

CATEGORY 1

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9707240059 DOC.DATE: 97/07/14 NOTARIZED: NO DOCKET #
 FACIL:50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
 AUTH.NAME AUTHOR AFFILIATION
 BOSNIC,D.P. Niagara Mohawk Power Corp.
 DAHLBERG,K.A. Niagara Mohawk Power Corp.
 RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 97-004-00:on 970613,experienced actuation of an ESF & water cleanup sys isolated on high differential flow.Caused by personnel error.Water cleanup sys automatic isolation was performed.W/970714 ltr.

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NIAGARA MOHAWK

GENERATION
BUSINESS GROUP

NINE MILE POINT NUCLEAR STATION/LAKE ROAD, P.O. BOX 63, LYCOMING, NEW YORK 13093

July 14, 1997
NMP2L 1715

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Docket No. 50-410
LER 97-04

Gentlemen:

In accordance with 10CFR50.73 (a)(2)(iv), we are submitting LER 97-04, "Reactor Water Cleanup Isolation on High Differential Flow Caused by Personnel Error."

Very truly yours,

Kim A. Dahlberg
Plant Manager - NMP2

KAD/TWP/lmc
Attachment

xc: Mr. H. J. Miller, Regional Administrator, Region I
Mr. B. S. Norris, Senior Resident Inspector
Records Management

9707240059 970714
PDR ADCK 05000410
S PDR



220077



LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 30.0 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

FACILITY NAME (1)

Nine Mile Point Unit 2

DOCKET NUMBER (2)

05000410

PAGE (3)

1 OF 6

TITLE (4)

Reactor Water Cleanup Isolation on High Differential Flow Caused by Personnel Error

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)
06	13	97	97	004	00	07	14	97	N/A	05000
									N/A	05000

OPERATING MODE (9)

1

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

POWER LEVEL (10) 095	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(c)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 73.71(b)
	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 73.71(c)
	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> OTHER
	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<i>(Specify in Abstract below and in Text, NRC Form 366A)</i>
	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME

D. P. Bosnic - Operations Manager NMP2

TELEPHONE NUMBER

(315) 349-7952

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)

YES (If yes, complete EXPECTED SUBMISSION DATE)

NO

EXPECTED SUBMISSION DATE (15)

MONTH

DAY

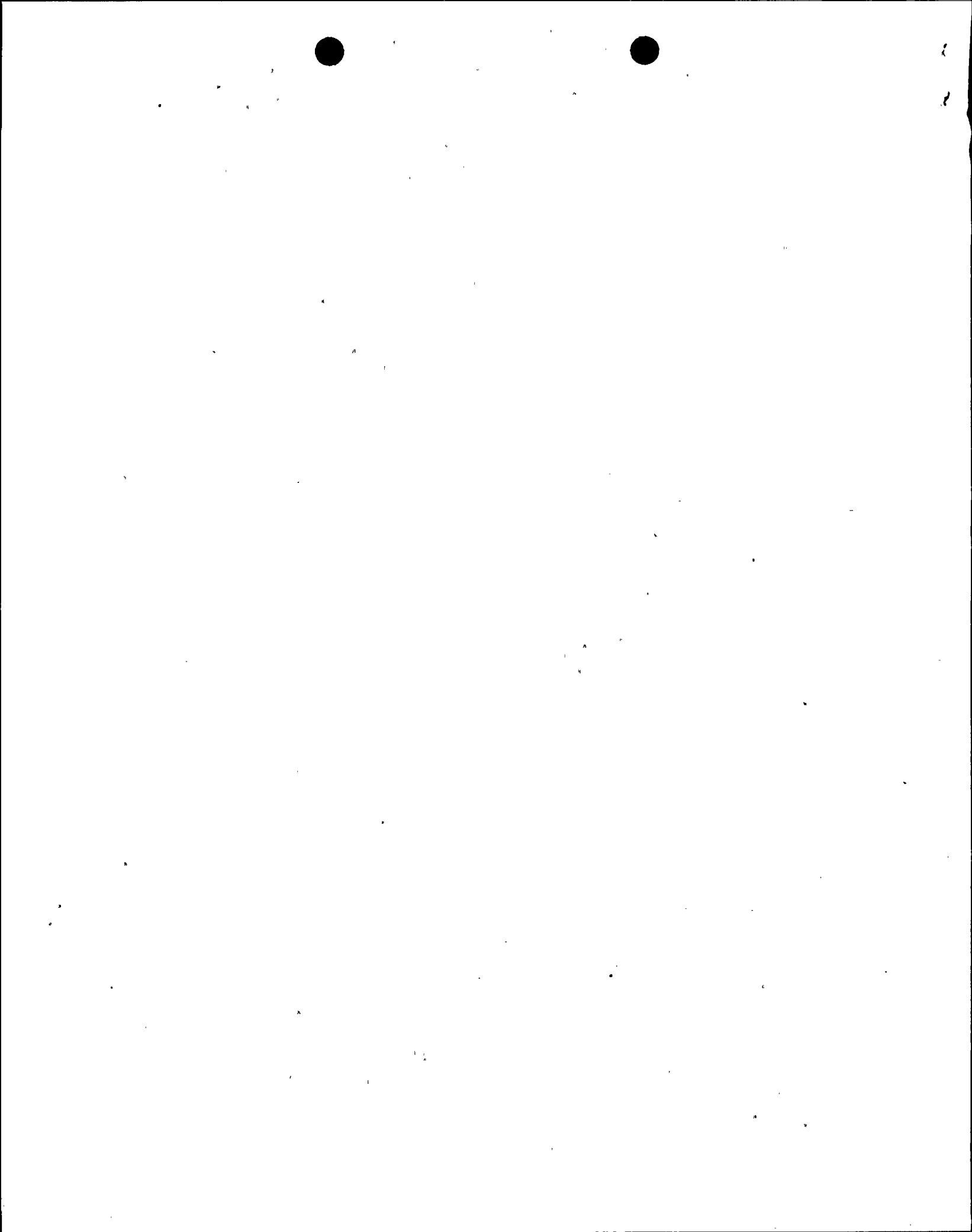
YEAR

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

On June 13, 1997, at 1528 hours, Nine Mile Point Unit 2 (NMP2) experienced the actuation of an Engineered Safety Feature (ESF). Specifically, the Reactor Water Cleanup System (WCS) isolated on high differential flow. Filter demineralizer evolutions were in progress at the time. Both divisions of the isolation logic actuated and isolated the inboard and outboard containment isolation valves as designed. The plant was operating in Operational Condition 1 at approximately 95 percent of rated thermal power.

The root cause of the event was determined to be personnel error in that procedural steps were not performed correctly. A WCS filter/demineralizer was not properly isolated from the system when its associated effluent strainer was backwashed. As a result, reactor water was drained to the WCS phase separators, causing a system high differential flow.

Immediate corrective actions included responding to and verifying WCS system automatic isolation, implementing the required actions of Technical Specification (TS) 4.4.4.c for reactor water continuous conductivity monitoring, and removing the "A" WCS pump (2WCS-P1A) from service for inspection and seal replacement. Additional actions were taken to prevent future recurrence.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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.

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point Unit 2	05000410	97	04	00	02 OF 06

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

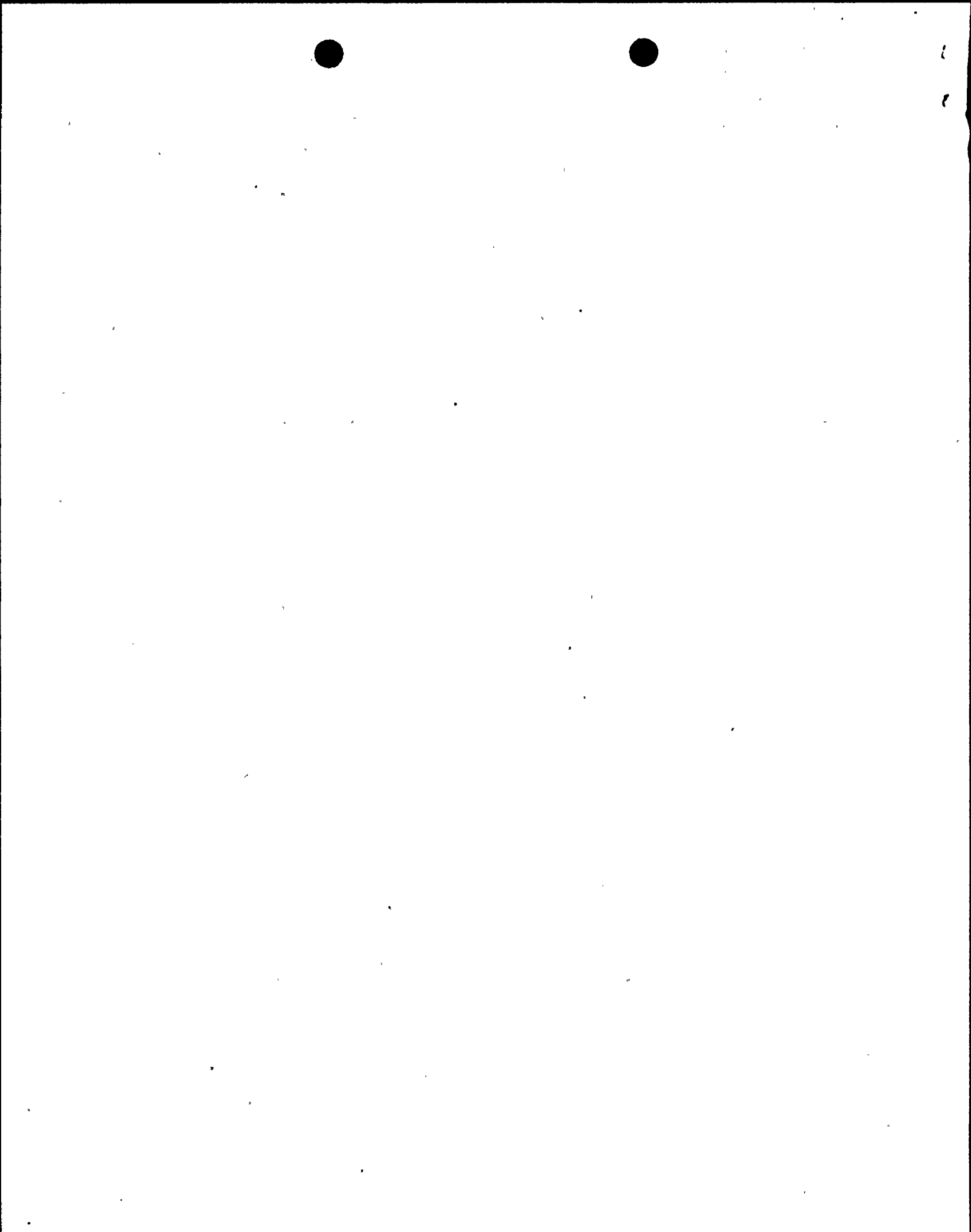
I. DESCRIPTION OF EVENT

On June 13, 1997, the plant was operating at approximately 95 percent of rated thermal power. Reactor Water Cleanup (WCS) system filter/demineralizer backwash and precoat activities were in progress. WCS filter 4B was removed from service, backwashed, precoated, and returned to service. Then filter 4A was removed from service for backwashing.

WCS filter 4A was being backwashed per procedure N2-OP-37, section F.3.0, and the non-licensed operator at the WCS local panel was on step F.3.28 (filter fill portion of the backwash sequence). At 1520 hours the Control Room called on the Gaitronics (plant paging system) that filter 4B effluent strainer was in alarm for high differential pressure and needed to be backwashed per section F.8.0 of N2-OP-37. The operator at the local WCS panel observed the alarm locally and was preparing to don communications headsets in preparation for performing the required strainer backwash. The backwash on filter 4A had by this time been completed through step F.3.31, which returned the WCS operator interface terminal to the main menu.

The first step of section F.8.0 of N2-OP-37 (filter/demineralizer effluent strainer backwash) directs the operator to remove the filter from service per section F.2.0 of the procedure. Required communications were established with the Control Room via headsets, and Control Room actions necessary to remove the filter from service were subsequently completed with the hold pump for WCS filter 4B running. At this time the operator in the Control Room communicated that his steps were complete. He asked if the operator at the local WCS panel was ready to backwash the effluent strainer for WCS filter 4B and if it was okay for the Control Room operator to go off the headset. Thinking the effluent strainer blowdown valves required the Station Shift Supervisor's (SSS) permission to operate, the operator at the local WCS panel paged back to section F.8.0 to verify this requirement and asked the Control Room operator to also check for this requirement. The Control Room operator communicated that he could find no step in section F.8.0 that required SSS permission to operate these valves and again asked if the local operator was ready to commence effluent strainer backwash for filter 4B. The operator at the local WCS panel stated that he was ready and the operators secured direct communications. However, at this point, steps F.2.6 and F.2.7 to locally place the filter in HOLD mode and verify proper valve repositioning, had not been completed to place filter 4B in "Standby" prior to commencing the effluent strainer backwash per section F.8.0.

The operator at the local WCS panel then turned off the WCS operator interface terminal to complete section F.3.0 for filter 4A. The local operator then proceeded with steps in section F.8.0 to backwash the effluent strainer for filter 4B without completing steps F.2.6 and F.2.7, which would have isolated filter 4B from the process system flowpath and placed it in standby. When filter 4B effluent strainer drain valves were opened, water from the inservice filter 4B was drained to the WCS phase separator and WCS system high differential flow alarms were received in the Control Room. Despite efforts to immediately contact the local operator via



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

I. DESCRIPTION OF EVENT (Cont'd)

the Gaitronics system to direct him to close the effluent strainer drain valves, the WCS system isolated on high differential flow signals, resulting in the automatic closure of the WCS inboard and outboard suction isolation valves, and the tripping of WCS pumps 2WCS-P1A and 2WCS-P1B (at 1528 hours on June 13, 1997). Both divisions of the isolation logic actuated per design.

Shortly after the system isolation occurred (approximately 1537 hours), a fire alarm was received in the area of the "A" WCS pump room. Personnel were dispatched to investigate. No indication of a fire was observed via installed cameras. The detector that actuated the alarm was located directly above pump 2WCS-P1A. Upon entering the WCS pump room, a small wisp of steam was noted coming from the pump seals. A small puddle of water was located near the pump. No other abnormal indications were observed. No indication of leakage had been observed via the installed cameras. This led plant personnel to believe that a partial seal failure had occurred on pump 2WCS-P1A. The fire alarm was acknowledged and cleared at approximately 1601 hours.

No structures, systems, or components were inoperable at the start of this event that contributed to the event.

II. CAUSE OF EVENT

A root cause evaluation was performed for this event. The root cause was determined to be personnel error in that procedural steps were not performed correctly.

The procedure for backwashing a WCS filter effluent strainer contains steps which require the operator to verify that the associated filter/demineralizer has been removed from service via another section of the procedure. Performance of section F.2.0 of the procedure contains steps to isolate the affected filter/demineralizer from the WCS system. Proper performance of section F.2.0 would have isolated filter/demineralizer 4B and its associated effluent strainer from the rest of the WCS system. Subsequent valve manipulations within this boundary would not have affected WCS system flow and thus would not have caused the isolation.

Procedure N2-ODP-OPS-0001, section 3.10.5, contains direction for procedural placekeeping techniques to be used to ensure proper procedure use. One of these techniques includes the use of water soluble marker on a laminated (plastic covered) procedure. The operator at the local WCS panel had been using a marker to mark off steps as they were completed. However, immediately after this event, the local operator reviewed the actions he had taken and observed no placekeeping markings next to steps F.2.6 and F.2.7. He also observed that the mode switch for filter 4B was still in "FILTER" and should have been in "HOLD" had the appropriate steps been completed. Although the operator was using the appropriate placekeeping techniques, he failed to complete the appropriate steps in one section before proceeding to the next section.



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II. CAUSE OF EVENT (cont'd)

Operations management interviewed the operator following the event. He indicated that he was experienced with placing filters in and out of service, but had not performed a strainer backwash recently. His attention was focused on the aspects of section F.8.0 to backwash the strainer and was distracted from section F.2.0 prior to completion of the section.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73 (a)(2)(iv), which requires licensees to report "any event or condition that resulted in a manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

The NMP2 Updated Safety Analysis Report Section 5.4.8 states: "The (WCS) system is classified as a primary power generation system (not an engineered safety feature [ESF]), a small part of which is part of the RCPB [Reactor Coolant Pressure Boundary] up to and including the outside isolation valve. The other portions of the system are not part of the RCPB and can be isolated from the reactor. The WCS system may be operated at any time during planned reactor operations or it may be shut down if water quality is within the Technical Specification limits."

Although WCS is classified as a primary power generation system, the isolation valves are included in the Primary Containment Isolation System, which is an ESF, and are designed to provide protection against the release of radioactive materials to the environment during accidents involving breaches of the Reactor Coolant Pressure Boundary. The WCS uses the differential flow measurement as one method to detect system leakage. The flow into the cleanup system is compared with the flow out of the system, and an isolation signal is initiated when high differential flow occurs. In this case, reactor water was drained to the WCS phase separators, causing a system high differential flow which isolated WCS as designed. Therefore, the design function to prevent major release of radioactive material was accomplished.

A WCS isolation does not impair the station's ability to achieve a safe shutdown condition, nor is there any impact to the health and safety of the general public or plant personnel. The total duration of this event from WCS isolation to WCS restoration was less than 14 hours.



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IV. CORRECTIVE ACTIONS

The immediate corrective actions included the following:

- The actions for a WCS system automatic isolation were performed.
- The Chemistry department was notified on June 13, 1997, at 1528 hours to obtain an in-line conductivity measurement in accordance with Technical Specification (TS) 4.4.4.c until continuous conductivity recording of the reactor coolant could be restored. (The WCS continuous conductivity recorder was declared operable on June 14, 1997, at 1116 hours.)
- Pump 2WCS-P1A was marked up and removed from service (on June 13, 1997, at approximately 2345 hours) for inspection and replacement of pump seals due to indications of pump seal leakage subsequent to the WCS system isolation.

Additional corrective actions included the following:

- The WCS system was restored to service on June 14, 1997, at 0450 hours.
- The operator at the local WCS panel was temporarily disqualified from performing plant manipulations without other operations personnel present to perform concurrent verification, with the following exceptions:
 - Performance of operator rounds.
 - Markup applications.
 - Performance of annunciator responses.

Following successful completion of remedial actions, the operator was returned to fully qualified status on June 29, 1997. This remediation included formal counseling on procedure work practices.

- The seals in pump 2WCS-P1A were replaced and the pump was returned to service on June 22, 1997. Subsequent inspection of the removed seals determined that they had not failed. The seals showed signs of nominal wear and no indication of damage. It is believed that the hydraulic transient that occurred as a result of the system isolation caused the seals to unseat and not reseat. Thus, the seals are not considered as failed components.



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IV. CORRECTIVE ACTIONS (Cont'd)

7. This DER will be reviewed in industry events training during operator requalification training. This will be completed by September 30, 1997.

V. ADDITIONAL INFORMATION

A. Failed components: none.

B. Previous similar events:

LERs 91-13 and 91-08 describe WCS isolations due to high differential flow which took place during manipulations involving WCS filter/demineralizers. Both of these events involved high differential flow due to filter/demineralizers being placed in service that were not completely filled due to faulty equipment. As such, the previous corrective actions would not have prevented this event.

There have been other previous events involving WCS isolations on high differential flow. However, these did not deal with filter/demineralizer evolutions and as such would not have helped in the prevention of this event.

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 EIS FUNCTION	IEEE 805 SYSTEM ID
Reactor Water Cleanup System	N/A	CE
Filter/Demineralizer	FDM	CE
Isolation Valve	ISV	CE
Pump	P	CE
Seal	SEAL	CE

