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REGION 1

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50-353

License No. NPF-39
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Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Facility Name: Limerick Generating Station

Inspection At: Limerick, Pennsylvania

Inspection Conducted: January 13-17, 1992

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2/12/92
Date

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2/12/92
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Inspection Summary: See the Executive Summary

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EXECUTIVE SUMMARY

The Nuclear Regulatory Commission (NRC) conducted a team inspection at the Limerick Generating Station Units 1 & 2 on January 13-17, 1992 to assess the programs developed by the licensee in response to NRC Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance." This team inspection was accomplished in accordance with NRC Temporary Instruction (TI) 2515/109, "Inspection Requirements for Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance." The generic letter and its Supplements (1, 2 and 3) discuss the many factors and efforts required by licensees to develop adequate programs that will ensure design basis operability of safety-related motor-operated valves.

The following are the team's most significant findings:

- . The original method used to set the motor-operated valve torque switches was inadequate. Diagnostic test equipment inaccuracy was not included when setting torque switches. This oversight has resulted in torque switches being set marginally above the minimum required torque switch setting for a number of safety-related valves. One primary containment isolation valve in the core spray system was declared to be inoperable due to an inadequate torque switch setting. This item remains open pending the results of the final calculation to determine valve operability (Section 2.4).
- . Plans for conducting design basis differential pressure testing have not been formulated. The licensee stated that their position and schedule for design basis differential pressure testing would be completed by March 15, 1992. The failure to address this issue is an indication of weak management support to the Generic Letter 89-10 program (Section 2.6).
- . A number of valves were inappropriately omitted from the program scope (Section 2.1).
- . The current guidelines for performing switch setting calculations are inadequate (Section 2.4).
- . A considerable effort remains to implement the Generic Letter 89-10 program in a timely manner (Section 2.6).

In addition to the items described above, other aspects of Limerick's current Generic Letter 89-10 program do not meet the intent of the generic letter. The team assessed the overall response to Generic Letter 89-10 as being weak. The licensee acknowledged the above and other findings of this report and agreed to take actions summarized in Table 1 to resolve each of the findings.

1.0 Introduction

On June 28, 1989, the NRC staff issued Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," which requested that licensees and construction permit holders establish a program to ensure that switch settings for motor-operated valves (MOV) in safety-related systems are selected, set and maintained properly. The staff held public workshops to discuss the generic letter and to answer questions regarding its implementation. On June 13, 1990, the staff issued Supplement 1 to Generic Letter 89-10 to provide the results of the public workshops. In Supplement 2 (issued on August 3, 1990) to Generic Letter 89-10, the staff stated that inspections of programs developed in response to the generic letter would not begin until January 1, 1991. In response to concerns raised by the results of NRC-sponsored motor-operated valve tests, the staff issued Supplement 3 to Generic Letter 89-10 on October 25, 1990, which requested that boiling water reactor licensees evaluate the capability of motor-operated valves used for containment isolation in the steam lines to the high pressure coolant injection system and reactor core isolation cooling system, in the supply line to the reactor water cleanup system, and in the lines to the isolation condenser as applicable. The generic letter also recommended that each licensee with an operating license complete all design basis reviews, analyses, verifications, tests and inspections that have been instituted within 5 years or three refueling outages, whichever is later, of the date of the generic letter (June 28, 1989).

The NRC inspection team used Temporary Instruction (TI) 2515/109 (dated January 14, 1991), "Inspection Requirements for Generic Letter 89-10, Safety-Related Motor-Operated Valve Testing and Surveillance," to perform this inspection. The inspection focused on Part 1 of the temporary instruction (TI), which involves a review of the program being established by the licensee in response to Generic Letter 89-10.

2.0 Generic Letter 89-10 Program for Limerick Generating Station Units 1 & 2

Philadelphia Electric Company (PECo) provided their response to Generic Letter 89-10 for Peach Bottom Atomic Power Station, Units 2 and 3, and Limerick Generating Station, Units 1 and 2 in a letter to the Nuclear Regulatory Commission (NRC), dated December 28, 1989. The letter stated that Limerick Generating Station would comply with the Generic Letter recommendations with certain exceptions, as noted in the response. Philadelphia Electric Company requested approximately two years to complete its response with regard to differential pressure testing valves, due to the many uncertainties surrounding the generic letter. The NRC staff responded to Philadelphia Electric Company in a letter on July 10, 1990. The NRC letter clarified a number of issues and stated it would be very difficult to complete the motor-operated valve program in the five-year time frame if differential pressure testing was delayed for two years. The licensee also provided a response, to Generic Letter 89-

10, Supplement 3, on December 14, 1990, which was replied to by the NRC on June 16, 1991. The team reviewed the licensee's response to the generic letter and discussed the program details with licensee personnel. The inspection results related to each aspect of Generic Letter 89-10 are described below.

2.1 Scope and Administration of the Program

The program administration was reviewed to assure that the licensee has an adequate program plan and schedule and has delineated responsibilities to complete the Generic Letter 89-10 program commitments.

The program description and schedule, which was requested to be available for NRC review on January 1, 1991, was available. Program responsibilities are divided between the Limerick maintenance and Chesterbrook engineering organizations. Responsibilities for each Generic Letter 89-10 recommendation were clearly delineated. The schedule for completing the Generic Letter 89-10 program was provided in the licensee's December 28, 1991 response to the NRC.

The Limerick Generating Station Motor Operated Valve Program Description, Attachment 4, provides a list of motor-operated valves included in the Generic Letter 89-10 program scope. Plant drawings, emergency operating procedures, and the update/final safety analysis report were reviewed to verify that appropriate valves were included in the Generic Letter 89-10 program scope.

The licensee has identified 448 motor-operated valves in the Generic Letter 89-10 program scope for the Limerick site. This includes several motor-operated valves with the potential to be inadvertently mispositioned. The inspectors identified three safety-related valves (two valves in the residual heat removal system HV-51-2F049 and HV-51-2F040 and one valve in the high pressure coolant injection system HV-55-126), that were inappropriately omitted from the program scope. The licensee stated these valves would be added to the program scope.

The team concluded that the existing program scope did not meet the intent of the Generic Letter due to the inappropriate omission of several valves. The licensee staff stated that the program scope will be verified to assure all applicable valves are included in the Generic Letter 89-10 program.

2.2 Design basis Reviews

Item "a" of the Generic Letter 89-10 and Generic Letter 89-10, Supplement 1, Question 16, recommends that licensees review and document the design basis for the operation of each motor-operated valve within the program for such parameters as:

1. Differential Pressure
2. Flow
3. Valve Orientation
4. External Factors
5. Ambient Temperature
6. Fluid Temperature
7. Minimum Voltage

The licensee's contractor has completed draft design basis reviews for motor-operated valves in the Generic Letter 89-10 Program. Philadelphia Electric Company engineers were verifying these calculations at the time of this inspection. The design basis reviews are scheduled for completion by April 1, 1992. The design basis reviews use the methodology described in the Boiling Water Reactor Owners Group reports on the operational design basis of selected safety-related motor-operated valves in response to Generic Letter 89-10. The design basis review calculations for the high pressure coolant injection, reactor core isolation cooling, and the reactor water cleanup systems were reviewed by the team to determine the adequacy of the licensee's efforts in this area.

The emergency operating procedures were not reviewed by the licensee to assure the maximum differential pressure and flows were identified for the design basis reviews as recommended in the generic letter. The licensee's stated that a review of the emergency operating procedures would be conducted to assure that the maximum differential pressure and flow used in the design basis reviews were appropriate for conditions requiring emergency procedure implementation.

The design basis reviews did include differential pressure and system flow effects. However, the undervoltage study for motor-operated valves was not completed and was not reviewed during this inspection. Also, the effects of fluid temperatures, ambient temperatures, and external factors such as seismic loads to determine effects on valve operability were not included in the design basis reviews, as recommended in the Generic Letter. The licensee's stated these items would be evaluated and included in the design basis reviews, where applicable.

The design basis reviews generally used the lowest safety relief valve setpoint for reactor vessel pressure when performing differential pressure calculations; however, for the reactor water cleanup system the normal operating reactor pressure was used. The licensee staff stated that the design basis reviews for the reactor water cleanup system would be revised to use the lowest safety relief valve setpoint pressure as the reactor vessel pressure for performing differential pressure calculations.

2.3 Diagnostics Systems

The Motor Operated Valve Analysis and Test System (MOVATS) diagnostic equipment was used to set the torque switches and perform diagnostic evaluations for motor-operated valves in the Generic Letter 89-10 program. All safety related valves have been evaluated using the MOVATS equipment. The licensee has recently purchased the Valve Operator Testing and Evaluation System (VOTES) and intends to use this equipment for future diagnostic testing of valves. The VOTES equipment will be used to test approximately 110 valves, under static conditions, during the Limerick Unit 1, March 1992 refueling outage.

The licensee stated that the motor-operated valve diagnostic systems vendor equipment validation results, as reported by the Motor-Operated Valve User's Group (MUG), or the results of a comparable test program, will be reviewed and inaccuracies from such reports will be incorporated into the Limerick Motor-Operated Valve Program acceptance criteria, as appropriate. The licensee had not incorporated equipment inaccuracies when they set torque switches with the MOVATS equipment. The licensee stated that the motor-operated valves in the generic letter program will be reviewed for operability, as diagnostic equipment inaccuracies become available from actual tests or industry equipment validation tests.

2.4 MOV Switch Settings and Setpoint Control

Item "b" of Generic Letter 89-10 recommended that licensees review and revise as necessary, the methods used for selecting and setting all motor-operated valve switch settings.

The methodology for selection and setting of motor-operated valve switches is provided in Philadelphia Electric Company Specification NE-105, "Specification for Selection of Spring Packs, Calculation of Torque Switch Settings, and Determine Block Plate Sizes for Limitorque Motor Operators." Specification NE-105 does not provide detailed guidance in the following areas:

- . Valve factor to be used in calculations.
- . Feedback from design basis test data for valve factor and stem friction coefficient assumptions.
- . Rate-of-Loading effect.
- . Torque switch repeatability and diagnostic equipment inaccuracies are not included.
- . Inertia effects on maximum torque and thrust settings.
- . Ambient temperature effects on motor output torque.
- . Verification of accuracy of generic spring pack curves.

The licensee engineering staff acknowledged these observations and stated that Specification NE-105 would be revised and the inspectors' observations would be incorporated where applicable.

The operator sizing and switch setting calculations had not been performed at the time of this inspection. The licensee stated that the motor sizing calculations based on the design basis reviews will be completed by April 1, 1992.

Philadelphia Electric Company has used a report, prepared by Kalsi Engineering and preliminarily endorsed by Limitorque, to provide justification for increasing the maximum thrust capability of Limitorque operators. The use of the Kalsi Engineering report to justify better than original motor-operated valve operator capabilities remains to be adequately justified pending a final Limitorque endorsement of the Kalsi Engineering findings.

The method to control torque switch settings was reviewed. The required thrust values are currently based on Valve - Motor Compatibility Forms provided during construction by the architect engineer. In many instances, these required thrust values are based on conservative differential pressure assumptions. However, valve factors that have been shown to be non-conservative by the industry were assumed in some cases. All motor-operated valve torque switches were set using the MOVATS diagnostic test equipment. The torque switches were set so the available thrust was greater than the original calculated thrust requirement. However, the team identified that the diagnostic test equipment inaccuracy, as provided in MOVATS Engineering Report ER-5.0, Table 3, were not included when setting the torque switches. When the diagnostic test equipment inaccuracies were added to the as left

Thrust values, a number of valves were identified as having inadequate thrust to seat the valve at maximum differential pressure. To address this concern, the licensee recalculated the required thrust using the lower Generic Letter 89-10 design basis differential pressure values, derived from the pump shutoff head and the system configuration. Using this lower differential pressure values all but in three valves were demonstrated to have inadequate thrust capabilities. The licensee evaluated the valve factor for two of these three valves and determined that the valve factor could be lowered such that the current torque switch settings would be adequate. The third valve (HV-52-1F015B), a primary containment isolation valve in the core spray system full flow test line, was declared inoperable and appropriate technical specification actions were taken. The original design differential pressure for this valve was 445 psid and the generic letter differential pressure is 418 psid. The as-left thrust based on MOVATS is 35690 pounds force. The required thrust based on 418 psid differential pressure is 33690 pounds force. The difference between the required and as-left thrust is 5.94%. The MOVAT accuracy for this thrust range is 6.4%. Since the MOVAT equipment accuracy exceeds the actual margin between the required and as-left thrust, this valve was declared inoperable. The valve was administratively received from service in the safety position. The licensee is continuing to review the calculations with regard to the operability of this valve. This item remains unresolved pending the completion of the final calculations (NRC Unresolved Item 50-352/92-80-01).

Philadelphia Electric Company has conducted VOTES testing on valves at Peach Bottom and has identified a significant difference in the MOVATS and VOTES measured thrust values. In addition, current industry efforts made by the motor-operator valve users group to determine diagnostic equipment accuracy is available in draft form. However, it appeared that the licensee had not recognized these known deficiencies and had not reviewed the site specific torque switch settings for incorporating this concern.

Thermal overload protection is bypassed when motor-operated valves are performing their intended safety function in accordance with technical specification 3.8.4.2. Therefore, the licensee had not performed a generic letter specific review of the thermal overload protection adequacy. The licensee stated that they would review the appropriateness of the above technical specification as part of the generic letter program.

2.5 Supplement 3 Response

The high pressure coolant injection system, reactor core isolation cooling system, and the reactor water cleanup system primary containment isolation valves at Limerick are globe valves. Generic Letter 89-10, Supplement 3, was issued in response to new information regarding the valve factors for gate valves. Therefore, the licensee concluded that Supplement 3 of Generic Letter 89-10, was not applicable to Limerick Generating Station. The NRC response to Philadelphia Electric Company stated that it was acceptable to address Supplement 3 motor-operated valves as part of the overall Generic Letter 89-10 program.

The list of valves to be statically tested during the Limerick Unit 1, 1992 refueling outage was reviewed. The list included static testing of the supplement 3 valves.

2.6 Motor-Operated Valve Testing

Action "c" of the generic letter recommended that licensees test motor-operated valves in situ under their design basis differential pressure and flow conditions. If in situ testing under those conditions is not practicable, the NRC allows alternate methods to be used to demonstrate the capability of the motor-operated valve. The NRC suggested a two-stage approach for a situation where neither design basis testing in situ is practicable nor an alternate method of demonstrating motor-operated valve capability can be justified. With the two-stage approach the capability for the motor-operated valve is evaluated using the best data available and then continue the efforts to obtain valve specific test data within the schedule of the generic letter.

All Generic Letter 89-10 motor-operated valves have been static tested using the MOVATS diagnostic test equipment. The licensee stated in their December 28, 1989, Generic Letter 89-10 response that "At this time Philadelphia Electric Company is not prepared to commit to performing additional in-plant differential pressure and/or flow (DP/flow) testing" and requested approximately two years to complete their response to design basis testing. The NRC responded to Philadelphia Electric Company on July 10, 1990 and indicated that, "the staff (NRC) believes that it would be very difficult for you to complete your motor-operated valve program in the five-year time frame if you do not plan to begin testing for two years." Plans for design basis differential pressure testing had not been formulated at the time of this inspection. The licensee stated that they were unable to provide a response regarding in-plant differential pressure testing and that one will be established by March 15, 1992.

2.7 Periodic Verification of MOV Capability

Action "d" of the generic letter recommended that licensees prepare or revise procedures to ensure that adequate motor-operated valve switch settings are established and maintained throughout the life of the plant. Paragraph "j" of the generic letter recommended that the surveillance interval be commensurate with the safety function of the motor-operated valve as well as its maintenance and performance history. But in no case should the interval exceed 5 years or 3 refueling outages. Further, the capability of the motor-operated valve has to be verified if the motor-operated valve is replaced, modified, or overhauled to an extent that the test results are not representative of the motor-operated valve performance.

The licensee's draft preventative maintenance procedure PMQ-600-022 indicates that periodic static testing would be used to ensure the continued adequacy of motor-operated valve torque switch settings. All valves in the Generic Letter 89-10 program were evaluated to establish surveillance intervals. Each valve was assigned a static diagnostic test interval between two and six years. Valves with known high failure rates are tested on a more frequent basis.

The relationship between the performance of a motor-operated valve under static conditions and design basis conditions is not clearly established; Therefore, at this time, it is not clear that a static test would verify valve performance under design basis dynamic conditions. The licensee acknowledged this concern and stated that the position to periodically test motor-operated valves under static conditions would be reevaluated following the dynamic test program.

2.8 MOV Maintenance and Post Maintenance Testing

The licensee has developed a number of procedures for performing maintenance on various models of Limitorque operators. The following maintenance procedures were reviewed:

- PMQ-500-023 "Limitorque Actuator Overhaul"
- PMQ-500-022 "Preventive Maintenance for Limitorque Actuator (SMB-000) Overhaul"
- PMQ-500-018 "Lubrication of Q-Listed Limitorque Actuators"
- PMQ-500-087 "Electrical Checkout and Adjustment of Limitorque Operators"

- PMQ-500-017 "Overhaul of Limatorque Operators type SMB-0 through SMB-4 and 4T and SB-2 and SB-3"
- M-500-022 "Procedure For Spring Pack Torque Limiting Sleeves Limatorque Motor Operators Size SMB-0 through SMB-4"

The team had the following observations with regard to the above procedures.

1. Past experience indicates that spring pack relaxation can adversely affect the operability of a motor-operated valve. However, the licensee's maintenance procedures only require measurement of belleville washer compression which will not detect all cases of spring pack relaxation.
2. Limatorque Maintenance Updates 88-2 and 90-1 establish criteria to prevent overfilling the limit switch gear case, the clutch and worm gear housing, or the main gearbox in the maintenance procedures. However, the licensee's procedures did not have the caution.
3. The licensee's current valve stem lubrication frequency (2-6 years) does not comply with Limatorque recommendations. Limatorque's recommendation for stem lubrication is at least 18 months unless experience indicates a longer interval is suitable.

The maintenance staff stated that they would review the above observations and make appropriate changes to the maintenance procedures where applicable.

The licensee does not currently have plans to routinely overhaul motor operators. The maintenance staff provided a number of factors to support this position such as diagnostic testing, grease inspections, and noise signature analysis of the valves. However, the licensee had not documented their justification for not periodically overhauling valves operators and plans for overhauls prior to Generic Letter 89-10 testing. The licensee agreed to document the above justification in their Generic Letter 89-10 program.

Maintenance Section Guideline Number 42, "MOV Preventive Maintenance Categorization" was reviewed. This guideline prioritized motor-operated valve preventative maintenance based on factors such as plant operability importance and operator maintenance history. All safety related motor-operated valves receive preventive maintenance between 2 years and 6 years based on their relative scores. The motor-operated valve prioritization methodology was reviewed and determined to be consistent with the generic letter recommendations.

The Post Maintenance Testing program is described in Maintenance Section Guideline Number 20. This guideline requires diagnostic testing to be conducted following corrective or preventive maintenance. The guideline requires post maintenance testing be performed in accordance with written instructions or formal procedures and identified on the work order. The guidelines for post maintenance testing of motor-operated valves were determined to be adequate.

2.9 MOV Failures, Corrective Actions, and Trending

Action "h" of the generic letter recommended that licensees analyze each motor-operated valve failure and justify corrective action. The results and history of each as-found deteriorated condition, malfunction, test, inspection, analysis, repair, or alteration were recommended to be documented and maintained. This motor-operated valve information was recommended to be periodically examined (every 2 years or after each refueling outage after program implementation) as part of the monitoring and feedback effort to establish trends of motor-operated valve operability.

The Maintenance Section Guideline Number 2, entitled "Equipment Failure Trend Analysis Program Guideline," provides general guidance and delineates responsibilities for trending valve failures. A work order history report is issued to the component engineers every 18 months for review. The program relies on the component engineer's experience to recognize and trend appropriate items. The current trending guidelines do not provide adequate guidance as to what parameters or failures to trend or how to document the trend data, as recommended in the generic letter. The licensee staff stated that the trending program would be reviewed and appropriate changes would be made to satisfy the intent of the generic letter.

The team reviewed the corrective action for the December 18, 1991 failure of the high pressure coolant injection system steam line inboard isolation valve and found that the corrective action adequately addressed the probable root cause of the failure.

2.10 Motor-Operated Valve Training

The team evaluated the licensee's motor-operated valve training courses, training facilities, and training staff qualifications. The licensee's training program is Institute of Nuclear Power Operations (INPO) accredited and outlines specific initial training requirements as well as continuing or ongoing training for various skill categories. The program included both classroom and hands-on training.

Maintenance on Limatorque operators is performed by electricians and mechanics who have completed a one week motor-operated valves training course taught by a contractor. The maintenance training representative stated that contractor personnel who assist in valve maintenance will be tested to assure adequate knowledge of valve operator maintenance prior to conducting maintenance on motor-operated valves. The training organization has contracted with Babcock and Wilcox to provide station personnel training on the Valve Operator Testing and Evaluation System (VOTES) diagnostic test equipment. Lesson plans for Motor Operated Valve Analysis and Test System (MOVATS) training included understanding Limatorque operation, equipment installation, and techniques for identifying valve performance and test results. A formal refresher training program for motor-operated valve maintenance is not included in the training program.

Limatorque maintenance training was conducted at both the site training center and at the Barbados training center located off-site. The Barbados training center provides initial and ongoing training for the maintenance technician training program and supports ongoing training needs beyond the capability of the site. Quarterly interface meetings are conducted between the training department and plant to assess the effectiveness of training and to address training needs which are tracked and included in continuing training course plans.

The team toured the site training center and facility for motor-operated valve training. The training aids and motor-operated valve training facilities were good. Lesson plans reviewed were comprehensive and provided adequate detail. The instructors were well qualified and knowledgeable. An effective interface was apparent between the maintenance engineer responsible for motor-operated valves and the maintenance training organization. Based on the above, it was concluded that the licensee's motor-operated valve training program is effective.

2.11 Industry Experience and Vendor Information

The Operating Experience Assessment Program Procedure No. NA-02A001, Revision 2, describes the process for evaluating industry experience and vendor information. The implementation of the process was reviewed for selected Limatorque 10 CFR Part 21 Notifications and Limatorque Maintenance Updates. All the 10 CFR Part 21 and Limatorque Maintenance updates were adequately evaluated; however, the Limatorque Maintenance Updates were not included in the Operating Experience Assessment Program.

The correspondence control desk at the site has the responsibility for incorporating information into the Operating Experience Assessment Program. Limerick was providing the Maintenance Updates directly to the maintenance staff which bypassed the correspondence control desk. This caused the Limerick Maintenance Updates to be omitted from the Operating Experience Assessment Program. Philadelphia Electric Company has contacted Limerick regarding this matter and ensured that future Maintenance Updates will be sent to the document control desk.

2.12 Schedule

The licensee has met the schedule commitments provided in the December 28, 1992, Generic Letter 89-10 response to the NRC such as selecting program scope and establishing procedures; however, a considerable effort is remaining such as completion of the design basis reviews, perform operator sizing calculation, and formulate plans for design basis testing. Two refueling outages remain for Limerick Unit 1 and one refueling outage remains for Limerick Unit 2 before the end of the Generic Letter 89-10 schedule. Supplement 1, of Generic Letter 89-10 recommends that all motor-operated valve testing should not be scheduled for the last refueling outage due to potential unforeseen delays. For Limerick Unit 2 all the dynamic testing, which requires an outage, will need to be conducted during planned maintenance outages or the next refueling outage. The team determined that a significant effort and management attention will be required to complete the Generic Letter 89-10 program in a timely manner.

3.0 Walkdown

During a walkdown, the switch covers for two motor-operated valves, HV-51-225A and HV-51-2F068B were opened for inspection. Switch contacts were in their proper position. Material conditions of these valves were good.

The condition of the sample of motor-operated valves was generally good with the following discrepancies:

1. Stem lubrication on valves HV-51-1F008 and HV-51-2F049, of the residual heat removal system and HV-49-1F076, of the reactor core isolation cooling system was minimal.
2. A packing leak on HV-51-2F0144, the residual heat removal heat exchanger water inlet valve was identified.

Work orders were generated by the licensee to address these deficiencies.

4.0 Conclusions

The team concluded that a number of aspects of the licensee's Generic Letter 89-10 program did not meet the intent of the letter. The list of valves selected to be included in the program did not meet the intent of the Generic Letter. The methodology used to conduct the design basis reviews was technically sound; however, the design basis reviews did not currently address all design basis parameters such as the effects of fluid temperatures and ambient temperature on alternating current motors. The motor sizing and switch setting specification were determined to be inadequate in a number of areas. The licensee has also failed to establish a position on design basis differential pressure testing in over two years. It appears that considerable management attention and effort will be required to successfully complete the generic letter 89-10 program in a timely manner.

5.0 Unresolved Items

An unresolved item was opened (UNR NRC 50-352/92-80-01) with regard to the core spray full flow test valve (HV-52-1F015B). This item may be closed following the review of the licensee's calculations determining the operability of this valve.

6.0 Exit Meeting

The inspectors met with those denoted in Appendix A on January 17, 1992, to discuss the preliminary inspection findings as detailed in this report.

APPENDIX A

1. Persons Contacted

Licensee

- P. Babiuk, Maint. Tech. Staff Engineer
- * G. Beck, Manager Licensing Section
- * R. Boyce, Maintenance/I&C - LGS
- * B. Curry, Nuclear Maintenance Division
- * G. Curtain, Maintenance - LGS
- * G. Cranston, Manager Nuclear Engineering
- * J. Doering, Plant Manager
- T. Dougherty, Supv. - Technical Training
- H. Giovan, Senior Instructor
- * R. Gropp, Licensing
- * D. Groves, Nuclear Engineering
- R. Hess, Nuclear Engineering
- * C. Hoffman, Operations - LGS
- * G. Hunger, Project Manager
- * J. Janocha, Nuclear Engineering
- * R. Krich, Branch Head
- * G. Madsen, Regulatory Engineer
- * M. McCabe, Regulatory - LGS
- * D. Neff, Licensing Engineer - LGS
- * T. Shea, Maintenance - LGS
- * C. Vose, Chief Clerk/Document Control

Nuclear Regulatory Commission

- * Dr. P. K. Eapen, Chief, Systems Section
 - * T. Kenny, Sr. Resident Inspector - Limerick
 - * W. Lanning, Deputy Director, Division of Reactor Safety
 - * B. Whitacre, Reactor Engineer
- * Denotes present at exit meeting held at Limerick Generating Station on January 17, 1992.

TABLE 1

Licensee Plans and Commitments for Further Program Improvements

	<u>Reference Paragraph</u>
<u>Section 2.1 Scope and Administration of the Program</u>	
• Address the omission of a number of valves from program scope.	5
<u>Section 2.2 Design Basis Reviews</u>	
• Review and revise as appropriate emergency operating procedures to assure maximum dp and flow used in design basis reviews.	3
• Evaluate fluid and ambient temperatures as well as external effects on valve operability and include in design basis reviews.	4
• Revise design basis reviews pertaining to reactor water cleanup system.	4
<u>Section 2.4 MOV Switch Settings and Setpoint Control</u>	
• Revise guideline inadequacies for performing switch setting calculations.	3
• Complete operator sizing and switch setting calculations by April 1, 1992.	4
• Review of torque switch settings to include an operability determination for a primary containment isolation valve in the core spray system. (Unresolved Item 50-352/92-80-01)	6
• Review of technical specification for bypassed status of thermal overloads.	8

Section 2.6 Motor-Operated Valve Testing

- Failure to address design basis testing, response to be provided by March 15, 1992. 2
- Necessary effort remaining to implement GL 89-10 program in a timely manner. 2

Section 2.7 Periodic Verification of MOV Capability

- Reevaluation to periodically test motor operated valves following a dynamic test program. 3

Section 2.8 MOV Maintenance and Post Maintenance Testing

- Review of observations made by inspectors regarding maintenance procedures. 3
- Documentation for justification of failure to routinely overhaul motor operators. 3

Section 2.9 MOV Failures, Corrective Actions, and Trending

- Review of current trending guidelines/parameters. 2