

FNP-2-ESP-0.2 6-29-2010 Revision 16

FARLEY NUCLEAR PLANT

EVENT SPECIFIC PROCEDURE

FNP-2-ESP-0.2

NATURAL CIRCULATION COOLDOWN TO PREVENT REACTOR VESSEL HEAD STEAM VOIDING

PROCEDURE USAGE REQUIREMENTS-per FNP-0-AP-6	SECTIONS
Continuous Use	ALL
Reference Use	
Information Use	

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Approved:

David L. Reed(for)

Operations Manager

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Revision 16

6/14/2013 12:46
FNP-2-ESP-0.2

NATURAL CIRCULATION COOLDOWN TO PREVENT REACTOR VESSEL HEAD STEAM VOIDING

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Revision 16

A. <u>Purpose</u>

This procedure provides actions to perform a natural circulation RCS cooldown and depressurization to cold shutdown, with no accident in progress, under requirements that will preclude any upper head void formation and flow stagnation in an inactive loop.

B. <u>Symptoms or Entry Conditions</u>

- I. This procedure is entered when it has been determined that a natural circulation cooldown is required; from the following:
 - a. FNP-2-ESP-0.1, REACTOR TRIP RESPONSE, step 19
 - b. FNP-2-ECP-0.1, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, step 22
 - c. FNP-2-ESP-1.1, SI TERMINATION, step 35
 - d. FNP-2-AOP-4.0, LOSS OF REACTOR COOLANT FLOW, step 16

Enclosure	3 to	NL-13	-1257
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	Enclosu	re 3 to NL-13-1257
6/14/2013 12:4 FNP-2-ESP-0.2	ACC NATURAL CIRCULATION COOLDOWN TO PREVENT REACTOR VESSEL HEAD STEAM VOIDING	Revision 16
Step	Action/Expected Response Response NOT C	btained
<u>CAUTION</u> :	[CA] To ensure proper plant response, FNP-2-EEP-0, REACT SAFETY INJECTION, must be entered upon any SI actuation	COR TRIP OR
**************************************	If RCP seal cooling had previously been lost, the affect not be started prior to a status evaluation.	ted RCP should
NOTE -	- Foldout need should be monitoured continuously	
NOIE:	 Foldout page should be monitored continuously. To ensure adequate pressurizer spray, the priority for RCP support conditions is 2B, 2A and then 2C. If conditions can be established for starting an RCP w procedure, step 1 should be repeated. 	: establishing while in this
1 [C/ coi	A] Establish RCP support nditions.	
<u>CAUTION</u> :	To prevent heat exchanger damage, do not attempt restora seal return flow unless the CCW miscellaneous header is operating CCW loop.	ation of RCP aligned to an
* * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * *
1.1 Ve ES	erify CCW cooling - 1.1 Proceed to step STABLISHED.	<u>9</u> 1.3.
1.1.1	Verify miscellaneous header aligned. CCW TO SECONDARY HXS] Q2P17MOV3047 open	
	Step 1 continued on next page.	

	TINI		Enclosu	re 3 to NL-13-12	257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLI VESSEL HEAD ST	DOWN TO PREVI TEAM VOIDING	ENT REACTOR	Revision 1	.6
Step A	ction/Expected Response] [Response NOT O	btained	
1.1.2 Y (] I (] I (] I (] I (] I (] I 1.2 Ver ESTA RCP RTN (] Q2E2 (] Q2E2 (] Q2E2 1.3 Ver cond 1.3.1 M 1.3.2 V 1.3.2 V 1.3.3 Ver cond 1.3.1 M 1.3.3 Ver () Q2E2 () Q2E2	Verify flow indicated in the On-Service train. HX 2A(2B,2C) CCW FLOW FI 3043AA FI 3043BA FI 3043BA FI 3043CA Expression of the set o	1.5	Verify CCW flow CCW FROM RCP THRM BARR Q2P17HV3045 clo	v isolated.	
HI [] Annu	nciator DD2 clear	IJ	QZE17NV5164 C10	JSEU	

		<u> </u>	Enclosu	re 3 to NL-13-1257
6/14/2013 12 FNP-2-ESP-(2:46 0.2 NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREVI VOIDING	ENT REACTOR	Revision 16
Step	Action/Expected Response		Response NOT C)btained
1.6	Verify at least one RCP bus – ENERGIZED.	1.6	Proceed to step	p 1.10.
[] [] []	2A 4160 V bus 2B 4160 V bus 2C 4160 V bus			
1.7	Check CCW to RCP oil coolers – SUFFICIENT.	1.7	Perform the fol	llowing.
	CCW FLOW FROM RCP OIL CLRS	1.7	.1 Verify CCW CCW TO RCP ([] Q2P17MOV3052	– ALIGNED. CLRS 2 open
[]	LO Annunciator DD3 clear		CCW FROM RCH OIL CLRS [] Q2P17MOV304([] Q2P17MOV318;	P 6 open 2 open
		1.7	.2 <u>IF</u> annunciat <u>THEN</u> proceed <u>IF NOT</u> proce step 1.10.	tor DD3 clear, d to step 1.8, eed to
1.8	Check at least one RCP oil level - SUFFICIENT.	1.8	Proceed to step	p 1.10.
[] [] []	RCP 2A(2B,2C) BRG UPPER/LOWER OIL RES LO LVL Annunciator HH1 clear Annunciator HH2 clear Annunciator HH3 clear			
1.9	Check RCS pressure – GREATER THAN 1850 psig.	1.9	Check RCS with: limits.	in FIGURE 2
[]	2C(2A) LOOP RCS WR PRESS PI 402A PI 403A			

		7		Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN T VESSEL HEAD STEAM V	O PREVE OIDING	NT R	EACTOR	Revision 16
Step A	Action/Expected Response		Rest	oonse NOT O	Obtained
					1
NOTE: C	hanges in RCP configuration may a	ffect p	ress	urizer spra	ay flow.
1.10 [C. ex: TH	A] <u>IF</u> support conditions ist to start an RCP, EN start at least one RCP.	1.10	Ver cir	ify adequat culation.	te natural
1.10.1	Start bearing oil lift pump.		a)	Check SG p or falling	pressure stable g.
[]	RCP OIL LIFT PUMP 2B(2A,2C)		b)	Check SUB MONITOR in greater th subcooled	COOLED MARGIN ndication nan 16°F in CETC mode.
1.10.2	Check oil lift pressure indicating light - LIT.		c)	Check RCS temperatur falling.	hot leg res stable or
1.10.3	Start RCP. RCP 2B(2A,2C)		[]	RCS HOT LI TR 413	EG TEMP
1.10.4	<u>WHEN</u> RCP has operated for one minute,		d)	Check core stable or	e exit T/Cs falling.
	THEN stop bearing oil lift pump. RCP OIL LIFT PUMP		e)	Check RCS temperatur saturation for SG pre	cold leg res at n temperature essure.
[]	2B(2A,2C)		[]	RCS COLD I TR 410	LEG TEMP
NOTE: E	nsure a cooldown rate of 25°F/hr his step.	is not	exce	eded when p	performing
			f)	<u>IF</u> natura <u>NOT</u> adequa <u>THEN</u> dump faster rat	l circulation ate, steam at a te.
	Step 1 continued o	n next	g) Dage	Begin tak: circulatio	ing natural on logs.
	Step i continued o	IICAL	ruge	•	

	TINIT	ТЭ	Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLD VESSEL HEAD ST	OWN TO PREVENT R EAM VOIDING	REACTOR	Revision 16
Step A	ction/Expected Response	Res	ponse NOT C	btained
		h)	Continue e establish conditions	efforts to RCP support s.
		i)	<u>WHEN</u> suppo exist to s <u>THEN</u> retur	ort conditions start an RCP, rn to Step 1.
		j)	Proceed to	o Step 2.
1.11 [C4 sta <u>THI</u> SHU LO4 2 [CA] shute 2.1 Dete	A] <u>IF</u> at least one RCP arted, <u>EN</u> go to FNP-2-UOP-2.1, JTDOWN OF UNIT FROM MINIMUM AD TO HOT STANDBY. Establish adequate down margin. ermine cold shutdown boron			
cond fol: [] Cord [] Cord [] Cord [] Cord	centration from the lowing. e Power History e Physics Curve 61 e Physics Curve 61A			
2.2 Dete add: fol:	ermine required boron ition from either of the lowing.			
[] Bord [] FNP	on tables -2-SOP-2.3 nomographs			

Enclosure	3 to	NL-13	-1257
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	T		<u> </u>	Enclosu	re 3 to NL-13-1257
6/14/2013 1 FNP-2-ESP-	2:46 NATURAL CIRCULATION VESSEL H	N COOLDOWN T HEAD STEAM V	CO PREVE VOIDING	ENT REACTOR	Revision 16
Step	Action/Expected Respon	se		Response NOT (Dtained
2.3	Borate RCS to cold shutdo concentration.	own	2.3	Emergency borat shutdown concer	te RCS to cold ntration.
2.3	1 Place makeup mode cont switch to STOP.	crol		a) Open emerge valve.	ency boration
	MKUP MODE CONT SWITCH [] N2E21HS2100P			EMERG BORA TO CHG PUMI [] Q2E21MOV81(TE 9 SUCT 04
2.3	2 Place makeup mode sele switch to BOR.	ector		b) Start a bos transfer pu	cic acid 1mp.
	MKUP MODE SEL SWITCH [] N2E21HS2100Q			BATP [] 2A [] 2B	
2.3	3 Adjust boric acid make flow controller for de flow.	eup esired			
	BORIC ACID MKUP FLOW [] FK 113				
2.3	4 Adjust boric acid integrator for require quantity.	ed			
	BORIC ACID BATCH INTEG [] FIS 113				
2.3	5 Place makeup mode cont switch to START.	rol			
	MKUP MODE CONT SWITCH [] N2E21HS2100P red light	: lit			
2.4	Direct Chemistry to sample for boron concentration of FNP-2-CCP-651, SAMPLING REACTOR COOLANT SYSTEM.	le RCS 1sing THE			
2.5	Verify RCS boron concent - GREATER THAN OR EQUAL T COLD SHUTDOWN CONCENTRAT	ration PO EON.	2.5	Return to step	2.1.
	Step 2	continued c	on next	page.	

	I INII'	ГО	Enclosu	ire 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDO VESSEL HEAD STE	WN TO PREVENT : CAM VOIDING	REACTOR	Revision 16
Step A	Action/Expected Response	Rea	sponse NOT (Obtained
2.6 Ali	gn reactor makeup system.			
2.6.1	Adjust BORIC ACID MKUP FLOW FK 113 to deliver greater than required cold shutdown boron concentration.			
2.6.2	Verify reactor makeup system – IN AUTOMATIC MODE.			
[]	MKUP MODE SEL SWITCH N2E21HS2100Q in AUTO			
[]	MKUP MODE CONT SWITCH N2E21HS2100P to START			
3 [CA] - ST	Verify both CRDM CLG FANs ARTED.			

			Enclos	ure 3 to N	L-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDON VESSEL HEAD STEA	WN TO PREVENT : AM VOIDING	REACTOR	Revi	sion 16
Step A	ction/Expected Response	Res	sponse NOT	Obtained	
	<u> </u>		-		
* * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * *	* * * * * * * * * * *	* * * * * * * * *	* * * * * * * * * * *
CAUTION: R(to a	CS boron concentration must be o the required Cold Shutdown I cooldown.	e verified to Boron Concentr	be greater ation prior	than or to comm	equal nencing
NOTE: An th	n inactive loop is any RCS loo he RCS due to a loss of the ca	op that is not apability to f	available eed or stea	for cool um its SG	ing 5.
4 Begin shuto 4.1 Cheo • St AN • Fe	n RCS cooldown to cold down. ck status of all SGs: team release capabilities - VAILABLE eed flow - AVAILABLE	4.1 Per 4.1.1 4.1.1 4.1.1. <u>Inactive SG</u> 2A(2B,2C) SG MSIV - TRIP <u>Q2N11HV</u> 2A(2B,2C) SG MSIV BYPASS Q2N11HV	form the fo <u>IF</u> feedwate loop(s) <u>NOT</u> <u>THEN</u> verify paths from isolated: 1 Verify a main ste bypass v inactive <u>2A</u> [] 3369A [[] 3370A [[] 3976A [ollowing: er to ina davailab the fol inactive at least eam isola valve for SG(s) - 2B] 3369B] 3370B] 3368B] 3976B	ctive ble, lowing loop(s) one SG tion and CLOSED 2C [] 3369C [] 3368C [] 3976C

		0	Enclosu	ire 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREVENT RE VOIDING	ACTOR	Revision 16
Step A	ction/Expected Response	Resp	onse NOT (Dbtained
		Ι		I
		4.1.1.2	<u>IF</u> 2B loc <u>THEN</u> iso steam su	op inactive, late TDAFWP pply from 2B SG.
			a) <u>IF</u> TH requ: <u>THEN</u> stean SG a pane	DAFWP <u>NOT</u> ired, isolate TDAFWP n supply from 2B t hot shutdown 1.
			TDAF 2B SC	WP STM SUPP FROM G
			[] Q2N1: LOCA TDAF 2B SO	2HV3235A/26 in L (HSDP F) WP STM SUPP FROM G
			[] Q2N1: STOP	2HV3235A/26 to (HSDP D)
			b) <u>IF</u> T <u>THEN</u> and 0 2B T Q2N1 Maste AUX 1	DAFWP required, locally unlock close STM LINE D TDAFWP ISO VLV 2V006A. (Key er V) (127 ft. BLDG MSVR)

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6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDO VESSEL HEAD STE	WN TO PREVENT F AM VOIDING	REACTOR	Rev	ision 16
Sten A	ction/Expected Response	Rog		' Obtainad	1
		I.es	ponse noi	obtailled	
		4.1.1.3	B <u>IF</u> 2C I <u>THEN</u> is steam s	loop inact solate TDA supply fro	tive, AFWP om 2C SG.
			a) Iso sup hot	olate TDAN oply from t shutdown	FWP steam 2C SG at n panel.
			TDA 2C	AFWP STM S SG	SUPP FROM
			[] Q21 LOC TDA 2C	N12HV3235I CAL (HSDP AFWP STM S SG	B in F) SUPP FROM
			[] Q21 (HS	N12HV32351 SDP D)	B to STOP
				<u>OR</u>	
			b) Loc clo TDA Q2N Mas AUX	cally unlo ose STM LI AFWP ISO V V12V005B. ster V) & BLDG MSV	ock and INE 2C TO VLV (Key (127 ft. VR)
		4.1.1.4	Verify inactiv ISOLATH	blowdown ve SG(s) ED	from -
		Inactive SG	2A	2B	2C
		SGBD ISO Q2G24HV	[] 7614A CLOSED	[] 7614B CLOSED	[] 7614C CLOSED
		4.1.1.5	5 Check d atmosph valves	inactive S neric rel: - CLOSED	SG(s) ief
		Inactive SG 2A(2B,2C) MS ATMOS REL VLV PC	2A	2B	2C
	Sten 4 continu	ed on next nage	7 2 2 , 111	[] 3 3 7 1 1	
	Step 4 continu	er on neve hage	- •		

	INIT	0	Enclosi	ure 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREVEN VOIDING	Г REACTOR	Revision 16
Step A	ction/Expected Response	I	Response NOT (Obtained
4.2 [CA] cool 25°] RCS [] TR 4	Maintain RCS cold leg down rate - LESS THAN F/hr. COLD LEG TEMP 410	4.1.2 4.1.3	Maintain co RCS cold le maximum all FIGURE 5. Go to step	oldown rate in gs less than owable limits of 4.3.

			Enclosu	ire 3 to NL-13-1257
6/14/2013 12 FNP-2-ESP-0	2:46 0.2 NATURAL CIRCULATION COOL VESSEL HEAD S	DOWN TO PREVENT TEAM VOIDING	REACTOR	Revision 16
Step	Action/Expected Response	R	esponse NOT ()btained
] [-	
**************************************	**************************************	**************************************	**************************************	**************************************
NOTE :	 The steam dumps will be in P-12 (543°F). This interl dumps with the STM DUMP IN Excessive opening of steam TAVG main steam line isola 	terlocked close ock may be bypa TERLOCK switche dumps can caus tion signal.	d when RCS T. ssed for A as s. e a high ste	AVG reaches nd E steam am flow LO-LO
4.3 [] [] []	<pre>IF condenser available, <u>THEN</u> dump steam to condenser from active SGs. BYP & PERMISSIVE COND AVAIL C-9 status light lit STM DUMP MODE SEL A-B TRN in STM PRESS STM DUMP INTERLOCK A TRN in ON B TRN in ON STM HDR PRESS PK 464 adjusted</pre>	4.3 Du ac 4.3.1 4.3.2	mp steam to tive SGs. Direct coun perform FNP STEAM ABNOR ENVIRONMENT. <u>IF</u> normal a <u>THEN</u> contro relief valv steam, <u>IF NOT</u> , dum FNP-2-SOP-6 AIR SYSTEM. 2A(2B,2C) M REL VLV PC 3371A ad PC 3371B ad PC 3371C ad	atmosphere from ting room to -O-CCP-645, MAIN MAL AL RELEASE. ir available, l atmospheric es to dump p steam using 2.0, EMERGENCY S ATMOS justed justed justed

	TINIT	0	Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREVENT I VOIDING	REACTOR	Revision 16
Step A	Action/Expected Response	Res	sponse NOT O	btained
4.4 Mon:	itor CST level.			
4.4.1 ([]] []]	Check CST level greater than 5.3 ft. CST LVL LI 4132A LI 4132B	4.4.1	Align AFW pu SW using FNH AUXILIARY FH	mps suction to 2-2-SOP-22.0, EEDWATER SYSTEM.
4.4.2	Verify makeup is aligned to the CST from water treatment plant (Ionics Frailer) using	4.4.2	<u>IF</u> inventory the hotwell, <u>THEN</u> align of flow to fill	y available in condensate dump t the CST.
	FNP-2-SOP-21.0, CONDENSATE AND FEEDWATER SYSTEM, <u>OR</u> demin water system using FNP-2-SOP-5.0, DEMINERALIZED MAKEUP WATER SYSTEM, as necessary.	4.4.2.	1 Verify at PUMP star	t least one CNDS tted.
		4.4.2.	2 Verify co valve mar valves op TURB BLDO	ondensate dump nual isolation oen. (137 ft, G)
			CNDS DUME [] N2N21V927	? OUTLET ISO
			CNDS PUME [] N2N21V530	? INLET ISO)
		4.4.2.	3 Adjust op dump valv Turb Bldg	pen condensate ve. (137 ft, g)
			CNDS EMER DUMP [] N2N21V904	RG

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6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATI VESSEI	CON COOLDOWN HEAD STEAM	TO PREVE VOIDING	ENT REACTOR	I	Revision 16	
Step A	Action/Expected Resp	onse		Response	NOT Obtai	ned	
	I I I I I I I I I I I I I I I I I I I					-	٦
4.5 [CA lev] Maintain SG narrow els approximately 65	/ range %.					
4.5.1	Control MDAFWP flow.						
[] []	MDAFWP FCV 3227 RESET A TRN reset B TRN reset						
[]	MDAFWP TO 2A/2B/2C SG B TRN FCV 3227 in MOD						
[] [] []	MDAFWP TO 2A(2B,2C) SG Q2N23HV3227A in MOD Q2N23HV3227B in MOD Q2N23HV3227C in MOD						
[] [] []	MDAFWP TO 2A(2B,2C) FLOW CONT HIC 3227AA adjusted HIC 3227BA adjusted HIC 3227CA adjusted	SG					
4.5.2	Control TDAFWP flow.						
[]	TDAFWP FCV 3228 RESET reset						
[]	TDAFWP SPEED CONT SIC 3405 adjusted						
[] [] []	TDAFWP TO 2A(2B,2C) SG Q2N23HV3228A in MOD Q2N23HV3228B in MOD Q2N23HV3228C in MOD						
[] [] []	TDAFWP TO 2A(2B,2C) FLOW CONT HIC 3228AA adjusted HIC 3228BA adjusted HIC 3228CA adjusted	SG					
	Step	4 continued	on next	page.			

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			Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	5 NATURAL CIRCULATION COOLDOW VESSEL HEAD STEA	VN TO PREVI	ENT REACTOR	Revision 16
Step	Action/Expected Response	[Response NOT C)btained
4.6 <u>IF</u> <u>TH</u> ter wi [] TR 2C RC [] PI [] PI	both CRDM CLG FANs started, <u>EN</u> maintain RCS cold leg mperature and pressure thin limits of FIGURE 3. S COLD LEG TEMP 410 (2A) LOOP S WR PRESS 402A 403A	4.6 [] []	Maintain RCS co temperature and within limits of RCS COLD LEG TH TR 410 2C(2A) LOOP RCS WR PRESS PI 402A PI 403A	old leg 1 pressure of FIGURE 4. EMP
5 [CA]	.] Monitor for Inactive op(s) Stagnation Condition:			
5.1 Ch	eck RCS loops - ANY INACTIVE	5.1	Proceed to step	рб.
5.2 Ve co AL	rify cooldown rate in RCS 1d legs – LESS THAN MAXIMUM LOWABLE LIMITS OF FIGURE 5.			
5.3 Mon ter AT RC	nitor RCS hot leg mperatures - ALL DECREASING 'SAME RATE 'S HOT LEG TEMP	5.3 5.3	Perform the fo .1 Reduce coold factor of ty	llowing: down rate by a wo.
[] TR	. 413			

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6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDON VESSEL HEAD STEA	WN TO PREVENT AM VOIDING	REACTOR	Rev	ision 16
Step A	ction/Expected Response	Re	sponse NOI	' Obtained	1
		5.3.2	Reduce ina pressure of active pressure:	active loo to within loop(s) s	op(s) SG 100 psig SG
			• <u>IF</u> norma <u>THEN</u> con relief steam fr SG(s), <u>IF NOT</u> , FNP-2-SC AIR SYST	al air avantrol atmovalves to rom inact: dump stea DP-62.0, 1 TEM.	ailable, ospheric dump ive am using EMERGENCY
		[[[2A(2B,20 REL VLV] PC 33711] PC 33711] PC 33710	C) MS ATM A adjuste B adjuste C adjuste	DS d d d
			<u>(</u>	<u>DR</u>	
			• Open at steam by inactive	least on ypass val e SG(s).	e SG main ve for
		Inactive SG	2A	2B	2C
		2A(2B,2C) SG MSIV BYPASS Q2N11HV	[] 3368A [] 3976A	[] 3368B [] 3976B	[] 3368C [] 3976C
			<u>(</u>	<u>DR</u>	

	TINIT	2	Enclos	ure 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREVENT RE VOIDING	EACTOR	Revision 16
Step A	ction/Expected Response	Resp	onse NOT	Obtained
		•	Open stea valve(s) inactive	am supply to TDAFWP from loop(s).
			a) <u>IF</u> 2F <u>THEN</u> stean SG.	3 loop stagnant, open TDAFWP n supply from 2B
			1)] c 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	LF previously closed, CHEN, locally open STM LINE 2B CO TDAFWP ISO VLV Q2N12V006A. (Key Master V) (127 Ct, AUX BLDG main steam valve room)
			2) F c J s s	Restore MCB control of TDAFWP steam supply from 2B SG.
			נ ו ס[] נ ו	TDAFWP STM SUPP FROM 2B SG Q2N12HV3235A/26 In REMOTE (HSDP-F)
			3) 2 t c	Start the TDAFWP From the main control board.
] [] [] [] [] [] [] [] []	TDAFWP STM SUPP FROM 2B SG Q2N12HV3235A/26 - START TDAFW SPEED CONT SIC 3405 adjusted as required
	Step 5 continued	on next page.		
1	step 5 continued	and have bage.	,	

			E	Inclos	sure 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOW VESSEL HEAD STEA	N TO PREVE M VOIDING	INT REACTO	R	Revision 16
Step A	ction/Expected Response		Response	NOT	Obtained
			-		
			b)	<u>IF</u> 20 <u>THEN</u> stean SG.	C loop stagnant, open TDAFWP m supply from 2C
				1)	<u>IF</u> previously closed, <u>THEN</u> locally open STM LINE 2C TO TDAFWP ISO VLV Q2N12V005B. (Key Master V) (127 ft, AUX BLDG main steam valve room)
				2)	Restore MCB control of TDAFWP steam supply from 2C SG.
				[] (TDAFWP STM SUPP FROM 2C SG Q2N12HV3235B in REMOTE (HSDP-F)
				3)	Start the TDAFWP from the main control board.
					TDAFWP STM SUPP FROM 2B(2C) SG Q2N12HV3235A/26 - START Q2N12HV3235B - START TDAFW SPEED CONT SIC 3405 adjusted as required
				0	<u>R</u>
	Step 5 continue	d on next	page.		

			TIN					Enclosu	ire 3 to NL-13-1257
6/14/2013 FNP-2-ESP	12:46 -0.2	NATURAL CI	IRCULATION CO VESSEL HEAD	DOLDOWN D STEAM	TO I VOII	PREVENT DING	REA	ACTOR	Revision 16
Step	Ac	ction/Expect	ed Response			Re	espo	onse NOT (Obtained
					ſ	5.3.3 5.3.3 5.3.3	•] t I I Cor ina ten <u>THF</u> .1	LF feed f to inactive THEN estal Over FNP-2 GENERATOR PROCESSING tool inactive tinue with active loo perature EN perform Stop inactive depressue Slowly rest	low established ve loop(s), blish blowdown -SOP-16.1, STEAM BLOWDOWN G SYSTEM, to tive loop(s). th step 6. <u>WHEN</u> op(s) hot leg decreasing, n the following: ctive loop(s) rization.
6	Check - LES	RCS hot leg S THAN 550°I	g temperature ?.	28	6	Ret	urn	rate <u>NOT</u> maximum a of FIGUR to step	to exceed allowable limits E 5. 4.
[]	- LES RCS H TR 41	S THAN 550°I	? _						

Enclosure	3 t	o NL	-13-	1257
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	<u> </u>			Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION CO VESSEL HEAD	OLDOWN TO PREV STEAM VOIDING	ENT	REACTOR	Revision 16
Step A	ction/Expected Response		Re	esponse NOT ()btained
appro 2C(24 RCS V [] P] [] P]	oximately 1950 psig. A) LOOP WR PRESS [402A [403A	* * * * * * * * * * * * * * *	* * *	* * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *
<u>CAUTION</u> : To le op	o prevent heat exchanger of etdown unless the CCW miso perating CCW loop.	damage, do not cellaneous hea	at der	tempt restora is aligned t	ation of to an
7.1 Chec	ek normal letdown flow -	7.1	Es	tablish norma	al letdown.
GREF	N HX	7.1	.1	Open letdown valves.	n isolation
OUTI [] FI 1	LET FLOW 150		[]	LTDN LINE PENE RM ISO Q2E21HV81754 Q2E21HV81754	A (PRIP) B (PRIP)
			[]	LTDN LINE CTMT ISO Q2E21HV8152	
			[]	LTDN LINE ISO Q2E21LCV459 Q2E21LCV460	
		7.1	.2	Manually ad PRESS LTDN H open.	just LP LTDN PK 145 to 50%
		7.1	.3	Open letdown isolation va	n orifice alve(s).
			[]	LTDN ORIF IS 45 GPM Q2E21HV8149A	50 A
			[]	LTDN ORIF IS 60 GPM Q2E21HV8149I	50 3
	Step 7 con	tinued on next	[] pa	ע∠⊾∠1НV81490 ge.	

	TINIT	2	Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREVEN VOIDING	VT REACTOR	Revision 16
Step /	Action/Expected Response	[Response NOT C)btained
Step 7.2 <u>IF</u> THE for fol 7.2.1 [] 7.2.2 [] 7.2.3 []	Action/Expected Response normal letdown established, N control auxiliary spray RCS pressure reduction as lows. Manually open both normal pressurizer spray valves. 2A(2B) LOOP SPRAY VLV PK 444C PK 444D Open auxiliary spray valve. RCS PRZR AUX SPRAY Q2E21HV8145 Verify flow path - ALIGNED. CHG FLOW FK 122 manually open	7.1.4 7.1.5 7.2	A Manually ad pressure to LP LTDN PRES PR 145 adjus PR 145 adjus Place LP LTI in AUTO. Place LP LTI in AUTO. Pressure re D Use one POF pressure re D Go to Step CAUTION PRI	just letdown 260-450 psig. SS sted ON PRESS PK 145 <u>NOT</u> be ne following. RV for RCS eduction. 8. OBSERVE IOR TO STEP 8.
[] []	CHG PUMPS TO REGENERATIVE HX Q2E21MOV8107 open Q2E21MOV8108 open RCS NORMAL			
[]	CHG LINE Q2E21HV8146 closed RCS ALT CHG LINE Q2E21HV8147 closed			
	Step 7 continued	on next p	page.	

	TINI	TO	Enclosu	re 3 to NL-13-1257	
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLD VESSEL HEAD ST	OWN TO PREVI CEAM VOIDING	ENT REACTOR	Revision 16	
Step	Action/Expected Response		Response NOT (Obtained	
				I	
7.2.4	<u>WHEN</u> RCS pressure reduction required, <u>THEN</u> operate the following valves as required to control pressurizer pressure.				
[]	CHG FLOW FK 122 manually open				
[] []	2A(2B) LOOP SPRAY VLV PK 444C manually open/closed PK 444D manually open/closed				
[]	RCS PRZR AUX SPRAY Q2E21HV8145 open/closed				
[]	RCS NORMAL CHG LINE Q2E21HV8146 open/closed				
[]	RCS ALT CHG LINE Q2E21HV8147 open/closed				

		Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREVENT REACTOR VOIDING	Revision 16
Step A	ction/Expected Response	Response NOT (Obtained
* * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * *
<u>CAUTION</u> : SI te g1	[actuation circuits will automa emperature rises to greater than ceater than 2000 psig.	ntically unblock if RCS n 543°F or PRZR pressure	average e rises to
* * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *
8 Block and 1 actua	k low pressurizer pressure low steam line pressure SI ation signals.		
8.1 <u>WHEN</u> <u>THEN</u>	<u>N</u> P-12 light lit, <u>N</u> perform the following.		
8.1.1 H	Block low steam line pressure SI.		
2 I [] [] []	STM LINE PRESS SI BLOCK - RESET A TRN to BLOCK 3 TRN to BLOCK		
8.1.2	Verify blocked indication.		
ו 2 1 1 1 1 1 1 1	BYP & PERMISSIVE STM LINE ISOL. SAFETY INJ. FRAIN A BLOCKED light lit FRAIN B BLOCKED light lit		
8.2 <u>WHEN</u> than <u>THEN</u>	<u>N</u> pressurizer pressure less n 2000 psig, <u>N</u> perform the following:		
8.2.1 H	Block low pressurizer pressure SI.		
I I [] [] []	PRZR PRESS SI BLOCK - RESET A TRN to BLOCK B TRN to BLOCK		
8.2.2	Verify blocked indication.		
ו נ נ [] נ []	BYP & PERMISSIVE PRZR. SAFETY INJECTION FRAIN A BLOCKED light lit FRAIN B BLOCKED light lit		

		<u> </u>	Enclosu	re 3 to NL-13-1257
6/14/2013 12:4 FNP-2-ESP-0.	A6 2 NATURAL CIRCULATION COOLDOW VESSEL HEAD STEA	N TO PREVEN M VOIDING	NT REACTOR	Revision 16
Step	Action/Expected Response		Response NOT C	Obtained
9 Ma co	intain the following RCS nditions.			
•	Maintain RCS pressure - approximately 1950 psig.			
[] []	2C(2A) LOOP RCS WR PRESS PI 402A PI 403A			
•	Maintain pressurizer level - approximately 22%.			
•	Maintain cooldown rate in RCS cold legs -			
	 LESS THAN 25°F/hr <u>IF</u> ALL RCS LOOPS ACTIVE 			
	OR			
	 LESS THAN MAXIMUM ALLOWABLE LIMITS OF FIGURE 5 <u>IF</u> AT LEAST ONE RCS LOOP INACTIVE 			
•	<u>IF</u> both CRDM FANs started, <u>THEN</u> maintain RCS cold leg temperature and pressure within limits of FIGURE 3	•	Maintain RCS o temperature an within limits	cold leg nd pressure of FIGURE 4.
[]	RCS COLD LEG TEMP TR 410	[]	RCS COLD LEG T TR 410	ГЕМР
[]	2C(2A) LOOP RCS WR PRESS PI 402A PI 403A	[] []	2C(2A) LOOP RCS WR PRESS PI 402A PI 403A	

	I IN II	TO	Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDO VESSEL HEAD STI	OWN TO PREVENT EAM VOIDING	REACTOR	Revision 16
Step A	ction/Expected Response	R	esponse NOT O	btained
				1
10 [CA]	Monitor RCS cooldown.			
• Che ind	eck core exit T/C lication - FALLING.			
• Che ten	eck RCS hot leg nperatures - FALLING.			
RCS [] TR	5 HOT LEG TEMP 413			
• Che MON SUH RIS	eck SUB COOLED MARGIN WITOR indication – BCOOLING IN CETC MODE SING.			
11 [CA] to re	Check CST level adequate emain in FNP-2-ESP-0.2.			
11.1 [CA] actu requ 25°H leve	Using ATTACHMENT 3, check aal CST level above minimum aired CST level for a E/hr cooldown. (actual CST al above 25°F/hr line)	11.1 Go 11.1.1	to appropria <u>IF</u> RVLIS ava <u>THEN</u> go to F NATURAL CIRC COOLDOWN WIT REACTOR VESS VOIDING (WIT	te procedure: ilable, NP-2-ESP-0.3, ULATION TH ALLOWANCE FOR EL HEAD STEAM TH RVLIS).
		11.1.2	<u>IF</u> RVLIS <u>NOT</u> <u>THEN</u> go to F NATURAL CIRC COOLDOWN WIT REACTOR VESS VOIDING (WIT	e available, NP-2-ESP-0.4, ULATION TH ALLOWANCE FOR EL HEAD STEAM THOUT RVLIS).

	TINIT		Enclosure 3 to NL-13-1257
6/14/2013 FNP-2-ESP	12:46 -0.2 NATURAL CIRCULATION COOLDON VESSEL HEAD STEA	WN TO PREVENT AM VOIDING	REACTOR Revision 16
Step	Action/Expected Response	Re	sponse NOT Obtained
	1	I	I
12	Begin RCS pressure reduction.		
12.1	<u>IF</u> both CRDM CLG FANs started, THEN maintain SUB COOLED	12.1 Per	form the following.
	MARGIN MONITOR indication greater than 68°F SUBCOOLED IN CETC mode.	12.1.1	<u>WHEN</u> RCS hot leg temperature ≥ 430°F, <u>THEN</u> maintain RCS pressure 1900-1950 psig.
			2A(2B) LOOP RCS WR PRESS
		[]	PI 402A PI 403A
		12.1.2	WHEN RCS hot leg temeprature less than 430°F, <u>THEN</u> maintain SUB COOLED MARGIN MONITOR indication greater than 212°F subcooled in CETC mode.

	INTT)	Enclosu	ire 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN VESSEL HEAD STEAM	TO PREV VOIDING	ENT REACTOR	Revision 16
Step	Action/Expected Response		Response NOT (Obtained
	I			I
12.2 <u>IF</u> <u>THE</u> for red	normal letdown established, <u>N</u> control auxiliary spray any RCS pressure uction, as follows.	12.2	<u>WHEN</u> RCS press required, <u>THEN</u> open only	ure reduction one PRZR PORV.
12.2.1	Manually open both normal pressurizer spray valves.			
[] []	2A(2B) LOOP SPRAY VLV PK 444C PK 444D			
12.2.2	Open auxiliary spray valve.			
[]	RCS PRZR AUX SPRAY Q2E21HV8145			
12.2.3	Verify flow path – ALIGNED.			
[]	CHG FLOW FK 122 manually open			
[] []	CHG PUMPS TO REGENERATIVE HX Q2E21MOV8107 open Q2E21MOV8108 open			
[]	RCS NORMAL CHG LINE Q2E21HV8146 closed			
[]	RCS ALT CHG LINE Q2E21HV8147 closed			

	LINI	TO	Enclosu	ire 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLD VESSEL HEAD ST	OOWN TO PREV TEAM VOIDING	/ENT REACTOR	Revision 16
Step	Action/Expected Response		Response NOT (Obtained
				I
12.2.4	<u>WHEN</u> RCS pressure reduction required, <u>THEN</u> operate the following valves as required to control pressurizer pressure.			
[]	CHG FLOW FK 122 manually open			
[] []	2A(2B) LOOP SPRAY VLV PK 444C manually open/closed PK 444D manually open/closed			
[]	RCS PRZR AUX SPRAY Q2E21HV8145 open/closed			
[]	RCS NORMAL CHG LINE Q2E21HV8146 open/closed			
[]	RCS ALT CHG LINE Q2E21HV8147 open/closed			

			0	Enclosu	re 3 to NL-13-1257
6/14/2013 1 FNP-2-ESP-	2:46 0.2 NATURAL CIRC	CULATION COOLDOWN	TO PREVI VOIDING	ENT REACTOR	Revision 16
Step	Action/Expected	Response		Response NOT ()btained
	[
13	[CA] Continue RCS of pressure reduction.	cooldown and			
13.1	Maintain RCS cold rate –	leg cooldown			
	• LESS THAN 25°F/H LOOPS ACTIVE	ır <u>IF</u> ALL			
	OR				
	• LESS THAN MAXIMU LIMITS OF FIGURE LEAST ONE RCS LO	JM ALLOWABLE 3 5 <u>IF</u> AT DOP INACTIVE			
13.2	Check both CRDM CI RUNNING.	LG FANs -	13.2	Go to Step 13.6	5.
13.3	Maintain SUB COOLE MONITOR indicatior than 68°F subcoole mode.	2D MARGIN 1 greater 2d in CETC	13.3	Stop depressuri reestablish sub	ization and ocooling.
13.4	Maintain RCS cold temperature and pr within FIGURE 3 12	leg cessure imits.			
[]	RCS COLD LEG TEMP TR 410				
[]	2C(2A) LOOP RCS WR PRESS PI 402A PI 403A				
13.5	Go to Step 14.				
13.6	<u>WHEN</u> RCS hot leg t 430°F, <u>THEN</u> maintain RCS 1900-1950 psig.	:emperature ≥ pressure			
[]	2A(2B) LOOP RCS WR PRESS PI 402A PI 403A				
		Step 13 continued	1 on nex [.]	t page.	

Enclosure 3	to NL	-13-1	257
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	TINIT		Enclosu	are 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDO VESSEL HEAD STE	WN TO PREVENT AM VOIDING	REACTOR	Revision 16
Step A	Action/Expected Response	Re	sponse NOT (Obtained
		I		
13.7 <u>WHE</u> les <u>THE</u> dep	<u>N</u> RCS hot leg temeprature s than 430°F, <u>N</u> continue the cooldown and ressurization as follows.			
13.7.1	Maintain SUB COOLED MARGIN MONITOR indication greater than 212°F subcooled in CETC mode until RCS pressure is reduced to 1200 psig.	13.7.1	Stop depress reestablish	surization and subcooling.
13.7.2	Maintain RCS cold leg temperature and pressure within FIGURE 4 limits.			
[]	RCS COLD LEG TEMP TR 410			
[]	2C(2A) LOOP RCS WR PRESS PI 402A PI 403A			

	TINT		Enclos	ure 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDON VESSEL HEAD STEA	N TO PREVENT	REACTOR	Revision 16
Step A	Action/Expected Response	Re	sponse NOT	Obtained
13.8 <u>WHE</u> red <u>THE</u>	<u>N</u> the RCS pressure is uced to 1200 psig, <u>N</u> perform the following.			
13.8.1	Maintain RCS pressure at 1200 psig.			
	2C(2A) LOOP RCS WR PRESS			
[]] []]	PI 402A PI 403A			
13.8.2	Maintain RCS cold leg temperature and pressure within FIGURE 4 limits.			
[] []	RCS COLD LEG TEMP TR 410			
1 [] []	2C(2A) LOOP RCS WR PRESS PI 402A PI 403A			
13.8.3	Cool down the RCS until RCS hot leg temeprature is less than 350°F.			
]	RCS HOT LEG TEMP			
[] [TR 413			

	TINT	TO	E	nclosure 3	to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLD VESSEL HEAD ST	OWN TO PREVEN EAM VOIDING	T REACTO	2	Revision 16
Step A	ction/Expected Response	I	Response	NOT Obta	ined
13.9 <u>WHEN</u> less <u>THEN</u>	<u>N</u> RCS hot leg temperature s than 350°F, <u>N</u> perform the following.				
13.9.1	Maintain RCS hot leg temperature 340-350°F.				
I	RCS HOT LEG TEMP				
[] [FR 413				
13.9.2	Maintain RCS pressure at 1200 psig.				
:	2C(2A) LOOP RCS WR PRESS				
[]] []]	PI 402A PI 403A				
13.9.3	<u>WHEN</u> RCS has soaked at 340-350°F for at least nine hours, <u>THEN</u> proceed to step 13.10.				
13.10 [CA the pro COO inc <u>ANI</u> 350	A] While continuing with e remaining steps of this ocedure, maintain SUB DLED MARGIN MONITOR dication greater than 68°F <u>D</u> reduce RCS pressure to D psig.				
2C RC	(2A) LOOP S WR PRESS				
[] PI [] PI	402A 403A				

			ГЭ	Enclosu	ure 3 to NL-13-1257
6/14/2013 FNP-2-ESP	12:46 -0.2 NAT	JRAL CIRCULATION COOLDO VESSEL HEAD STE	WN TO PREV AM VOIDING	ENT REACTOR	Revision 16
Step	Action/	Expected Response		Response NOT (Obtained
14	[CA] Check reactor ve	no steam void in ssel.	14	Perform the fol	lowing.
 14 [CA] Check no steam void in reactor vessel. Check pressurizer level - NO UNEXPECTED LARGE VARIATION. Check REACTOR VESSEL LEVEL indication - 100% UPPER HEAD. 		14.1 14.2 14.2	<u>IF</u> both CRDM C <u>THEN</u> raise RCS FIGURE 3 limit; <u>IF NOT</u> , raise 1 within FIGURE <u>IF RCS pressure</u> continue, <u>THEN</u> go to app: recovery proces 2.1 <u>IF RVLIS ava</u> <u>THEN</u> go to 2 NATURAL CIRC COOLDOWN WI' REACTOR VES VOIDING (WI' <u>IF NOT</u> , go FNP-2-ESP-0	LG FANs started, pressure within s, RCS pressure 4 limits. e reduction must ropriate dure. ailable, FNP-2-ESP-0.3, CULATION TH ALLOWANCE FOR SEL HEAD STEAM TH RVLIS), to .4. NATURAL	

CIRCULATION COOLDOWN WITH ALLOWANCE FOR REACTOR VESSEL HEAD STEAM VOIDING

(WITHOUT RVLIS).

		Encic	sure 3 to N		5-1257
6/14/2013 12:46 FNP-2-ESP-0.2NATURAL CIRCULATION COOLDOWN TO PREVENT REACTOR VESSEL HEAD STEAM VOIDINGRevision 16					
Step Action/Expected Response	Res	sponse NOI	C Obtained	1	
15 Check when to isolate SI accumulators.					
15.1 Check power to discharge valves - AVAILABLE.	15.1 Clo val ATT	se accumui ve discon ACHMENT 1	lator disc nects usin	cha: ng	rge
2A(2B,2C) ACCUM DISCH ISO [] Q2E21MOV8808A [] Q2E21MOV8808B [] Q2E21MOV8808C					
15.2 [CA] <u>WHEN</u> RCS pressure less than 1000 psig, THEN close all SI accumulator	15.2 Ven can	t any SI a not be iso	accumulato plated.	or t	chat
discharge valves.	ACC N2	UM VENT			
2A(2B,2C) ACCUM DISCH ISO	[] HIK	936 open			
[] Q2E21MOV8808A [] Q2E21MOV8808B	ST ACCUM	2 A	2B		2C
[] Q2E21MOV8808C	2A(2B,2C) ACCUM N2 SUPP/VT ISO				20
	Q2E21HV	[] 8875A	[] 8875B	[]	8875C
		open	open	1	open

15.3 [CA] <u>WHEN</u> SI accumulator discharge valves closed, THEN open and lock accumulator discharge valve disconnects using ATTACHMENT 2.

	IINII	TO	Enclosu	re 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLD VESSEL HEAD ST	OWN TO PREV EAM VOIDING	VENT REACTOR G	Revision 16
Step A	Action/Expected Response		Response NOT C	Obtained
16 [CA]	Maintain letdown flow.			
16.1 <u>WHE</u> req <u>THE</u> ori: LTD 45 ([] Q2E LTD 60 ([] Q2E	N letdown flow less than uired, N open additional letdown fice isolation valves. N ORIF ISO GPM 21HV8149A N ORIF ISO GPM 21HV8149B 21HV8149C			
	OR			
16.2 <u>WHE</u> req <u>THE</u> let [] PK	<u>N</u> letdown flow less than uired, <u>N</u> adjust low pressure down control valve. LTDN PRESS 145 Maintain seal injection			
flow SEAL INJE [] HIK	to each RCP - 6-13 gpm. WTR CTION 186 adjusted			

		0	Enclosure 3 to NL-13-12	57
6/14/2013 12: FNP-2-ESP-0.	A46 .2 NATURAL CIRCULATION COOLDOWN TO VESSEL HEAD STEAM	O PREVENT REAC	CTOR Revision 1	.6
Step	Action/Expected Response	Respon	se NOT Obtained	
18 Ch p1	heck if RHR system can be laced in service.			
18.1 C	Check RCS hot leg temperatures - LESS THAN 350°F.	18.1 Return	to step 13.	
F [[]	RCS HOT LEG TEMP TR 413			
18.2 C F	Check RCS narrow range range pressure – LESS THAN 350 psig.	18.2 Return	to step 13.	
2 F [] F [] F	2C(2A) LOOP RCS NR PRESS PI 402B PI 403B			
18.3 H u H	Place RHR system in service using FNP-2-SOP-7.0, RESIDUAL HEAT REMOVAL SYSTEM.			
19 [0 	CA] Continue RCS cooldown to old shutdown with RHR.			
* * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * *
<u>CAUTION</u> :	Depressurizing the RCS before the result in void formation in the R	entire RCS is CS.	less than 200°F may	
* * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * * * * * * * * * * * * *	* * * * * * * * * * * * * * * * * * * *	* * * *
20 [0 ir	CA] Continue cooldown of nactive portion of RCS.			
20.1 M 3	Maintain RCS pressure - 350-400 psig.			
2 F [] F [] F	2C(2A) LOOP RCS NR PRESS PI 402B PI 403B			
20.2 V	Verify both CRDM CLG FANs – STARTED.			
20.3 (a	Continue dumping steam from all SGs.			

		Enclosu	re 3 to NL-13-1257
6/14/2013 12 FNP-2-ESP-0	2:46 0.2 NATURAL CIRCULATION COOLDOW VESSEL HEAD STEA	N TO PREVENT REACTOR M VOIDING	Revision 16
Step	Action/Expected Response	Response NOT O	btained
21 0 i	Check if RCS depressurization is permitted.		
NOTE :	FNP-2-SOP-68.0, INADEQUATE CORE detailed operating instructions	COOLING MONITORING SYSTE for the core exit T/C mc	M provides nitor.
21.1	Check reactor vessel upper head temperature - LESS THAN 200°F.	21.1 Return to step	19.
[] []	CORE EXIT THERMOCOUPLE MONITOR TRAIN A (Points 22,23) TRAIN B (Points 16,20)		
21.2	Check all atmospheric relief valves – OPEN.	21.2 Perform the fol	lowing.
[]	2A(2B,2C) MS ATMOS REL VLV PC 3371A PC 3371B	21.2.1 Direct count perform FNP- STEAM ABNORM ENVIRONMENTA	ing room to O-CCP-645, MAIN AL L RELEASE.
[]	PC 3371C	21.2.2 Open all atm valves.	ospheric relief
		2A(2B,2C) MS REL VLV [] PC 3371A [] PC 3371B [] PC 3371C	ATMOS
21.3	Locally check SGs – NOT STEAMING.	21.3 Return to step	19.
21.4	Go to FNP-2-UOP-2.2, SHUTDOWN OF UNIT FROM HOT STANDBY TO COLD SHUTDOWN.		
	- END -		

		Sure 3 to INE-13-1237
6/14/2013 12:4 FNP-2-ESP-0.2	6 NATURAL CIRCULATION COOLDOWN TO PREVENT REACTOR VESSEL HEAD STEAM VOIDING	Revision 16
<u>START</u> <u>STEP</u>	CONTINUOUS ACTION	
	CAUTION [CA] To ensure proper plant response, FNP-2-EEP-0, REACTOR TRIP OR SAFETY INJECTION entered upon any SI actuation.	N, must be
1	[CA] Establish RCP support conditions.	
	1.10 [CA] IF support conditions exist to start an RCI start at least one RCP.	P, THEN
	1.11 [CA] IF at least one RCP started, THEN go to FNP-2-UOP-2.1, SHUTDOWN OF UNIT FROM MINIMUM LOA STANDBY.	AD TO HOT
2	[CA] Establish adequate shutdown margin.	
3	[CA] Verify both CRDM CLG FANs - STARTED.	
4	4.2 [CA] Maintain RCS cold leg cooldown rate - LESS THA 25F/hr.	AN
	4.5 [CA] Maintain SG narrow range levels approximately	65%.
5	[CA] Monitor for Inactive Loop(s) Stagnation Condition	:
10	[CA] Monitor RCS cooldown.	
11	[CA] Check CST level adequate to remain in FNP-2-ESP-(0.2.
	11.1 [CA] Using ATTACHMENT 3, check actual CST level minimum required CST level for a 25F/hr cooldown level above 25F/hr line)	above n. (actual CST
13	[CA] Continue RCS cooldown and pressure reduction.	
	13.10 [CA] While continuing with the remaining steps this procedure, maintain SUB COOLED MARGIN MONI indication greater than 68F AND reduce RCS pres 350 psig.	of ITOR ssure to
14	[CA] Check no steam void in reactor vessel.	

		ure 3 to NL-13-1257
6/14/2013 12:4 FNP-2-ESP-0.2	6 NATURAL CIRCULATION COOLDOWN TO PREVENT REACTOR VESSEL HEAD STEAM VOIDING	Revision 16
<u>START</u> <u>STEP</u>	CONTINUOUS ACTION	
15	15.2 [CA] WHEN RCS pressure less than 1000 psig, THEN SI accumulator discharge valves.	close all
	15.3 [CA] WHEN SI accumulator discharge valves closed, open and lock accumulator discharge valve disconne ATTACHMENT 2.	THEN ects using
16	[CA] Maintain letdown flow.	
17	[CA] Maintain seal injection flow to each RCP - 6-13 g	gpm.
19	[CA] Continue RCS cooldown to cold shutdown with RHR.	
20	[CA] Continue cooldown of inactive portion of RCS.	













)	E	Enclosure 3 to NL-1	3-1257
6/14/201 FNP - 2 - E:	3 12:46 SP-0.2 NAT	TURAL CIRCULATION COOLDOWN TO VESSEL HEAD STEAM VO	PREVENT F IDING	REACTO	R Revisi	on 16
Step	Action	/Expected Response	Res	ponse	NOT Obtained	
				-		
		ATTACHMENT	1			
1	Close the disconnect	following ts.				
		'B' Train Dis	connects]
	Disconnect TPNS No.	Description	Position	Кеу	Location	
	Q2R18B035-B	Disconnect FV-S2 MOV 8808B-B	ON	V -5	139' hall way- outside elec. penetration room	
		-			•	-
		'A' Train Dis	connects]
	Disconnect TPNS No.	Description	Position	Кеу	Location	
	Q2R18B031-A	Disconnect FU-Z3 MOV 8808C-A	ON	V - 6	139' hall way-	
	Q2R18B032-A	Disconnect FU-Z2 MOV 8808A-A	ON	V - 4	outside counting room	
2	Verify ac valves MC AVAILABLE 2A(2B,2C) DISCH ISO Q2E21MOV83 Q2E21MOV83 Q2E21MOV83 Notify con accumulate disconnec	cumulator discharge B indication - POWER ACCUM 808A 808B 808C ntrol room of or discharge valve t status.				
		- END -				

				Er	nclosure 3 to NL-13-12	
4/201 ?-2-E:	013 12:46 ESP-0.2NATURAL CIRCULATION COOLDOWN TO PREVENT REACTOR VESSEL HEAD STEAM VOIDING					
tep	Action	Response NOT Obtained				
Ι	I	ATTACHMENT :	2			
1	Open and isconnect	lock the following ts.				
	'A' Train Disconnects					
	Disconnect TPNS No.	Description	Position	Кеу	Location	
	Q2R18B031-A	Disconnect FU-Z3 MOV 8808C-A	LOCKED OPEN	V-6	139' hallway- outside counting	
	Q2R18B032-A	Disconnect FU-Z2 MOV 8808A-A	LOCKED OPEN	V-4		
	'B' Train Disconnects					
	Disconnect TPNS No.	Description	Position	Кеу	Location	
	Q2R18B035-B	Disconnect FV-S2 MOV 8808B-B	LOCKED OPEN	V-5	139' hallway- outside elec. penetration room	

2 Notify control room of accumulator discharge valve disconnect status.

- Current AFW flowrate is in Gallons per minute.
- 350°F = Temperature required to place RHR on-service.
- 12500 = Gallons per foot of CST level.
- 60 = Minutes per hour.
- 5.3 = Minimum CST level in feet before having to shift AFW suction to SW.

		Enclosur	e 3 to NL-13-1257
6/14/2013 12:46 FNP-2-ESP-0.2	NATURAL CIRCULATION COOLDOWN TO PU VESSEL HEAD STEAM VOID	REVENT REACTOR ING	Revision 16
Step A	Action/Expected Response	Response NOT Of	otained

Γ

Monitor SI criteria. 1

1.1 Greater than 16°F subcooled in CETC mode and PRZR level above 4%.

2 Monitor switchover criteria.

- Response NOT Obtained
- 1.1 Verify SI actuated <u>AND</u> go to FNP-2-EEP-0.
- 2.1 CST level greater than 5.3 ft.2.1 Align AFW pumps suction to SW
using FNP-2-SOP-22.0.