Approval AR-41.10	Vogtie Electric General NUCLEAR OPERATIONS	ting Plant	Procedure No. 12000 - C
Date	COMMON		Revision No.
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REFUELING RECOVERY

(MODE 6 TO MODE 5)

1.0 PURPOSE

This procedure provides instructions for taking the unit from a refueling condition (Mode 6) to cold shutdown (Mode 5).

- 2.0 PRECAUTIONS AND LIMITATIONS
- 2.1 PRECAUTIONS
- 2.1.1 If the count rate on either Source Range Channel increases unexpectedly by a factor of two or more during any operation, the operation must be suspended immediately until a satisfact ry evaluation of the situation has been performed.
- 2.1.2 Notify Health Physics prior to performing operations evolutions which may significantly alter radiation levels.
- 2.1.3 Notify Chemistry prior to installing or removing the Containment Equipment Hatch that containment ventilation flow will be changed during this evolution.
- 2.1.4 During periods of operation with the Reactor Coolant System (RCS) level below the Reactor Vessel Flange elevation (194 feet elevation), ongoing work activities should be closely scrutinized and any work activity limited that has the potential for reducing RHRS capability.
- 2.1.5 Inadvertent Containment Ventilation Isolation (CVI) may occur during the movement of the Reactor Vessel Head from the head stand to the cavity. Ensure Health Physics initiates compensatory actions to prevent inadvertent actuations.

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2.2	LIMITATION	15	
2,2,1	In Mode 5, . equal to t 3.1.1.2, F	shutdown margin shall b the limit specified in Te Tigure 3.1-2.	e greater than or chnical Specification
2.2.2	When in Mc Residual H in operati	de 5, with loops filled, leat Removal train (RHR) on, and either:	at least one shall be operable and
	a. One a	dditional RHR train shal	1 be operable, or
	b. The s Steam range	econdary side water leve Generators shall be gre level. (Technical Spec	1 of at least two exter than 17% of wide ification 3.4.1.4.1)
2.2.3	While in M to 2 hours RHR train Specificat	ode 5, one RHR train may for surveillance testin is operable and in opera ion 3.4.1.4.1)	the inoperable for up g provided the other tion. (Technical
2.2.4	While in M trains sha shall be i 1208-U4-17 shall be c stops), ex opened for provided t a setpoint background	ode 5 with the RCS 1.0ps 11 be operable and at le n operation. Reactor Ma 5, 1208-U4-176, 1218-U4- losed and secured in pos cept 1208-U4-171 and 120 short periods of fime f he Hi Flux at Shutsown A of less than or equal t . The infcal Specificat	not filled, two RHR ast one RHR train keup Water Valves 177, and 1208-U4-183 ition (by mechanical 8-U4-177 may be or chemistry control larm is operable with o 2.30 times ion 3.4.1.4.2)
2.2.5	When in Mo equal to 2 least one (Technical	de , with the water lev 3 feet above the Reactor RHR train shall be opera Specification 3.9.8.1)	el greater than or Vessel Flange, at ble and in operation.
2.2.6	When in Mo above the be operabl (Technical	de 6, with the water lev Reactor Vessel Flange, t e and at least one RHR t Specification 3.9.8.2)	el less than 23 feet wo RHR trains shall rain in operation.
2.2.7	While in M on, at lea Protection	odes 4, 5, and 6 with th st one of the following Systems shall be operab	e Reactor Vessel Head Cold Overpressure le:
	a. Two P setti estab 3.4-4	ower Operated Relief Val ngs which do not exceed lished in Technical Spec , or	ves (PORV) with lift the limits ification Figure
	b. Two R of 45	HR Suction Relief Valves 0 psig $\pm 3\%$, or	each with a setpoint
	c. The R relie (Tech	CS depressurized with an ving at least 670 gpm wa nical Specification 3.4.	RCS vent capable of ter flow at 470 psig. 9.3)

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2.2.8	While in M Boron Inje	odes 5 and 6, at least on ction Flow Paths shall be	e of the following operable.			
	a. A flo Boric the R Stora opera	w path from the Boric Aci Acid Transfer Pump and a eactor Coolant System if ge Tank in specification ble, or	d Storage Tank via a Charging Pump to the Boric Acid 3.1.2.5a is			
	b. The f Tank Refue 3.1.2 3.1.2	low path from the Refuelin (RWST) via a Charging Pum ling Water Storage Tank in .5b is operable. (Technic .1)	ng Water Storage p to the RCS if the n Specification cal Specification			
2.2.9	The temper coolant in 70 degrees Steam Genes (Technical	ature of both the primary the Steam Generators shal when the pressure of eith rator is greater than 200 Specification 3.7.2)	and secondary 11 be greater than her coolant in the psig.			
2.2.10	While in Mode 5 two channels of Source Range Nuclear Instrumentation shall be operable (Technical Specification 3.3.1). One channel should be selected to Recorder NR-45 with the SOURCE RANGE HI FLUX LEVEL AT SHUTDOWN alarm operable.					
2.2.11	While in Mo shall be op the Contro Containment 3.9.2)	ode 6 both Source Range Ne perable with continuous vi 1 Room and one with audibl t and Control Room. (Techr	eutron Flux Monitors Isual indication in Le indication in the Dical Specification			
2.2.12	While in Ma with the Re fully tens: maintained shall be ma whichever i 1208-U4-175 shall be co stops), exc short perio the Hi Flux setpoint of background.	ode 6 (whenever fuel is in eactor Vessel Head Closure ioned or with the head rep at 0.95 or less, or the b aintained greater than or is more restrictive. Addi 5, 1208-U4-177, 1208-U4-18 losed and secured in posit cept 1208-U4-176 and 177 m ods of time for chemistry c at Shutdown Alarm is ope f less than or equal to 2. . (Technical Specification	the Reactor Vessel Bolts less than noved) Keff shall be boron concentration equal to 2000 ppm, tionally, valves 3 and 1208-U4-176 tion (by mechanical may be opened for control provided erable with a 30 times on 3.9.1)			
2.2.13	While in Mo Reactor Ves the RWST wi 99,404 gail boron conce	odes 5 and 6, with the RCS ssel Flange elevation (194 111 be operable with a mir lons (9% of instrument spa entration between 2400 and	feet elevation), imum volume of n) of water at a 2600 ppm.			

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3.0	INITIAL CON	DITIONS	-
3.1	The RHR Syst minimum tota	tem is in service a al flow of 3000 gpm	ligned to the RCS at a
3.2	The Reactor support RCS operations.	Coolant Drain Tank and/or Refueling C	(RCDT) is aligned to avity draining
3.3	The Componer	nt Cooling Water (C	CW) System is in service.
3.4	At least one is in servic	Nuclear Service C	ooling Water (NSCW) train
3.5	Two Source F channel sele	lange Channels are acted to Recorder N	in operation and highest R-45.
	a. SOURCE operabl	RANGE HI FLUX LEVE .e,	L AT SHUTDOWN alarm
	b. Audible operabl	count rate in Con .e.	tainment and Control Room
3.6	Reactor Vess	el Head not instal	led.
3.7	Fuel Pool To	Transfer Canal Ga	te is closed.
3.8	Transfer Tub	e Gate Valve is cl	osed and locked.
			INITIALS
4.0	INSTRUCTIONS		
		NOTE	
	As IN st ad	terisk (*) steps b ITIALS spaces indi eps that generate ditional documents	eside cates
4.1	POST REFUELI	NG MODE 6 OPERATIO	NS
4.1.1	As directed Supervisor a the Refuelin the Reactor per 13011, " System".	by the Outage Area nd when necessary, g Cavity level to Vessel and Head as Residual Heat Remo	ADJUST support sembly val

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UNIT NO.

4.1.2

OBTAIN from the Control Room Mode Change Binder or OBTAIN from the Surveillance Tracking Coordinator all deferred (not performed) surveillance tests required for Mode 5 entry.

SCHEDULE and COMPLETE those applicable test procedures prior to Mode 5 entry.

NOTE

As a precaution, Containment Building Penetrations Technical Specification 3.9.4 will be established during periods of Reactor Vessel Hord movement.

CAUTION

Inadvertent Containment Ventilation Isolation (CVI) may occur during the movement of the Reactor Vessel Head from the head stand to the cavity. Ensure Health Physics initiates compensatory actions to prevent inadvertent actuations.

4.1.3

Prior to setting the Upper Internals Assembly

- a. NOTIFY Chemistry that closure of the Containment Equipment Hatch will change containment ventilation flow.
- NOTIFY Maintenance to reset the Containment Personnel Lock Interlock System,
- c. PERFORM 14210, "Containment Building Penetrations Verification-Refueling",
- d. NOTIFY Chemistry to reset the PERMS Containment Low Range Area Monitors RE-0002 and RE-0003 alarm setpoint to 100 mR/hour.
- e. INITIATE RWST cleanup per 13719, "Spent Fuel Pool Cooling And Purification System".

INITIALS

VEOD	12000 0	12	
VEGE	12000-0	10	6 of 15
UNIT NO.			INITIALS
4.1.4	Prior to Head, PER	setting the Reactor Vessel FORM the following:	
	a. VERI Over oper the Spec	FY at least one of the Cold pressure Protection Systems able by performing one of following (Technical lfication 4.4.9.3):	
	(1)	RHR Suction Relief Valves - VERIFY RHR Suction Valves open per 14000, "Operations Shift And Daily Surveillance Logs" and INITIATE shiftly surveillance per 14000,	
	(2)	RCS Vent Path - VERIFY an RCS Vent Path per 14000, "Operations Shift And Daily Surveillance Logs" and INITIATE shiftly surveillance per 14000,	
	(3)	PLACE the Cold Overpressure Protection System (COPS) in operation by performing the following:	
		(a) ENSURE PRZR PORV BLOCK VLV COLD OVERPRESSURE CNTL Handswitches HS-8000G and 8000H are in the BLOCK position,	
		(b) REQUEST I&C to perform an analog channel operational test on both PORV Actuation Channels per 24518, "Reacto Coolant Pressure (Wide Rang Protection II P-403 Analog Channel Operational Test An Channel Calibration" and 24519, "Reactor Coolant Pressure (Wide Range) Protection I P-405 Analog Channel Operational Test And Channel Calibration".	r e) d

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UNIT NO.				•	INITIALS
	(c) VERIF annun	Y the followin ciators in ala	g irm.	
		1	A COLD OP LOW TEMP, (ALB 12	AUCT RCS CO4),	
		2	B COLD OP LOW TEMP (ALB 12 C	AUCT RCS	
	(d) ARM t placi HS-80 posit	he A and B COP ng handswitche 00G and 8000H ion,	S by s to ARM	
	(e) VERIF annur armin	Y the followin ciators alarme g COPS:	g d upon	
		<u>1</u>	A COLD OP ACTU HV-8000A NOT F (ALB 12 E06),	VLV ULL OPEN	
		<u>2</u>	B COLD OP ACTU HV-8000B NOT F (ALB 12 F06).	VLV ULL OPEN	
	(f) ENSURI and 49 hands	E PRZR PORVs P 56A are closed witches in AUT	V-455A and the O,	
	(g) ENSURI valve:	E OPEN PRZR PO s HV-8000A and	RV BLOCK HV-8000B.	
		1	NOTE		
	Th Sp re	is step s ecificat: quirement	satisfies Tech ion surveillan t 4.4.3.3.1.c.	nical ce	
	(h) VERIFY	f the followin ciators reset:	g	
		<u>1</u> /	A COLD OP ACTU HV-8000A NOT F (ALB 12 E06),	VLV ULL OPEN	
		<u>2</u> 1	B COLD OF ACTU HV-8000B NOT F (ALB 12 F06).	VLV ULL OPEN	
b	 VERIFY A and B and tag Cooldow 	SAFETY II breakers ged per I n To Cold	NJECTION Fumps s are racked o 12006, "Unit d Shutdown",	ut	

in the second into		REVISION	PAGE NO.	
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INTE NO				
UNIT NO.				INITIALS
4.1.5	While ope 17% press feet elev should be	rating with the RCS level urizer level (approximate ation) the following cont in effect:	l below aly 207 trols	
	a. Tygo any bein leve (app elev	n tube watch is required time the RCS level is g changed while the RCS l is below 17% roximately 207 feet ation) pressurizer level,		
	(1)	Periodic comparison chec should be made every 4 h between the Control Room Temporary RCS Level Moni and the Tygon tube,	ks iours tors	
	(2)	The Control Room Monitor should agree within 7 pe of scale with the Tygon	s rcent tube,	
	(3)	Two out of three Level M must agree before draini below the top of the hot (188 feet 3 inches),	onitors ng RCS leg	
	(4)	If neither Control Room Level Monitor is availab then a continuous Tygon watch should be establis while RCS level is below pressurizer level.	RCS le, tube hed 17%	
	(5)	DETERMINE closure status Containment Equipment Ha and ENSURE hatch is capa being closed within 57 m or ENSURE hatch is close to reducing RCS level be three feet below the Rea Vessel Flange (191 ft. e	of tch ble of inutes d prior low ctor 1.),	
	(6)	A review of all Containm penetrations addressed i 14210, "Containment Buil Penetrations - Refueling should be accomplished t determine those which ha been opened by manual me and an info LCO generate those identified.	ent n ding " o ve ans d for	

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	(7)	Except when installing the	
		of two incore thermocouples	mum
		shall be available,	
	(8)	KLQUEST I&C reset the designated ERF incore thermocouples alarm setpoint to alarm at 10°F above desired temperature per 00410-C, "Computer Software Control".	
	(9)	If SC Nozzle Dams are to be	
		installed and no cold leg opening is to be establishe a vent path is required fro the Reactor Vessel upper plenum.	d, m
		This vent path can be satis by:	fied
		(a) Removing a pressurizer manway, or	
		(b) Removing a Steam Gener manway on a hot leg th will not be dammed, or	ator at
		(c) Removing three pressur code safeties.	izer
	(10)	If SG Nozzle Dams are to be installed and a cold leg opening is to be establishe a vent path is required fro the Reactor Vessel Upper Plenum by removing an SG manway on an HL that will n be dammed.	d, m
	(11)	If it is intended to operat at one foot above mid-nozzl level, the preferred RHR configuration is one train operating with a flow of 30 gpm,	e 00

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3.4.2

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UNIT NO.			TNTTTAL
UNIT NO.			TNTTTAL
			A ST & A & FEED
	(12)	While operating with SG Nozzle Dams installed, ENSURE one Safety Injection Pump is capable of being racked in and operated in the hot leg injection mode if needed,	
	(13)	While level is in the region of the hot legs, TREND RHR Pump parameters on ERF for early detection of possible RHR Fump degradation due to vortexing,	
	(14)	Minimum RCS level is one foot above mid-nozzle (188 feet 0 inches elevation) except for Steam Generator burping during initial drain down. For effective SG tube draining, RCS level should be lowered to 187 feet 6 inches. Upon completion of SG burping, RAISE RCS level to 188 feet - 0 inches and MAINTAIN at this level thereafter.	
	(15)	A minimum of 4 Containment Cooling Units will be operable and capable of being started if required while RCS level is below 191 feet elevation.	
	b. COORI Super the P per J Syste	DINATE with Outage Area visor and INITIATE draining Refueling Cavity to 190 feet 13011, "Residual Heat Removal em",	
	DE-EN prior	NERGIZE all underwater lights to uncovering.	
4.1.6	When the H be lowered level is 1	leactor Vessel Head is ready to I into place, VERIFY RCS water less than or equal to 190 feet.	Mangang and a second of the

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UNIT NO.				INITIALS
4.1.7	Prior to low into place, Area by open Support Dra	wering Reactor Vessel He DRAIN Reactor Tavity Se ning Reactor Cavity Seal in.	ad al	And And And And And
	UNIT 1: 1	-1213-U4-088		
	UNIT 2: 2:	-1213-U4-088		IV
				IV
4.1.8	If it is new head lifts is deconning, a performing is applicable as Entry" Core and ATTACH is	cessary to perform any for O-ring inspections, etc., then prior to the lift, COMPLETE the steps of 12007-C, "Refuel Alternations Checklist 2 to this procedure.	ling	
4.1.9	After the Re lowered into tensioning, at less than	actor Vessel Head is place and during Head MAINTAIN RCS water level or equal to 190 feet.		
4.1.10	If necessary 1 foot above 0 inches) c Dars install	, INITIATE reducing leve mid-nozzle (188 feet - or 1.9 feet with SG Nozzl led.	el to le	
4.1.11	MAINTAIN RCS Outlet HV-06 Train B) as exceed 130°F	temperature utilizing H 06 for Train A (HV-0607 high as possible but not	to to	

OUEDURE NO.		REVISION	PAGE NO.	Contract of the other states of the state of
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				COLOR ANY ADVANCEMENT OF
UNIT NO.	-		II	ITIALS
4.1.12	NOTIFY He release th restriction for the Fu the Fuel H Containment	alth Physics that they ma he locked or posted access ons on the concrete plugs uel Transfer Tube bellows Handling Building and nt Building.	in	
4.1.13	Upon compl decontamin	letion of refueling cavit nation activities:	y	
	a. ENSUP 2 Bli drair Cavit	RE Maintenance removes th ind Flanges on the 12 inc n lines in the Refueling ty,	e h	
				īv
	b. ENSUR the 7 (Tech	RE Maintenance has instal Transfer Tube Blind Flang nnical Specification 4.6.	led e. 1.1.a)	No. of Concession, Name
			4	IV
	c. ENSUR Coil verif HS-12 OFF p	RE the FHB HVAC Pre-heati Thermostat is reset by fying local handswitches 2470 and 12471 are in the position,	ng	
	d. CLOSE Drain	E Reactor Cavity Seal Sup	port	
	UNIT	1: 1-1213-U4-088		
				IV
	UNIT	2: 2-1213-U/-088	-	-
				IV

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UNIT NO			요즘 집에서 집에 집에 있다.	TATTTA
4.2	MOD	ESE	IT D V	INTITU
4.2.1	. Ded	0 × 10	Maintenance completing the	
	las ent	t head ry) PI	I bolt tensioning (Mode 5 RFORM the following:	
	а.	COMP VERI are	LETE the following logs and FY the requirements therein met for entry into Mode 5:	
		(1)	14000, "Operations Shift And Daily Surveillance Logs".	
			OBTAIN the new cycle curves for the Plant Technical Data Book from Reactor Engingering to be used for shutdown margin determinations.	
			If curves are not available, OBTAIN a method of performing shutdown margin determinations from Reactor Engineering.	
		(2)	14225, "Operations Weekly Surveillance Logs",	
		(3)	14228, "Operations Monthly Surveillance Logs",	
		(4)	14915, "Special Condition Surveillance Logs.	
	b.	REVI	EW the following for impact on ring Mode 5:	
		(1)	Jumper and Lifted Wire Log,	
		(2)	Temporary Modification Log,	
		(3)	Equipment Clearance Log,	
		(4)	LCO Book,	
				and the second of the second of

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UNIT NO.				INITIA
	c. ENSURE test p Sub-su for Mo complet	that all surveillance rocedures scheduled per bsection 4.1.2 required de 5 entry have been ted.		
	REVIEW change Survei	the Control Room Mode Binder or OBTAIN from the llance Tracking Coordinat	he tor.	
	d. INITIA reading Shift	TE Mode 5 log sheet gs per 14000, "Operations And Daily Surveillance Lo	s ogs",	
	e. OBTAIN Supervi status	On-Shift Operations isor's approval to change from Mode 6 to Mode 5.		
	osos si	Ignature Date	fime	
4.2.2	When notifie that the las is tensioned Unit Control	ed by Maintenance Departm st Reactor Vessel Head Bo i, LOG Mode 5 entry into i Log Book.	nent olt the	
4.2.3	This procedu 12001-C, "Ur (Mode 5 to M	are is complete: REFER to hit Heatup To Hot Shutdow Mode 4).	o vn	
Completed:	termine (second second s			
		Signature	Time	7 Date
Reviewed:		Signature	Time	/ Date
Comments:			mentalas statemaka saya sara	no aparita a cara
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5.0	REFERENC	ES		
5.1	PROCEDUR	ES .		
5.1.1	12001-C	"Unit Heatup To Hot (Mode 5 To Mode 4)	Shutdown	
5.1.2	12006+C	"Unit Cooldown To Co	ld Shutdown"	
5.1.3	13005	"Reactor Coolant Sys	tem Draining"	
5.1.4	13011	"Residual Heat Remov	al System"	
5.1.5	13715	"Component Cooling W	ater System"	
5.1.6	13719	"Spent Fuel Fool Coo System"	ling And Purification	
5.1.7	14000	"Operations Shift An Logs"	d Daily Surveillance	
5.1.8	14210	"Containment Buildin Verification-Refueling	g Penetrations	
5.1.9	14225	"Operations Weekly St Logs"	urveillance	
5.1.10	14228	"Operations Monthly : Logs"	Surveillance	
5.1.11	14915	"Special Condition St Logs"	irveillance	
5.1.12	24518	"Reactor Coolant Pre Protection II P-403 Operational Test And	ssure (Wide Range) Analog Channel Channel Calibration"	
5.1.13	24519	"Reactor Coolant Pres Protection I P-405 An Operational Test And	ssure (Wide Range) halog Channel Channel Calibration"	

END OF PROCEDURE TEXT

