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)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Dresden Nuclear Power Station, Unit 3	05000249	1 OF 6

TITLE (4)
Unit 3 Manual Scram Due to Fish Run Blockage of Intake Structure

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
10	29	95	95	-- 019 --	00	11	21	95	None	
									FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9)	N
POWER LEVEL (10)	060

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(3)(i)		50.73(a)(2)(iii)		73.71(b)
	20.2203(a)(1)		20.2203(a)(3)(ii)	X	50.73(a)(2)(iv)		73.71(c)
	20.2203(a)(2)(i)		20.2203(a)(4)		50.73(a)(2)(v)		OTHER
	20.2203(a)(2)(ii)		50.36(c)(1)		50.73(a)(2)(vii)		(Specify in Abstract below and in Text, NRC Form 366A)
	20.2203(a)(2)(iii)		50.36(c)(2)		50.73(a)(2)(viii)(A)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)		50.73(a)(2)(viii)(B)		
	20.2203(a)(2)(v)		50.73(a)(2)(ii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Paul Garrett, Plant Engineering Ext. 3585	(815) 942-2920

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
C	KE	SCN	F026	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 October 29, 1995, at 0914 hours, with Unit 3 in the run mode at 60% core thermal power, the 3E and 3F Circulating Water Travelling Screens became obstructed to the point of significantly reducing net positive suction head to the 3C Circulating Water Pump. Reactor power was reduced and a manual scram was initiated at 0914 on October 29, 1995, in accordance with conservative operating standards to prevent a loss of Circulating Water to the unit. The blockage to the travelling screen was later found to be caused by debris, silt, and an unusually large amount of fish. Some individual screen modules on the 3F Travelling Screen were bowed from the weight of the debris. The plant response upon scramming was uneventful, including Group 2 and 3 Isolation. The reactor heat removal was accomplished by using the Isolation Condenser, and Reactor Water Cleanup System. Corrective actions included cleaning and inspection of the affected bays and future evaluation of fish populations.

EVENT IDENTIFICATION:

Unit 3 Manual Scram Due to Fish Run Blockage of Intake Structure

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: 3 Event Date: 10/29/95 Event Time: 0914

Reactor Mode: Run Mode Name: N Power Level: 60%

Reactor Coolant System Pressure: 990 psig

B. DESCRIPTION OF EVENT:

This report is being submitted in accordance with 10CFR50.73(a)(2)(iv), which requires an LER be written for any event or condition that resulted in a manual or automatic actuation of any engineered safety feature.

Prior to the event, the 3A Circulating Water Pump [NN] had been out of service for about six weeks for repairs to its motor. This left the 3B and 3C Circulating Water pumps for service on Unit 3. Two Circulating Water pumps are needed in service, with only one pump in service, pump runout conditions can occur. Unit 2 is in a refueling outage, and none of its three Circulating Water Pumps were operating.

On October 28, 1995, during day shift, an Operator was dispatched to the cribhouse upon receipt of a "Screen Wash Panel Trouble" alarm. The Operator found a high differential pressure on the 3E and 3F Travelling Screens, which are in line with the 3C Circulating Water Pump. The screens were manually started to clear the debris. The Shift Manager (Licensed Senior Reactor Operator) consulted with the System Engineer. They agreed the work on the 3A pump should be expedited so the 3C pump could be taken out of service and the 3E and 3F bays cleaned. The motor for the 3A pump was due back on site on October 31, 1995. Monitoring of the screens would continue so that if conditions degraded they could take appropriate actions.

On October 28, 1995, during day shift, the Unit 3 screens were placed in "manual-slow" for continuous debris removal, due to the increased rate of debris buildup. Caution cards were placed on control switches to leave them in "manual slow" until debris in front of the screens could be cleared.

On October 29, 1995, at about 0700, a Maintenance Supervisor (not filling a licensed role) checked the screens and determined that the support chain tension was not even. He notified the Shift Manager, and they decided that this did not appear to be an immediate threat, but repair would be expedited upon return of the 3A pump to service.

On October 29, 1995, at 0803, the control room again received the "Screen Wash Panel Trouble" alarm. An Operator (non-licensed) was dispatched to investigate and he found the 3E and 3F differential pressure gauges off scale high on the chart, greater than 20 psid. The operator noted the screen wash indication showed slow speed travel, but noted the screens were not travelling. He tried to start the screens in the fast mode but still did not observe any screen motion. The Shift Manager had been monitoring the radio communications and went

to the cribhouse to assess the situation. He and the Operator noted that the Travelling Screen Motor was moving and thus determined that the shear pin to the drive had broken. They also noted that the level in the pump intake was down about ten feet. The Shift Manager assigned the Operator to monitor the bay for signs of further level decrease. A Field Supervisor (Licensed Senior Reactor Operator) was assigned to the cribhouse to monitor the 3C Circulating Water Pump for signs of cavitation. Additional Operators made attempts to remove debris with buckets. Maintenance arrived and started to install a new shear pin on the 3F screen. Meanwhile, the 3E screen had stopped travelling and attempts to restart were unsuccessful. The new shear pin was installed on the 3F screen and it was restarted. It travelled only about six inches before again stopping due to the breakage of the new shear pin caused by the heavy load on the screens.

At 0838 on October 29, 1995, the Shift Manager notified the Unit Supervisor to start dropping unit load, using recirculation flow. The Unit Supervisor notified the Shift Manager that the control room personnel had been preparing for such a contingency based upon lessons learned from a Salem event (SOER 94-01). The Shift Manager authorized a fast load drop, to be completed in a controlled and safe manner. At 0903, the power reduction to 509 MWe from 731 MWe was completed. The Shift Manager met with the Maintenance Supervisor and they decided that with the current situation there were no viable options except for a manual scram. At 0903, on October 29, 1995, the Shift Manager held a briefing with the control room personnel and then ordered the manual scram of the unit. Power was at approximately 509 MWe at 0914 when the unit was manually scrammed.

The plant response was as expected, including a Primary Containment [JM] Group 2 and 3 Isolation, which is normal during a scram recovery. The reactor was cooled using the Isolation Condenser [BL], and Reactor Water Cleanup System (RWCU) [CE]. There were several equipment abnormalities experienced during the shutdown, that are noted below:

1. Low Pressure Feedwater heater [SM] extraction bypass valves 3-3102B and 3102C did not open on turbine trip.

2. The Reactor Water Cleanup auxiliary pump developed a seal leak.

3. Intermediate Range Monitors (IRMs) [IG] 13 and 14 displayed erratic indications.

4. The 3B Reactor Recirculation [AD] Pump stopped its normal runback at approximately 37% speed due to mismatch interlock actuation with the 3A Reactor Recirculation Pump at 43%. Operator action was taken to complete runback of the Recirculation Pumps.

5. Control Rod Drive [AA] pressure indicator PI 3-302-85 developed a small water leak.

6. While continuing reactor cooldown with the Shutdown Cooling (SDC) System [BO], the 3A SDC pump unexpectedly tripped twice.

7. While reconfiguring the RWCU system in response to the RWCU aux pump seal leak, pump suction valve 3-1201-3, failed to fully close.

None of these were consequential, and action requests were written to correct the problems.

C. CAUSE OF EVENT:

The cause of this event was due to a large amount of fish, Gizzard Shad, that overwhelmed the screens. The high differential pressure across the Travelling Screens was caused by the large amount of fish that were concentrated in the middle of the screens.

Contributing to this was the combination of:

1. The 3A Circulating Water Pump out of service for maintenance. This results in a higher flow rate to the 3B and 3C pumps.

2. The buildup of silt and debris on the screens. The fish and debris were accumulating more in the 3E and 3F bays due to the physical configuration of the canal. As the flow in the 3E and 3F bays was reduced, this increased the fish and debris directed to the 3C and 3D bays.

The Travelling Screens sensed the differential pressure across them and tried to move to clear the debris, but eventually the amount of material collecting on the screens reached the point where the weight on the screens caused the shear pin to the drive motor to break. Several of the individual screen modules on the Travelling Screens were bowed due to the weight of the fish and debris, this caused binding which contributed to the shear pin break.

The causes of the other issues identified during the scram were as follows:

1. The packing on heater extraction steam bypass valves 3-3102B and 3-3102C was found to be hardened, thus preventing smooth operation.

2. The RWCU auxiliary pump leakage was caused by pump seal failure.

3. Engineering review of IRM 13 and 14 performance indicated that the spiking observed is consistent with their performance during the current operating cycle, and is not an operability issue. The spiking of IRMs 13 and 14 is attributed to the temperature change during unit cool down, between 500 and 400 degrees F. The erratic behavior is limited to a narrow range of temperature and presently does not effect operability.

4. The Reactor Recirculation Pump runback issue was due to a time delay relay failure in the interlock circuity.

5. The pressure indicator PI 3-302-85 water leak was caused by piping vibration resulting from loose or inadequate supports.

6. Investigation into the 3A SDC pump trips indicated that they were valid low suction pressure trips. Calibration and testing indicates that with 2 SDC pumps operating in the particular condition that existed at the time, suction pressure was at the trip setpoint. Trip of the 3A SDC pump did

not challenge decay heat removal capability. It is believed that the cause of the suction pressure trip was due to a lack of margin in the trip setpoint value.

7. Engineering review into the RWCU auxiliary pump suction valve 3-1201-3 concern indicated that configuration of a closed torque switch contact arm pedestal within the valve operator may have been the cause of the valve not fully closing.

D. SAFETY ANALYSIS:

Blockage of the Travelling Screens will result in reduced cooling capacity. If the flow became low enough, the associated Circulating Water Pump would cavitate and possibly trip. With one Circulating Water Pump already out of service, if one of the remaining Circulating Water Pumps were to trip, the one operating Circulating Water Pump would runout and trip on motor overcurrent. Without circulating water flow through the Condenser, Condenser vacuum would decrease causing a Reactor scram, followed by a turbine trip. The Isolation Condenser would then be used for decay heat removal, with HPCI available as an alternate cooling source. Plant safety, and the safety of the public were not threatened during this event.

E. CORRECTIVE ACTIONS:

1. The immediate corrective action was to manually scram the unit.

2. The individual screen modules in the Travelling Screens will be replaced with a composite material which is lighter and stronger than the steel material currently in use. (249-180-95-01901)

3. The bays were inspected and cleaned by divers. The area of the intake canal in front of the bar racks was inspected and cleaned by divers.

4. A GSRV surveillance will be created to inspect and clean the area of the canal in front of the intake canal and bays, on a prescribed frequency. (249-180-95-01902)

5. An inspection plan will be developed to routinely inspect the condition of the travelling screens. (249-180-95-01903)

6. Gizzard Shad populations will be studied to determine their projected impact at Dresden. An outside agency or company will be considered for the study. Results and recommendations of the study will be implemented as deemed appropriate. (249-180-95-01904)

7. Engineering Operational Problem Response/Trouble Shooting Plan (EOPR#95-00-44-055) which provides Operations with recommendations during heavy fish runs for the operation of the system will be covered during cycle 2 of the licensed operator, and non-license operator continuing training. (249-180-95-01905)

8. Investigate auto function for travelling screens that fast and slow speed are properly set, spray patterns for the spray wash are the correct

configuration for removing debris, and initiation setpoint is appropriate. (249-180-95-01906)

9. Low Pressure Feedwater Heater extraction steam bypass valves were disassembled, machined, and reassembled with new packing and gaskets. These valves will be included in a preventive maintenance program. (249-180-95-01907)

10. The RWCU auxiliary pump was replaced with a complete new pump assembly.

11. Although engineering has determined IRMs 13 and 14 to be fully operable, IRM 14 will be replaced. (249-180-95-01908) IRM 13 requires further trouble shooting and evaluation to determine its resolution. (249-180-95-00802S1)

12. Two time delay relays within the Reactor Recirculation mismatch interlock circuitry were replaced and the system was tested satisfactorily. For Unit 3, the Feedwater Level Control [JB] logic system modification will facilitate use of its logic circuitry to perform the interlock functions of the mismatch interlock relays. (249-180-95-01909A) For Unit 2, the time delay relay function will be incorporated into the Unit 2 Feedwater Level Control [JB] logic system modification; or a preventive maintenance replacement of the time delay relays will be implemented. (249-180-95-01909B)

13. A thorough walkdown of CRD piping involved in the vibration concern was performed and various support system improvements were implemented. Similar Unit 2 CRD piping and instrumentation inspections/improvements will also be completed. (249-180-95-01910)

    An ultrasonic inspection of Unit 3 CRD piping down stream of valve 3-301-25 will also be performed and repairs made as appropriate. (249-180-95-01911)

    Replacement of CRD piping restricting orifice RO-3-302-16 will also be evaluated. (249-180-95-01912)

    Further observations of Unit 3 CRD piping will also be performed during Unit 3 shutdown at the end of the current operating cycle. (249-180-95-01913)

15. Engineering will evaluate if a SDC suction pressure setpoint change, to provide greater margin during 2-pump running configurations, can be performed. (249-180-95-01914)

F. PREVIOUS OCCURRENCES:

None.

G. COMPONENT FAILURE DATA:

Several of the individual screen modules on the Travelling Screens were bowed due to the weight of the debris.