

South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

July 5, 2022 NOC-AE-22003867 10 CFR 50.73 STI: 35276504

ATTN: Document Control Desk U.S. Nuclear Regulatory Commission Washington, DC 20555-0001

South Texas Project Unit 2 Docket No. STN 50-499 Licensee Event Report 2021-002-01 Supplement to Condition Prohibited by Technical Specifications Due to Inoperable Train of Essential Core Cooling System and Containment Spray System

Reference: Letter from M. Schaefer, STPNOC; to NRC Document Control Desk; "Licensee Event Report 2021-002-01 Condition Prohibited by Technical Specifications Due to Inoperable Train of Essential Core Cooling System and Containment Spray System;" December 21, 2021; (ML21355A278) (NOC-AE-21003862)

On December 21, 2021, STP Nuclear Operating Company (STPNOC) submitted the referenced Licensee Event Report. This letter is a supplement to the report to provide the updated corrective actions after review of industry operating experience and inspection of similar hand switches. The updated information is denoted by revision bars located in the right-hand margin. This report is submitted in accordance with the requirements of 10 CFR 50.73.

The event did not have an adverse effect on the health and safety of the public.

There are no commitments in this letter.

If you should have any questions on this submittal, please contact Zachary Dibbern at (361) 972-4336 or me at (361) 972-7888.

Michael A. Schaefer Site Vice President

Attachment: STP Unit 2 LER 2021-002-01, Condition Prohibited by Technical Specifications Due to Inoperable Train of Essential Core Cooling System and Containment Spray System

CC:

Regional Administrator, Region IV U.S. Nuclear Regulatory Commission 1600 E. Lamar Boulevard Arlington, TX 76011-4511 Attachment

STP Unit 2 LER 2021-002-01, Condition Prohibited by Technical Specifications Due to Inoperable Train of Essential Core Cooling System and Containment Spray System

NRC FO	RM 366		U.S.	NUCLEAR	REGUL	ATORY CO	MMISSI	ON	APF	PROVED BY OM	B: NO. 31	50-010	4	EXPIR	ES: 0	8/31/2023
(08-2020)	GULADORY	LI	CENSE	E EVEN	T REF	PORT (LI	ER)		Estim lesso comm	nated burden per respor ns learned are incorp nents regarding burden	nse to comply w porated into the estimate to the	vith this mane licensi e FOIA, L	andatory collect ng process an ibrary, and Infor	ion reque d fed ba mation C	est: 80 h ack to collection	ours. Reported industry. Send ns Branch (T-6
	COM	(See Pag	e 3 for requ	uired number o	of digits/c	haracters for	each blo	ck)	Infoc	1), U.S. Nuclear Regi ollects.Resource@nrc.	gov, and the ON	ssion, vv //B review	asnington, DC er at: OMB Offic	20555-0 e of Infor	mation a	and Regulatory
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1. Facili South	ty Nam Texa	e as Proje	ct, Unit	2					2. Do 05	ocket Number 000499			3. Page	1 0	F 8	
4. Title Cond Spray	ition P Syster	Prohibited	by Tech	nnical Spe	cificati	ons due t	o Inop	erat	ole T	rain of Essent	ial Core	Coolir	ng Systen	n and	Con	itainment
5.	Event	Date	6.	LER Numbe	•	7. Re	port Da	te			8.	Other	Facilities I	nvolve	d	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Y	Year	Facility Name				Docke	et Nun	nber
10	15	2021	2021	- 002 -	01	07	05	2	022	Facility Name				Docke	et Nur	nber
9. Operati	ng Mod	e						10.	Powe	r Level						
				1								100				
			11. T	'his Report is	Submitte	ed Pursuant	to the Re	quire	ement	s of 10 CFR §: (Check all tl	hat app	ly)			
10	CFR	Part 20		20.2203(a)(2)(vi)	50.36	δ(c)(2)			50.73(a)(2)(iv	/)(A)	50	.73(a)(2)(x)			
20.2	201(b)			20.2203(a)(3)(i)	50.46	6(a)(3)(ii))		☐ 50.73(a)(2)(v)(A)		10 CF	R Pa	art 7	3
20.2201(d)				20.2203(a)(3)(ii)		□ 50.69(g)			☐ 50.73(a)(2)(v)(B)		☐ 73.71(a)(4)					
20.2203(a)(1)			20.2203(a)(4)		50.73(a)(2)(i)(A)			☐ 50.73(a)(2)(v)(C)		□ 73.71(a)(5)						
20.2203(a)(2)(i)			10) CFR Pa	rt 21	t 21 ⊠ 50.73(a)(2)(i)(B) □ 50.73(a)(2)(v)(D) □ 73.77(a)			.77(a)(1)(i)							
20.2203(a)(2)(ii)				21.2(c)		□ 50.73(a)(2)(i)(C) □ 50.73(a)(2)(vii) □ 73.77(a)(2)(i			.77(a)(2)(i)							
20.2203(a)(2)(iii) 10 CFR Part 5			rt 50	50.73	8(a)(2)(ii))(A)		☐ 50.73(a)(2)(v	iii)(A)	□ 73	.77(a)(2)(ii)					
20.2203(a)(2)(iv) 50.36(c)(1)(i)(A)			(A)	50.73(a)(2)(ii)(B)				50.73(a)(2)(v	iii)(B)							
20.2	203(a)(2)(v)		50.36(c)(1)(ii)(A)	50.73	8(a)(2)(iii)		50.73(a)(2)(i)	(A)					
Oth Oth	er (Spe	cify here, ir	Abstract,	or in NRC 36	66A).											
Liconcoc C	ontoot					12. Lice	nsee Co	ontac	ct for	this LER		Bho	a Number (Inc	ludo Aro	o Codo)	
Zachar	y Dibl	pern, Lice	ensing E	ngineer	nnloto O	no Lino for o	ach Com	non	ont Eci		his Papart	36	1-972-433	6	a 0000,	
Cau	se	System	Componen	nt Manufac	turer	Reportable 1	o IRIS		Cause	System	Compor	nent	Manufactu	irer	Report	able To IRIS
E		VG	HS	GE	Ξ	Y										
		14. Supple	mental Re	eport Expect	ed				45	E			Month	Da	у	Year
N 🛛	• [Yes (If	yes, comp	lete 15. Expe	cted Sul	omission Da	te)		15.	Expected Sub	mission Da	ate				
16. Abst	ract (Lim	it to 1560 spa	aces, i.e., ap	proximately 15	single-sp	aced typewritt	en lines)			~ .	~	(2)				
On O	ctobe	r 15, 202	1, at 013	33 hours, t	he Sou	th Texas	Proje	ct N	vucle	ar Operating	Compan	y (ST	PNOC) s	tarte	d Hig	gh
Head conta	Salet	y injectio	on (HHS	valve cub	B IOr	SI Accur	nulatoi	r 2E as e	3 IIII. vnec	ted The B-T	HHSI pui rain Eme	mp ro	om Ians i	hor tr	ne ng Su	stem
(ECC	S) and	d Contai	ment S	prav were	decla	red inope	rable.	On	Octo	ber 15, 2021.	at 1319	hours	troubles	shoot	ing Sy	500111
comn	nence	d and det	ermined	the cause	for th	e failure	was th	e B	-Tra	in hand swite	h (B2HF	HS95	27) was s	sticki	ng ai	nd
neede	ed to b	e replace	ed. On C	October 15	, 2021	, at 2318	hours,	Op	oerati	ons declared	B -Train	ECCS	S and Co	ntainı	nent	Spray
opera	ble fo	llowing	complet	ion of cor	rective	mainten	ance.				0					
On O	ctobe	r 27, 202	1, at 20:	58 hours the	ne eve	nt was de	termin	ted t	to be	reportable by	y Operati	ons a	s a condi	tion p	orohi	bited
not m	et.	ai specii	reations	because t	ne req	uneu acti	on sta	cill	ents	tor rechnical	specific	auon	s 3.3.2 ar	iu 3.0	9.2.1	were

A planned corrective action resulting from this event is to improve the process of requiring retention of defective components. Completed corrective actions resulting from this event include the replacement of the B train hand switch, evaluation of operating experience against the risk of de-terming and re-terming the hand switch given its proximity to other switches, and inspection of four other hand switches to determine effectiveness of current PMs.

(See N	U.S. NUCLEAR REGULA	EPORT (LER) SHEET for completing this form regs/staff/sr1022/r3/)	N APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023 Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Library, and Information Collections Branch (T-6 A10M), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk ali: <u>oira submission@omb.eop.gov</u> . The NRC may not conduct or m sponsor, and a person is not required to respond to, a collection of information unless the document requesting or remulting the collection displays a current valid OMB control number.				
1. FAC	ILITY NAME	2. DOCKET	NUMBER		3. LER NUMBER		
South	Texas Project, Unit 2	05000499		year 2021	sequential number - 002	rev no. - 01	
NARRA I. Desc	TIVE cription of Reportable Event					<u></u>	
А.	Reportable event classification						
	This event is reportable pursuar Technical Specification 3.5.2 re System (ECCS) and Technical Containment Spray System wer	nt to 10 CFR 50.7 equired action sta Specification 3.6 re not met.	73(a)(2)(i)(B) because the tements for an inoperable .2.1 required action staten	South Te Essentia nents for	exas Project (S l Core Cooling an inoperable	TP) g	
В.	Plant operating conditions prior	to event					
	Prior to the event, STP Unit 2 w	vas at 100% pow	er in Mode 1.				
C.	C. Status of structures, systems, and components that were inoperable at the start of the event and that contributed to the event						
	No other structures, systems, or this event.	components we	re inoperable at the start o	f this eve	nt that contrib	uted to	
D.	Background Information						
	Unit 2 Control Room hand swit be operated to turn on the fans Containment Spray (CS) Pump fans in air handling units VAH- Head Safety Injection (HHSI) H	ch (B2HFHS952 that provide cool cubicles. The B- 005 and VAH-0 Pump 2B was star	7), hereafter referred to as ing for the B-Train Safety Train hand switch failed v 13 from starting automatic rted for testing.	s the B-T Injectior which pre cally as d	rain hand swite (SI) Pump an evented the coor esigned when	ch, can d oling High	
	The B-Train hand switch is a G throughout industry and at Southand switch is designed with a fan from the control room, a ST deenergize power to the fans for the cooling fans to start automathey they continue to run until an op the fans (on/off) can be confirm	eneral Electric S th Texas Project I manual start posi OP position to se r personal safety tically when HH erator manually se hed in the Control	BM rotary control hand sy Electric Generating Station tion which can start the Si ecure the fan, a pull-to-loc and for maintenance, and SI Pump 2B is started. On stops the fans with the B-T I Room by computer point	witch, wh n (STPEC I pump va ek positio an AUT an AUT ce the fan Frain han t readout.	ich are used w GS). This B-Tr alve room VA n to completel O position that n motors are st d switch. The	ridely cain H-005 y t allows carted, status of	
	The function of the VAH-005 a Handling Building (FHB) Roor Containment Spray Pump. Elev VAH-005 and VAH-013 fans a circuits are also interlocked wit	nd VAH-013 sup n 005 and FHB F rated temperature re designed to sta h the startup and	oplemental cooler units is Room 008 which contain t is in these rooms are detec art automatically on high t running of any one of the	to provid he B-Tra ted by th cemperatu pumps in	e cooling in Fu in SI pumps an ermostats and ure. The fan sta n the room.	uel 1d the the artup	
	The FHB Heating, Ventilation, environmental conditions requi inside the Fuel Handling Buildi building with a filtered source of	and Air Condition red to ensure the ng. During norm of outside air at th	oning (HVAC) System ma operability of the system al operation, the supply ai the proper temperature. Co	intains th compone ir subsyst oling coi	ne normal nts that are loc em provides th ls supplied by	ated e the	

NRC FC	DRM 366A U.S. NUCLEAR REGULA	TORY COMMISSION	APPROVED BY OMB: NO. 3150-010	4	EXPIRES:	08/31/2023
(08-2020)	LICENSEE EVENT RI CONTINUATION	EPORT (LER) SHEET	Estimated burden per response to comply wi lessons learned are incorporated into the lice regarding burden estimate to the FOIA, Libra Nuclear Regulatory Commission, Was Infocollects.Resource@nrc.gov, and the OME Affairs, (3150-0104), Attn: Desk ail: <u>oira sul</u> sponsor, and a person is not remuired to res	th this mandatory nsing process ar ry, and Informati shington, DC reviewer at: ON <u>bmission@omb.e</u> pond to a collec	y collection request: 80 hc d fed back to industry. Se on Collections Branch (T-1 2055-0001, or by AB Office of Information a <u>op.gov</u> . The NRC may n tion of information unless.	ours. Reported end comments 6 A10M), U.S. e-mail to nd Regulatory tot conduct or the document
<u>http</u>	s://www.nrc.gov/reading-rm/doc-collections/nu	regs/staff/sr1022/r3/)	requesting or requiring the collection displays a	a currently valid OMB control number.		
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South	Texas Project, Unit 2	05000499			NUMBER	NO.
				2021	- 002	- 01
	non-safety Mechanical Auxilian maintain the building within de adequate heating capacity to ter safety features (ESF) actuation subsystem is shut down. Emerg the building. During the ESF m draw outside air into the buildin return air registers in the cubicl	sign ambient tem nper outside supp for safety injection gency air relief dat ode of operation, ng through the relies and exhaust ver	a water subsystem provid peratures. Similarly, elect oly air during winter cond on, high radiation, or loss mpers are opened to conti the safety-related exhaus lief dampers. The exhaust entilation ducts to exit thro	tric heatin itions. Up of offsite inue to pe t air subsy air subsy	ng coils provid pon an enginee power, the su ermit outside a ystem continu rstem pulls air plant main ver	acity to le ered pply air ir into es to through nt stack.
	FHB HVAC is a required support containment spray system.	ort system for the	Emergency Core Cooling	g System	(ECCS) and the	he
E.	Narrative summary of the event	t				
	Note: all times are approximate	and are listed in	Central Daylight Time			
	October 5, 2021, 03:44 hours: 0 and Valve Room Ventilation fa	Operations started ns (VAH-005 and	l HHSI Pump 2B for Accu d VAH-013) started as exp	umulator pected.	fill. ESF Pumj	p Room
	October 5, 2021, 03:46 hours: 0	Operations secure	d HHSI Pump 2B followi	ng accun	nulator fill.	
	October 5, 2021, 03:48 hours: I stopped by Operations in the Co	B-Train SI/CS Pu ontrol Room.	mp Room Air Handling U	Jnit 21B	fan VAH-005	was
	October 5, 2021, 03:49 hours: I stopped by Operations in the Co	B-Train SI/CS Va ontrol Room.	lve Room Air Handling U	Jnit 21B	fan VAH-013	was
October 15, 2021, 01:33 hours: Operations started HHSI Pump 2B for Accumulator 2B fill. W pump 2B was started, the B-Train SI/CS Pump Room Air Handling Unit (AHU) 21B and Valv AHU 21B failed to start (VAH-005 and VAH-013 fans). B-Train ECCS and Containment Spra inoperable due to failure of room AHU to start on pump start.						en HHSI Room declared
	October 15, 2021, 01:34 hours: placed it in automatic.	Operations secur	red HHSI Pump 2B follow	ving accu	mulator fill an	ıd
	October 15, 2021, 13:19 hours: cooler fans failing to start as ex switch (B2HFHS9527) was stic	Troubleshooting pected. Results o king and needed	commenced to determine f troubleshooting conclud to be replaced.	the caus ed that th	e for the suppl le B-Train han	lemental d
	October 15, 2021, 20:04 hours: replacement of the B-Train han Pump 2B start.	Operations started d switch. Fans fo	ed HHSI Pump 2B for pos r both VAH-005 and VAI	st mainter H-013 sta	nance testing a rted with the I	fter HHSI
	October 15, 2021, 20:05 hours:	Secured HHSI P	ump 2B following satisfa	ctory pos	t-maintenance	test.
	October 15, 2021, 23:18 hours: following completion of correct completion of post-maintenance	Operations decla tive maintenance e testing.	red B-Train ECCS and C to replace the B-Train ha	ontainme nd switch	nt Spray opera	able ul

NRC FORM 366A U.S. NUCLEAR REGULA	ATORY COMMISSION	APPROVED BY OMB: NO. 3150-010)4	EXPIRES: (08/31/2023
(08-2020) LICENSEE EVENT R CONTINUATION (See NUREG-1022, R.3 for instruction and guidance https://www.nrc.gov/reading-rm/doc-collections/nu	EPORT (LER) SHEET for completing this form regs/staff/sr1022/r3/)	Estimated burden per response to comply wi lessons learned are incorporated into the lice regarding burden estimate to the FOIA, Libra Nuclear Regulatory Commission, Was Infocollects.Resource@nrc.gov, and the OME Affairs, (3150-0104), Attr: Desk all: <u>oira su</u> sponsor, and a person is not required to res requesting or requiring the collection displays a	th this mandatory insing process an iny, and Informatic shington, DC 3 reviewer at: OM <u>bmission@omb.ec</u> pond to, a collect a currently valid O	collection request: 80 ho d fed back to industry. Se on Collections Branch (T-6 20555-0001, or by B Office of Information ar <u>pp.qov</u> . The NRC may nr ion of information unless MB control number.	urs. Reported nd comments & A10M), U.S. e-mail to nd Regulatory of conduct or the document
1. FACILITY NAME	2. DOCKET	NUMBER		3. LER NUMBER	
South Texas Project, Unit 2	05000499		year 2021	sequential number - 002	rev no. - 01

October 27, 2021, 20:58 hours: Event was determined to be reportable by Operations as a condition prohibited by Technical Specifications.

F. Method of discovery

The event was self-revealed when the VAH-005 and VAH-013 fans failed to start when HHSI pump 2B was started for testing.

Engineering evaluation concluded there was firm evidence that the B-Train hand switch failure occurred on October 5, 2021 when the switch was manipulated to stop the VAH-005 fans. The failure of the B-Train hand switch prevented cooling fans VAH-005 and VAH-013 from performing their safety function of heat removal from October 5, 2021 to October 15, 2021, resulting in conditions prohibited by Technical Specifications for exceeding the seven-day allowed outage times for ECCS Technical Specifications 3.5.2 Limiting Condition for Operation Action (a) and the Containment Spray System Technical Specification 3.6.2.1 Limiting Condition for Operation Action (a).

II. Component failures

A. Failure Mode, mechanism, and effects of failed component

The failed component in this event was B-Train hand switch (B2HFHS9527). This hand switch is a General Electric rotary SBM control switch located in the Control Room. This model of hand switches is a rugged design with proven reliability, but they can develop high contact resistance that in rare instances can prevent relay actuations.

Troubleshooting determined that the B-Train hand switch was sticking, as reported by Maintenance personnel during switch replacement. Prior to replacement of the switch, Operations manipulated the switch to the start position and the fans came on at that time, indicating a potential intermittent failure of the switch. The most likely cause of the switch was sticking of the switch and/or high resistance contacts inside the switch.

The failure of the B-Train hand switch resulted in the cooling fans VAH-005 and VAH-013 not automatically starting to provide heat load removal for the B-Train HHSI pump, Low Head Safety Injection (LHSI) pump, and Containment Spray Pump should these pumps be called upon to perform their safety functions during the time window from October 5, 2021 to October 15, 2021. This time frame exceeds the seven-day allowed outage time of the ECCS Technical Specification 3.5.2 Limiting Condition for Operations Action (a) and the seven-day allowed outage time of the Containment Spray System Technical Specification 3.6.2.1 Limiting Condition for Operations Action (a).

B. Cause of component or system failure or personnel error

The direct cause of this event was the failure of B-Train hand switch B2HFHS9527 which resulted in cooling fans VAH-005 and VAH-013 failing to start automatically to provide supplemental heat load removal in the rooms containing the B-Train HHSI pump, LHSI pump, and Containment Spray Pump.

The failure of the hand switch was due to a sticking hand switch or due to a high resistance contact in the switch. The failed switch was not retained for more detailed failure analysis, but the personnel who

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(See N <u>http</u>	UREG-1022, R.3 for instruction and guidance s://www.nrc.gov/reading-rm/doc-collections/nul	regs/staff/sr1022/r3/)	sponsor, and a person is not required to response requesting or requiring the collection displays a	pond to, a collec a currently valid C	ction of information unless DMB control number.	the document	
1. FAC		2. DOCKET	NUMBER		3. LER NUMBER		
South	Texas Project, Unit 2	05000499		YEAR	NUMBER	NO.	
				2021	- 002	- 01	
	performed the replacement activ replacement of the B-Train han fans started, indicating a potent	vity reported it w d switch, Operati ial intermittent fa	as sticking when operating ions manipulated the switch ailure of the switch.	g. Addities h to the s	onally, prior to start position a	o Ind the	
	Operations used it to stop the V automatically, to stop the VAH the operator must take the hand should have spring-returned to expected to go from being close Project Nuclear Operating Com spring returned to center when	AH-005 fans, in -005 fans after a switch from the center, which is t ed to open withou pany (STPNOC) VAH-005 was st	accordance with procedur start due to any cause othe AUTO position to the ST he AUTO position. The sy at some external event occ concluded the componen opped on October 5, 2021	e. Althou er than hi OP positi witch cor curring, th t failure o	igh the fans ar gh room temp ion. The hand ntact would no nerefore South occurred when	e started erature, switch t be Texas	
C.	Systems or secondary functions	that were affected	ed by the failure of compo	onents wi	th multiple fur	nctions	
	This event involved a failure in HVAC system, resulting in the System being declared inoperate Spray on FHB HVAC supplem design. No other systems were	the B-Train supp B-Train Safety In ole. The dependent ental coolers is an directly affected	blemental coolers portion on njection System and the B ncy of B-Train Safety Inje n expected consequence o	of the Fu -Train Co ction and f the app	el Handling B ontainment Sp d B-Train Cont roved STPEG	uilding ray tainment S	
D.	Failed component information						
	The B-Train hand switch was a This model control switch is a f Pull-to-Lock capability, and a p the industry and at STPEGS in Room and in Switchgear of the reliability, but they can develop	General Electric Four-position, thread istol hand grip. Comany application Power Distribution high contact res	SBM control switch mod ee-stage, with spring retur General Electric SBM rota is; most of these are in the on System. They are a rug istance that in rare instance	el Q16SF n to the c ry switch Control gged desi ces can pr	BMC4A42S1F central position nes are used with Board of the C gn with proven revent relay ac	1P1. 1, idely in Control n tuations.	
III. Ar	alysis of the event						
А.	Safety system responses that oc	curred					
	No safety system responses occ	surred due to this	event.				
B.	Duration of safety system inope	erability					
	The Unit 2 B-Train LHSI, HHS at 0348 hours until October 15,	I, and Containme 2021 at 2318 ho	ent Spray systems were in urs.	operable	from October	5, 2021	
C.	Safety consequences and implie	cations					
	Supplemental cooler VAH-005 Pump 2B, and Containment Spr support the B-Train of the ECC inoperable from October 5, 202	provides cooling ray Pump 2B mor S and Containme 1 through Octobe	g for continued operation of tors, so it is considered rec ent Spray System. These s er 15, 2021 due to the inab	of the LH quired au ystems w pility to p	SI Pump 2B, I xiliary equipm vere declared provide sufficie	HHSI tent to	

NRC FORM 366A U.S. NUCLEAR REGULA	TORY COMMISSION	APPROVED BY OMB: NO. 3150-010)4	EXPIRES:	08/31/2023			
(08-2020) LICENSEE EVENT RI CONTINUATION \$ (See NUREG-1022, R.3 for instruction and guidance	EPORT (LER) SHEET	Estimated burden per response to comply w lessons learned are incorporated into the lice regarding burden estimate to the FOIA, Libra Nuclear Regulatory Commission, Wa Infocollects.Resource@nrc.gov, and the OME Affairs, (3150-0104), Attn: Desk ail: <u>oira su</u> sponsor, and a person is not required to res	ith this mandatory insing process ar ary, and Informati shington, DC 3 reviewer at: ON ibmission@omb.e soond to, a collec	r collection request: 80 ho nd fed back to industry. Se on Collections Branch (T-f 20555-0001, or by dB Office of Information a <u>sop.gov</u> . The NRC may m ition of information unless.	ours. Reported and comments 6 A10M), U.S. e-mail to and Regulatory not conduct or the document			
https://www.nrc.gov/reading-rm/doc-collections/nur	egs/staff/sr1022/r3/)	requesting or requiring the collection displays	a currently valid C)MB control number.				
	2. DOCKET	NUMBER		3. LER NUMBER	BEV			
South Texas Project, Unit 2	05000499		YEAR	NUMBER	NO.			
HVAC heat removal.			2021	- 002	- 01			
This ten-day period exceeds the 3.5.2 Limiting Condition for Op Containment Spray System Tec (a).	This ten-day period exceeds the seven-day allowed outage time of the ECCS Technical Specification 3.5.2 Limiting Condition for Operations Action (a) and the seven-day allowed outage time of the Containment Spray System Technical Specification 3.6.2.1 Limiting Condition for Operations Action (a).							
The period of inoperability for l supplemental cooler VAH-005 HHSI Pump 2B, and Containing automatically with an ESF sign rates. During the ESF mode of subsystem continues to draw ou subsystem pulls air through retu through the plant main vent state Fuel Handling Building, and ev Spray pump room. This air flow	ECCS B-Train ar not providing coo ent Spray Pump 2 al and would hav operation, the saf itside air into the irn air registers in ck. The exhaust a rentually outside v will be availabl	nd Containment Spray B- oling for continued operat 2B motors. These pumps re started successfully and fety-related Fuel Handling building through the relie in the cubicles and exhaust fir fans will draw air from air, to the B-Train Safety e for some heat removal f	Frain is be ion of the were avai provided Building of damper t ventilati- the lowe Injection from the p	ased on the LHSI Pump 2 lable to start their design f g exhaust air s. The exhaust on ducts to exi r elevations of and Containm pump room.	2B, flow t air it f the nent			
Due to the condition with the B started with an ESF actuation the 2B, or Containment Spray Pum. The valve room supplemental c temperature was sensed by the its design capacity for heat remu- is independent of the control circ	-Train hand swite rough the breake p 2B. VAH-005 ooler VAH-013 thermostat in the oval with essentia rcuit VAH-005.	ch, the VAH-005 and VA er closed contacts for the l would also not have started would have started autom valve room (FHB Room al chilled water. The high	H-013 far LHSI Puned on high atically if 008) and temperat	ns would not h np 2B, HHSI I 1 room temper high room would have pr ture start of VA	nave Pump rature. rovided AH-013			
Considering the size of the B-T provided air drawn to the exhau start on valve room high temper 2B, and Containment Spray Pur upon. The failure of the B-Train safety.	rain Safety Inject 1st air subsystem, rature, engineerin mp 2B motors co 1 hand switch (B2	tion and Containment Spr and the availability of su ig judgement indicates the uld have continued to ope 2HFHS9527) did not sign	ay pump pplement e LHSI Pu erate succ ificantly	room, the cool al cooler VAH ump 2B, HHSI essfully if call compromise p	ling I-013 to I Pump .ed lant			
IV. Cause of the event								
The most-likely cause of the ev in the switch. The failed switch	ent was due to a swas not retained	sticking hand switch or du for more detailed failure	ie to a hig analysis.	gh resistance c	ontact			
V. Corrective actions								
As a corrective action, the stick successfully performed on Octo	ing B-Train hand ber 15, 2021.	l switch was replaced, and	l a post-m	naintenance tes	st was			
STPNOC plans to improve the they are removed following an database and is due to be compl	process of requiri unexpected failur lete August 31, 2	ing retention of component re. This corrective action in 022.	nts for fur is being ti	ther analysis a racked in the C	after CR			

			24		00/24/2022		
	EPORT (LER) SHEET	Estimated burden per response to comply wi lessons learned are incorporated into the lice regarding burden estimate to the FOIA, Libra Nuclear Regulatory Commission, Wai Infocollects.Resource@nrc.gov, and the OME Affairs (3150-0104) Atto: Desk all. oira au	ith this mandatory ensing process ar ary, and Informati shington, DC B reviewer at: ON	y collection request: 80 ho d fed back to industry. Se on Collections Branch (T-6 20555-0001, or by JB Office of Information ar	urs. Reported nd comments & A10M), U.S. e-mail to nd Regulatory		
(See NUREG-1022, R.3 for instruction and guidance https://www.nrc.gov/reading-rm/doc-collections/nu	for completing this form regs/staff/sr1022/r3/)	sponsor, and a person is not required to res requesting or requiring the collection displays a	pond to, a collec a currently valid C	tion of information unless to MB control number.	the document		
1. FACILITY NAME	2. DOCKET	NUMBER		3. LER NUMBER			
South Texas Project, Unit 2	05000499		YEAR	SEQUENTIAL NUMBER	REV NO.		
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follow the industry recommend concluded that the other industry inspect them for developing iss of other switches on the control STPNOC inspected four other evaluate if the preventative man have no discrepancies, clean co evaluated and STPNOC determ sufficient. Therefore, the correct	ation for cycling cy recommendation ues presented too board. SBM hand switch intenance strategin ontacts, and opera- tined that the currective action to inc	the hand switches to verify on for de-terming and re-to high of a plant status cor- ness at the station to determ es need to be revised. All ted smoothly without stick rent preventative maintena- rease the frequency of the	fy operab erming the ntrol risk of nine the m four switt king. The ance freque preventa	ility. STPNOC the hand switched due to the proxi- naterial conditi thes were four results were uency and scop native maintenan	es to cimity ons and nd to be are nce		
from 468 weeks to 234 weeks weeks to 234 weeks weeks to 234 weeks weeks to 234 weeks	was canceled. As nd switches, and	an alternate solution, syst if a trend is identified will	em engin l generate	eers will contine corrective act	nue to tions.		
General Electric SBM rotary sw applications; most of these are Power Distribution System. Th they can develop high contact r	vitches are used v in the Control Bo ey are a rugged d esistance that in t	videly in the industry and ard of the Control Room esign with proven reliabil care instances can prevent	at STPE and in the ity, but S relay act	GS in many e Switchgear of TP experience uations.	f the shows		
Since the SI and Containment S switches are not exercised frequencies of the switch mechanism and de actuations.	Spray pumps are n uently. This can l evelop high conta	rarely energized, GE SBM ead to contamination build act resistance that in rare in	I series co dup on th nstances o	ontrol room ha e contacts or b can prevent rel	nd inding ay		
A similar event occurred at ST and VAH-012 failed to start fol resistance of the associated A-7 STPNOC created preventive m oxidation and exercise the swit events since 2007.	A similar event occurred at STPEGS in 2007. In this similar event, the Unit 1 A-Train fans VAH-004 and VAH-012 failed to start following a start of LHSI Pump. This failure was attributed to high contact resistance of the associated A-Train hand switch (A1HFHS9517). As a corrective action for this event, STPNOC created preventive maintenance activities to cycle the hand switches to remove contact oxidation and exercise the switch. These actions have proved effective in preventing additional similar events since 2007.						
Additionally, there is also induce broken contacts that can prever Associates, Inc., "Generic Qual followers were the result of som manufacturing. The hydrocarbo polycarbonate. As a result, mai cleaner. Industry operating exp by tarnished, dirty, or loose cor	stry experience w at switch actuation lification of Rotan ne of the cam follons would cause t ntenance procedu erience has also f ntacts.	ith defective internal cam n found in a report prepar- cy Hand Switches," May 1 lowers being exposed to h he cam followers to degra tres were revised to prohil cound multiple instances o	follower ed by Pov 1983. The ydrocarb ade as the bit the use of failed a	s and worn, dir wer Technical e defective cam ons during y were made o e of hydrocarbo ctuation being	rty, or n of ons as a caused		
Additional recent industry guid describes a General Electric typ was found to have fouling on th	ance can be foun be SBM control s ne contacts that p	d in a special inspection rewitch that failed to actuate revented the current flow	eport, MI e. When e necessary	221321A365, t examined the s to actuate the	hat witch		

	NRC FORM 366A U.S. NUCLEAR REGULA	TORY COMMISSION	APPROVED BY OMB: NO. 3150-010	4	EXPIRES:	08/31/2023
Both MDEEG-1022, R.3 for individuo and updateous for comparing the formation and updateous in our page the product is a collected individuo and updateous in the collected individual experiments and updateous individual experiments. I - FACILITY NAME COCKET NUMBER C.ERNIMER South Texas Project, Unit 2 05000499 Train formation of the source in the collected individual experiments and updateous individual experiments. South Texas Project, Unit 2 05000499 Train formation of the source in the collected individual experiments. System. After further investigation the fouling was determined to be caused by no preventive maintenance activities being performed. Source in the collected individual experiments.		EPORT (LER) SHEET	Estimated burden per response to comply wit lessons learned are incorporated into the licer regarding burden estimate to the FOIA, Librar Nuclear Regulatory Commission, Was Infocollects.Resource@nrc.gov, and the OMB	th this mandatory nsing process and ry, and Informatic hington, DC previewer at: OM	collection request: 80 ho d fed back to industry. Se on Collections Branch (T-f 20555-0001, or by B Office of Information at	urs. Reported and comments A10M), U.S. e-mail to nd Regulatory
Itemportugion Instruction Concernment of the collection detype is a currently with OMB control municipation. 1. FACILITY NAME 2. DOCKET NUMBER 3. LERNMBER Second municipation. Rev. South Texas Project, Unit 2 05000499 10.002 -0.01 -0.02 -0.01 system. After further investigation the fouling was determined to be caused by no preventive maintenance activities being performed. Second municipation Rev. -0.02 -0.01	(See NUREG-1022, R.3 for instruction and guidance	for completing this form	Affairs, (3150-0104), Attn: Desk ail: oira_sub sponsor, and a person is not required to resp	omission@omb.ec oond to, a collect	<u>op.gov</u> . The NRC may not ion of information unless	ot conduct or the document
1. FACILITY NAME 2. EDR.NUMBER 3. LER.NUMBER South Texas Project, Unit 2 05000499 Team South Texas Project, Unit 2 0.002 -0.01 system. After further investigation the fouling was determined to be caused by no preventive maintenance activities being performed. system Provide the texas of texas of the texas of texas of the texas of	https://www.nrc.gov/reading-rm/doc-collections/nur	egs/staff/sr1022/r3/)	requesting or requiring the collection displays a	a currently valid O	MB control number.	
South Texas Project, Unit 2 05000499 YEAR Structure 2021 OUNCE	1. FACILITY NAME	2. DOCKET	NUMBER		3. LER NUMBER	
2021 -002 -01 system. After further investigation the fouling was determined to be caused by no preventive maintenance activities being performed.	South Texas Project, Unit 2	05000499		YEAR	SEQUENTIAL NUMBER	REV NO.
system. After further investigation the fouling was determined to be caused by no preventive maintenance activities being performed.				2021	- 002	- 01
	system. After further investigati maintenance activities being pe	ion the fouling w rformed.	as determined to be cause	d by no p	reventive	