

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
McGuire Nuclear Station - Unit 1DOCKET NUMBER (2)
0 5 0 0 0 3 1 6 9 1 OF 0 4

TITLE (4)

Chemical and Volume Control System Pump Inoperable More Than 72 Hours

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)	
01	05	86	86	001	0	02	04	86			050000	
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)												
OPERATING MODE (9)			20.402(b)			20.405(c)			50.73(a)(2)(iv)			73.71(b)
POWER LEVEL (10)			20.405(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(iv)			73.71(c)
100			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)			X 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)(ix)			

LICENSEE CONTACT FOR THIS LER (12)
NAME
Jerry Day, LicensingTELEPHONE NUMBER
AREA CODE
71014 317131-17101313

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPDs	CAUSE	SYSTEM

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On January 5, 1986 at 0520, the action statements for Technical Specifications (T.S.) 3.1.2.2, 3.1.2.4, and 3.5.2 could not be met for Chemical and Volume Control (NV) System pump 1B. The T.S.'s require the pump to be returned to service within 72 hours after being declared inoperable. Approximately 4 hours before the expiration of the 72 hour time limit, notification was received that the NRC had granted a 24 hour extension to the applicable T.S. action statements. The pump was returned to operability at 1859 on January 5, approximately thirteen and a half hours into the 24 hour extension.

Unit 1 was in Mode 1 at 100% power during the incident.

Several items contributed to the delay in pump repair: an oversight in material handling, problems with the breathing air system, and problems with the replacement parts.

No incidents occurred during this time that required the NV pump, and redundant equipment was operating as designed.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

On January 5, 1986, at 0520, the action statements for Technical Specifications (T.S.) 3.1.2.2, 3.1.2.4, and 3.5.2 could not be met for Chemical and Volume Control [EIIS:CB] (NV) System pump 1B. These T.S.'s require the pump to be returned to service within 72 hours after being declared inoperable. The 72 hour limit expired at 0520 on January 5. At 0110 on January 5, notification was received that the NRC had granted a 24 hour extension to these T.S. action statements.

Unit 1 was in Mode 1, Power Operation, at 100% power during the incident.

Some of the delays in repairing NV pump 1B could have been avoided if the Material Handling Procedure for Repaired/Salvaged Items, had been implemented properly. The loss of the Breathing Air [EIIS:LH] System during the repair work also accounted for a four hour delay in the work.

BACKGROUND

The Chemical and Volume Control System is designed to maintain required water inventory in the Reactor Coolant System, [EIIS:AB] maintain seal water injection flow to the reactor coolant pumps, control Reactor Coolant System water conditions, and fill and drain the Reactor Coolant System. The Chemical and Volume Control System has two centrifugal charging pumps and one positive displacement pump.

The charging and letdown functions of the system are employed to maintain a programmed water level in the Reactor Coolant System pressurizer, thus maintaining proper reactor coolant inventory during all phases of plant operation. The centrifugal charging pumps normally take suction from the volume control tank and return the cooled purified reactor coolant to the Reactor Coolant System. During a loss-of-coolant accident, both centrifugal charging pumps operate automatically as part of the Emergency Core Cooling System.

The seal housings, one inboard and one outboard, are located on either end of the NV pump and are designed to seal the pump shaft as it exits the pump housing. The seal housings are basically identical and can be used to replace each other without major difficulty.

DESCRIPTION OF EVENT

On December 31, 1985, an emergency work request (WR) was written to replace a leaking seal on NV pump 1B. On January 2, 1986, at 0520, the pump was declared inoperable to replace the seal. The leaking seal did not itself render the pump inoperable. A spare mechanical seal had been obtained from the warehouse, and disassembly of the pump began. Disassembly was completed and the outboard seal housing of the pump was transported to the Hot Machine Shop. During the disassembly, work time was lost due to losing the Breathing Air System in the NV pump room and having to leave. All work in the NV pump room was having to be done in air line respirators due to airborne activity.

After the seal housing was inspected, it was determined that the entire outboard seal housing would require replacing. Maintenance personnel checked with Materials personnel and discovered that seal housings had been discontinued as a stock item. Materials personnel checked with Catawba Nuclear Station and found seal housings in stock there. On January 3, personnel went to Catawba Nuclear Station and got an outboard seal housing for the NV pump.

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After the seal housing was received at McGuire, it was inspected. It was determined that the seal housing obtained from Catawba was a used one and the threads were stripped on some of the fittings of the housing. A Maintenance coordinator remembered there were seal housings that had been removed during previous work stored in the contaminated warehouse. Personnel were able to locate one inboard seal housing. The housing was stripped of all parts and had to be rebuilt using the housing from Catawba for parts.

By this time, it was determined that the work on NV pump 1B was not going to be completed before the 72 hour T.S. action item would expire. Licensing personnel began proceedings to contact the NRC to try to get an extension on the T.S. action items to prevent having to shut down the unit. This request was made via telecons on January 4 and 5, 1986 and followed by letter (H.B. Tucker to J.N. Grace, Region II) on January 6, 1986.

On January 4, reassembly of the seal housing began.

On January 5, at 0110, the shift supervisor received notification from the station manager that the NRC had granted a 24 hour extension to the T.S. action statements (T.S. 3.1.2.2, 3.1.2.4, and 3.5.2) regarding the NV pumps.

Assembly of the NV pump was completed, the shaft was aligned and the pump thermocouples were replaced. A retest on the pump was performed due to it being rebuilt. The pump was declared operable at 1859 on January 5.

The major problem was that the used inboard seal housing which was stored in the contaminated warehouse was not listed as being in stock. (It had been in storage since 1983.) The purpose of the Material Handling Procedure for Repaired/Salvaged Items is to provide a system to maintain traceability and accountability of items removed from service for repair. The Repaired/Salvaged Items Procedure is contained in the Materials Manual which is an administrative guideline for station personnel to use during the procurement, receipt, storage, and issue of materials, parts, and components.

The inboard seal housing which was stored in the contaminated warehouse should have been handled using the Material Handling Procedure for Repaired/Salvaged Item. If the procedure had been used, the seal housing would have been repaired, stored in the warehouse, and would have been shown as being in stock. The Repaired/Salvage Items Procedure is adequate and the inboard seal housing was an exception rather than the rule on how the program works.

A contributor to the event was the loss of the Breathing Air System. There have been problems with the Breathing Air System for several months. Duke engineers have been working with the vendor to resolve the problems. The air purifier was identified as being the main source of the problems. The purifier is comprised of four filters: the prefilter, the desiccant filter, the catalyst filter, and the final filter. During troubleshooting, it was determined that the desiccant in the desiccant filter had not been packed sufficiently. The desiccant was vibrating until it became powdery. The powdery substance was passing through the catalyst filter and into the final filter which was becoming clogged. This caused a drop in air flow; therefore, the Breathing Air System was unable to supply sufficient breathing air. The desiccant was replaced, and the Breathing Air compressors have been in service without problems since January 24, 1986. Preventative maintenance is performed on the air purifier on a monthly basis to determine if any of the filters need to be replaced.

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Another problem encountered while repairing the NV pump was that the seal housings were not stocked at McGuire. Although the seal housings (inboard and outboard) were once kept in stock, they were discontinued as a stock item due to their high cost (approximately \$28,000 each). Since the entire seal housings rarely need replacing, it was felt that the seal housings could be discontinued as a stock item, and that the necessary parts to rebuild the housings could be kept in stock.

A review of past incident reports indicates that there are no previous reportable incidents similar to this one. Therefore, this event is not considered recurring.

CORRECTIVE ACTIONS:

Immediate: None

Subsequent: Repairs were completed on NV pump 1B.

Planned: A memorandum will be written to all Maintenance personnel addressing the usage of the Material Handling Procedure for Repaired/Salvaged Items.

SAFETY ANALYSIS:

The boron injection portion of the NV system ensures that negative reactivity control is available during all modes of operation. The components required to perform this include the NV charging pumps. With the Reactor Coolant System average temperature above 200°F, a minimum of two boron injection flow paths are required to ensure one flow path is operational in the event an assumed failure renders one of the flow paths inoperable. T.S. allows operation to continue for up to 72 hours after one NV pump (i.e. flow path) is declared inoperable. NV pump 1B was inoperable for approximately 14 hours more than the 72 hours limit. All plant systems operated as designed during all 86 hours that NV pump 1B was inoperable.

The Emergency Core Cooling Systems (ECCS), which includes the NV system, has associated with it, two 100% capacity pumps, each of which is powered from redundant power sources. The operability of two, independent ECCS subsystems ensures that sufficient emergency core cooling capability will be available in the event of a loss-of-coolant accident (LOCA), assuming the loss of one subsystem through any single failure consideration. Either subsystem operating along with the cold leg accumulators is capable of supplying sufficient core cooling to limit the peak cladding temperatures within acceptable limits for all postulated break sizes, ranging from the double ended break of the largest reactor coolant system cold leg pipe downward. In addition, each ECCS subsystem provides long-term core cooling capability in the recirculation mode during the accident recovery period. NV pump 1A was available during the period NV pump 1B was inoperable, thus providing an operable ECCS subsystem.

The health and safety of the public were not affected by this incident.