NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE 1
South Texas Unit 1	05000 498	1 OF 6

TITLE (4) Standby Diesel Generator 13 Failure to Start

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
01	20	93	93	-- 005 --	01	11	23	93		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
POWER LEVEL (10)	95	20.402(b)		20.405(c)		50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)	73.71(c)
		20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)	X OTHER
		20.405(a)(1)(iii)	X	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)		50.73(a)(2)(iii)		50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Jairo Pinzon - Senior Engineer	(512) 972-8027

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
E	EK	DG	C634	YES						

SUPPLEMENTAL REPORT EXPECTED (14)			EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE).	X	NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On January 20, 1993, Unit 1 was in Mode 1 at 95% power. Standby Diesel Generator 13 failed to start during a monthly surveillance, due to paint which had been applied to the fuel injection pumps. The paint ran into the fuel metering rod ports and caused binding of the fuel metering rods. The primary cause of this event was the lack of proper work process control. Contributing causes were inadequate implementation of lessons learned from industry operating experience and inadequate verbal communications which led to a lack of clearly defined responsibility for ensuring paint was not applied inappropriately. Corrective actions that have been or will be taken include revising work process control documents to include specific guidance on painting activities and pre-job briefings, enhancing the Operating Experience Review program, performing a case study of the event for training purposes, and including the event in the Licensed Operator Requalification Program. This event is also being reported as a valid failure of Standby Diesel Generator 13. The performance described herein clearly does not meet management's expectations. Efforts to improve station safety culture are ongoing.

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DESCRIPTION OF EVENT:

On January 20, 1993, Unit 1 was in Mode 1 at 95% power. Standby Diesel Generator (SDG) 13 failed to start during a scheduled monthly surveillance. Troubleshooting showed that paint which had been applied to the fuel injection pumps, ran into the fuel metering rod ports and caused binding of the fuel metering rods. The NRC was notified on January 20, 1993, at 2359 hours.

As part of the Material Condition Improvement Pilot Program, a contract for painting was awarded. At the request of the Pilot Program Leader (PPL) a work document was revised to paint SDG 13. The work document was revised by the planner on November 12, 1992, and signed by the Responsible Maintenance Authority on December 28, 1992.

On December 28, 1992, representatives from HL&P, the contractor Superintendent and contractor Foreman met to discuss the painting activities. Detailed directions were given by Maintenance on what was and what was not to be painted. The areas not to be painted centered on the fuel linkages. Instructions were given not to paint any labels, conduit, stainless steel, and shiny metal (alloys), or areas that had not been painted before.

The work request included an Operational Impact Assessment that required a Post Maintenance Test (PMT). This PMT, consisting of a start test, was written to "verify proper operation after coating is complete to ensure that the throttle linkage is not binding". The operations shift was told that the work would take approximately two to three weeks to complete. The operations shift thought there were two options for performing the start test, (1) declare the SDG inoperable every day that painting was performed and perform a start test at the end of the day to restore operability of the SDG or (2) declare the SDG inoperable for the duration of the painting and perform the start test at the end of that period. Neither option seemed viable, however, the operations shift agreed that the PMT was not necessary when told of the actions planned to ensure that paint would not be applied to inappropriate surfaces. These actions included a pre-job briefing with the HL&P representatives, the contractor Superintendent and the contractor Foreman. Additionally, the contractor was given direction to pick five of their best painters, who would be under the constant supervision of the contractor Foreman.

When management learned of the removal of the start test, the System Engineer was contacted to perform daily checks of the painting activities as an added precaution. Management intended that the System Engineer would be responsible for ensuring paint would not be applied inappropriately. The System Engineer did not understand that it was his responsibility for ensuring this happened.

DESCRIPTION OF EVENT: (Cont'd)

Painting began on SDG 13 on December 29, 1992, and the majority of the work was completed within three days, followed by touch up of certain areas. The original prediction of two to three weeks was based on painting all components in the SDG room, not just the SDG.

A start of SDG 13 was attempted on January 20, 1993, as part of a scheduled monthly surveillance, and at 0627 hours SDG 13 was declared inoperable when it failed to start. The problem was traced to the fuel injection pumps. The fuel metering rods, which are connected to the throttle linkage, move in and out of the fuel injection pump. The fuel metering rod moves all the way through the pump, with a small portion exiting the inboard portion of the pump. The hole that the metering rod travels back and forth through, had paint obstructing the passage on 11 of the 20 pumps. The positioning of the pump is such that any extra paint on the body of the pump around the hole would allow paint to run into the hole and bind the metering rod. The affected fuel metering pumps were cleaned and lubricated. SDG 13 was returned to service on January 22, 1993, at 2101 hours.

CAUSE OF EVENT:

The primary cause of this event was lack of application of proper work process controls. The applicable painting procedure was inadequate, in that mandatory, in-process controls and maintenance tests were not required when painting safety-related components. An inappropriate decision to delete the PMT was made and the added precautions were inadequate. Additionally, the pre-job briefing was inadequate.

A contributing cause was inadequate implementation of lessons learned from industry operating experience. Although previous industry events of a similar nature had been reviewed as part of the station Operating Experience Review Program, the personnel involved in the painting were not fully cognizant of this experience and controls were insufficient to ensure cited corrective actions were implemented.

Other contributing causes were inadequate verbal communications which led to a lack of clearly defined responsibility for ensuring paint was not applied inappropriately.

ANALYSIS OF EVENT:

SDG 13 was determined to have been inoperable from the time the painting began on December 29, 1992, until 2101 hours on January 22, 1993, (approximately 24 days) when the SDG was returned to service. Failure to restore SDG 13 to operable status within 72 hours is a violation of Technical Specification 3.8.1.1, Action b and therefore reportable pursuant to 10CFR50.73(a)(2)(i)(b). A subsequent review of the Operability Tracking Log (OTL) index showed that SDG 12 was inoperable for maintenance approximately 61 hours during the 24 days in which SDG 13 was inoperable. Failure to restore at least two SDGs to operable status within 2 hours is a violation of Technical Specification 3.8.1.1, Action f. The OTL index review also showed that during the 61 hours, some cross-train equipment was inoperable, and turbine-driven auxiliary feedwater (AFW) pump 14 was in a condition in which it may not have automatically started (ref: LER 93-007, Unit 1); this is a violation of Technical Specification 3.8.1.1, Action d. Additionally, Technical Specification 3.0.4 was violated because Unit 1 changed Modes three times while SDG 13 was inoperable. This event is also being reported as a valid failure of SDG 13 because SDG 13 failed to start during a scheduled monthly surveillance.

The SDG and AFW events were analyzed using the STP Probabilistic Safety Assessment (PSA), which has been reviewed by the NRC as documented in a Safety Evaluation Report dated January 21, 1992. The concurrent SDG and AFW unavailability is estimated to have negligibly changed the annual average core damage frequency from 4.4E-5/yr to 4.5E-5/yr.

The impact of SDGs 12 and 13, and AFW pump 14 being simultaneously unavailable is partially compensated for by STP's three-train safety design, with one train sufficient to mitigate most design basis accidents. The effects of this event on the following UFSAR Chapter 15 safety analyses were considered: loss-of-cooling accident (LOCA), main steam line break, feedwater line break, steam generator tube rupture, station blackout, anticipated transient without scram, and long-term cooling. The STP design has sufficient redundancy and margin to ensure that the acceptance limits for the above mentioned accidents would not be exceeded, with the exception of certain large break LOCAs.

ANALYSIS OF EVENT: (Cont'd)

During a LOCA, one train of safety equipment is sufficient to ensure calculated results remain below the acceptance limits. The only exception is when a break occurs in the Reactor Coolant System cold leg with the operating Safety Injection (SI) train such that the required SI flow does not inject in to the reactor core. During the 61 hours in which SDGs 12 and 13 were coincidentally inoperable and AFW pump 14 potentially inoperable, the calculated results for this type of large break LOCA would have exceeded the acceptance limits. However, the STP PSA shows that this large-break LOCA coincident with a loss of offsite power (LOOP) is highly improbable. The NRC approved leak-before-break methodology also supports this conclusion. Hence, the actual safety significance is small due to the extremely low probability of the accidents.

CORRECTIVE ACTIONS:

1. The affected fuel metering rods were cleaned and lubricated. SDG 13 was run satisfactorily and returned to service on January 22, 1993, at 2101 hours.

2. The painting and coating procedure has been enhanced with respect to the pre-job briefing and PMT following painting.

3. The PMT Reference Manual has been revised to require post maintenance testing to be considered following maintenance involving painting or coatings.

4. The lessons learned from this event have been discussed with Senior Reactor Operators (SROs) assigned to both Units. Additionally, this event has been included in the Lessons Learned portion of the licensed Operator Requalification Training Program.

5. The Operating Experience Review program will continue to be enhanced per the STP Business Plan to ensure that lessons learned are translated into actions for the enhancement of plant safety and reliability.

6. HL&P has completed a case study of the SDG event for training purposes. The training has been presented to Shift Supervisors and Maintenance Planners in their continuing training programs and has also been presented to System Engineers.

ADDITIONAL INFORMATION:

Including this event, there had been one valid failure in the previous 20 valid tests and less than four valid failures in the previous 100 tests. Therefore, on January 20, 1993 the testing frequency was not changed from once per 31 days for SDG 13.