Pow	ver Reactor				Event # 43527					
			Regior P,[2] W-3-L_	P		me: 07/27/2007 me: 07/26/2007 ion: 07/27/2007	09:05	(EDT) (EDT)		
HQ Emerg	Notified by: Ops Officer: gency Class: CFR Section:	MARK A NON EM	BRAMOVIT		Notifications: JOI PAI	EL MUNDAY RT 21 (E-MAIL)		R2 NRR		
Unit	Scram Code	RX Crit	Init Power	Initial RX Mode	Curr Power	Current RX Mod	le			
1 2	N N	Yes Yes	100 100	Power Operation Power Operation	100 100	Power Operatio Power Operatio				

PART 21 NOTIFICATION - FAILURE OF ENERSYS (EXIDE) BATTERY

In March 2005, battery cell internal resistance for an EDG battery bank revealed five cells with abnormal resistance. "There was one cell for which no reading could be obtained and was replaced immediately. A second cell had a reading that was nearly four times the average of the associated string and was subsequently replaced as a proactive measure during the EDG maintenance outage. Three (3) other cells were noted with higher than average readings that are not considered to be operability concerns. In total, five (5) cells out of a total of 240 were found with higher than expected internal resistance values."

The failed battery was destructively tested revealing significant corrosion within the battery. The unit-2 batteries have been replaced. The unit-1 batteries will be replaced in the fall 2007 outage.

Manufacturer: Enersys (Exide) Model: 3CA-5 Serial Number: beginning with 05

The licensee notified the NRC Resident Inspector.



Received at: 07/27/2007 09:03

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NRC FORM 381				·			U.S. NUCLEA	R REGULATORY	COMMISSIO
12-2000)		REACT	OPERATIONS CENTER						
	1	EVEN	TNOT		WORKSHE	ET	EN#	4352 (
NRC OPERATION TELEP	HONENU	UMBER: P	PRIMARY -	- 301-816-5100	or 800-532-3469*,	BACI	(UPS [1st] 301-	-951-0550 or 800-4	49-3894*,[2n
301-415-0550 and [3rd] 3	01-415-055 FACILITY O	53 "License	es who mainte	ain their own ETS are UNIT	provided these telephone	numbe	эгв.	CALL BACK #	
0905	1 - North A	Anna			Licensing				
	ation		1 and 2	I om Snaub		9.42E-			
EVENT TIME & ZONE	EVENT DAT	ATE F	POWER/MOD	E BEFORE		PC	WERMODE AFTER		
VA	07/26/07		100%/Moo			10	100%/Mode 1		
EVENT CLASSIFI	CATIONS	S 1	I-Hr. Non-	Emergency 10 (OFR50.72(b)(1)		(v)(A) Sate S/D Ca	pability	AI
GENERAL EMERGENCY	GEN	AAEC	TS Devia				(v)(B) RHR Capabi		A
SITE AREA EMERGENCY SIT/AAEC			4-Hr. Non-Emergency 10 CFR 50.72(b)(2) (V)(C) Control of Red Release				ed Release	A1	
ALERT	ALE/A	AAEC	(i), TS	Required S/D	ASHU		(v)(D) Accident Mit	igetion	AI
UNUS JAL EVENT		AAEC		CCS Discharge to R	······································		(xii) Offsite Medic		AM
SO.72 NON-EMERGENCY				PS Actuation (scra		+	(xiii) Loss of Comm		AC
PHYSICAL SECURITY (73		0000		ffaite Notification	APRE	╄┯		tional 10 CFR 50.7	73(a)(1)
MATERIAL/EXPOSURE					CFR 50.72(b)(3)	$\downarrow \downarrow$		d System Actuation	
FITNESS FOR DUTY		HFIT		graded Condition	ADEG	<u> </u>	Other Unspec	lfied Regulrement	t (Identify)
OTHER UNSPECIFIED R	EQMT(see last i	(calumn)	(ii)(B) Un	analyzed Condition	AUNA	X	10 CFR Part 21	Notification	NO
INFORMATION ONLY		NINF	(iv)(A) S	pecified System Act	uation AESF				NO
		nd their in	itiating sign		RIPTION et of event on plant, a	action	is taken or planned	i , etc. (Continued or	n beck)
10 CFR 21 Notificatio Abstract: Internal cell resistance	n e measure	ements d	obtained o	als, causes, etie on one of the s	et of event on plant, a afety-related eme	rgên	cy diesel gener	ator (EDG) batte	ries identifie
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	ADDITIONAL INFORMATION PAGE 2 OF 2												
RADIOLOGICAL RELEASES: CHECK OR FILL IN APPLICABLE ITEMS (specific details/explanations should be covered in event description)													
	LIQUID RELEASE GASEOUS RELEASE		UNPLANNED RELEA				PLANNED RELI		ONGOING	TERMIN			
	MONITORED	UNMONITORED	OFFSITE I	OFFSITE RELEASE		\square	T. S. EXCEEDED		RM ALARMS	AREAS	EVACUATED		
-	PERSONNEL EXPOSED	OFFSITE	PROTE	CTIVE /	ACTIO	NS RECOMM	IENDED	*State release pa	ase path in description				
Total Activity (CI) % Release Rate (Release Rate (Cl/sec)	% T. S. LIMIT		HOO GUIDE		Total Activ	vity (CI)	% T. S. LIMIT	HOO GU	IDE		
No	ble Gas	<u>фаниции и положи и по</u>	1	01 C	1 Ci/sec				1000 Ci				
	line	T	1		10 uCi/sec					0.01 Ci			
_	rticulate				1 aCi/	sec				1 mCi			
	uld <i>(excluding iritium and</i> solved noble gases)				10 uCi	i/min				0.1 Ci			
Lig	iuki (tritium)				0,2 Ci	/min				5 Ci			
Tot	tal Activity												
		PLANT STACK	CONDENS	ERAIR E	JECTOR	M	IAIN STEAM LIN	NE	SG BLOWDOWN		OTHER		
RAD	D MONITOR READINGS	·	Γ			Τ					-		
ALA	ARM SETPOINTS	1				T							
%7	T. S. LIMIT (If applicable)	1	1			+-					1		
_		CK OR FILL IN APPLICABLE ITE	MS: (specific) detaila/a)	xplemetic	ins she	uld be covered	d in event à	isecription)				
LOC	CATION OF THE LEAK (e.g.,	, SG #, valve, pipe, etc.)											
LEA	AK RATE:	UNITS gpm/gpd		T. S. LIN	AITS			SUDDEN	OR LONG-TERM DEVE	ELOPMENT			
LEA	AK START DATE		COOLAI AND UN		IVITY	PR/MARY	S	SECONDARY	ECONDARY				
LIST OF SAFETY RELATED EQUIPMENT NOT OPERATIONAL													
EVENT DESCRIPTION (Continued from front)													
<u>Description</u> (continued) A Part 21 evaluation was performed (2005) and it was concluded that this was not a substantial safety hazard because the defect would be identified through normal battery testing before a battery was rendered incapable of performing its function. A more recent review of this issue along with discussions with NRC personnel has resulted in re-evaluation of this earlier conclusion. Without the new quarterly internal cell resistance tests that were created, the Technical Specification required battery surveillances (weekly, quarterly and 18-month) would not be able to detect this internal degradation. The 5-year EDG battery capacity test would be able to detect when internal resistance advanced to the point where capacity was <80% of manufacturers rating, but the degradation could progress between tests resulting in inoperability without detection.													

Causes:

Equipment Specification, Manufacture, and Construction- Fabrication Deficiency

The internal lead post and connector / terminal within the battery jar were bonded together by hand using a high temperature heating process referred to as a "burn". If the temperature used during the "burn" is too low, cracks and voids are left between the post and connector. Acid seeps into the voids, causing the post to corrode and resulting in an open circuit over an extended period of time.

Corrective Actions:

Cell internal resistance readings were obtained on all four (4) battery banks for the EDGs. There was one cell for which no reading could be obtained and was replaced immediately. A second cell had a reading that was nearly four times the average of the associated string and was subsequently replaced as a proactive measure during the EDG maintenance outage. Three (3) other cells were noted with higher than average readings that are not considered to be operability concerns. In total, five (5) cells out of a total of 240 were found with higher than expected internal resistance values.

Periodic testing of all North Anna EDG batteries was put in place to monitor for this defect (increases in internal cell resistance readings) to confirm continued operability of all EDG batteries. In parallel, plans were launched to replace all EDG batteries with models that are not susceptible to this defect. Unit 2 batteries have been replaced and Unit 1 batteries will be replaced during the fall 2007 outage.

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