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REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9010230009 DOC. DATE: 90/10/04 NOTARIZED: NO DOCKET #
 FACIL: 50-220 Nine Mile Point Nuclear Station, Unit 1, Niagara Powe 05000220
 AUTH. NAME AUTHOR AFFILIATION
 HELMS, D. Niagara Mohawk Power Corp.
 FIRLIT, J. F. Niagara Mohawk Power Corp.
 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 88-014-01: on 880510, failure of core spray high point vent isolation valve 40-30 to meet stroke requirement.

DISTRIBUTION CODE: IE22T COPIES RECEIVED: LTR 1 / ENCL 1 SIZE: 7
 TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

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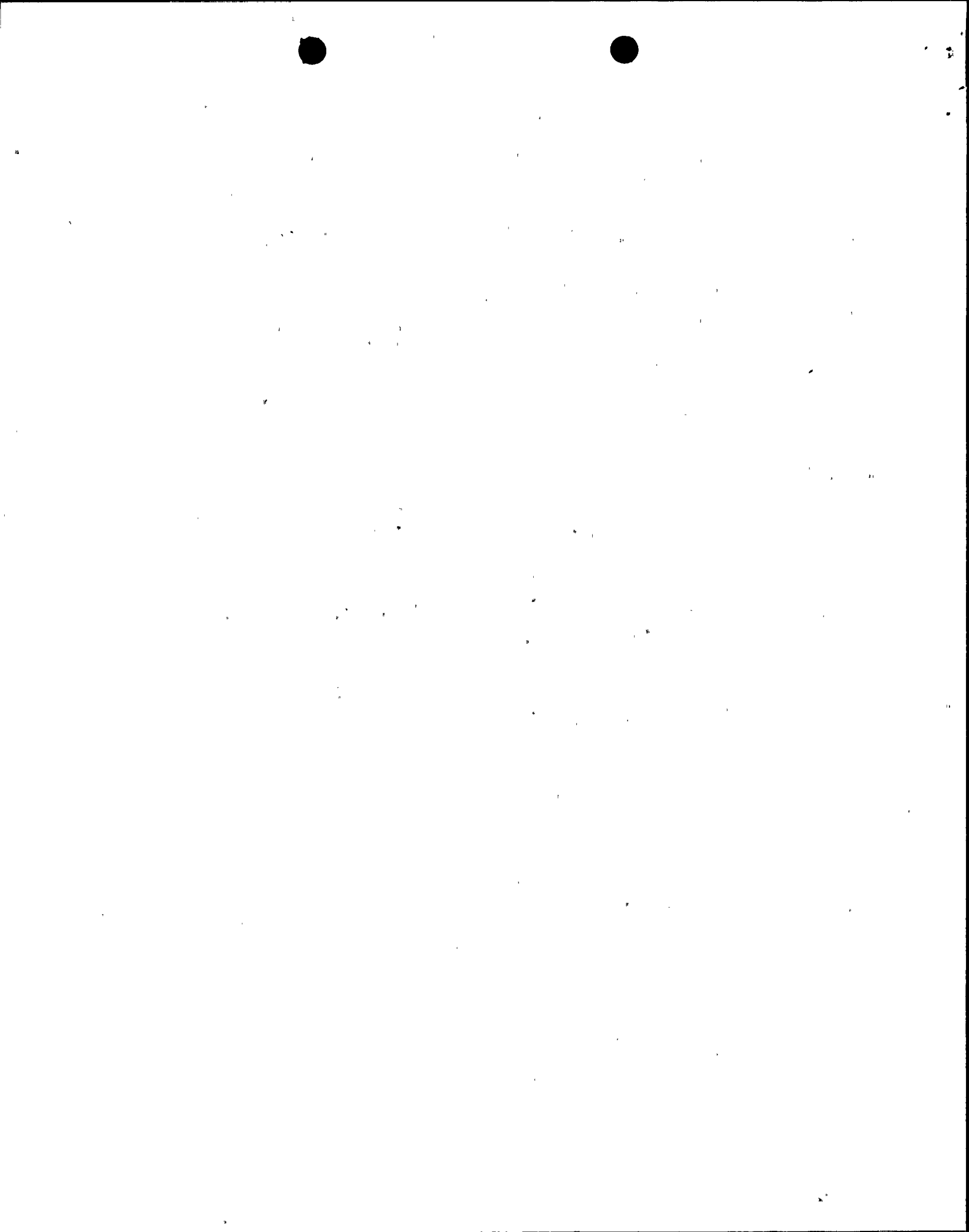
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NMP73912

October 4, 1990

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

RE: Docket No. 50-220
LER 88-14 Supplement 1

Gentlemen:

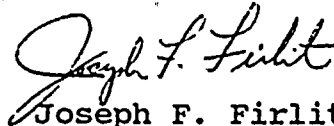
In accordance with 10 CFR 50.73, we hereby submit the following Licensee Event Report:

LER 88-14 Supplement 1 Which is being submitted in accordance with 10 CFR 50.73 (a)(2)(i)(B), "Any operation or condition prohibited by the plant's Technical Specifications".

A 10 CFR 50.36 notification was made at 1630 hours on May 10, 1988.

The report was completed in the format designated in NUREG-1022, Supplement No. 2, dated September 1985.

Very truly yours,



Joseph F. Firlit
Vice President - Nuclear Generation

JFF/GB/lmc

ATTACHMENT

cc: Thomas T. Martin, Regional Administrator Region I
W. A. Cook, Sr. Resident Inspector



LICENSEE EVENT REPORT (LER)

| | | |
|--|---|-----------------------------|
| FACILITY NAME (1) Nine Mile Point Unit 1 | DOCKET NUMBER (2) 0 5 0 0 0 2 2 0 | PAGE (3) 1 OF 0 6 |
|--|---|-----------------------------|

TITLE (4) **Failure of Core Spray High Point Vent Isolation Valve 40-30 To Meet Stroke Requirement Due To Procedural Deficiencies**

| 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) | | |
| | | | | | | | | | N/A | | | 0 5 0 0 0 | | |
| 0 | 5 | 10 | 8 | 8 | 0 | 1 | 4 | 0 | N/A | | | 0 5 0 0 0 | | |

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|--|--|--|---|--|--|--|--|--|--|--|
| OPERATING MODE (9) N | 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 | <input type="checkbox"/> 20.402(b) | <input type="checkbox"/> 20.405(c) | <input 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) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) | | | | | | |
| | <input type="checkbox"/> 20.405(a)(1)(iii) | <input checked="" type="checkbox"/> 50.73(a)(2)(i) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) | | | | | | | |
| | <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)(ix) | | | | | | | | |

LICENSEE CONTACT FOR THIS LER (12)

| | |
|---|--|
| NAME D. Helms, Supervisor System Support NMP1 | TELEPHONE NUMBER |
| | AREA CODE: 3 1 5 NUMBER: 3 4 9 - 2 8 0 8 |

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 |
|-------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|
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SUPPLEMENTAL REPORT EXPECTED (14)

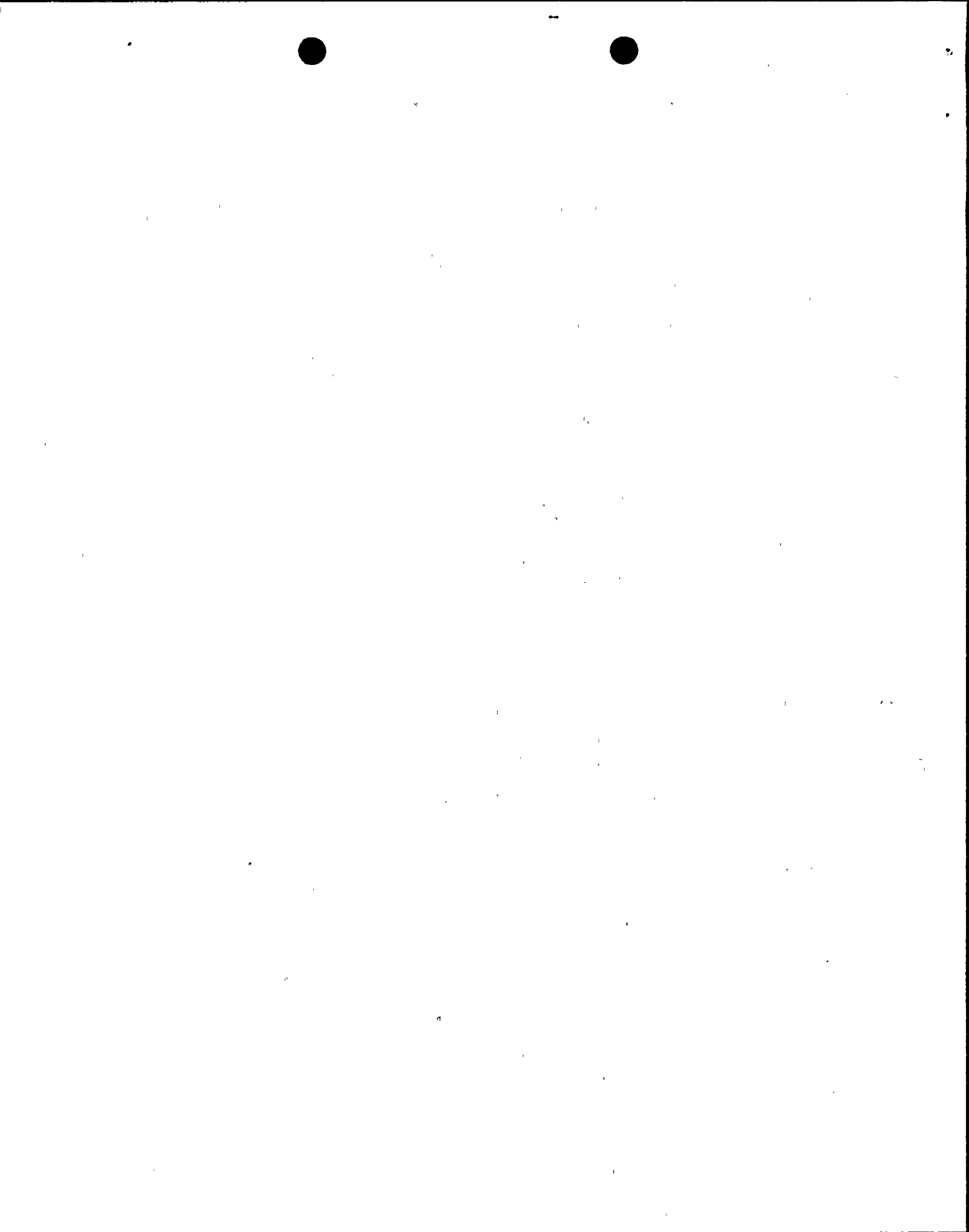
YES (If yes, complete EXPECTED SUBMISSION DATE) NO

| | | | |
|-------------------------------|-------|-----|------|
| EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
| | | | |

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

On May 10, 1988, with Nine Mile Point Unit 1 (NMP1) in a refueling outage, it was identified that the actual full-open to full-closed stroke time for Core Spray High Point Vent Isolation Valve (IV) 40-30 had exceeded its Technical Specification (T.S.) limit. This was discovered while conducting research for Significant Operating Experience Report (SOER) 86-2, "Inaccurate Closed Position Indication on Motor-Operated Valves". In accordance with Site procedures, valve closure time is measured from the time the control switch is taken to the closed position to the time the red indicating lamp goes out. For IV 40-30, the red lamp went out when the valve was 89 percent closed. Based on a review of test results from April 30, 1986, the additional 11 percent of valve travel resulted in the actual full open to full closed stroke time to exceed the T.S. requirement of 30 seconds.

The root cause of this event has been determined to be personnel error as a result of a procedural deficiency. Action to correct the valve's stroke time was not initiated because the procedure did not identify T.S. criteria. Corrective actions include valve maintenance, procedural revisions, and modifications to motor operated valves to ensure the indicating lights accurately represent actual valve position.



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 600 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.

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| FACILITY NAME (1) Nine Mile Point Unit 1 | DOCKET NUMBER (2) 0 5 0 0 0 2 2 0 | LER NUMBER (6) | | | PAGE (3) | |
| | | YEAR 8 8 | SEQUENTIAL NUMBER 0 1 4 | REVISION NUMBER 0 1 | 0 2 | OF 0 6 |

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

I. DESCRIPTION OF EVENT

On May 10, 1988, with Nine Mile Point Unit 1 (NMP1) in a cold shutdown condition for a refueling outage, it was identified that the actual full-open to full-closed stroke time for Core Spray High Point Vent Isolation Valve (IV) 40-30 had exceeded its Technical Specification (T.S.) limit since at least April 30, 1986. This was discovered while conducting research for Significant Operating Experience Report (SOER) 86-2, which addressed inaccurate closed position indication on motor-operated valves. | 1

To ensure that adequate thrust is applied to unseat and open motor-operated valves under all operating conditions, NMP1 made adjustments to the torque bypass limit switches of motor-operated valves to bypass the associated torque switch for a larger portion of the valve stroke, in response to NRC Bulletin 85-03 "Motor Operated Valve Common Mode Failure". The limit switch contacts are operated off of rotor type assemblies. Isolation valve 40-30 control and indication circuits used the same ganged pair of limit switches to bypass the torque switch during an opening stroke and de-energize the red "open" lamp on a closing stroke. The adjustment to the bypass switch to provide a longer bypass period during valve opening resulted in the red indication lamp extinguishing prior to complete closure of isolation valve 40-30. When stroke time testing was performed in accordance with Site Surveillance Test Procedures N1-ST-R8, "Reactor Coolant and Primary Containment Isolation Valves Timing" and N1-ST-M6, "Core Spray Keepfill System", (N1-ST-R8 now superceded by procedures N1-ST-Q4, "Reactor Coolant System Isolation Valves Operability Test" and N1-ST-Q5, "Primary Containment Isolation Valves Exercising"), the stroke time was measured from the time the control switch was moved to the closed position to the time the red indicating lamp went out. These procedures were used to verify compliance to the T.S. valve stroke time requirements by the Operations Department. | 1

It was identified through testing, per Maintenance Department procedure N1-EPM-V5 "Procedure for Testing Motor Operated Valves Utilizing MOVATS" (now superceded by procedure N1-EPM-GEN-V125 "Limitorque Motor Operated Valve Testing Utilizing MOVATS-2150"), that the red indicating lamp for isolation valve 40-30 went out when the valve was actually only 89 percent closed. Based on a review of stroke time test results for isolation valve 40-30 from April 30, 1986, the additional 11 percent of travel the valve took to become fully closed resulted in the actual full-open to full-closed stroke time to exceed the 30 second T.S. limit. Procedure | 1



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.

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

N1-EPM-V5 was used to determine the overall operating conditions of motor operated valves, however, it did not identify any T.S. limit requirements nor require review of results for possible T.S. implications. This procedure was performed in April 1986, on isolation valve 40-30, the actual full-open to full-closed stroke time was 30.34 seconds. The valve was deemed acceptable for service based upon satisfactory stroke time results when the operations stroke time test procedure "N1-ST-M6" was performed. However, the inaccurate closed indication light was used to indicate valve closure. | 1

A review was conducted of all isolation valves that have T.S. stroke time requirements. Isolation valve 40-30 was the only valve found to be outside its limit. It was identified that other isolation valve motor operators had the same potential problem. However, their stroke times were such that there was sufficient time between the red lamp off indication and the valves T.S. limit, for full valve closure. There were no other inoperable systems or components that contributed to this event. | 1

II. CAUSE OF EVENT

A root cause analysis was performed to determine why Core Spray High Point Vent Isolation Valve 40-30 failed to meet its 30 second Technical Specification stroke time limit. The root cause evaluation was performed in accordance with procedure S-SUP-1 (Root Cause Evaluation Program) and identified the cause to be personnel error resulting from a procedural deficiency. | 1

The Limitorque motor operator for isolation valve 40-30 uses rotor type assemblies to operate its limit switch contacts. Isolation valve 40-30 motor operator has a torque bypass switch which is utilized during valve stroking from a full-open or full-closed position. The torque bypass limit switch contact and the red lamp limit switch contact were set by the same rotor. In response to NRC Bulletin 85-03, which addressed problems with motor-operated valve failures during plant transients due to improper switch settings, adjustments were made to isolation valve 40-30 torque bypass switch setting. This adjustment, while assuring that isolation valve 40-30 would unseat with its torque switch bypassed, also changed its red lamp actuation point such that it appeared closed when it was actually still partially open. | 1



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

Isolation valve 40-30 motor-operator is equipped with four rotor limit switch trains. However, only two were used for limit switch contacts. By utilizing the other rotors, limit switch contacts for different functions are set and act independently. 1

Results from procedure N1-EPM-V5 in April 1986, identified that valve closure time exceeded T.S. requirements. Because no T.S. references or acceptance criteria for valve stroke times were provided, isolation valve 40-30 slow closure was not reported at that time. The valve was returned to service at that time based on satisfactory results of the Operations post maintenance test for stroke timing since it was this test that was used to establish T.S. compliance. 1

The root cause which resulted in this event becoming reportable has been attributed to personnel error as a result of a procedural deficiency. Procedure N1-EPM-V5 failed to identify T.S. requirements. Therefore, corrective action was not initiated at that time. Procedure N1-ST-M6 did not account for the valves actual position when the indicator light was extinguished. 1

In an attempt to determine why Isolation Valve 40-30 operated slowly, and to correct as necessary, Work Request (WR) 141556 was written in May 1988. Various preventative maintenance activities were performed, but no conditions were identified that would have caused isolation valve 40-30 to stroke slow. During performance of procedure N1-EPM-GEN-V125 "Limitorque Motor Operated Valve Testing Utilizing MOVATS - 2150", on June 30, 1988, it was identified that isolation valve 40-30 exceeded its T.S. stroke closure time because of its open limit switch setting. The open limit switch was set too close to the valve backseat. This condition increased the total stroke of valve 40-30 resulting in a longer valve stroke time. 1

A condition stated in the original LER concerning equipment failure (inability of valve operator to stroke valve full-open to full-close in specified time interval) has been removed from this LER as a result of this investigation. 1

III. ANALYSIS OF EVENT

Technical Specification Limiting Condition for Operation (LCO) identified in Table 3.2.7, requires that Core Spray High Point Vent Isolation Valve 40-30 maintain a maximum closure stroke time of 30 seconds. This requirement was not met. Therefore, this event



LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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

is reportable per 10 CFR 50.36, for not meeting an LCO and per 10 CFR 50.73 for violating Technical Specification.

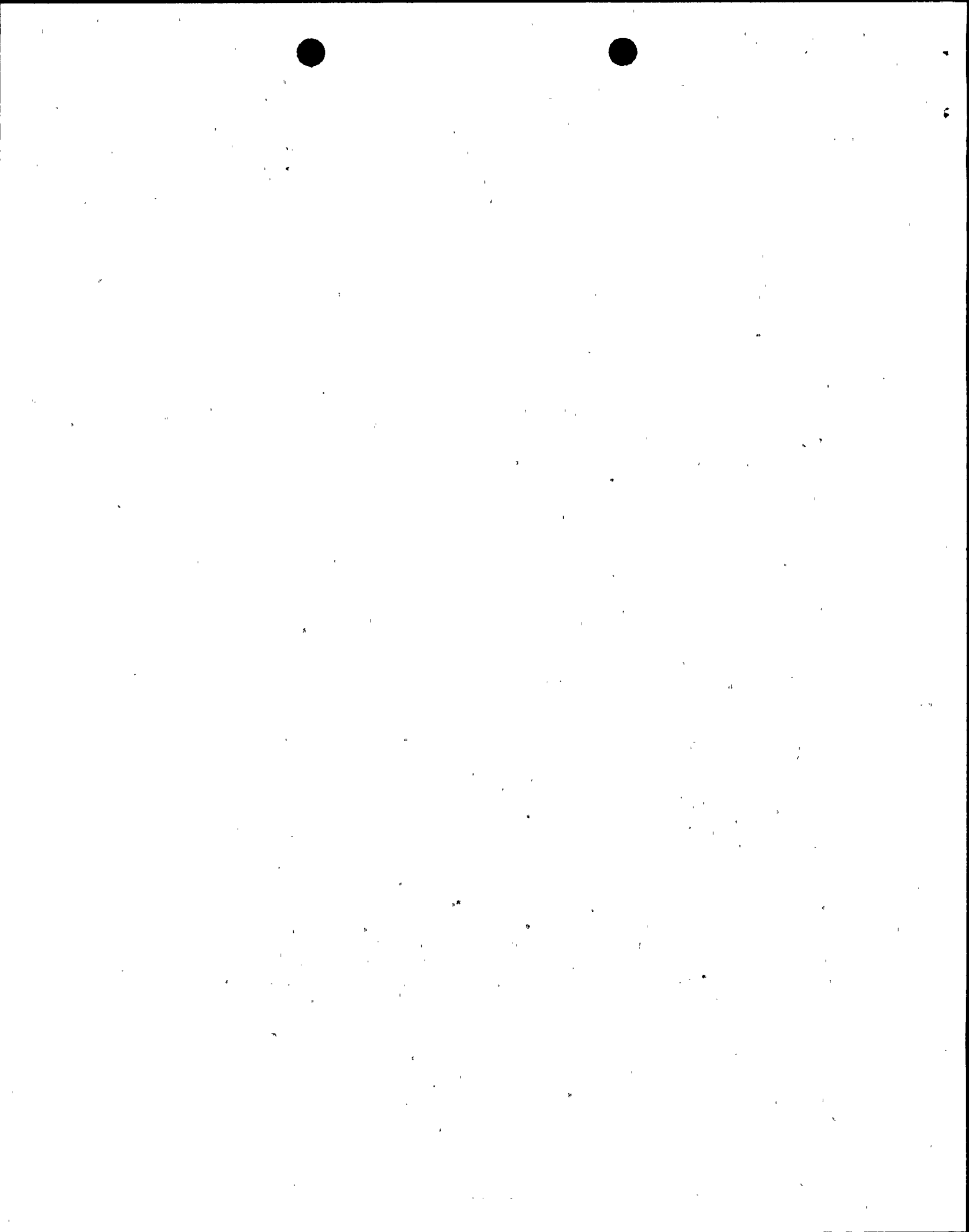
There were no adverse safety consequences as a result of this event. Valve 40-30 is an isolation valve and not a throttle valve. Its motor-operator is provided with a "seal-in" close signal. The "seal-in" feature will ensure valve closure until the motor operator is deenergized by the torque switch regardless of lamp indication. An additional isolation valve (40-32) and a locked closed manual valve (40-26) located downstream from isolation valve 40-30 would ensure system integrity. In addition, previous testing per procedure N1-EPM-V5 has shown that the "seal-in" feature for isolation valve 40-30 does provide full valve closure. Therefore, this event did not result in any safety consequences.

IV. CORRECTIVE ACTIONS

Immediate corrective actions included initiation of Occurrence Report No. 88-441 on May 10, 1988, identifying the failure of isolation valve 40-30 to meet its T.S. stroke time. Isolation Valve 40-30 was declared inoperable and Work Request (WR 141556) was written to troubleshoot its slow closure problem.

The failure of isolation valve 40-30 to meet its T.S. stroke time requirement was identified while researching SOER 86-2 for possible plant impacts at NMP1. This research also identified other isolation valve motor operators which had actual stroke time masked by limit switch location. This concern was addressed by modification N1-88-032, "Limitorque Limit Switch Rewire". This modification placed the red indicating light, the torque switch closed bypass, the torque switch open bypass, and the green indicating lights on separate rotors, allowing for independent adjustment of limit switch setting. This modification resolved design deficiencies for motor operated valve (MOV) limit switches as they pertained to NRC Bulletin 85-03, NRC Information Notice 86-29, INPO (Institute for Nuclear Power Operations) SOER 86-2, and INPO SER 86-12. The majority of safety-related motor operated valves have been modified, with modification of remaining safety related MOVs deferred to the next refueling outage.

Procedure N1-EPM-V5 has been superceded by procedure N1-EPM-GEN-V125, "Limitorque Motor Operated Valve Testing Utilizing MOVATS-2150". The acceptance criteria within N1-EPM-GEN-V125 requires valve stroke time to be in accordance with applicable T.S. In



LICENSEE EVENT REPORT (LER)
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addition, procedure N1-EPM-GEN-V125 now references T.S. valve stroke times in a listing of Limitorque Operated Valves. 1

ADDITIONAL INFORMATION

A. Similar events for which valve stroke requirements were not met, were reported in NMP1 LERS 81-34 (MSIV #122 Failed 7% Stroke Test), 81-39 (MSIV #122 Failed 7% Stroke Test) and 83-38 (#12 Emergency Condenser Loop Rendered Inoperable Due To Stroke Time of Valve 39-06 per NRC Direction).

B. Failed components: none.

C.

| COMPONENT | IEEE 803A COMPONENT | IEEE 805 SYSTEM ID |
|---------------------------|---------------------|--------------------|
| Isolation Valve | ISV | AC |
| Limit Switch | 33 | AC |
| Limitorque Valve Operator | 84 | AC |
| Core Spray System | N/A | AC |



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