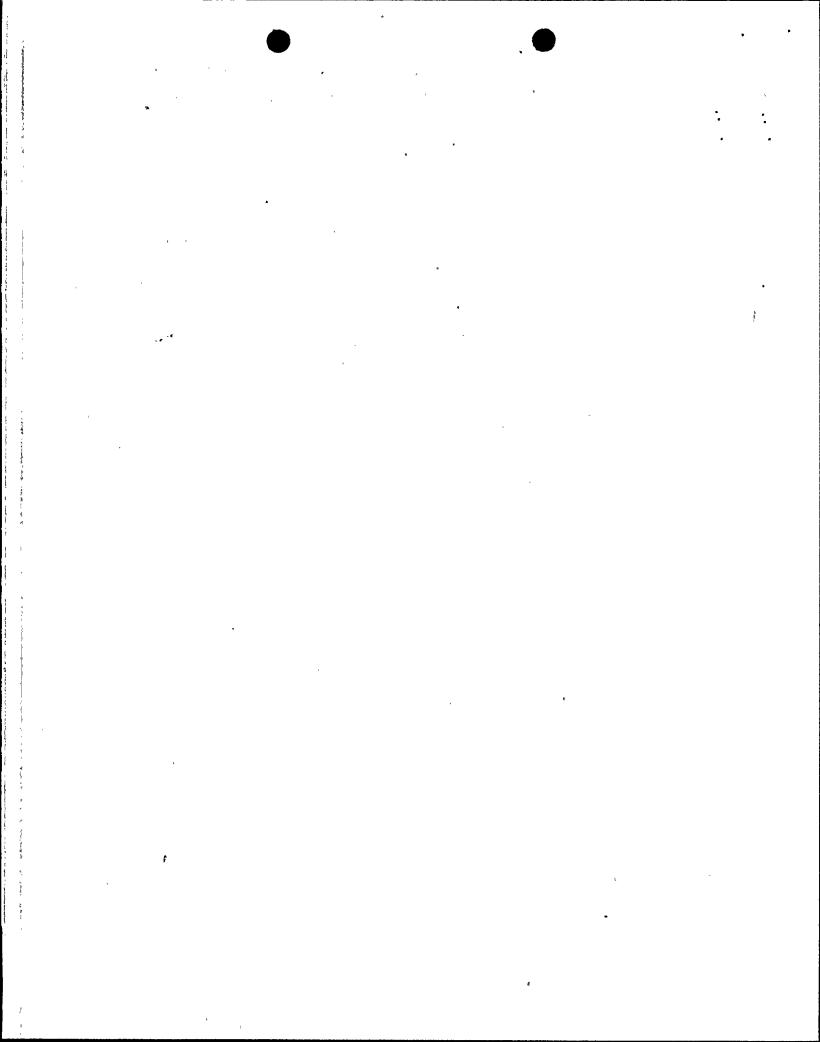
PALO VERDE NUCLEAR GENERATING STATION MANUAL	PROCEDURE NO. 91PE-1SI08	
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0.0%		

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SI FULL FLOW VERI	FICATION TEST		Page 195 of
April de 84	EN or VERIFY OPEN SIA-HV-6 EN position and RELEASE. PLACE SIA-HS-678 to the GREEN indicating light RELEASE.	JOG OPEN positio	n, HOLD until
is	JUST SIA-HV-657 until a re indicated on SIA-FI-338 a A-FI-306.		
	CORD the following paramet	ers:	
Jan 6-6-84 (1)	SIA-HV-657 position (ZI	-657) <i>[00</i>	% OPEN
JEM 6-6-84 (2)	SIA-HV-678 position (ZI	-678) <u>45</u>	% open
(3)	SDCHX (SIA-E01) Inlet P. (SIA-PI-303X)	ress. <u>/2</u>	5_psig
Jan 6 Val (4)	SIA-FI-338 (CSS PMP flo	w) 496	20_gpm
Jan 6-6-84 (5)	SIA-FI-306 (Total flow)	860	OO gpm
Jan 6-64 (6)	LPSI PMP flow (SIA-FI-30 minus SIA-FI-338 flow)		<u>3700 gpm</u>
8.16.36 RE	CORD the following SIA-PO1	operating parame	ters:
Jan 6-6-24 (1)	Suction Pressure at SIA	-V959	25 psig
Jan 626-84 (2)	Discharge Pressure at S	IA-V840	182 psig
100 2-6-84 (3) Se	Recirculation Flow (SIN rial No	-FI-300)	<i>500</i> gpm
(4)	LPSI A Flow (SIA-FI-306 minus SIA-FI-338)	•	<i>3700</i> gpm
(5)	Motor Current SIA-HS-3	ammeter	57 amps
(6)	Motor Current PBA-S03F & S & AMPS, ØB 5 & AMPS	ammeter S, ØC <u>55</u> AMPS	a.

RWT Water Temperature (CHN-TI-200)

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	Jam 6-6-84	(8) (9)	Refueling Water Tank Lev Reactor Vessel Water Lev Leg Nozzle Centerline (a	vel above Cold as measured in	<u>58</u> %	,
	8.16.37	RECO	feet using tape measure)		eters:	
į	Jun 6-6.84	(1)	Suction Pressure at SIA	-V960	30_{psig}	
	All 6-6-84	(2)	Discharge Pressure at Si	IA-V016	228 psig	
	JAM 6-6-84	(3) Seri	Recirculation Flow (SIN- al No/3//0	-FI-300)	_ <i>500</i> _gpm	
}	JUM 6-6-84	(4)	Indicated Flow (SIA-FI-3	338)	4850 gpm	ı
	JUM 6-6-84.	(5)	Motor Current SIA-HS-5	ammeter _	<u>89</u> amps	
	Jan 6-6.84	(6)	Motor Current PBA-SO3D & BA BAANPS, ØB BAANPS	ammeter 5, ØC <u>84</u> AMPS		
Ì	JAM 6-6-84	(7)	Refueling Water Tank Lev	vel (CHN-LI-200)	<u>56 %</u>	
	JAM 6-6-84	(8)	Reactor Vessel Water Lev Leg Nozzle Centerline (a feet using tape measure)	vel Above Cold as measured in	ft	
	8.16.38	RECO	RD the following SIA-PO2	operating parame	eters:	ITE
	JEM 6-6.84	(1)	Suction Pressure at SIA	-V009 <u> </u>	3/14 psig	49
	(10h) 6.6.24	(2)	Discharge Pressure at S	IA-V028	850 psig	
,	Jun 6-6-84	(3)	Indicated Flow (SIB-FI-3 (SIB-FI-3 (SIA-FI-3 (SIA-FI-3	321) · 331)	275 gpm 275 gpm 275 gpm 275 gpm	
	APM 6-6-84	(4)	HPSI INJECTION FLOW TOTAL	AL ,	1094 gpm	
	JEM 6-6-84	(5)	Motor Current SIA-HS-1	ammeter	<u>1/5</u> amps	

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Jem 6-6-84

(6) Motor Current PBA-S03E ammeter ØA //O AMPS, ØB //4 AMPS, ØC //3 AMPS

ACCEPTANCE CRITERIA:

118 amps maximum

(MM) 6-6-84 MM) 6-6-84

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

Jan 6-6-89 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:

<u> Alim 6-6.84</u>

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.

JM 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.

John 6 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.

ff 6 6 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.

41.5 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.

Alm 6 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.

(1011) 6.16.42

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.

(1011 6 8.16.43

POSITION SIA-HS-3 to the STOP position, RELEASE and VERIFY:

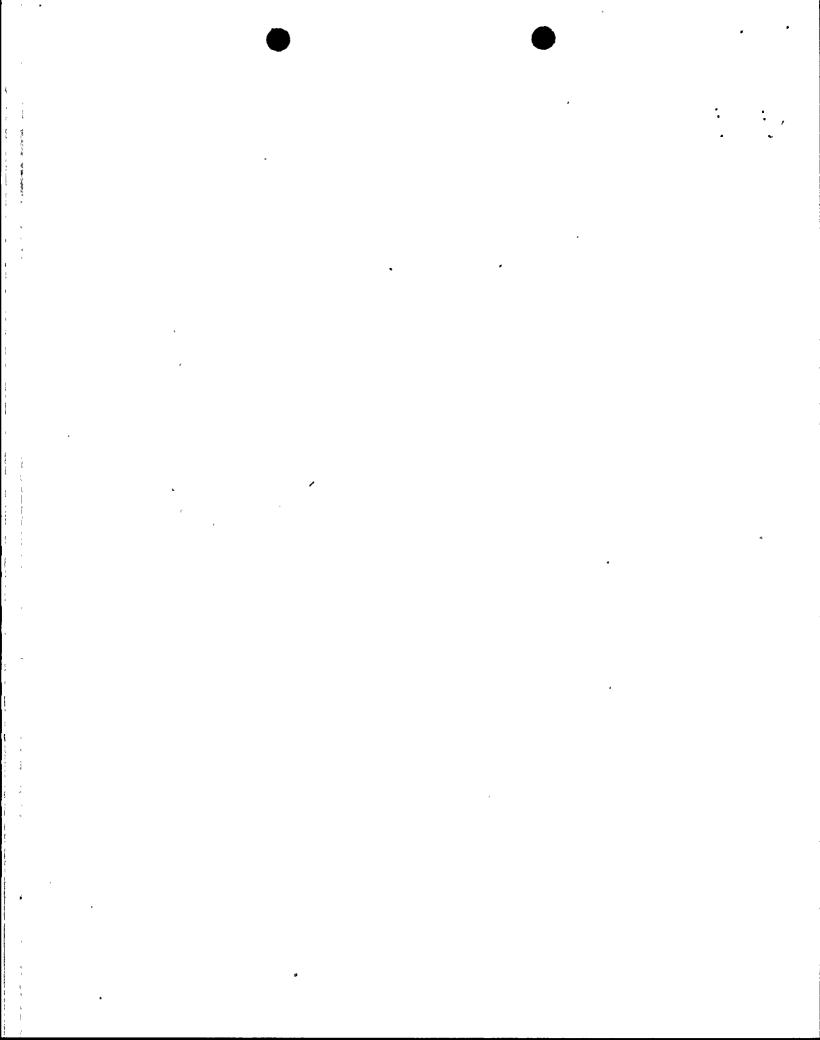
<u>Glen</u> 6-6-89

(1) SIA-PO1 stops running.

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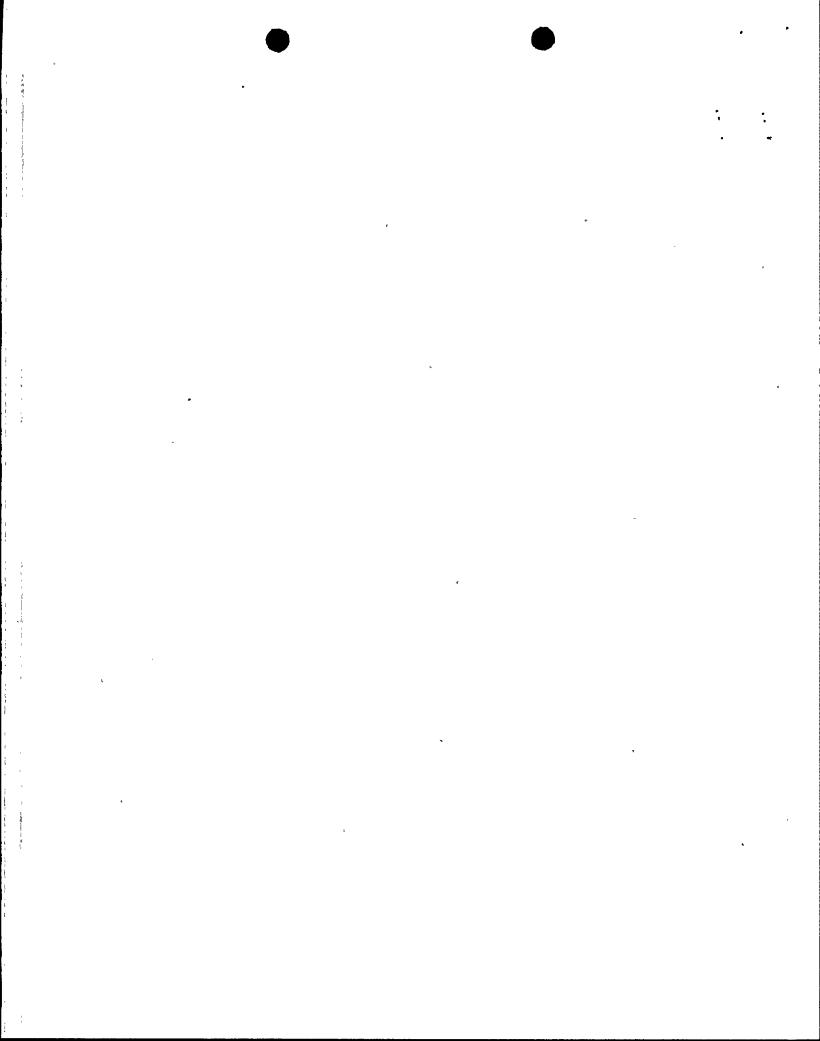
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•	nevision 1	
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All 68.16.44 POSITION SIA-HS-5 to the STOR	P position, RELEAS	SE and VERIFY:
Glimb 484 (1) SIA-PO3 stops running.		
Gem 68.16.45 POSITION SIA-HS-1 to the STOR	P position, RELEAS	SE and VERIFY:
Alm 6.6.84 (1) SIA-PO2 stops running.	ح	•
Using data recorded in step 8 accordance with Appendix P ar greater than design NPSH for	nd VERIFY value is	
ACCEPTANCE CRITERIA Calculated N	NPSH LPSI FLOW (S	Step 8.16.36 (4))
22 Ft. (Minimum) 72.2 Ft.	. <u>3700</u> gpm	(4800 to 5000gpm)
HES chaff 8.16.47 Using data recorded in step 8 accordance with Appendix P ar greater than design NPSH for	nd VERIFY value is	NPSH in sequal to or
ACCEPTANCE CRITERIA Calcuated N	PSH CS FLOW (Ster	8.16.37(4))
22 Ft. (Minimum) 85.6 Ft.	4850 gpm	(4800 to 5000gpm)
Using data recorded in step 8 accordance with Appendix P ar greater-than design NPSH for	nd VERIFY value is	
ACCEPTANCE CRITERIA Calculated 1	NPSH HPSI FLOW (S	Step 8.16.38(4))
22 Ft. (Minimum) 82.5 Ft.		1088 to 1130 gpm)
8.16.49 All steps in this section (18 completed or are documented a		

Administrative Procedure 90AC-0ZZ02.



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8.17 Safety Injection Combined Pump Operation Train B

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

itatia katala kala katala kata 4 CAUTION * ņ 1. ENSURE PROPER OIL LEVEL IN THE HPSI PUMP. 40 1 PUMP CASING AND SUCTION LINES MUST BE COMPLETELY * FILLED PRIOR TO STARTING. 4: * IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL 40 NOISE OR EXCESSIVE VIBRATION IS DETECTED. y, DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW ų, RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED. 4 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 * مار MINIMUM FLOW. te CAUTION * LIMIT THE NUMBER OF PUMP RESTARTS TO THE FOLLOWING WHEN y, OPERATING THE PUMP: * * 1. MOTOR COLD - 2 CONSECUTIVE STARTS. ÷ * MOTOR AT OPERATING TEMPERATURE - 1 CONSECUTIVE * START. * 3. TIME BETWEEN ADDED STARTS:

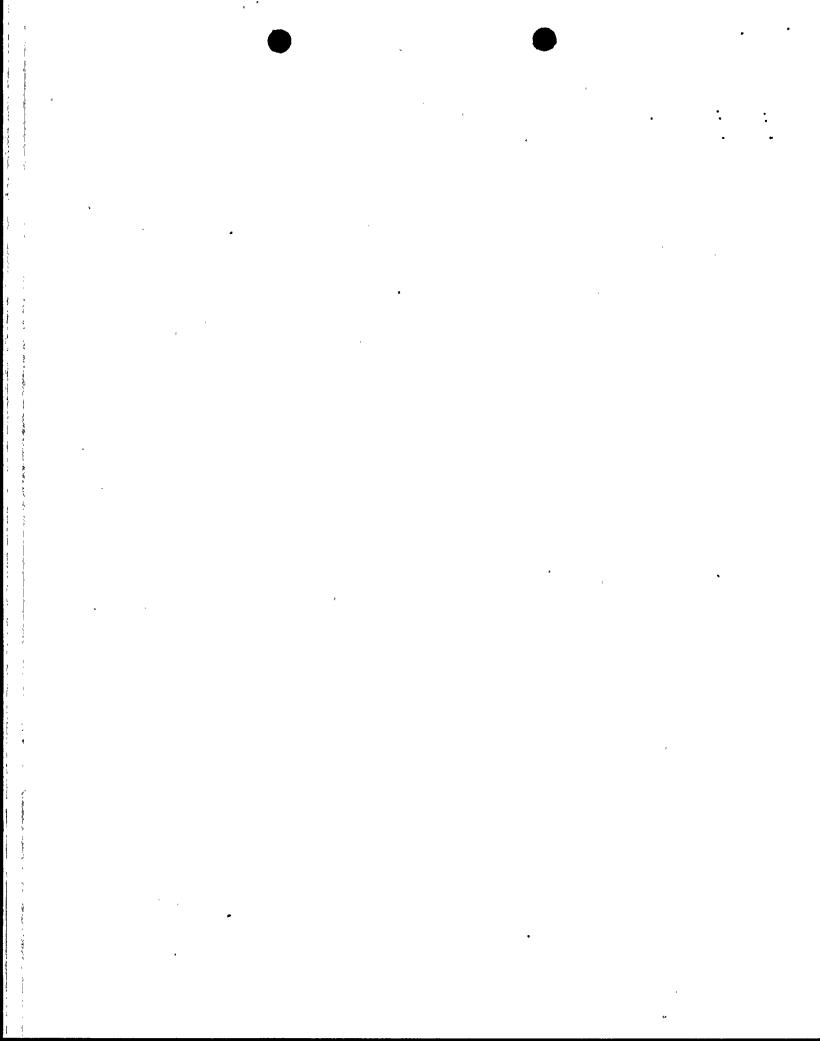
MOTOR RUNNING - 15 MINUTES APART. MOTOR NOT RUNNING - 45 MINUTES APART.

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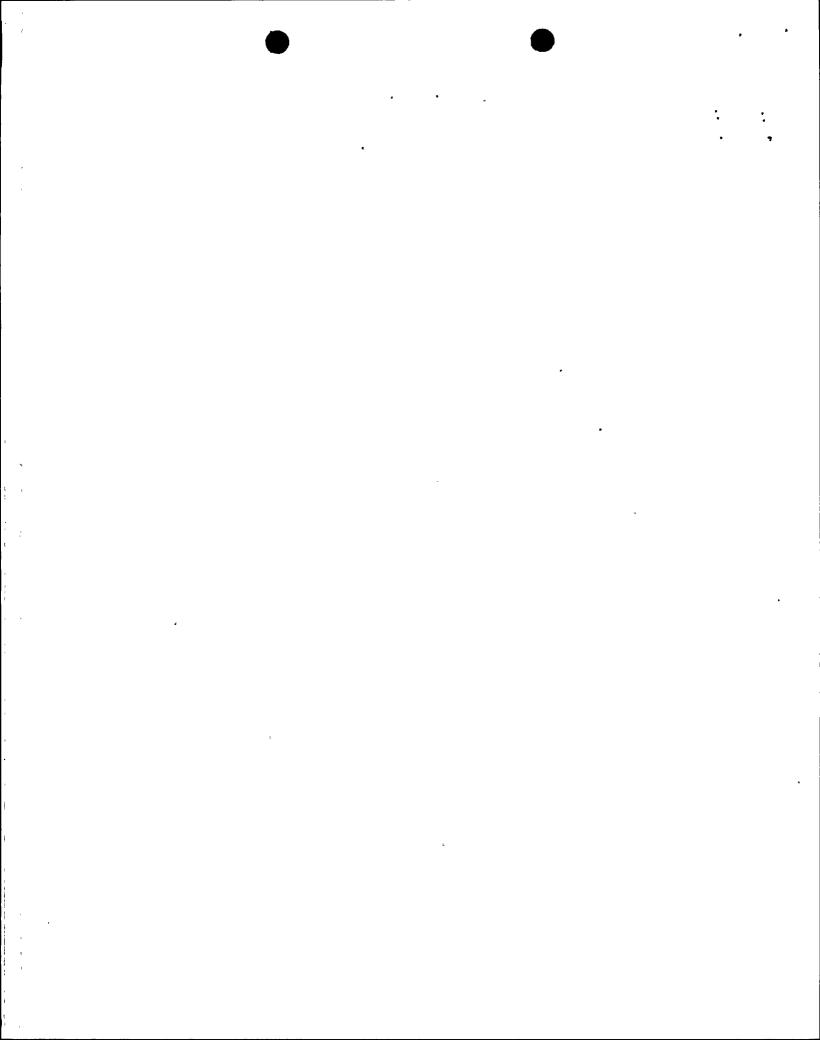
an a sign of a garden problem.



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PALO VERDE NUCLEAR GENERATING		PROCEDURE NO.	
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, I	VERIFY that there is a minimoressure gauge at SIB-V011.		SIB-PO2 suction
Jan 6-8-31 8	SUCTION PRESSPSI START SIB-PO2 by POSITIONING		START position
8.17.4	and RELEASE. PERIFY SIB-PO2 is running by	observing the fol	llowing:
	siB-P02 running by local	observation.	
· ·	2) RED indicating light at	•	
(3) GREEN indicating light at SIB-HS-2 is OFF. (4) WHITE indicating light at SIB-HS-2 is OFF.			
10 cm 18-24	 WHITE indicating light a RECORD current indicated 		
1000 284	6) RECORD current indicated ØA <u>75</u> AMPS, ØB <u>78</u> AMPS	at PBB-S04E ammet	
JUM 6-8-84 (7) SIB-PO2 recirculation fl	ow is 85 gpm. Minim	num.
,	sin-fi-300 <u>/60</u> gpm	Serial No. 15	<u> </u>
8.17.5 F	RECORD the following HPSI Pu	mp B operating par	cameters:
Jan 6-8-84 . (1) Suction Pressure at SIB-	V011	psig
1/11/1 6-8-84 (2	2) Discharge Pressure at SI	B-V030 ·	900 psig
1 (JEM 60 0 13	B) RWT Water Temperature (C	HN-TI-200)	76 F
1100 68-84 (1			<u>93 </u> %
(1011) 6 8.17.6	VERIFY the following con	ditions before sta	arting SIB-P01:
Mar 4-8-84	(1) Refueling Water Tank (RW read CHN-LI-200.	T) has a minimum 1	level of 80% as
VERIFY LPSI Train B safety injection piping is filled and vented.			

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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.

Jan 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 4217 PSIG

CAUTION

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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.

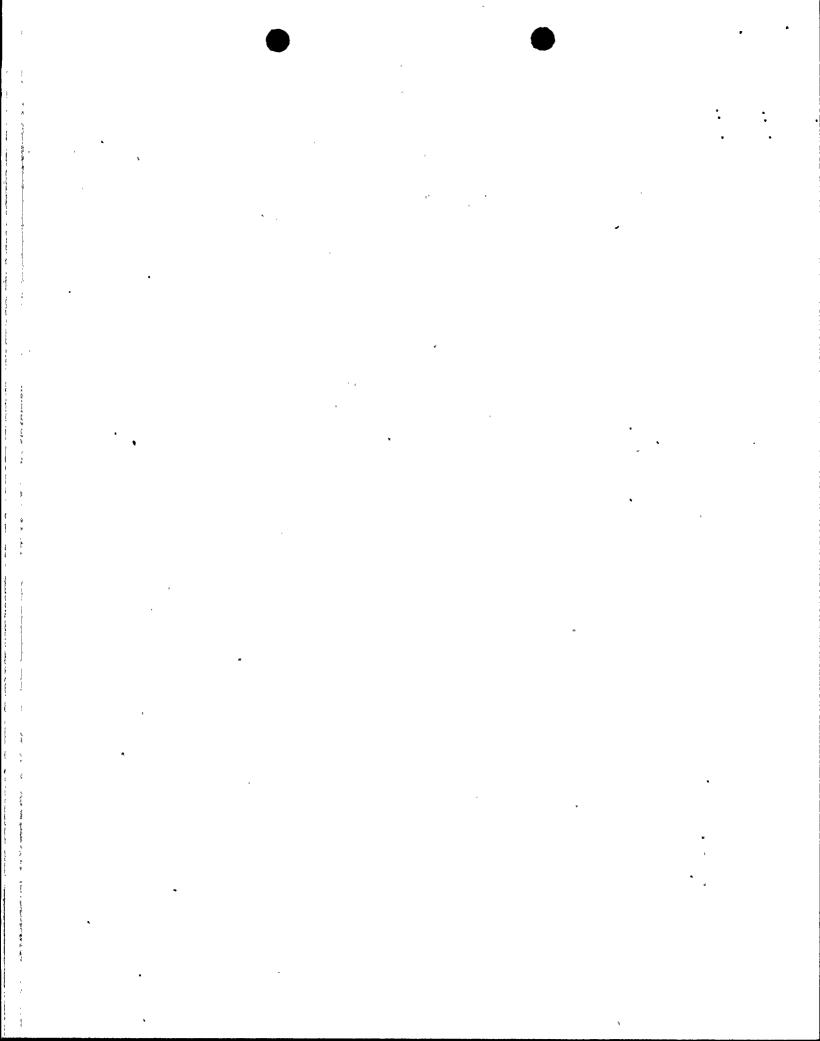
BEFORE STARTING LPSI PUMP, VERIFY THAT THE SUCTION PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG.

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

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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.

Jem 6-8-84

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:

Win 6-8-84

(1) SIB-P01 running by local observation.

NEM 6-8-84

(2) RED indicating light at SIB-HS-4 is ON.

Jen 6-8-84

(3) GREEN indicating light at SIB-HS-4 is OFF.

(UM) 6-8-84

(4) WHITE RAS override indicating light at SIB-HS-4 is OFF.

1611 6-8-84

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

(<u>fe/1)</u> 6-8-84

(6) RECORD current indicated at SIB-HS-4 20 AMPS.

[[KM] 6-8-84

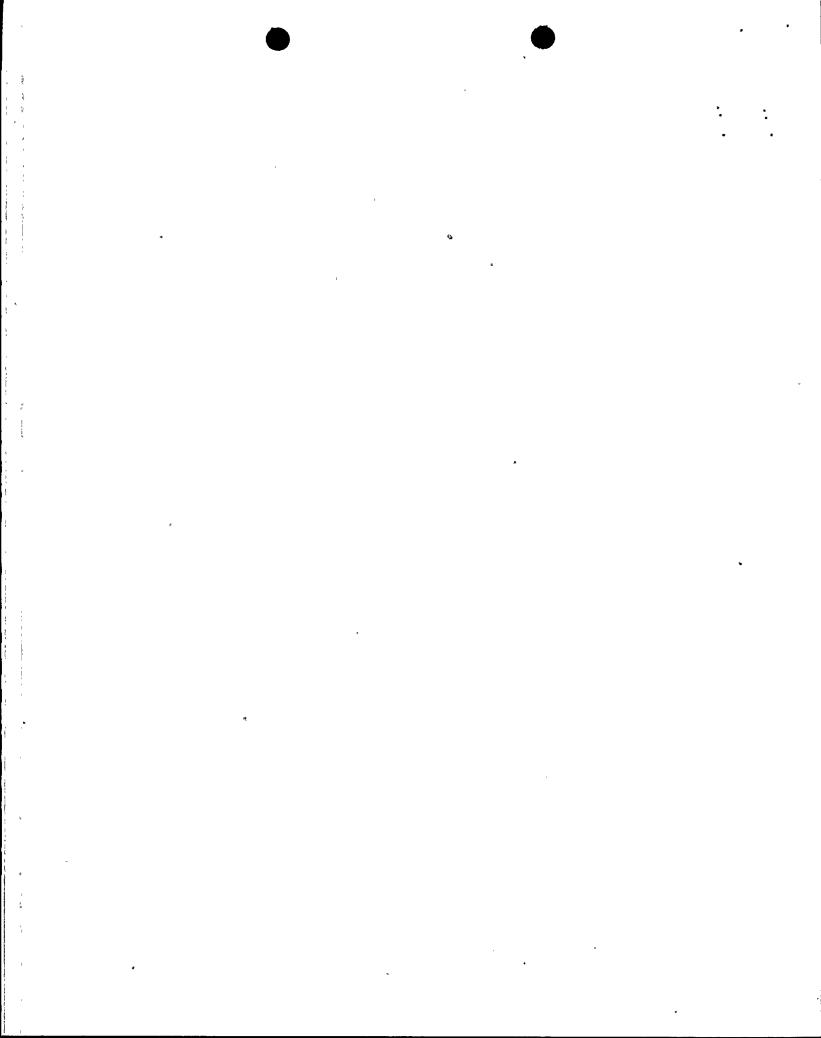
(7) RECORD Current indicated at PBB-S04F gA 32 AMPS, ØB 35 AMPS, ØC 35 AMPS

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SI FULL FLOW	/ERIFI	CATION TEST	,	Page 203 of 380
Jan 6-8-84 8.17.11	* * * VERI esta gpm 8.17	DO NOT OPERATE THE PUMP OF FOR A PERIOD EXCEEDING ON THAN ONE (1) HOUR MAINTAI MONITOR PUMP TEMPERATURES TY LPSI pump SIB-P01 miniblished by observing an improve the HPSI recirculate (7) as indicated on SI Actual Flowrate FI-300 (Serial No./3//0	NE (1) HOUR. FOR IN A MINIMUM OF 10 in A MINIMUM OF 10 in a minimum recirculation indicated flowrate ion flow recorded in FI-300.	PERIODS LONGER * 000 GPM AND * * * * * * * * * * * * *
8.17.12	RECO	RD the following LPSI Pum	p B operating pa	rameters:
Alm 6-8-84	(1)	Suction Pressure at SIB-	-V962 _	<i>42,8</i> psig
JEM 6-8-84 .	(2)	Discharge Pressure at SI	IB-V842	222 psig
(flin 6-8-84	(3)	RWT Water Temperature (C	CHN-TI-200)	96 °F
JUM 6-8-84	(4)	RWT Level (CHN-LI-200)		95 %
	VERI	FY the following condition	ons before starti	ng SIB-P03:
J <u>lm</u> 6-8-84 Jlm 6-3-84	(1)	VERIFY CSS Train B safet vented.	y injection pipi	ng is filled and
(<u>flm</u> 6-3-84	(2)	That there is a minimum pressure gauge at SIB-V9		B-P03 suction
		SUCTION PRESS 433	L PSIG	10 miles

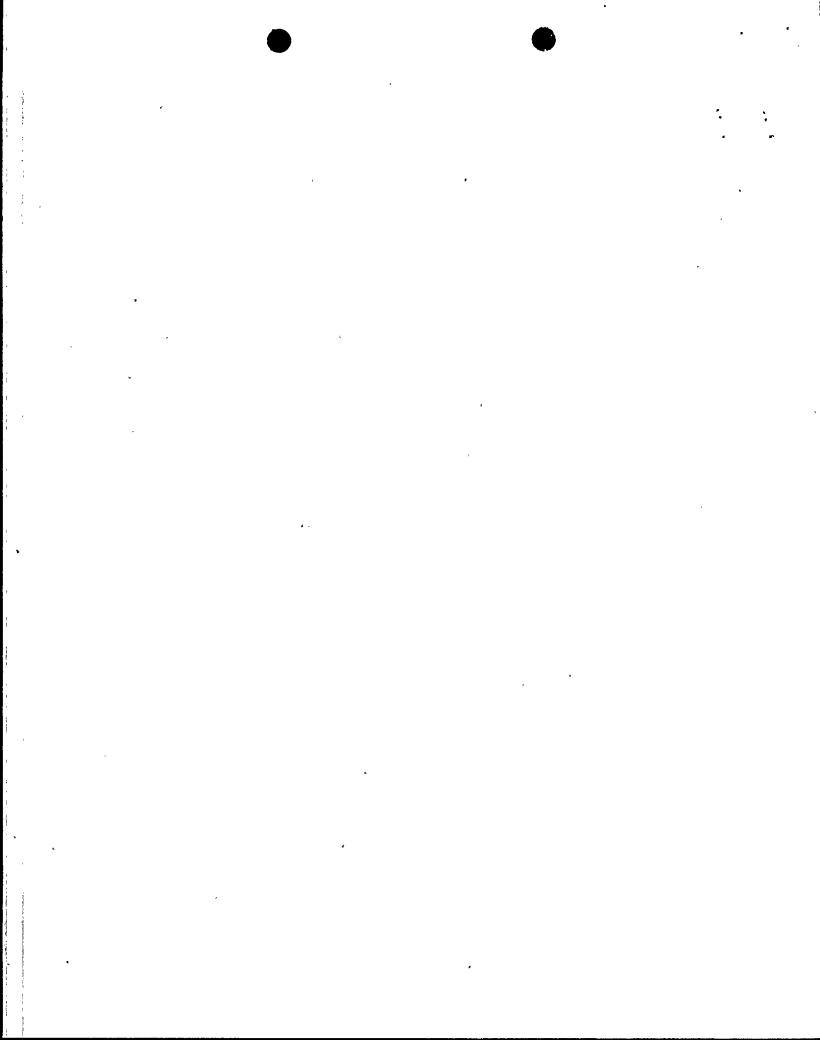


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8.17.14 VERIFY the following conditions to prevent water from being introduced to the Containment Spray Header.

[[[[]]]] 6-8-8\ [[]][]] 6-8-8\

- (1) SIB-UV-671 is CLOSED
- (2) SIB-V501 blank flange is REMOVED
- JEM 6-8-84
- (3) SIB-V501 is OPEN
- JEM 6-8-84
- (4) E-PHB-M3612 is OFF
- 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.



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* CAUTION 4 4. ENSURE PROPER OIL LEVEL IN THE CSS PUMP. 4 * PUMP CASING AND SUCTION LINES MUST BE COMPLETELY FILLED * PRIOR TO STARTING. * بي IMMEDIATELY STOP AN OPERATING PUMP IF ANY ABNORMAL NOISE بإد OR EXCESSIVE VIBRATION IS DETECTED. 4. 4 DO NOT OPERATE THE PUMP WITH BOTH ITS MINIMUM FLOW ų. RECIRCULATION VALVE AND DISCHARGE VALVE CLOSED. * ,, BEFORE STARTING CSS PUMP, VERIFY THAT THE SUCTION PRESSURE IS EQUAL TO OR GREATER THAN 10 PSIG. ş, * * ENSURE THE CSS PUMP HAS A MINIMUM FLOW OF 150 GPM WHENEVER THE PUMP IS OPERATING. a alabah dalah da ņ * 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

April 10 februarie 10 februarie

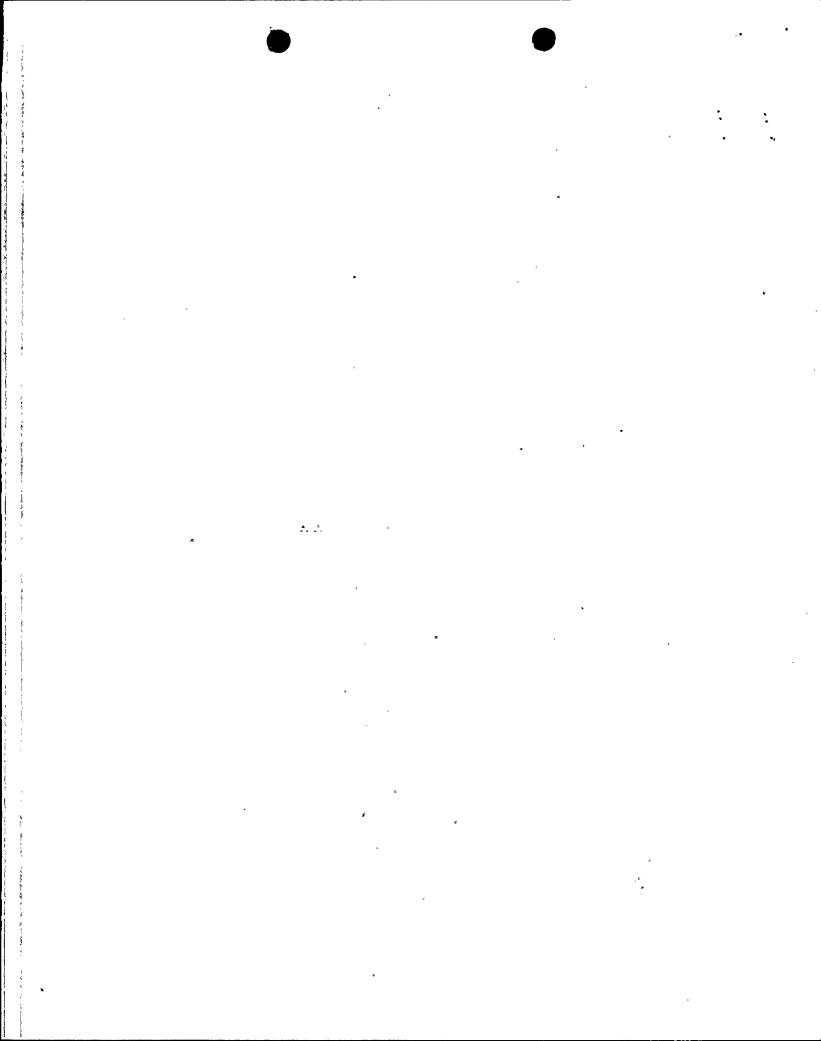
Closely monitor all important pump and motor parameters, including discharge pressure, suction pressure, motor current, vibration and bearing temperatures, whenever pump is running, to ensure proper operation of equipment as per CSS Pump Technical Manual, Ingersoll Rand, N001-15.02-11.3.

Jem 6,384 8.17.16

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START SIB-PO3 by POSITIONING SIB-HS-6 to the START position and RELEASE.

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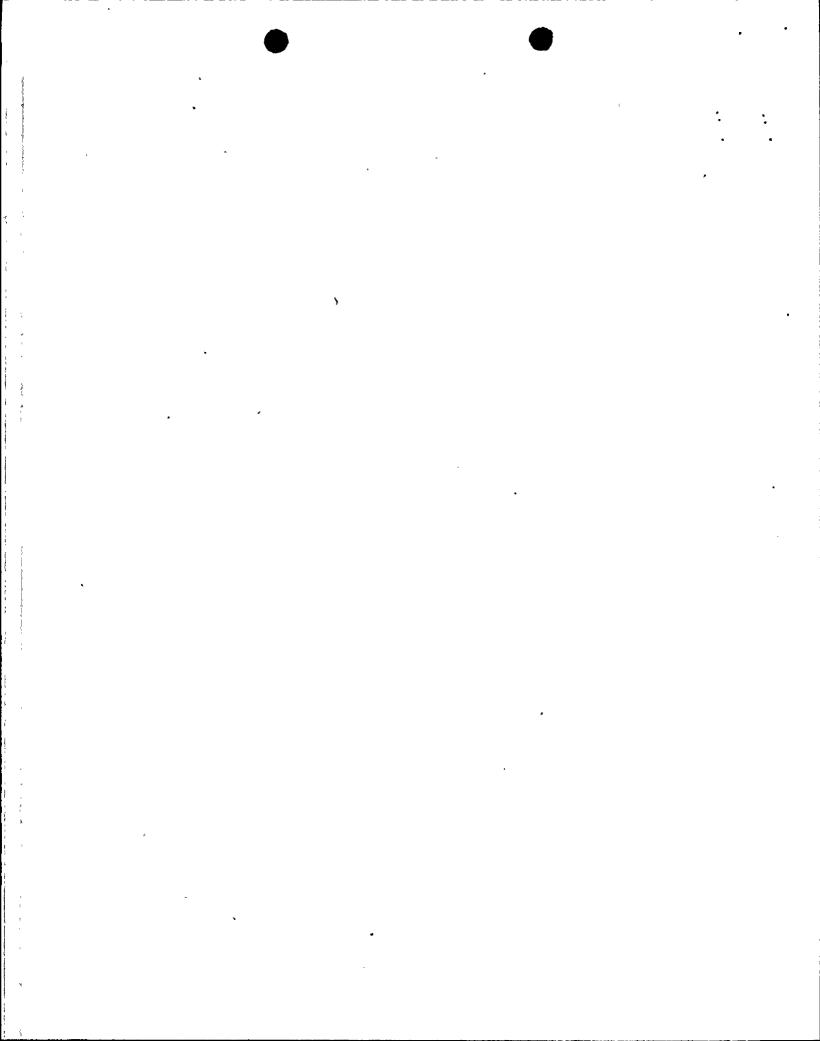
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	VER	RIFY SIB-P03 is running by	observing the fo	llowing:
JEM 6-8-84	(1)	SIB-P03 running by local	observation.	
Alm 6-8-84	(2)	RED indicating light at	SIB-HS-6 is ON.	
JAM 6-8-84	(3)	GREEN indicating light as	sIB-HS-6 is OFF	•
(flist 6-8-84	(4)	WHITE indicating light at	t SIB-HS-6 is OFF	•
16176-8-84	(5)	RECORD current indicated	at SIB-HS-6 amme	ter 37 AMPS.
Jem 6-8-84	(6)	RECORD current indicated ØA 33 AMPS, ØB 36 AMPS		
Jem 6-8-84	(7)	SIB-P03 recirculation florecorded as indicated flo		
		Instrument Step 8.17.1	l(1) Flowrate S	IB-P03 Flowrate
		SIN-FI-300		
		Serial No. <u>13/10</u>		
		<u>335</u> gpm - <u>3</u>	60 gpm =	ggm gpm
	***	Parte est estrate estrate estrate estr	stestestestestestestestestestestestestes	**********
	*	, CA	AUTION	*
· ·	*	,		**
	*	DO NOT OPERATE THE PUMP (
	**	FOR A PERIOD EXCEED ONE		
	. " *	THAN ONE (1) HOUR MAINTAI MONITOR PUMP TEMPERATURES		000 GPM AND *
	*	,	••	*
•	****	telekekekekekekekekekekekekekekekekekeke	******************************	\:\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
8.17.18	B REC	ORD the following CSS Pump	B operating par	ameters:
JUM 6-8-84	(1)	Suction Pressure at SIB-	/961 <u> </u>	43,5 psig
JUM 6-8-84	(2)	Discharge Pressure at SI	3-V017 <u>=</u>	320 psig
(JEN) 6-8-84	(3)	RWT Water Temperature (Ch	IN-TI-200)	96 °F
alm 6.8.84	(4)	RWT Level (CHN-LI-200)	•	95 %

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CAUTION ÷ * DO NOT EXCEED 1130 GPM TOTAL HPSI PUMP FLOW TO THE * REACTOR VESSSEL بې ų, * THE FOLLOWING STEPS WILL PUMP LARGE VOLUMES OF WATER * INTO THE REACTOR VESSEL. THE VESSEL WILL OVERFLOW INTO ب. THE REFUELING POOL. ENSURE ALL PERSONNEL ARE CLEAR. * * REACTOR VESSEL LEVEL SHOULD BE MAINTAINED GREATER THAN 40 *, COLD LEG CENTER LINE. 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. 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. 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. 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. RECORD the Header 2 flows as follows: GPM (272 gpm to 282 gpm) SIB-FI-311 SIB-FI-321 GPM (272 gpm to 282 gpm) GPM (272 gpm to 282 gpm) SIA-FI-331 GPM (272 gpm to 282 gpm) SIA-FI-341 RECORD the following operating parameters: Suction Pressure at SIB-V011 psig Discharge Pressure at SIB-V030 psig

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| Motor Current E PBB-S04E ammeter A 108 AMPS, B 1/2 AMPS | C 1/1 AMPS | 1/2 AMPS | 1/2 AMPS | 1/4 AMPS | 1/4

CAUTION

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

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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

Ofen 6-8-84 8.17.25 *

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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.

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(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.

Jan 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.

10m 6-8-84

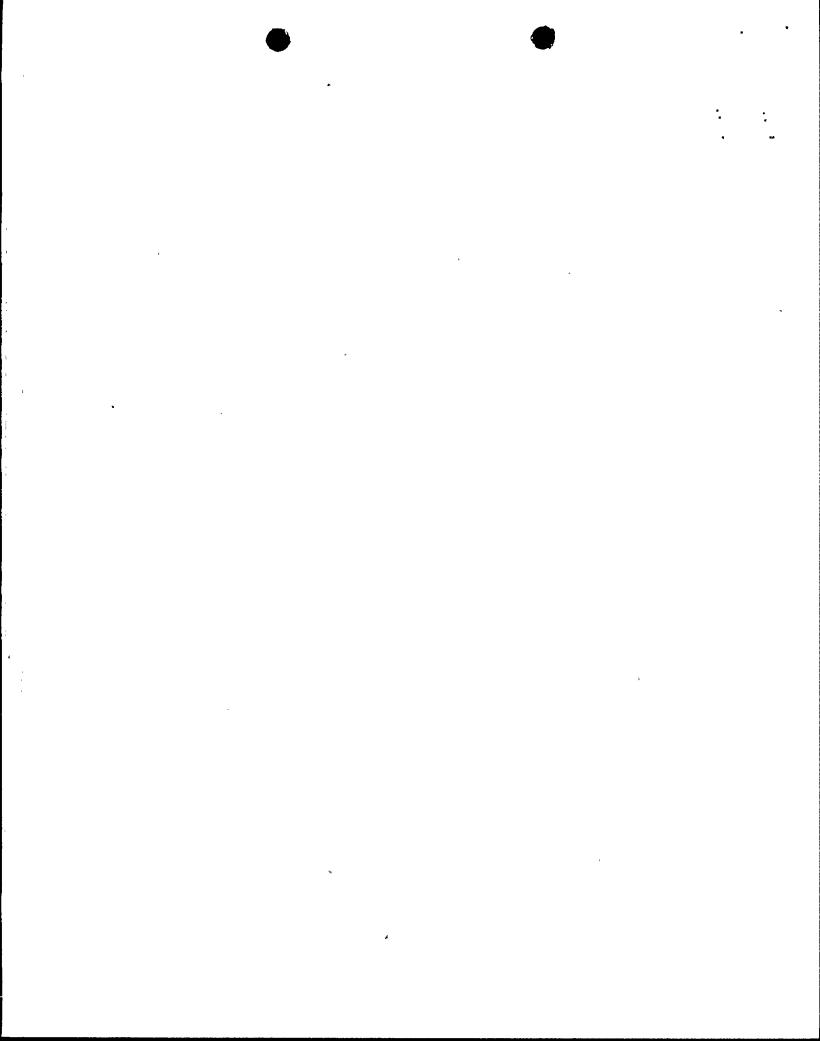
PLACE SIB-HS-625 to the JOG OPEN position and slowly OPEN SIB-UV-625 until SIB-UV-645 is FULLY OPEN and then RELEASE.

JEM 6-8-84 8.17.28

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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-BO2E.

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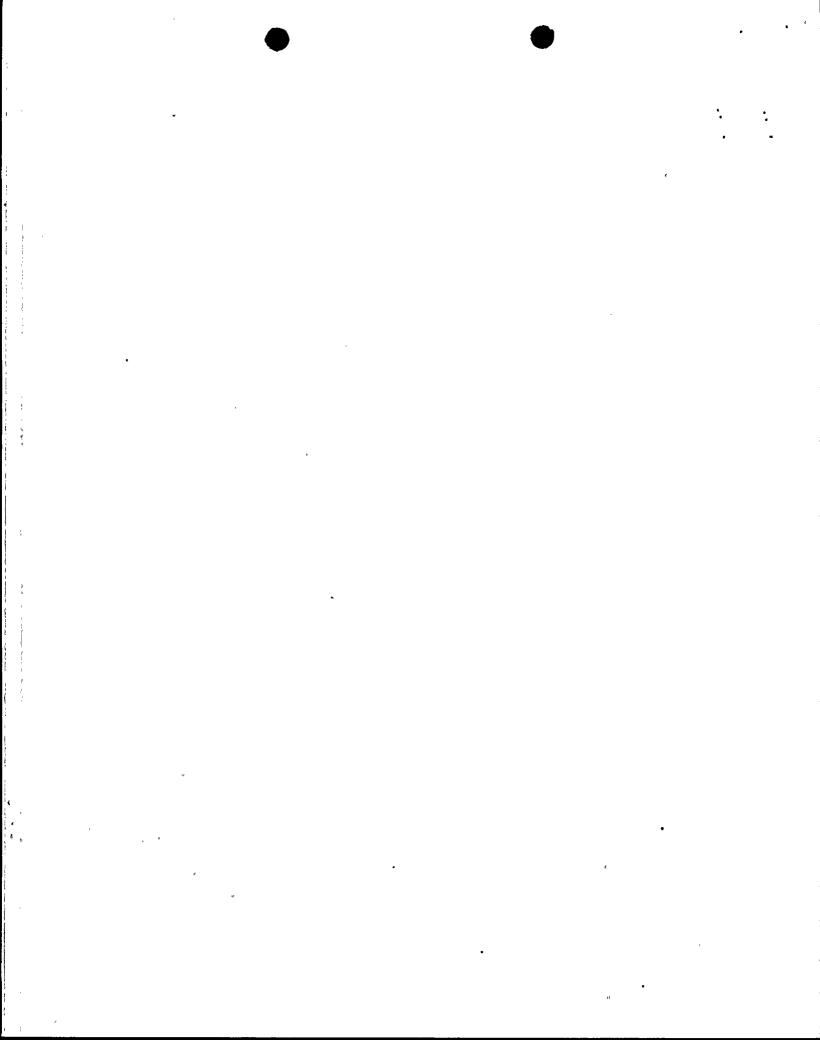
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1000 6-8-84 8.17.29 RECORD SIB-FI-307 flowrate:		
<u>Instrument</u> <u>Nominal F</u>		Flowrate
SIB-FI-307 4800 to	5000 gpm	4900 gpm ·
8.17.30 RECORD the following LPSI pu	Bede Girley mp 8 operating pai	ameters:
10 6-8-84 (1) Suction Pressure at SIB-	۷962 <u> </u>	36,4 psig
100 6-8-84 (2) Discharge Pressure at SI	B-V842	<u>/68</u> psig
(3) Recirculation Flow (SIN-	FI-300)	<u>475</u> gpm
Serial No. <u>/3//0</u>	·	•
Mm 6-8-84 (4) Motor Current SIB-HS-4 a	mmeter	<u>55</u> amps
(5) Motor Current PBB-S04F a SG AMPS, B SG A	mmeter C <u>58</u> AMPS	
(fm 6-8-84 (6) RWT Level (CHN-LT-200)		<u>9,2,5</u> %
8.17.31 PLACE SIB-HS-679 to the JOG is 25% OPEN then RELEASE SIB		11 SIB-HV-679
$ \frac{1}{1000} 6 - 8 - 84 \qquad (1) \text{SIB-HV-679 position (ZI-} $	679) 23	5 % OPEN.
68.17.32 CLOSE or VERIFY CLOSED SIB-H	V-693.	
OPEN position and RELEASE.	9 by placing SIB-H	IS-689 to the
All 8.17.33.1 PLACE SIB-HS-679 to the SIB-HV-679 indicating li RELEASE.		
8.17.34 ADJUST SIB-HV-658 until a re is indicated on SIB-FI-348 a on SIB-FI-307.		
8.17.35 RECORD the following paramet	ers:	*
(1) SIB-HV-658 position (ZI-	658) <i>30</i>	% OPEN.
(2) SIB-HV-679 position (ZI-	679) <u>100</u>	% OPEN

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Jem 6-8-84	(3)	SDCHX (SIB-E01) Inlet Pr (SIB-PI-303Y)	ess. <u>188</u>	psig.
Alm 6-8-84	(4)	SIB-FI-348 (CSS PMP flow	490	00 gpm.
Jam 6-8-84	(5)	SIB-FI-307 (Total flow)	_8_	7700 gpm.
Jun 6-8-84	(6)	LPSI PMP flow (SIB-FI-30 minus SIB-FI-348 flow)	7 —	<i>4000</i> gpm.
8.17.	36 `	RECORD the following SIB	-P01 operating pa	rameters:
Jan 6-8-84	(1)	Suction Pressure at SIB-	V962	32 psig
(JIM 6-8-84	(2)	Discharge Pressure at SI	B-V842	/80 psig
(Jen 6-8-84	(3)		(SIN-FI-300)	440 gpm
		Serial No. <u>13/10</u>	,	
JUM 6-8-84	(4)	LPSI B Flow (SIB-FI-307 minus SIB-FI-348)		4000 gpm
Jum 6-8-84	(5)	Motor Current SIB-HS-4 at	mmeter	. 50 amps
Jan 6-8-84	(6)	Motor Current PBB-S04F amps AMPS, ØB 56 AMPS		
JAM 6-8-84	(7)	RWT Level (CHN-LI-200)		82,5 %
(1011 6-8-84	(8)	RWT Temperature (CHN-TI-	200)	96 °F
. 4 <u>1111</u> 6-8-84	(9) ⁻	Reactor Vessel Water Levenozzle centerline (as meusing tape measure)	-	3017 ft
8.17.	37	RECORD the following SIB	-PO3 operating pa	arameters:
Jen 6-8-84	(1)	Suction Pressure at SIB-	V961	35 psig
(J/M 6-8-84	(2)	Discharge Pressure at SI	B-V017	2/9_psig
<u> 4000 6-8-84</u>	(3)	Indicated Flow (SIB-FI-3	48) —	4900 gpm
(LM) 6-8-84	(4)	Motor Current SIB-HS-6	ammeter .	90 amps

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Jan 6-3-84	(5)	Motor Current PBB-S04D a A <u>83</u> AMPS, B <u>86</u> AMPS,	ammeter C <u>& A</u> MPS	
916/M 6-8-84	(6)	Refueling Water Tank Lev	vel (CHN-LI-200)	79,5 % 21,7 ft
JAM 6-8-84	(7)	Reactor Vessel Water Lea Centerline (as measured		
8.17.38	B REC	ORD the following SIB-PO	2 operating parame	eters:
Jan 68-84	(1)	Suction Pressure at SIB-	-V011	35 psig
116M 6-8-84	(2)	Discharge Pressure at Si	IB-V030	<i>850</i> psig
Aften 6-8-84	(3)	Indicated Flow (SIB-FI-3 (SIB-FI-3 (SIA-FI-3 (SIA-FI-3	321) 331)	295 gpm 285 gpm 275 gpm 272 gpm
JAM 6-8-81	(4)	HPSI Injection Flow TOTA	AL	<u>//27</u> gpm
(10) 6-8-84	(5)	Motor Current SIB-HS-2	ammeter	////_amps
(/ <u>f/M)</u> 6-8-84	(6)	Motor Current PBB-S04E & ØA 108 AMPS, ØB 12 AMPS ACCEPTANCE CRITERIA: 1:		
JEM 6-8-84	(7)	Refueling Water Tank Lev	vel (CHN-LI-200)	76_%
(100) 68.17.39		E SIB-HV-658 by POSITION: TAIN until ZI-658 indicat		JOG CLOSE,
(1011) 6-8-84 8.17.40		E SIB-HV-679 by POSITION: TAIN until SIB-HV-679 is		
<i>A</i> -		flow to the Reactor Vess	sel as follows:	
(SUM) 6-8-84 8.17.1	41.1	CLOSE SIB-UV-615 by POS		

CLOSED, then RELEASE SIB-HS-615.

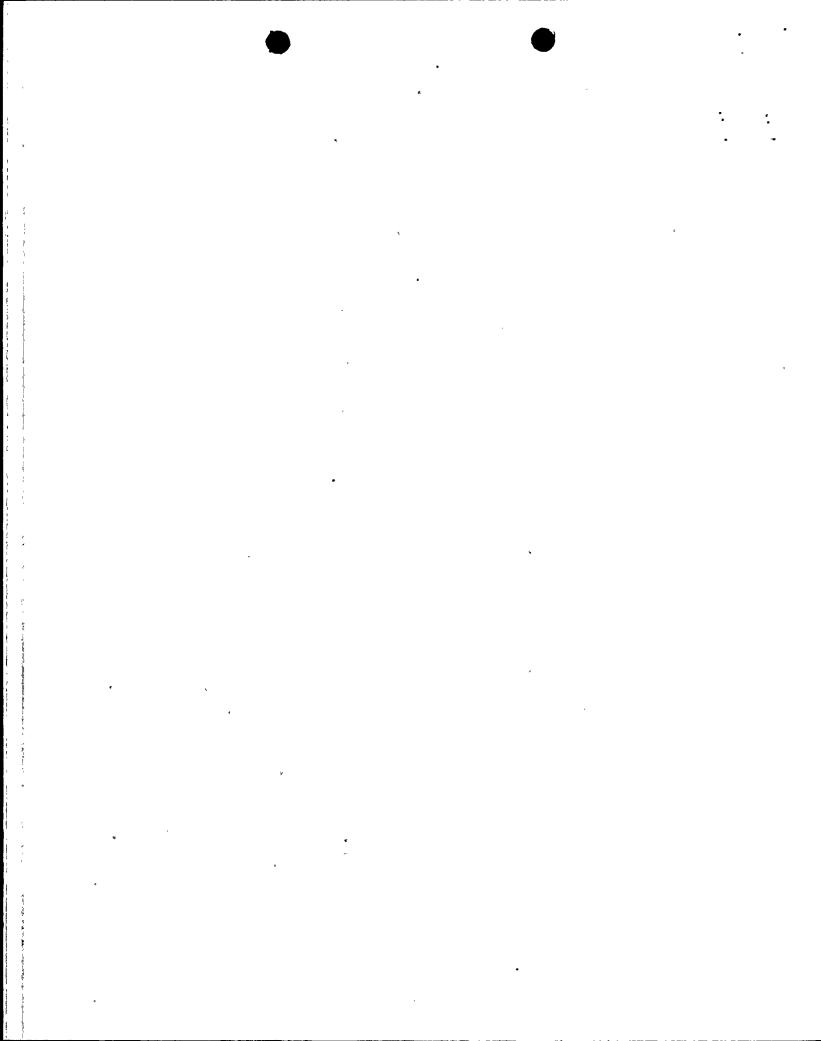
CLOSED, then RELEASE SIB-HS-625.

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CLOSE position and MAINTAIN until SIB-UV-615 indicates

CLOSE SIB-UV-625 by POSITIONING SIB-HS-625 to the JOG CLOSE position and MAINTAIN until SIB-UV-625 indicates



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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. CLOSE SIB-UV-626 by POSITIONING SIB-HS-626 to the JOG ' CLOSE position and MAINTAIN until SIB-UY-626 indicates CLOSED, then RELEASE SIB-HS-626. 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. 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. 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. . 8-84 8.17.43 POSITION SIB-HS-4 to the STOP position, RELEASE and VERIFY: (1) SIB-PO1 stops running. POSITION SIB-HS-6 to the STOP position, RELEASE and VERIFY: SIB-PO3 stops running. POSITION SIB-HS-2 to the STOP position, RELEASE and VERIFY: (1) SIB-PO2 stops running. 1<u>8 6/11/84</u>8.17.46 Using data recorded in step 8.17.36 CALCULATE NPSH in

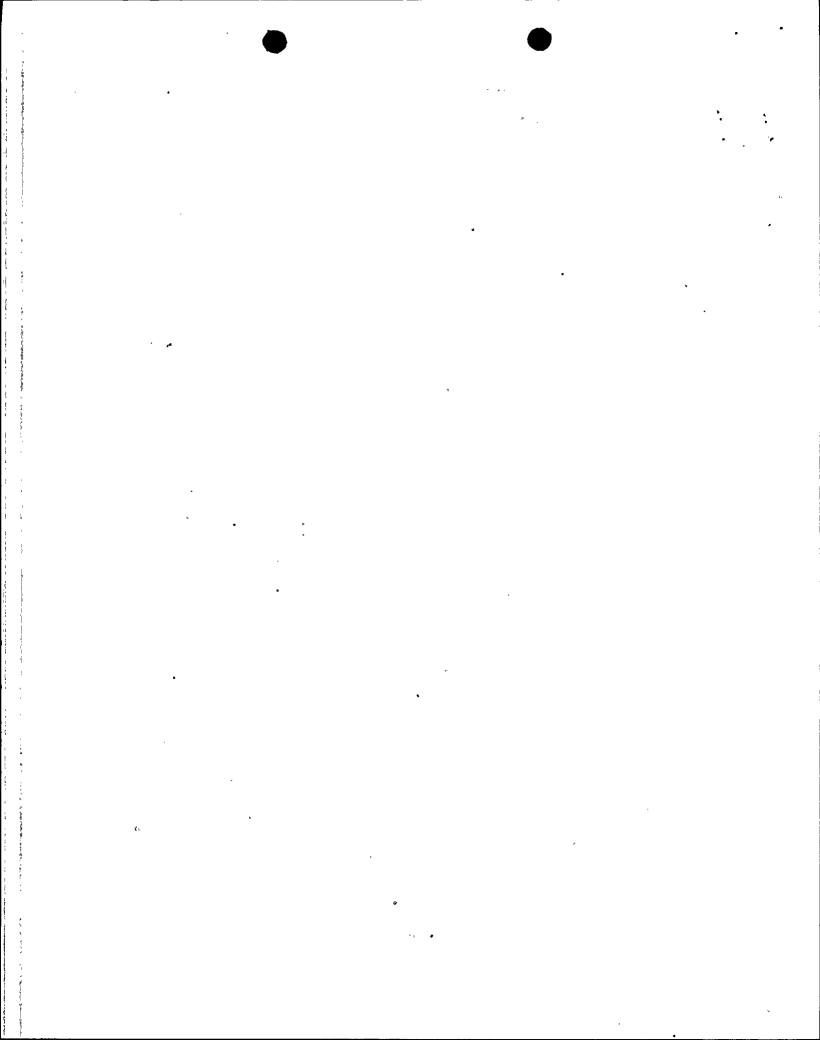
accordance with Appendix P and VERIFY value is equal to or greater than design NPSH for SIB-P01.

ACCEPTANCE Calculated NPSH LPSI Flow (Step 8.17.36(4)

22 Ft. minimum 73.7 Ft. 4000 gpm(4800 to 5000gpm)

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الح<u>الما 8.17.47</u> 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 <u>82.9</u> Ft. <u>4900</u> gpm(4800 to 5000gpm)

Hell 6/11/8/8.17.48 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.

ML Sulling / 6/11/84
Signature Date

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

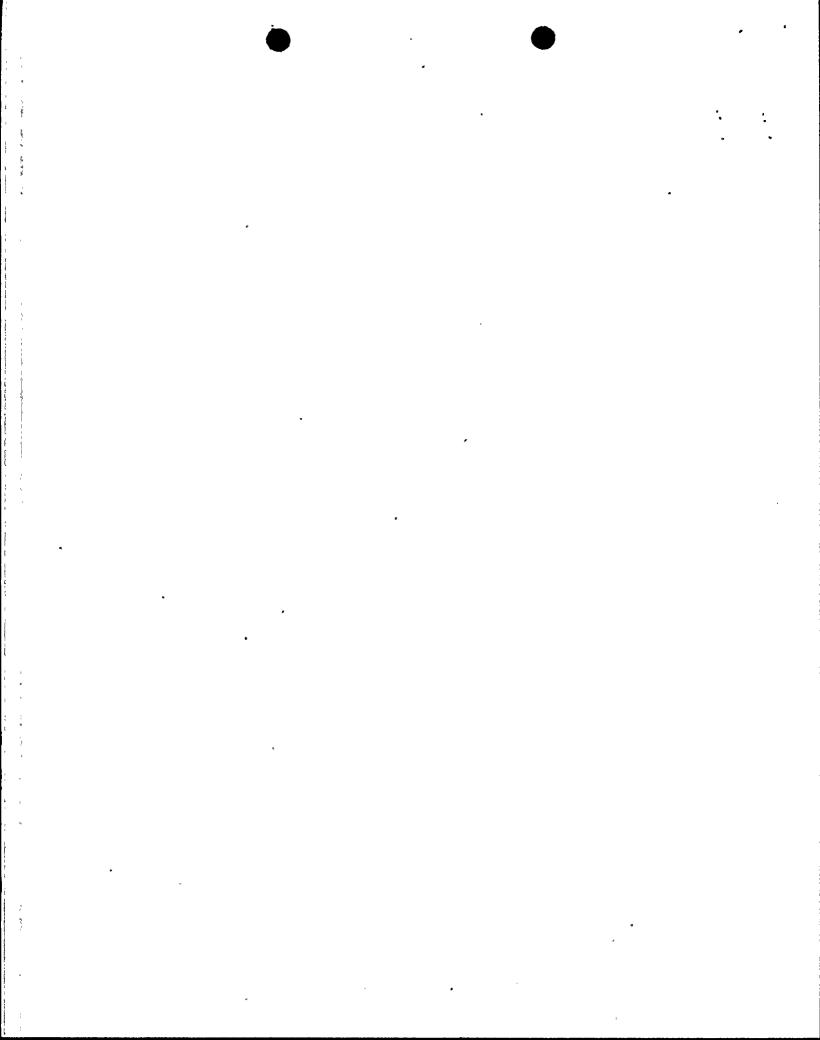
8.18.1 Tank Filling and Pressurizing

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Applohology 8.18.1.1 VERIFY the Valve Checklist - Appendix C has been completed.

ADP6/7/68.18.1.2 VERIFY the Electrical Checklist - Appendix A has been completed.

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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)

 $H_{Atm} = 34 \text{ Ft.}$

C_B = Boron Concentration Correction Factor
(App M)

simulate RWT at RAS set point (Ft.)
(Column D on App R) (Ft.)

CELEV = Correction in feet for gage height above pump suction.

LPSI "A" (SIA-P01)

Step 8.1.25.2

$$H_{NPSH} = \frac{32.6 \text{ PSIG} * 2.3218 * .9974 + 34 Ft. -39.25 Ft. + 9.5 Ft.}{8.1.23(1) \text{ App N} \text{ App M} \text{ App R} 5.7(1) Cm^2-84(5.74) + 34 Ft. -39.25 Ft. + 9.5 Ft.}$$

 $H_{NPSH} = \underline{79.7}$ Ft.

Step 8.16.46

$$H_{NPSH} = \frac{25 \text{ PSIG* } 2.320 * .9774 + 34 \text{ Ft.} - 29.15 \text{ Ft.} + 9.5 \text{ Ft.} = 72.25 \text{ Ft.}}{8.16.36(1) \text{ App N} \text{ App R}} = \frac{25 \text{ PSIG* } 2.320 * .9774 + 34 \text{ Ft.} - 29.15 \text{ Ft.}}{8.16.36(1) \text{ App N}} = \frac{25 \text{ PSIG* } 2.320 * .9774 + 34 \text{ Ft.}}{8.16.36(1) \text{ App N}} = \frac{27.15 \text{ Ft.}}{8.16.36(1) \text{ App N}} = \frac{27.15 \text{ Ft.}}{9.14 - 84} = \frac{27.1$$

LPSI "B" (SIB-P01)

Step 8.3.25

$$H_{NPSH} = \frac{30.8 \text{ PSIG*} 2.320* .9974 + 34 \text{ Ft.} - 35.4 \text{ Ft.} + 9.3 \text{ Ft.}}{8.3.23(1) \text{ App N} \text{ App M}} = \frac{35.4 \text{ Ft.} + 9.3 \text{ Ft.}}{5.7(2)} = \frac{35.4 \text{ Ft.}}$$

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Step 8.17.46

$$H_{NPSH} = \frac{32 \text{ PSIG} + 2.3205 + .9974 + 34 \text{ Ft.} - 43.68 \text{Ft.} + 9.3 \text{ Ft.}}{8.17.36(1) \text{ App N}} + \frac{9974 + 34 \text{ Ft.} - 43.68 \text{Ft.} + 9.3 \text{ Ft.}}{5.1/(2)} = \frac{9}{4}$$

 $H_{NPSH} = 73.7$ Ft.

CS "A" SIA-PO3

Step 8.14.42

$$H_{NPSH} = \frac{36.5 \text{ PSIG} * 2.3205 * .9775 + 34 \text{ Ft.} - 49.8 \text{ Ft.} + 10.2 \text{ Ft.}}{14.39(1) \text{ App N} \text{ App M}} + 34 \text{ Ft.} - 49.8 \text{ Ft.} + 10.2 \text{ Ft.}}$$

$$H_{NPSH} = \frac{78.84 \text{ Ft.}}{14.39} \text{ Ft.}$$

Step 8.14.46

 $H_{NPSH} = \frac{77.13}{\text{Ft}}.$

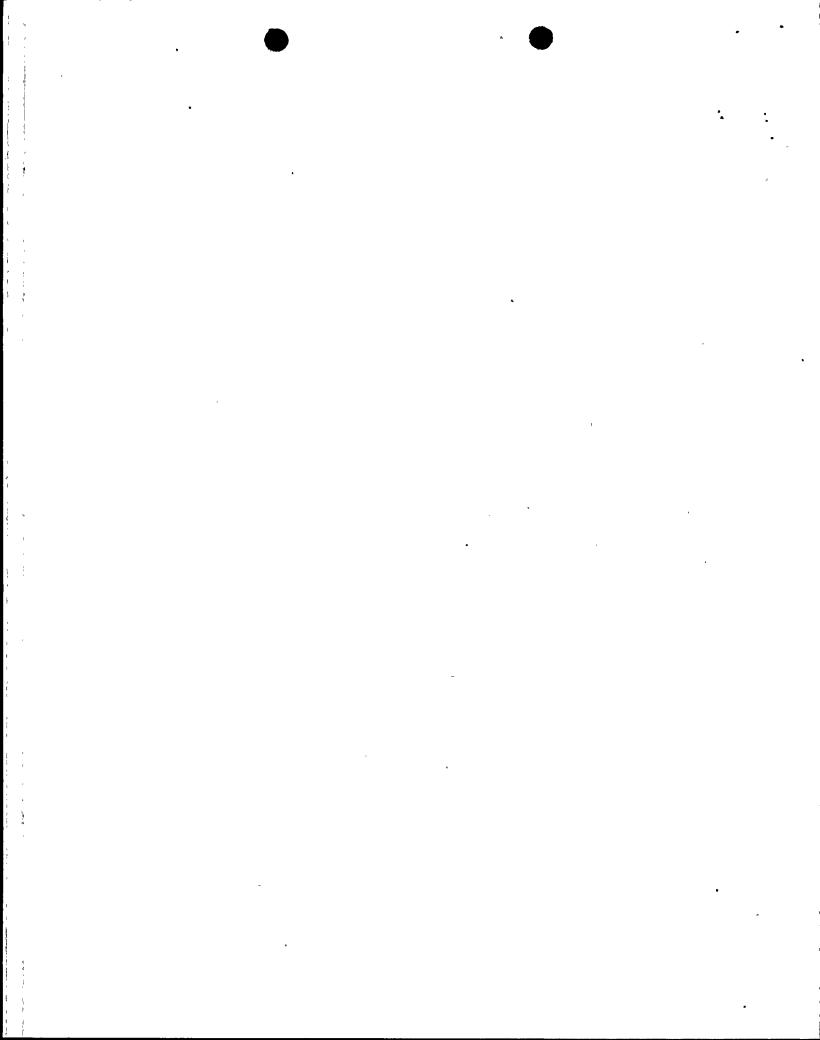
Step 8.16.47

$$H_{NPSH} = \frac{30 \text{ PSIG} + 2320}{8.16.37(1) \text{ App N}} + \frac{9674}{4} + 34 \text{ Ft.} - \frac{27.97}{4} \text{Ft.} + \frac{10.2}{4} \text{Ft.}$$

$$8.16.37(1) \text{ App N} \quad \text{App R 5.} \int_{-7.94}^{7.94} (5) \frac{114-84}{2} \text{Ft.}$$

$$H_{NPSH} = \frac{85.6}{4} \text{ Ft.}$$

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CS "B" SIB-PO3

Step 8.15.42

$$H_{NPSH} = \frac{32.5 \text{ PSIG} + 2.3205 + .9975 + 34 \text{ Ft.} -50.44 \text{ Ft.} + \frac{9.8 \text{ Ft.}}{5.200} \text{ Cluss}$$
 $+ \frac{8.15.39(1) \text{ App N}}{1.3205} + \frac{34.7 \text{ Ft.}}{1.3205} + \frac{$

Step 8.15.46

$$H_{NPSH} = \frac{37 \text{ PSIG*23205} * ,9975 + 34 \text{ Ft.} -5044 \text{ Ft.} + 9.8 \text{ Ft.}}{8.15.44(1) \text{ App N} \text{ App M}} + 34 \text{ Ft.} -5044 \text{ Ft.} + 9.8 \text{ Ft.}$$

$$8.15.44(1) \text{ App N} \text{ App M} + 34 \text{ Ft.} -5044 \text{ Ft.} + 9.8 \text{ Ft.}$$

$$App R 5 \cancel{5}(6) \cancel{6}(1) \cancel{8} \cancel{4}$$

$$H_{NPSH} = \cancel{79} \text{ Ft.}$$

Step 8.17.47

कृत्य दिवस्य द्वारी । कार्या स्थापनी क्रिकेट के किस्ती के क्र

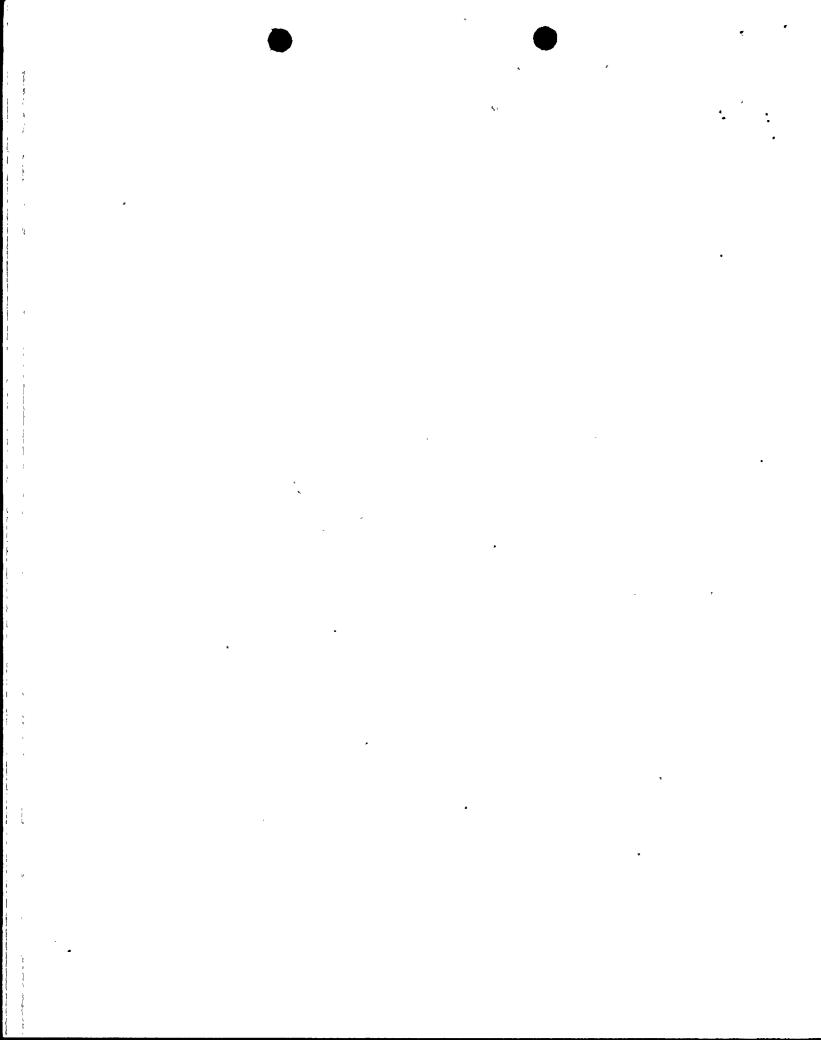
$$H_{NPSH} = \frac{35 \text{ PSIG} * 2.3205 * .9174 + 34 \text{ Ft.} - 41.9 \text{ Ft.} + 9.8 \text{ Ft.}}{8.17.37(1) \text{ App N} \text{ App M}} + 34 \text{ Ft.} - 41.9 \text{ Ft.} + 9.8 \text{ Ft.}$$

$$8.17.37(1) \text{ App N} \text{ App M} + 34 \text{ Ft.} - 41.9 \text{ Ft.} + 9.8 \text{ Ft.}$$

$$App R 5.7(6)$$

$$9.44 - 9.4$$

$$H_{NPSH} = 82.9 \text{ Ft.}$$



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HPSI "A" SIA-PO2

Step 8.7.13

$$H_{NPSH} = 41 PSIG = 2.320 = 9974 + 34 Ft. - 40.4 Ft. + 2 Ft.$$
8.7.11(1) App N App M App R 5.7(9)

$H_{NPSH} = 90.5$ Ft.

Step 8.7.17

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

$$8.7.15(1) App N App M App R 5.7(9) 9.14-84$$

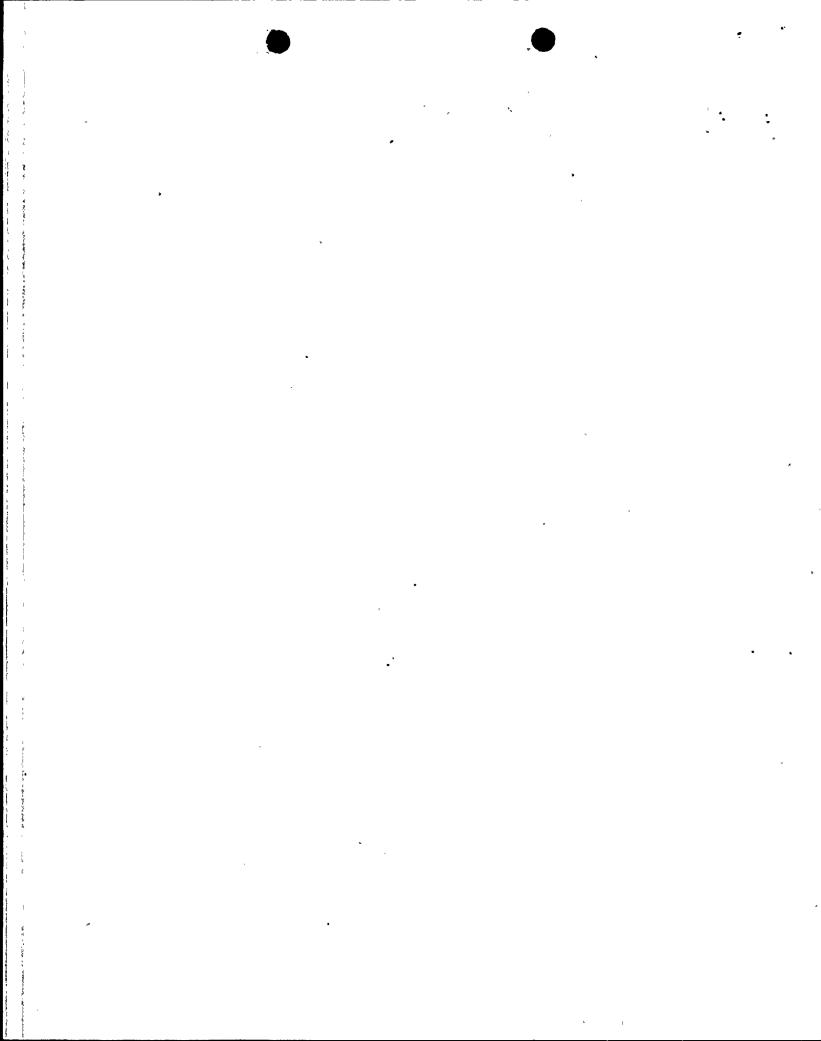
$$H_{NPSH} = 90.3 Ft.$$

Step 8.16.48

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

$$8.16.38(1) \text{ App N} \text{ App R 5.7(9)} 5.44-84$$

$$H_{NPSH} = 82.5$$
 Ft.



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HPSI "B" SIB-P02

Step 8.11.13

 $H_{NPSH} = 87.4$ Ft.

Step 8.11.17

$$H_{NPSH} = \frac{40 \text{ PSIG* } 2.3196 * .9974 + 34 \text{ Ft. } -41.03 \text{ Ft. } + 2.5 \text{ Ft.}}{8.11.15(1) \text{ App N} \text{ App M}}$$
 App R 5.7(10)

$$H_{NPSH} = _{gg} Ft.$$

Step 8.17.48

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

$$8.17.38(1) App N App M App R 5.7(10)$$

$$H_{NPSH} = \frac{77.7}{7} Ft.$$

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