NRC FORM 366 (6-89) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 5/31/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Perry Nuclear Power Plant, Unit 1	0 5 0 0 0 4 4 0	1 OF 0 4

TITLE (4): Full Scram Signals Received from a Combination of Half Scrams Inserted for Planned Maintenance and Spurious Half Scram Signals from Other Outage Activities

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 NAMES	DOCKET NUMBER(S)
										0 5 0 0 0
0 3	3 1	9 2	9 2	- 0 0 7	- 0 0	0 4	2 4	9 2		0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 0 0	20.402(b)	20.405(c)	X 60.73(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)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
		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
	AREA CODE
Henry L. Hegrat, Compliance Engineer, Extension 5185	2 1 6 2 5 9 - 3 7 3 7

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	

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 fifteen single-space typewritten lines) (16)

On March 31, 1992 at 0425, and April 6, 1992 at 2138, while in Operational Condition - for a refuel outage, full scram signals were received from a combination of a half scram inserted for planned maintenance and the initiation of an unexpected half scram signal from a spiking Local Power Range Monitor (LPRM) and Intermediate Range Monitor (IRM) respectively.

The LPRM spiking in the March 31 event was determined to be caused when contractor personnel working under the reactor vessel bumped an LPRM cable. The April 6 event was caused either when electronic noise produced by welding in the drywell area interacted with IRM E, causing it to spike; or when contractor personnel working under the reactor vessel bumped an IRM cable.

On March 31, 1992 work in the area was stopped and LPRM cables were inspected and none were found to be damaged. IRM cables will be inspected as necessary to determine if equipment condition contributed to the IRM spiking problem. A design change to upgrade the cable connectors is also being evaluated. Work groups have been directed to notify the control room prior to any welding in the drywell. Additionally, these events will be reviewed with licensed and nonlicensed operators as part of routine operator requalification training.

I. Introduction

On March 31, 1992 at 0425 and April 6, 1992 at 2138, full scram signals were received from a combination of a half scram inserted for planned maintenance and the initiation of an unexpected half scram signal from a spiking Local Power Range Monitor (LPRM) and Intermediate Range Monitor (IRM) respectively. At the time of these events, the plant was in Operational Condition 5 (Refuel). The Reactor Pressure Vessel [RPV] was at atmospheric pressure with the reactor water temperature at approximately 89 degrees Fahrenheit. The required non-emergency four-hour notifications were made to the NRC pursuant to the requirements of 10CFR50.72(b)(2)(ii). These events are being reported under the requirements of 10CFR50.73(a)(2)(iv).

II. Event Description

On March 31, 1992 at 0217, a half scram signal was inserted on Reactor Protection System [JC] (RPS) A in accordance with Technical Specification 3.3.1 due to the planned deenergization of IRMs A, C, E, and G for the Divisional 1 electrical equipment [EB] outage. At this time work was also being performed under the reactor vessel to remove Traversing In-Core Probe (TIP) tubing hangers. At 0418 LPRM 3A-48-41 spiked causing an upscale trip of Average Power Range Monitor (APRM) B, resulting in a trip on RPS B. With a half scram already inserted in RPS A, a full scram signal was generated. All of the control rods were inserted at the time, no rod movement occurred and the operators immediately reset the scram. Personnel working under the vessel were instructed to exit the area until an inspection concluded no cables had been damaged.

On April 6, 1992, at 2117 a half scram signal was inserted on RPS B in accordance with Surveillance Instruction (SVI-D17-T0041B) "Main Steam Line Radiation Monitor 1D17-K610B Calibration". Also at this time, work was being performed under the reactor vessel for Control Rod Drive [AA] removal and in the drywell for a Reactor Water Cleanup [CE] pipe replacement. At 2138 IRM E spiked giving a trip on RPS A, resulting in a full scram signal. The Control Room operators reset the half scram signal on channel A at 2139; however, IRM E again spiked and another full scram signal was received. Personnel working in the drywell and under-vessel area were directed to stop work. At 2207 the half scram signal of channel B was reset and at 2217 the channel A half scram signal was reset. At 0137 on April 7, following the successful completion of SVI-D17-T0041B, the Main Steam Line Radiation Monitor for channel B was considered operable.

III. Cause Analysis

The APRM trip in the March 31, 1992 event was determined to be caused when contractor personnel working under the reactor vessel bumped an LPRM cable. The conditions for undervessel work are very close and cramped and half scrams, although not planned, are not unexpected.

During the April 6, 1992 event, work was being performed under-vessel and welding was being performed in the drywell area. It was not thought by the workers under the reactor vessel that they had bumped any equipment or keyed any radios at the time of the event, however, as undervessel work has caused numerous half scrams signals this can not be conclusively eliminated as the cause. Another possible cause is that electronic noise produced by welding in the drywell area interacted with IRM E, causing it to spike. Previously on April 6, 1992 welding had been blamed for abnormal performance of a Source Range Monitor (SRM).

IV. Corrective Action

On March 31, 1992 work in the area was stopped and LPRM cables were inspected and none were found to be damaged. IRM cables will be inspected as necessary to determine if equipment condition contributed to the IRM spiking problem. A design change to upgrade the cable connectors is also being evaluated. Work groups have been directed to notify the control room prior to any welding in the drywell. Additionally, these events will be reviewed with licensed and nonlicensed operators as part of routine operator requalification training.

V. Safety Analysis

The Reactor Protection System is designed to provide protection against the conditions that threaten the integrity of the fuel barrier and reactor coolant pressure boundary. This is accomplished by rapid insertion of all control rods into the reactor core (scram) to shut down the reactor, when specific variables exceed predetermined limits. The RPS is made up of two independent trip systems; the tripping of both systems is required to cause a scram. Although the reactor is shutdown when the plant is in Operational Condition 5 (refuel), the RPS function from IRMs and APRMs is still required to be operable at this time and a scram accumulator is required to be operable for any withdrawn control rod. The Technical Specifications allow one control rod to be withdrawn under the refuel condition and the IRMs and APRMs must be capable of scramming that rod should the indicated neutron flux require it.

In these events, one of the RPS trip systems was required to be placed in the tripped condition due to planned maintenance. When the spurious signal tripped the other trip system a full scram signal was generated as designed. Although the RPS system can not be physically secured from service, at the time of this event all of the control rods were inserted and the nitrogen accumulators for all hydraulic control units had been depressurized. As it was not intended that any control rod be withdrawn during the time frame of these events, steps had been taken to remove the control rod drives from service. Because no rod motion occurred as a result of these scram signals, these events are not considered to be safety significant.

A similar previous event occurred during the first refuel outage, where a half scram inserted for planned maintenance combined with an unexpected half scram during undervessel work, resulting in a full scram signal. In that event, because all fuel was removed from the vessel, neither the RPS nor the control rod drives were required to be operable and were properly removed from service.

Energy Industry Identification System Codes are identified in the test as [XX].