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DTE Energy

10CFR50.90
10CFR50.67

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NRC-04-0037

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington D C 20555-0001

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) Detroit Edison Letter to NRC, "Proposed License Amendment for the Implementation of Alternative Radiological Source Term Methodology," NRC-03-0007, dated February 13, 2003

3) Detroit Edison's Letter to NRC, "Response to NRC Request for Additional Information Regarding the Implementation of Alternative Source Term," NRC-03-0053, dated July 8, 2003

4) Detroit Edison's Letter to NRC, "Response to NRC Request for Additional Information Regarding the Implementation of Alternative Source Term," NRC-03-0095, dated December 12, 2003

Subject: Response to NRC Request for Additional Information Regarding the Use of Standby Liquid Control System in Suppression Pool pH Control Post LOCA

In Reference 2, Detroit Edison requested NRC approval of a proposed license amendment that modifies the Technical Specifications (TS) based on a re-evaluation of the Loss of Coolant Accident (LOCA) radiological dose consequences using the Alternative Source Term (AST) methodology. In References 3 and 4, Detroit Edison provided responses to NRC requests for additional information regarding the proposed license amendment. In February 2004, the NRC requested Detroit Edison to

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respond to specific questions regarding the capability and reliability of the Standby Liquid Control (SLC) System in controlling the acidity level (pH) in the suppression pool water following a LOCA. The AST analysis credited the SLC system injection of Sodium Pentaborate into the Reactor Pressure Vessel (RPV) post LOCA in controlling and maintaining the pH in the suppression pool above 7.0 so that the iodine remains in a more soluble form and would not re-evolve out of the water.

Enclosure 1 to this letter provides responses to the NRC questions.

The following commitments made in this letter will be implemented concurrent with the implementation of the requested license amendment:

1. The SLC System Operating Procedure will be revised to describe the new system function of controlling suppression pool pH post-LOCA
2. The Alarm Response Procedure for the Containment High Area Radiation Monitor will be revised to direct operators to initiate SLC when high radiation levels and LOCA symptoms are detected in the primary containment
3. The plant Emergency Operating Procedures will be revised to clearly direct operators to maintain SLC injection when it is required for suppression pool water pH control
4. Operator training will be updated to reflect the pH control function of the SLC system

Should you have any questions or require additional information, please contact Mr. Norman K. Peterson of my staff at (734) 586-4258.

Sincerely,

William J. O'Connor Jr

Enclosure

cc: D. P. Beaulieu
E. R. Duncan
NRC Resident Office
Regional Administrator, Region III
Supervisor, Electric Operators,
Michigan Public Service Commission

I, WILLIAM T. O'CONNOR, JR., do hereby affirm that the foregoing statements are based on facts and circumstances which are true and accurate to the best of my knowledge and belief.

William T. O'Connor Jr.
WILLIAM T. O'CONNOR, JR.
Vice President - Nuclear Generation

On this 4th day of June, 2004 before me personally appeared William T. O'Connor, Jr., being first duly sworn and says that he executed the foregoing as his free act and deed.

CYNTHIA L. SMITH
NOTARY PUBLIC
MONROE CO.

CYNTHIA L. SMITH
Notary Public, Monroe County, MI
My Commission Expires Oct. 5, 2008

Cynthia L Smith
Notary Public

ENCLOSURE 1 TO
NRC-04-0037

FERMI 2 NRC DOCKET NO. 50-341
OPERATING LICENSE NO. NPF-43

RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION REGARDING THE USE OF STANDBY LIQUID CONTROL SYSTEM IN SUPPRESSION POOL pH CONTROL POST LOCA

Response to NRC Request for Additional Information Regarding the Use of SLC System for Suppression Pool pH Control

Detroit Edison's response is provided after each NRC question.

NRC Question:

You propose to credit control of the pH in the suppression pool following a LOCA by means of injecting sodium pentaborate into the reactor core with the standby liquid control (SLC) system. The SLC system design was not previously reviewed for this safety function (pH control post-LOCA). Licensees proposing such credit need to demonstrate that the SLC system is capable of performing the pH control safety function assumed in the AST LOCA dose analysis. The following questions are from a set of generic questions developed by the staff and which are being provided to all BWR licensees with pending AST license amendment requests. In responding to questions regarding the SLC system, please focus on the proposed pH control safety function. The reactivity control safety function is not in question. For example, the SLC system may be redundant with regard to the reactivity control safety function, but lack redundancy for the proposed pH control safety function. If you believe that the information was previously submitted to support the license amendment request to implement AST, you may refer to where that information may be found in the documentation.

1. Please identify whether the SLC system is classified as a safety-related system as defined in 10 CFR 50.2, and whether the system satisfies the regulatory requirements for such systems. If the SLC system is not classified as safety-related, please provide the information requested in Items 1.1 to 1.5 below to show that the SLC system is comparable to a system classified as safety-related. If any item is answered in the negative, please explain why the SLC system should be found acceptable for pH control agent injection.

    1.1 Is the SLC system provided with standby AC power supplemented by the emergency diesel generators?

    1.2 Is the SLC system seismically qualified in accordance with Regulatory Guide 1.29 and Appendix A to 10 CFR Part 100 (or equivalent used for original licensing)?

    1.3 Is the SLC system incorporated into the plant's ASME Code ISI and IST programs based upon the plant's code of record (10 CFR 50.55a)?

1.4 Is the SLC system incorporated into the plant's Maintenance Rule program consistent with 10 CFR 50.65?

1.5 Does the SLC system meet 10 CFR 50.49 and Appendix A to 10 CFR 50 (GDC-4, or equivalent used for original licensing)?

Detroit Edison's Response:

1. The SLC system at Fermi 2 is not classified as a safety-related system as defined in 10 CFR 50.2 and is not required to meet the regulatory requirements for such systems. However, the system was designed with a high degree of reliability and with certain safety features. The storage tank and active portion of the SLC system necessary for the injection of boron have been reclassified, as quality assurance (QA) level 1M. This designation indicates that the SLC system may have not been originally intended, procured, designed, or classified as safety related, but is being maintained and tested as a safety-related system.

1.1 The SLC system is provided with backup power supplied by the emergency diesel generators (EDG).

SLC pump A is powered from motor control center (MCC) 72B-4C, position 2AR. MCC 72B-4C is fed from 480 Volt essential safety system (ESS) bus 72B, position 4C. 480V ESS bus 72B is fed from 4160V ESS bus 64B, position B12. Normal feed to 4160V ESS bus 64B is from transformer 64. Emergency power from EDG 11 will power up 4160V ESS bus 64B upon loss of offsite power.

SLC pump B is powered from MCC 72E-5B, position 2B. MCC 72E-5B is fed from 480V ESS Bus 72E, position 4B. 480V ESS bus 72E is fed from 4160V ESS bus 65E, position E12. Normal feed to 4160V ESS bus 65E is from transformer 65. Emergency power from EDG 13 will power up 4160V ESS bus 65E upon loss of power.

Both MCC 72B-4C and MCC 72E-5B are automatically re-energized following a loss of power.

1.2 The original system design specification required the SLC process equipment, instrumentation, and controls essential for the injection of the sodium pentaborate solution into the reactor to be designed to withstand earthquake loads for Class I

systems. The piping system essential for injection has been analyzed in accordance with seismic Category I requirements. The primary containment isolation check valves have been seismically analyzed as seismic Category I components. The explosive valves have been seismically tested and the pumps and motors have been seismically qualified by analysis. The SLC tank has also been seismically evaluated by analysis. The anchorage of the storage tank and the pump/motor assemblies has been designed to withstand the postulated seismic loads.

The Safety Evaluation Report for Fermi 2, NUREG-0798, Section 4.6.3 states, "the [SLC] system equipment for injection of the sodium pentaborate solution is designed to seismic Category I requirements."

In summary, it is concluded that the SLC components essential for injecting the sodium pentaborate solution into the reactor have been verified to withstand the effects of a safe shutdown earthquake in accordance with the original Fermi 2 licensing basis. Therefore, the design is in compliance with Regulatory Guide 1.29 and Appendix A to 10 CFR Part 100.

1.3 The SLC system is incorporated in the plant's American Society of Mechanical Engineers (ASME) Code In-Service Inspection (ISI) and In-Service Testing (IST) programs. Applicable components of the SLC system are inspected and tested as required by 10 CFR 50.55a.

1.4 The SLC system is incorporated in the plant's Maintenance Rule (MR) program and is classified as a Risk Significant System. The system was included in the program as a result of the initial MR scoping in accordance with paragraph (b) of 10 CFR 50.65.

1.5 The SLC system is not included in the environmental qualification program at Fermi 2. However, the SLC system components essential for ensuring successful injection of the sodium pentaborate into the reactor have been evaluated against the requirements for electrical equipment qualification in 10 CFR 50.49. It was determined that the post-LOCA environmental conditions in the areas where these components are located would remain below the threshold of the Fermi 2 harsh environment limits in the first six hours of the accident. The Fermi 2 AST dose analysis assumes SLC injection has been completed and is fully mixed in the suppression pool water within six hours from the onset of the LOCA event.

The SLC pumps and motors are located on the fourth floor and the explosive valves are located on the second floor of the reactor building. Both areas' post-LOCA dose is expected to remain below 1E+04 Rad during the initial six hours. Other monitoring and control components located in the relay room or the control room will also remain in mild environment. Motor control centers which provide power to the pumps and explosive valves are located on the first floor of the reactor building and were also verified to remain in mild environment during the initial six hours. Temperature, pressure and humidity in the reactor building where the pumps, explosive valves and MCCs are located remain below the threshold of harsh environment during the period of interest.

Section (c) (3) of 10 CFR 50.49 states:

"Requirements for environmental qualification of electrical equipment important to safety located in mild environment are not included in the scope of this section. A mild environment is an environment that would at no time be significantly more severe than the environment that would occur during normal plant operation, including anticipated operational occurrences."

Based on the evaluation of environmental conditions in the areas where SLC components required for injection are located, it is concluded that the components are not required to be included in the electrical equipment environmental qualification scope in accordance with 10 CFR 50.49.

The evaluation also identified two cable types routed in the reactor building that support the SLC injection function. Both types are environmentally qualified by the Fermi 2 EQ program. A review was performed to verify that the level of qualification bounds the environmental conditions for the cables supporting SLC components.

Therefore, the SLC system is verified to be able to perform its injection function post-LOCA under the expected environmental conditions.

NRC Question:

2. Please describe proposed changes to plant procedures that implement SLC sodium pentaborate injection as a pH control additive. In addition, please address Items 2.1 to 2.5

below in your response. If any item is answered in the negative, please explain why the SLC system should be found acceptable for pH control additive injection.

2.1 Are the SLC injection steps part of a safety-related plant procedure?

2.2 Are the entry conditions for the SLC injection procedure steps symptoms of imminent or actual core damage?

2.3 Does the instrumentation cited in the procedure entry conditions meet the quality requirements for a Type E variable as defined in RG 1.97 Tables 1 and 2?

2.4 Have plant personnel received initial and periodic refresher training in the SLC injection procedure?

2.5 Have other plant procedures (e.g., ERGs/SAGs) that call for termination of SLC as a reactivity control measure been appropriately revised to prevent blocking of SLC injection as pH control measure? (For example, the override before Step RC/Q-1, *"If while executing the following steps:....It has been determined that the reactor will remain shutdown under all conditions without boron, terminate boron injection and..."*)

Detroit Edison's Response:

2. The SLC System Operating Procedure will be revised to describe the new system function of controlling suppression pool pH level post-LOCA. The procedure contains the necessary steps for injecting the sodium pentaborate into the reactor pressure vessel.

The Alarm Response Procedure for the Containment High Area Radiation Monitor (CHARM) will be revised to direct operators to initiate SLC when high radiation levels and LOCA symptoms are detected in the primary containment.

2.1 Both the SLC system operating procedure and the CHARM alarm response procedure were developed and maintained in accordance with the quality assurance requirements of 10 CFR 50, Appendix B and Regulatory Guide 1.33, Revision 2, "Quality Assurance Program Requirements (Operation)." The term "safety-related procedure" is not specifically used at Fermi 2; however, these procedures are controlled in accordance with the pertinent requirements of the quality assurance program and 10 CFR 50.59.

2.2 As stated above, the entry conditions for the SLC injection procedure will be based on the CHARM reading and LOCA symptoms. The verified CHARM alarm is used to evaluate and classify the extent of reactor core damage and is an indication of imminent or actual core damage.

2.3 The primary containment high area radiation monitors meet the quality requirements of Category 1 instruments as defined in Tables 1 and 2 of Regulatory Guide 1.97 for Type E variables.

2.4 The SLC system operating procedure is included in the licensed operator initial and continuing training programs. This training will be updated to reflect the pH control function of the system.

2.5 As mentioned in the response to Question 2 in Reference 3, the plant Emergency Operating Procedures will be revised to clearly direct operators to maintain SLC injection when required for suppression pool water pH level control.

NRC Question:

3. Please provide a description of the analysis assumptions, inputs, methods, and results that show that a sufficient quantity of sodium pentaborate can be injected to raise and maintain the suppression pool greater than pH 7 within 24 hours of the start of the event. (See also Position 2 of Appendix A to RG 1.183.) In your response, please discuss the adequacy of recirculation of suppression pool liquid via ECCS through the reactor vessel and the break location and back to the suppression pool in meeting the transport and mixing assumptions in the chemical analyses. Assume a large break LOCA.

Detroit Edison's Response:

3. As previously submitted in Reference 2, the Fermi 2 suppression pool pH analysis includes the following assumptions:

- Borated solution injection is completed and fully mixed within 6 hours following the accident,
- Chlorine-bearing materials present on exposed cables inside containment, potentially subject to radiolytic breakdown and carryover of the free chlorine radicals as

hydrochloric acid to the suppression pool, can be conservatively represented as approximately 5,792,250 square centimeters of Hypalon with a 0.514 centimeter thickness (80% of the average cable radius), and

- A minimum mass of 1990 pounds of sodium pentaborate, corresponding to the TS Figure 3.1.7-1 minimum net tank volume of 2712 gallons and minimum concentration by weight of 8.5%, is delivered into the suppression pool.

Two situations representing the beginning of a fuel cycle and the end of a cycle condition were evaluated. It was determined that the beginning of cycle conditions are more critical for pH control. As reported in Table 13 of Reference 2, the SLC injection results in maintaining suppression pool pH values above 7 for the 30-day duration of the accident. The 30-day suppression pool pH value was reported as 7.5.

In Reference 4, an update was provided on primary containment chlorine-bearing material as a result of the installation of permanent lead shielding blankets inside the primary containment. The outer fabric material encasing the lead wool shielding is a silicone-impregnated fiberglass material that is subject to potential radiolytic breakdown. The breakdown of chlorine, fluorine and sulfur contained in the fabric could potentially result in carryover of hydrogen ions into the suppression pool. The additional effect of the radiolytic breakdown of 618 pounds of installed shielding blanket cover material on suppression pool pH levels post-LOCA resulted in a 30-day pool pH value of 7.46 (compared to the 7.5 value reported in Table 13 of Reference 2).

The methodology used for calculating the suppression pool pH values with and without the sodium pentaborate is based on the source term assumptions stated in Section 2 of Appendix A of Regulatory Guide 1.183. The approach considers the acids and bases created inside containment during the LOCA event. The methodology used to calculate suppression pool pH has been approved by the NRC for the Grand Gulf Nuclear Station.

SLC solution mixing in the suppression pool is achieved as a result of Emergency Core Cooling Systems (ECCS). ECCS will take water from the suppression pool and pump it into the Reactor Pressure Vessel (RPV) core region. Additionally, the SLC system will pump the sodium pentaborate solution in the same core region. ECCS water will refill the reactor vessel core region under post-LOCA conditions. The mixed water and SLC solution will spill out of the break, flow to the bottom of the drywell and through the eight vent lines. The water will continue to flow into the suppression pool header ring and through the 80 downcomers to the suppression pool water.

When the Alarm Response Procedure is revised, it will direct operators to initiate SLC when high radiation levels and LOCA symptoms are detected in the primary containment. SLC injection is expected to occur well within two hours from the start of the accident; however, for this analysis, SLC injection is assumed to be initiated 2 hours after the start of the accident. It is also assumed that ECCS injection would not start until that time. Using one division of the low pressure coolant injection system and one division of the core spray system, the initial RPV and attached piping volume would be turned over in less than five minutes. The turnover would continue as SLC is injected and the mixed solution spills out of the break.

With these assumptions, it would take about 33 minutes to circulate the suppression pool water volume. SLC injection would be completed in less than 70 minutes; however, ECCS circulation would continue. In six hours from the start of the accident, the initial RPV and attached piping volume would be turned over more than 50 times and the suppression pool water volume would be turned over more than seven times. Therefore, the assumption of complete mixing and effective suppression pool chemistry at six hours from the onset of the accident, as used in the dose analysis, is adequately justified.

NRC Question:

4. Please show that the SLC system has suitable redundancy in components and features to assure that for onsite or offsite electric power operation its safety function of injecting sodium pentaborate for the purpose of suppression pool pH control can be accomplished assuming a single failure. For this purpose, the check valve is considered an active device since the check valve must open to inject sodium pentaborate. If the SLC system can not be considered redundant with respect to its active components, the licensee should implement one of the three options described below, providing the information specified for that option for staff review.

4.1 Option 1 Show acceptable quality and reliability of the non-redundant active components and/or compensatory actions in the event of failure of the non-redundant active components. If you choose this option, please provide the following information to justify the lack of redundancy of active components in the SLC system:

4.1.1 Identify the non-redundant active components in the SLC system and provide their make, manufacturer, and model number.

4.1.2 Provide the design-basis conditions for the component and the environmental and seismic conditions under which the component may be required to operate during a design-basis accident. Environmental conditions include design-basis pressure, temperature, relative humidity and radiation fields.

4.1.3 Indicate whether the component was purchased in accordance with Appendix B to 10 CFR Part 50. If the component was not purchased in accordance with Appendix B, provide information on the quality standards under which it was purchased.

4.1.4 Provide the performance history of the component both at the licensee's facility and in industry databases such as EPIX and NPRDS.

4.1.5 Provide a description of the component's inspection and testing program, including standards, frequency, and acceptance criteria.

4.1.6 Indicate potential compensating actions that could be taken within an acceptable time period to address the failure of the component. An example of a compensating action might be the ability to jumper a switch in the control room to overcome its failure. In your response please consider the availability of compensating actions and the likelihood of successful injection of the sodium pentaborate when non-redundant active components fail to perform their intended functions.

4.2 Option 2 Provide for an alternative success path for injecting chemicals into the suppression pool. If you chose this option, please provide the following information.

4.2.1 Provide a description of the alternative injection path, its capabilities for performing the pH control function, and its quality characteristics.

42.2 Do the components which make up the alternative path meet the same quality characteristics required of the SLC system as described in Items 1.1 to 1.5, 2 and 3 above?

4.2.3 Does the alternate injection path require actions to be taken in areas outside the control room? How accessible will these areas be? What additional personnel would be required?

4.3 Option 3 Show that 10 CFR 50.67 dose criteria are met even if pH is not controlled. If you chose this option, demonstrate through analyses that the projected accident doses will continue to meet the criteria of 10 CFR 50.67 assuming that the suppression pool pH is not controlled. The dissolution of CsI and its re-evolution from the suppression pool as elemental iodine must be evaluated by a suitably conservative methodology. The analysis of iodine speciation should be provided for staff review. The analysis documentation should include a detailed description and justification of the analysis assumptions, inputs, methods, and results. The resulting iodine speciation should be incorporated into the dose analyses. The calculation may take credit for the mitigating capabilities of other equipment, for example the standby gas treatment system (SGTS), if such equipment would be available. A description of the dose analysis assumptions, inputs, methods, and results should be provided. Licensees proposing this approach should recognize that this option will incur longer staff review times and will likely involve fee-billable support from national laboratories.

Detroit Edison's Response:

4. Most active components of the Fermi 2 SLC system have suitable redundancy and features to ensure that sodium pentaborate injection would be accomplished assuming a single failure. However, as described below, this redundancy is not extended to all active components and the SLC system cannot be considered redundant as a whole. Therefore, the information requested in item 4.1 (Option 1) is provided herein.

4.1 Option 1 This option of justifying the lack of complete redundancy in the system has been selected out of three alternative choices.

4.1.1 There are three non redundant active components in the SLC system:

- SLC injection line outboard check valve, C4100F006, and
  SLC injection line inboard check valve, C4100F007
  Make: Swing Check
  Manufacturer: Anchor Darling Valve Company
  Model: 1½-inch, W8622382

- Control room initiation switch, C4100M004
  Make: Keylock Selector Switch

Manufacturer: General Electric (GE)
Model: CR2940UN200E

4.1.2 The design basis conditions for the three non redundant components are provided below:

SLC injection line inboard and outboard check valves: These two valves are required to swing open under SLC pump discharge pressure to allow injection of the sodium pentaborate into the RPV. The outboard valve is located in the reactor building, second floor and the inboard valve is located in the drywell. The outboard valve is expected to remain in mild environment during the required injection period; however, the inboard valve will be subject to the primary containment post-LOCA temperature, pressure, humidity and radiation. With the exception of the soft seats, these valves are mechanical components and are not subject to environmental qualification requirements. The soft seats are not required for the opening function associated with injection. The piping stress analysis indicates that seismic accelerations at both valve locations are about 1 g.

SLC injection switch: This keylock selector switch has three positions, pump A, off, and pump B. In the "off" position the system is disabled. In the pump A or pump B position, the appropriate pump is started and both explosive valves are actuated. The switch is located in the control room where mild environment is maintained. The switch is mounted on one of the control room benchboard panels. The control room seismic response spectrum indicates maximum lateral acceleration levels of less than 1 g at the panel natural frequency of 12 Hz.

4.1.3 The two SLC injection line check valves were purchased in accordance with Appendix B to 10 CFR Part 50. The selector switch was supplied by GE as a commercial grade, non safety related component.

4.1.4 A search of the plant corrective action database for entries associated with the SLC check valves and the selector switch identified the following information:

Anchor Darling Company check valve, model W86223:
Several Deviation Event Reports identified leaks, stuck open check valve and improper assembly of the valve. However, there were no reports associated with the failure of the valve to open.

GE selector switch, model CR2940:
Several Deviation Event Reports identified industry events associated with the CR2940 switch or contact block. Evaluation of these events concluded that none of them applies to Fermi 2.

A search of the EPIX/NPRDS database for the same components identified the following information:

Anchor Darling Company check valve, model W86:
One failure was identified; however, this failure was associated with a gate valve. Therefore, it is not applicable to the Fermi 2 check valves.

GE selector switch, model CR2940:
One failure of a CR2940 switch to operate on demand was identified. The switch failure was attributed to a loose screw.

4.1.5 The SLC injection line check valves are tested in both the open and closed directions every 18 months during refueling outages in accordance with the IST program. Both valves are 1-1/2 inch, 900-pound, swing check models with no external actuators. The inboard valve has no position indication while the outboard valve is equipped with dual limit switches that provide disc position indication in the control room.

The open direction test for both valves is performed during the SLC flow verification surveillance in accordance with the Technical Specifications Surveillance Requirement (SR) 3.1.7.8. The test is conducted by injecting demineralized water from the SLC test tank through one of the injection pumps into the reactor vessel.

The closed direction test is performed by one of the following two methods. The first method consists of performing a back-leakage test of the check valve to verify that the flow is "checked" with no backward leakage. The second method involves a Type C air leak rate test in accordance with 10 CFR 50, Appendix J. This latter test is performed on an isolated test volume of the piping system in which the check valve is part of the pressure boundary. Additionally, the outboard check valve is subject to position indication test.

Both check valves are periodically disassembled and inspected for degradation and for replacement of the soft seat in accordance with the preventive maintenance program.

The keylock selector switch is tested every 18 months during refueling outages as part of SR 3.1.7.8. In this test, one of the two SLC pumps is started by operating the selector switch and demonstrating a successful injection into the RPV.

4.1.6 The check valves utilized at Fermi 2 are very reliable. Generic data used in probabilistic risk assessment evaluations estimate the probability of a check valve failing to open as 2.69E-04. This equates to approximately one failure for each 3,700 attempts. Such failure is considered highly unlikely due to the normally inactive nature of the SLC system. The system is typically only used once every 18 months to perform the surveillance test. Additionally, high differential pressure, particularly post LOCA, will provide a significant opening force on the disc. The SLC pumps are capable of generating 1370 psig of discharge pressure.

Should the outboard check valve fail to open and assuming the RPV is de-pressurized as a result of the LOCA, it is possible to obtain authorization to access the area, vent the discharge line and connect a temporary hose between test and vent lines to form a bypass path around the check valve. However, this compensatory measure is not included in plant procedures and would not apply to failure of the inboard valve since it would require access to the primary containment.

Should the selector switch fail to function when a pump is selected, operators would attempt to select the other pump. If the switch fails to operate either pump, jumpers could be easily installed in the relay room that would start a pump and actuate the explosive valves. However, the installation of such jumpers is also not included in plant procedures.

In addition, Fermi 2 emergency operating procedures provide directions for using an alternate boron injection path using the standby feedwater system if SLC fails to inject into the RPV.

4.2 & 4.3 These options are not selected.