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L. T. Gucwa
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NED-84-395

July 24, 1984

Director of Nuclear Reactor Regulation
Attention: Mr. John F. Stolz, Chief
Operating Reactors Branch No. 4
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

NRC DOCKETS 50-321, 50-366
OPERATING LICENSES DPR-57, NPF-5
EDWIN I. HATCH NUCLEAR PLANT UNITS 1, 2
SUBMITTAL OF EQUIPMENT QUALIFICATION PROGRAM
JUSTIFICATIONS FOR CONTINUED OPERATION

Gentlemen:

On July 16, 1984, Georgia Power Company (GPC) personnel discussed the status of the 10 CFR 50.49 equipment qualification program for Plant Hatch with Mr. Paul Shemanski and Mr. Prasad Kadambi of the NRC staff by telephone. Mr. Shemanski requested that GPC resubmit Justifications for Continued Operation (JCOs) for all equipment items at Plant Hatch which are still considered to be not fully qualified. Therefore, Attachment 1 to this letter contains Unit 1 JCOs for Balance of Plant Components (non-NSSS items), Attachment 2 contains Unit 1 Nuclear Steam Supply System (NSSS) JCOs, and Attachment 3 contains Unit 2 Balance of Plant JCOs. Since GPC plans to complete qualification of the Unit 2 NSSS equipment prior to start-up from the refueling/pipe-replacement outage currently in progress, no JCOs are needed for those components. These three attachments cover all Plant Hatch equipment items for which complete environmental qualification per 10 CFR 50.49 has not yet been demonstrated.

Sincerely yours,

L. T. Gucwa

CBS

Enclosures

xc: H. C. Nix, Jr.
J. P. O'Reilly (NRC- Region II)
Senior Resident Inspector

A048
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ATTACHMENT 1

RESPONSE TO NRC IE
BULLETIN 79-01B

E. I. HATCH PLANT UNIT 1
JUSTIFICATION FOR CONTINUED OPERATION

BALANCE OF PLANT COMPONENTS

ATTACHMENT 1

GENERIC - LIMIT SWITCHES FOR INDICATION ON AIR OPERATED VALVES

The limit switches on the valves are supplied to provide valve position indication only. They do not provide any control function. The valves on which they are mounted receive a signal and move to their safety position within the first few seconds of any event for which they are required to operate. The operator at this time is required to verify isolation and the switches will most likely indicate properly during the early stages of any postulated accident event.

Once a valve is in its safety position, it is not credible to assume that a valve will shift position since the electrical cable, connections, switches, etc. which are associated with energizing the solenoid are qualified. In order for the valve to move to its non-safety position the solenoid must be energized to port air to the isolation valve which has been shown to be not credible.

Since qualification data to demonstrate complete acceptability of the limit switches has not been located to date, qualified replacement limit switches have been purchased.

Continued operation is justified since the probability of a LOCA or HELB outside containment occurring coupled with the failure of these switches and the associated solenoid valves prior to their replacement is very remote. In addition, as indicated above, the switches are only for indication and provide no control.

ATTACHMENT 1

GENERIC-PILOT SOLENOID OPERATORS

The solenoid on these valves operate within the first few seconds of the postulated accident. It is not credible to assume that the harsh environment has time to significantly affect their operation before they receive their safety signal and move to their safety position which is de-energized. Once the solenoid de-energizes, there is no need for them to be re-energized for any action pertaining to safety. The most probable failure of a solenoid valve is a loss of power due to either a short or open in the coil which will cause the solenoid to fail in its safety position. Since qualification data has not been found to date, replacement solenoids have been purchased. Continued operation is justified until installation since the probability of the postulated LOCA or a HELB occurring coupled with a failure of these solenoid valves to function as designed for that event, prior to the next refueling outage, is extremely remote.

ATTACHMENT 1

B21-F019

Valve B21-F019 is a main steam line drain isolation valve. It will receive a signal to close on a containment isolation due to a LOCA and on a Main Steam Line Break signal.

B21-F019 will only be subjected to a harsh environment due to radiation after a LOCA. This valve is assumed to be in its safety position, closed, since the only time it will open is during startup. It is not credible to assume that a LOCA will occur concurrent with a plant startup. The time listed on the system component evaluation work sheet is fifteen (15) seconds which is consistent with the Plant Technical Specifications but the actual time could be "0". If for some reason the valves were to be open at the onset of a LOCA, it will be closed within fifteen (15) seconds of the initiating signal. The time duration during which it must operate is short enough that it is not credible to assume that appreciable radiation damage will occur potentially rendering the valve inoperable prior to it reaching its fully closed position. Once in its safety position, there is no reason to assume that it will move since all its controls are fully qualified for their associated environment.

B21-F019 could experience a harsh environment due to temperature and steam in the unlikely event of a RCIC or Main Steam line break but the valve is assumed to go to its safety position, closed, if it is open. The basis for this rational is the same as is presented for the radiation case above, that is, the valve will be in its safety position prior to any significant degradation, due to the temperature and steam environment occurring. In the unlikely case that B21-F019 does not function as required, valve B21-F016 receives the same signals to close. This valve is located inside the primary containment and has demonstrated complete qualification. In addition, this valve will not experience the harsh environment for which it is being given a signal to close. The valve is located inside the primary containment and has demonstrated complete qualification. In addition, this valve will not experience the harsh environment for which it is being given a signal to close. It is powered from a separate power source and as such is assumed to close.

Based on the above, continued operation is justified.

ATTACHMENT 1

E11-MOV-F004D, E11-MOV-F075A

The above listed motor operated valve operators, which previous to this revision were considered fully qualified, are now considered open items.

A recent field inspection revealed that the nameplates of the subject equipment were missing. It is felt the lack of positive identification necessitates the replacement of these components in order that complete traceability exists. However, justification for continued operation until the replacements can be implemented exists because no discrepancies between the as-tested and as-installed components were found.

ATTACHMENT 1

E11-F008

Valve E11-F008 is the outside primary containment shutdown cooling isolation valve for the RHR system. It isolates the reactor from the RHR system shutdown cooling mode suction line.

E11-F008 will be subjected to a harsh environment due to radiation after a LOCA. The valve will always be closed during normal plant operation. The closed position is assured since there is a high pressure interlock which prevents valve opening when the primary pressure approaches the design rating of the system.

Since the valve is in its safety position, radiation damage will not prevent the valve from serving its safety function.

The valve may be called upon to operate later in the LOCA, to go into shutdown cooling, but if it does not operate the alternate method of cooling which is described in section 6.2.6 of the "General Electric High Energy Line Break Evaluation for Edwin I. Hatch Nuclear Power Station" can be used.

Based on the above, continued operation is justified.

ATTACHMENT 1

E11-MOV-F009, E11-MOV-F021A, E11-MOV-F021B, E21-MOV-F004A, E21-MOV-F004B, E21-MOV-F005A, E21-MOV-F005B

The above listed motor operated valve operators, which previous to this revision were considered fully qualified, are now considered as having an open item regarding the radiation qualification of the motor brake assemblies.

Recent information from the suppliers of the motor operated valve operators indicate their unwillingness to formally support the radiation qualification of their brake assemblies. However, note that brakes similar in design to the subject brakes have in fact successfully undergone both HELB/LOCA and radiation testing.

Reference to Limitorque test report 600376A (F-C3441 Appendix C) states that the brake was radiated to over $2.04X10^8$ rads with no apparent damage. However, the same specimen which had been radiated did not undergo a HELB/LOCA test. For this reason, each of the above listed motor operated valve operators are being replaced with a design which precludes the necessity of brake assemblies.

Based on the successful-though limited-testing and the fact that the operating time requirements are minimal (3 minutes within 1st 25 days), operation until such time as fully qualified components can be installed is justified.

ATTACHMENT 1

E11-F022

Valve E11-F022 is the inside primary containment reactor head spray isolation valve for the RHR system. It isolates the reactor from the RHR system in the event of a LOCA or if the primary system pressure approaches the design rating of the RHR system.

This valve has been tested but there is not adequate documentation to demonstrate complete acceptability of the motor brake mechanism when subjected to radiation.

E11-F022 will be subjected to a harsh environment due to radiation during a LOCA but it will be in its safety position, which is closed. This valve will never be open when the reactor is at pressure but still receives a containment isolation signal. All the associated controls for the valve are fully qualified; therefore, it is not credible to assume that during a LOCA, when it will be subjected to the adverse environment, it will open. The failure of this valve will not create a condition which is adverse to safety.

Based on the above, continued operation is justified.

ATTACHMENT 1

E11-F028A,B

The subject valves are required for the use of RHR in the suppression pool spray and/or cooling mode. The safety analysis does not take credit for the suppression pool spray mode.

The valves are qualified for the radiation but lack adequate data for the high energy line break environment.

During a LOCA the valves are subject to a harsh environment due to radiation. Since the valves are qualified for the radiation dose they will perform their function during that accident.

Subsequent to a HELB outside the containment, the valves will see a harsh environment due to the temperature and steam. If the subject valves fail to operate, when called upon for suppression pool cooling subsequent to a HELB, the drywell spray mode of the system can be initiated. This mode of operation takes suction from the suppression pool, sprays the drywell and the downcomers return the water to the suppression pool.

The above discussion provides justification for continued operation.

ATTACHMENT 1

E41-F001

Valve E41-F001 is the steam inlet valve to the HPCI turbine. The valve motor has been identified as having Class B insulation which has been shown to be acceptable for other components which have been subjected to a similar environment.

E41-F001 will only be subjected to a harsh environment due to radiation after a LOCA. The valve will receive its signal and move to its safety position in the first few minutes of an event. The time duration during which it must operate is short enough that it is not credible to assume that appreciable radiation damage will occur potentially rendering the valve inoperable prior to it reaching its full open position.

E41-F001 could experience a harsh environment due to temperature and steam in the unlikely event of a HPCI steam line break. No credit is taken for the operation of this valve after a HPCI steam line break.

Based on the above, continued operation is justified.

ATTACHMENT 1

E41-F003

E41-F003 isolates the HPCI System from the reactor. This valve has not been tested; however, the manufacturer is in the process of developing qualification information based on similarities with other valve motors which have undergone qualification testing. The valve motor has been identified as having Class B insulation which has been shown to be acceptable for other components which have been subjected to a similar environment.

E41-F003 will only be subjected to a harsh environment due to radiation after a LOCA. The valve is a normally open valve and does not have to move. It is not credible to assume the valve will inadvertently close rendering the HPCI system inoperable since all associated controls for the valves are fully qualified.

The valve could experience a harsh environment due to temperature and steam in the unlikely event of a HPCI steam line break but the valve will receive a signal to close on a HPCI steam line break early enough in the transient that there is a high degree of assurance that the valve will reach a fully closed position prior to experiencing significant degradation due to the environment. In addition, E41-F007 will also receive a signal to close. This valve is located inside the primary containment. This will not be subjected to the adverse environment created by this break. It is powered from a separate power source and as such is assumed to close.

Based on the above, continued operation is justified.

ATTACHMENT 1

E41-F006

E41-F006 isolates the HPCI system from the feedwater system. The valve motor has been identified as having Class B insulation which has been shown to be acceptable for other components which have been subjected to a similar environment.

E41-F006 will only be subjected to a harsh environment due to radiation after a LOCA. The valve will receive its signal and move to its safety position in the first few minutes of an event. The time duration during which it must operate is short enough that it is not credible to assume that appreciable radiation damage will occur potentially rendering the valve inoperable prior to it reaching its full open position.

The subject valve could experience a harsh environment due to temperature and steam in the unlikely event of a HPCI, RCIC, or Main Steam line break. HPCI can and in all probability will function as designed for a RCIC and Main Steam line rupture and is not required for a HPCI line break. The basis for this rationale is the same as is presented for the radiation case above, that is, the valve will be in its safety position prior to any significant degradation, due to the temperature and steam environment, occurring.

Based on the above, continued operation is justified.

ATTACHMENT 1

E41-F041

Valve E41-F041 is the suction from the suppression chamber isolation valves for the HPCI pump. The valve motor has been identified as having Class B insulation which has been shown to be acceptable for other components which have been subjected to a similar environment.

The valve could experience a harsh environment due to temperature and steam in the unlikely event of a HPCI steam line break but no credit is taken for the system in the event of this break.

Valve E41-F041 will only be subjected to a harsh environment due to radiation after a LOCA. The valve is required to open when the suppression chamber reaches the high level alarm. The valve will not be subjected to a high temperature and steam environment concurrent with the high radiation environment; therefore; there is a high degree of assurance that it will function as designed.

In the unlikely event that valve E41-F041 does not open, the control room operator can manually operate the ADS system and use the low pressure ECCS systems to assure core cooling.

Based on the above, continued operation is justified.

ATTACHMENT 1

E41-F007

Valve E41-F007 is the discharge isolation valve for the HPCI pump. Adequate documentation has not been located to adequately demonstrate the complete acceptability of the motor brake mechanism.

The normal and accident position of the subject valve is open. The only time the valve would be closed is during maintenance operations on the HPCI system and it is not credible to assume a HELB or a LOCA during that time. No identified motor operator failure mechanism exists that could cause the valve to close during HPCI system operation since all the controls for the valve have documentation to demonstrate their complete qualification.

ATTACHMENT 1

E51-F008

E51-F008 isolates the RCIC System from the reactor. The valve motor has been identified as having Class H insulation which has been shown to be acceptable for other components which have been subjected to a similar environment.

E51-F008 will only be subjected to a harsh environment due to radiation after a LOCA. The valve is a normally open valve and does not have to move. If for some reason the valve closes, it does not affect safety since no credit is taken for the RCIC system to mitigate the consequences of a LOCA.

The valve could experience a harsh environment due to temperature and steam in the unlikely event of a RCIC or Main Steam line break but the valve will receive a signal to close on a RCIC line break early enough in the transient that there is a high degree of assurance that the valve will reach a fully closed position prior to experiencing significant degradation due to the environment. The valve is not required to operate on a Main Steam line break. In addition, E51-F007 will also receive a signal to close. This valve is located inside the primary containment and has demonstrated complete qualification. In addition, this valve will not experience the harsh environment for which it is being given a signal to close. It is powered from a separate power source and as such is assumed to close.

Based on the above, continued operation is justified.

ATTACHMENT 1

E51-F031

Valve E51-F031 is the suction from the suppression chamber isolation valve for the RCIC pump. The valve motors have been identified as having Class B insulation which have been shown to be acceptable for other components which have been subjected to a similar environment.

E51-F031 will only be subjected to a harsh environment due to a radiation after a LOCA. The valve is required to open when the suppression chamber reaches the high level alarm and the operator manually signals it to open. The valve will not be subjected to a high temperature and steam environment concurrent with the high radiation environment; therefore, there is a high degree of assurance that it will function as designed.

The valve could experience a harsh environment due to temperature and steam in the unlikely event of a RCIC line break. In the unlikely event that the valve does not function as designed, it does not affect safety since no credit is taken for the RCIC system in the accident analysis.

Based on the above, continued operation is justified.

ATTACHMENT 1

G31-F001

Valve G31-F001 isolates the RWCU system from the reactor. Adequate documentation has not been located to adequately demonstrate the complete acceptability of the motor brake mechanism.

The valve must close on a LOCA or a HELB in the RWCU system. It will be subjected to a harsh environment due to radiation, temperature and pressure in the event of a LOCA. In the unlikely event of a LOCA the valve will receive a signal and move to its safety position within thirty (30) seconds of the event. There is a high degree of assurance that the valve will reach its fully closed position prior to experiencing significant degration due to the environment. In addition, valve G31-F004 will not experience the LOCA environment and is assumed to close.

Valve G31-F001 does not experience a harsh environment during a line break in the RWCU system outside the drywell and is assumed to close.

Based on the above, continued operation is justified.

ATTACHMENT 1

G31-F004

G31-F004 isolates the RWCU System from the reactor. The valve motor has been identified as having Class B insulation which has been shown to be acceptable for other components which have been subjected to a similar environment.

Valve G31-F004 is a containment isolation valve which must operate to isolate containment on a LOCA and to isolate the RWCU system from the Reactor on a break in that system.

The valve will only be subjected to a harsh environment due to radiation after a LOCA. Being a containment isolation valve, it will receive a signal and move to its safety position in the first few minutes of an event. The time duration during which it must operate is short enough that it is not credible to assume that appreciable radiation damage will occur potentially rendering the valve inoperable prior to it reaching its full open position.

The valve could experience a harsh environment due to temperature and steam in the unlikely event of a RWCU line break but it will receive a signal to close on a RWCU line break early enough in the transient that there is a high degree of assurance that the valve will reach a fully closed position prior to experiencing significant degradation due to the environment. In addition, G31-F001 will also receive a signal to close. This valve is located inside the primary containment and will not be subjected to a harsh environment when required to close and as such is assumed to close.

Based on the above, continued operation is justified.

ATTACHMENT 1

P33-P001A,B; R11-S039, 40; and Panel board in R24-S011, 12

This existing equipment is designed such that it meets the requirements of NUREG 0578. It was not known that this equipment, which in most cases, was heretofore not considered safety grade would have to have documentation to the level required by the DOR guidelines until September 30, 1980. The requirements became known when Supplement No. 2 of I. E. Bulletin 79-01B was issued. Prior to the issuance of supplement 2 of the bulletin the decision was made that all equipment required by Lessons Learned to be added to the plant would be purchased to meet IEEE 323-1974 but equipment which was existing at the plant which met the requirements of NUREG 0578 would not be replaced.

When Supplement 2 of I. E. Bulletin 79-01B was issued, which mandated that all TMI equipment must meet the new requirements, an extensive document search was undertaken. All equipment which is involved in the IEB 79-01B Master List and required to meet the requirements of TMI Lessons Learned has either been demonstrated to be qualified or has been replaced by qualified equipment with the exception of the H_2 and O_2 Analyzer System. The existing H_2 and O_2 Analyzer System and associated power supply are of high quality and are fully expected to operate after an accident, but operability can not be demonstrated by test at this time. The continued operation of the station is justified given the installed equipment is of the high quality and there is a very low probability that it will not function in the unlikely event of a LOCA or HELB. This equipment is diagnostic in nature and as such does not directly affect the continued safe operation of the plant.

ATTACHMENT 1

P52-F875

Valve P52-F875 is the isolation valve for the redundant nitrogen supply to the non-interruptible air system. The normal and accident position for this valve is closed. If the normal supply of non-interruptible air is lost this valve should automatically open and supply nitrogen to the system.

In the unlikely event that the valve does not open, the drywell pheumatic isolation valves will close. This condition is not adverse to safety since all essential components are provided with an accumulator in order to assure their short term operability. The only time post-accident that a long term air supply is required is to assure SRV operability while the plant is in the alternate shutdown cooling mode of operation in which case manual action can be taken to open the subject valve.

If valve P52-F875 should inadvertently open there will be no condition adverse to safety. The non-interruptible air system will just have two pressurization sources which will have no affect on its operation.

Based on the above, continued operation is justified.

ATTACHMENT 1

P52-N021

Pressure switch P52-N021 monitors the pressure in the normal supply to the non-interruptible air system and sends a signal on low pressure to open valve P52-F875. A failure or misoperation of the instrument is not adverse to safety since the misoperation of valve P52-F875, as has been previously demonstrated, does not create a condition which is adverse to safety.

Based on the above, continued operation is justified.

ATTACHMENT 1

T41-N019A&B, T41-N020A&B, T41-N021A&B

The present cooler logic requires the control switch for one unit to be on "Auto" and the redundant unit on "Standby". Subsequent to ECCS pump initiation the cooler on "Auto" comes on and in case of a malfunction the standby cooler comes on based on compartment high temperature or low flow for the lead cooler.

The system operating procedure requires the control switches for both coolers to be placed in "Auto". This justifies continued operability since both coolers will come on and stay on upon system initiation

ATTACHMENT 1

T46-N005B&C

These instruments monitor the $\triangle P$ between the reactor building and atmospheric pressure. The instrument provides the control room operator with an indication that the standby gas treatment system is in operation and the reactor building is being maintained at a negative pressure.

This instrument serves no control function, it just provides the operator with confirmatory information as to the operation of the SGTS. The operator has available to him many other indication which will provide him with the desired indication such as damper position, fan running indication, and refueling floor to outside atmosphere $\triangle P$ indication. Therefore, a failure of the subject instruments will not mislead the operator. The only action which the operator may take based on the information provided by this instrument is to start the SGTS system which, in all cases, is the correct action and will not cause a condition which is adverse to safety.

Based on the above, continued operation is justified.

ATTACHMENT 1

I47-N003 and T47-N009

These instruments are RTDs which monitor the drywell temperature in the area of the reference legs on the RPV water level instruments. The instruments are used by the operators to density compensate the level instruments based on drywell temperatures.

The level instruments do not require the density compensation in order for all automatic system actuations to take place to assure plant safety. The temperature instruments in conjunction with the level instrument will be used by the operator to confirm proper injection system operations. The maximum expected error in the level instruments is 25 inches which corresponds to a drywell temperature of 340°F. The operator is very aware of this error and if in doubt will apply the maximum error in the safe direction. If the instrument provided an incorrect reading the operator could be misled but the automatic system actuations which occur on high and low RPV level will protect the core and will alert the operator to the fact that he is being misled by the temperature elements. Therefore, plant safety is assured.

Based on the above, continued operation is justified.

ATTACHMENT 1

T48-K001 & T48-N001

These instruments provide the control room operator with an indication that the nitrogen system is available for use for CAD or as an alternate supply to the drywell pneumatic system.

The instruments serve no automatic function and are backed up by local pressure and level indication at the tanks which are outside the secondary containment. If the operator suspects an anomaly in his indication he can have it locally verified. The operator will take no improper action based on a false indication from these instruments.

CAD system operation will be required days after a DBA and the SRVs have backup N_2 accumulators to assure their short term operability; therefore, there is no urgent need for operator action on nitrogen system loss.

Based on the above, continued operation is justified.

ATTACHMENT 1

T48-N009A-D

These instruments are RTDs and are used to monitor the water temperature in the suppression chamber. They do not provide any automatic initiation signals.

In the event of a LOCA, the instruments may be subjected to a harsh environment due to radiation. The plant is operated within the technical specifications which require that the temperature be monitored and corrective actions be taken at various temperatures. The accident analysis has shown that during a LOCA condition a sufficient heat sink is provided by the suppression chamber volume to assure plant safety regardless of the temperature monitoring capabilities.

The temperature elements could be subjected to a high temperature and pressure environment in the event of an HELB in the torus room. If due to the HELB, a plant cooldown is required which uses the suppression chamber as a heat sink the operator, due to his experience and training, knows that the suppression pool cooling mode of operation is required. He will place the RHR system in the cooling mode regardless of the temperature indication if it is erratic or ambiguous.

In the event of major flooding in the torus room, if the suppression chamber is used as a heat sink, the suppression pool cooling mode of the RHR system is required and will be initiated by the operator regardless of the operation of the temperature elements.

Based on the above, continued operation is justified.

ATTACHMENT 1

T48-FIT-N014A&B, T48-F112A&B, and T48-E/S-K011A&B

The subject flow indicating transmitter, power supply and associated valve are required for recording and modulation of the nitrogen flow. Nitrogen provides containment atmosphere dilution subsequent to a postulated LOCA to maintain containment hydrogen concentrations less than 4%.

While it is important to measure flow and have flow control capability for hydrogen control, interim plant operation can be justified by the following:

1. If the postulated failure of the flow transmitter/power supply disables flow measurement capability, the control valve can be placed in the manual mode and hydrogen control capability is still provided. Containment hydrogen concentrations and pressures can be read in the Control Room.

2. If the postulated failure of the flow transmitter disables the control valve, alternate nitrogen injection capability is provided by the nitrogen inerting system. The flow controller for the nitrogen inerting can be placed in the manual mode and flow control valve throttled to the lowest flow. Containment hydrogen concentrations and pressures can be read in the Control Room.

ATTACHMENT 1

T48-LT-N021A,B

These instruments provide narrow range indication of torus water level. They do not provide any automatic control or initiation signals.

These instruments are backed up by the torus wide range level transmitters which are fully qualified.

All automatic system functions are facilitated by separate level instruments which are associated with the system being controlled. The accident analysis has demonstrated that acceptable pressure suppression and plant cooldown capabilities are assured with the suppression chamber level maintained within its Technical Specification limits at the onset of a transient or accident. Prior to a postulated LOCA which could subject these instruments to a high radiation dose the instruments will function acceptably thereby assuring that the suppression chamber level is within Technical Specification limits.

Based on the above continued operation is justified.

ATTACHMENT 1

T48-N210 and N211

These differential pressure switches open air operated isolation valves upstream of the suppression chamber to the secondary containment vacuum breakers. The vacuum breakers are provided to protect the suppression chamber against negative pressures.

The operability of the differential pressure switches is required for a LOCA in the containment or for a HELB in the torus compartment.

Interim plant operability can be justified by the following:

1. The post-LOCA pressure profile as shown in FSAR figures 14.4.10a,b indicates that the pressure in the torus will never be negative.

2. The HELB analysis for the torus chamber room gives a peak pressure of 16.7 psia. As indicated in FSAR section N.5.3.1.2 and referenced on the instrument data sheet, the torus has been evaluated for this external pressure with acceptable results.

ATTACHMENT 1

PVC CABLE

Although the specific cables in the subject systems have not been tested to the standards required by the DOR guidelines which are an attachment to I. E. Bulletin 79-01B, justification for continued plant operation until replacement on or before June 30, 1982 is principally based on IEEE paper entitled" Insulation and Jackets for Control and Power Cables in Thermal Reactor Nuclear Generating Stations, (IEEE Transactions on Power Apparatus and Systems Vol. PAS-88, No. 5, May 1969)."

A key consideration in the evaluation of this report relative to the acceptability of the cable installed at HNP-1 is that under no circumstances will the accident dose of radiation occur concurrent with the harsh environment created by a high energy line break since all the subject cables are located exterior to the drywell. With this in mind radiation can be evaluated independently of the high energy line break.

The IEEE paper in Table X1 concludes that PVC has an "Overall threshold of damage" of 5×10^5 Rads. Were it not for the failure of the test cable in a simulated steam environment after being irradiated to 5×10^6 Rads the overall threshold of damage would have been 5×10^6 Rads. Since we are not considering a steam environment concurrent with the maximum radiation, the 5×10^6 Rads threshold of damage compares favorably with the highest actual accident dose of 1.86×10^6 Rads in the area of the NE and SE corner rooms.

The IEEE paper in Table II indicates that the useful life of PVC cable in terms of elongation loss is greater than 115 years even after being irradiated to 5×10^6 Rads. Although further evaluations of cable life are possible, these evaluations are not necessary because the cable is being replaced.

The maximum accident temperature of 214°F presents no significant problem because PVC cable, as pointed out in the IEEE paper on page 534, has a useful life of 200 hours at 136°C (276°F). Additionally, a steam environment presents no significant problem because PVC cable, as pointed out in the IEEE paper on page 534 and Table 1X, was found suitable in a steam environment greater than 9 days.

ATTACHMENT 2

EDWIN I. HATCH NUCLEAR PLANT UNIT 1

JUSTIFICATION FOR CONTINUED OPERATION

NUCLEAR STEAM SUPPLY SYSTEM COMPONENTS

ATTACHMENT 2

GENERIC-LIMIT-SWITCHES FOR INDICATION ON AIR OPERATED VALVES

The limit switches on the valves are supplied to provide valve position indication only. They do not provide any control function. The valves on to which they are mounted receive a signal and move to their safety position within the first few seconds of any event for which they are required to operate. The operator at this time is required to verify isolation and the switches will most likely indicate properly during the early stages of any postulated accident event.

Once a valve is in its safety position, it is highly unlikely that a valve will shift position since the electrical cable, connections, switches, etc. which are associated with energizing the solenoid are qualified and in order for the valve to move to its non-safety position the solenoid must be energized to port air to the isolation valve.

Since qualification data to demonstrate complete acceptability of the limit switches has not been located to date, qualified replacement limit switches have been purchased.

Continued operation is justified since the probability of a LOCA or HELB outside containment occurring coupled with the failure of these switches and the associated solenoid valves prior to their replacement is very remote. In addition, as indicated above, the switches are only for indication and provide no control.

ATTACHMENT 2

GENERIC-SOLENOID OPERATORS

The solenoid on these valves operates within the first few seconds of the postulated accident. It is highly unlikely that the harsh environment has time to significantly affect their operation before they receive their safety signal and move to their safety position, which is de-energized. Once the solenoid is de-energized, there is no need for them to be re-energized for any action pertaining to safety. The most probable failure of a solenoid valve is a loss of power due to either a short or open in the coil which will cause the solenoid to fail to its safety position. Since qualification data has not been found to date, replacement solenoids have been purchased. Continued operation is justified until installation since the probability of the postulated LOCA or a HELB occurring coupled with a failure of these solenoid valves to function as designed for that event prior to their replacement is extremely remote.

ATTACHMENT 2

B21-N006A-D, B21-N007A-D, B21-N008A-D and B21-N009A-D

The switches sense high flow in the main steam lines and cause an isolation in the event of a main steam line break. On a break, they will sense the flow and isolate the steam lines within ten (10) seconds. The temperature to which they will be subjected is less than the temperature to which test experience is available. There is a high degree of probability that the switches will operate as designed and initiate an isolation signal. If for some reason they do not operate the high ambient temperature switches will cause the MSIVs to close terminating the event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N010A-D, B21-N011A-D, B21-N012A-D, B21-N0013A-D

These instruments are temperature switches which are designed to detect high ambient temperature and initiate an isolation of the main steam lines on high temperature. The instruments are randomly spaced in the main steam tunnel in order to assure that they will detect a break. Test data is available to show that the switches will operate at temperatures equal to their set point temperature. The data provides assurance that the switches will operate and cause the required main steam line isolation.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N017A-D

Switches B21-N017A-D sense a low RPV level to provide scram initiation and trip the HPCI and RCIC turbines on high RPV level.

In the unlikely event of a LOCA the instruments will be subjected to a harsh environment due to radiation but will have served their function, to scram the reactor, prior to any significant irradiation of the device. On a HELB outside the drywell the instruments will be subjected to a harsh environment due to temperature. The instruments have test data to demonstrate that they will operate at temperatures up to the accident temperature. The test experience has shown that the effect of the adverse environment is to decrease the accuracy of the instrument. The decrease in accuracy could cause the switch setpoint error to be approximately two (2) inches. The effect of this error is insignificant with respect to assuring adequate core cooling. In addition, the racks on which these instruments are mounted are widely separate, therefore, there is a high degree of assurance they will operate mitigating the consequences of the event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N021A-F

Switches B21-N021A-F sense RPV pressure and provide the low RPV pressure permissive signal for the low pressure ECCS systems.

These switches are redundant, diverse, separated and there is test documentation which provides a high degree of assurance that they will function. The test experience has demonstrated that the effect of the adverse environment is to decrease the accuracy of the instruments. This decrease in accuracy could cause a setpoint error to be no more than 28 psi. The effect of this potential error is insignificant with respect to assuring adequate core cooling.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N024A&B, B21-N025A&B

These instruments provide the signal which causes the isolation of the MSIVs on low RPV level.

In the unlikely event of a LOCA the instruments will be subjected to a harsh environment due to radiation but will have served their safety function prior to any significant irradiation. On a HELB outside the drywell the instrument will be subjected to a harsh environment due to high temperature. There is a high degree of assurance that they will operate to serve their safety function since they have test data to show they will operate at the accident temperature. The test experience has shown that the potential affect of the adverse environment is to decrease the accuracy of the instrument. This decrease could cause the setpoint error to be no more than six (6) inches. The effect of this error is insignificant with respect to assuring adequate core cooling.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N026A&B

B21-N026A& B Level Indication Transmitter Switch (LITS) provides control room indication of reactor vessel level. Transmitters A&B provide indication readout on level instruments B21-R604A&B on panel H11-P603. These transmitters are Yarway model 4418CE. Transmitters C&D provide level recorder inputs to recorders B21-R623A&B on panel H11-P601. These transmitters are Barton 760 level indicating transmitter switches. 1 The transmitters are located on racks H21-P004 and H21-P005 which could be affected by a RWCU HELB resulting in an ambient temperature transient peak of approximately 210°F. They also could be affected by a LOCA event which may result in a total radiation exposure of 1.2 X 10^6 rads.

Even though the transmitter function of the Yarway 4418CE was not evaluated during temperature test, it may be assumed from the test data that the transmitter function would survive the harsh environment and would provide an indication of vessel water level, albeit somewhat degraded, during and subsequent to the accident event. This engineering judgement is based upon the operating principle of the Yarway 4418CE LITS which uses a reliable magnetically actuated armature assembly and transmitting coil (LVDT) to provide a driving signal to a remote LVDT slave device. The same signal drives the local indicator and the remote indicator and test data indicated that the local indicator read out properly during the test. THe non-metallic materials used in the Yarway LITS have been reviewed and it appears that the minimum threshold of damage in the radiation environment is approximately 10^6 rads.

In addition to the Yarway remote level indicators, the B21-N026A& B transmitters drive a remote recorder in the control room. These transmitters are Barton 760 devices for which no test data could be formed.

Since the Yarway transmitters driving the control room level indicators are expected to survive the harsh environment and since the Barton transmitters driving the control room level recorders are diverse instruments, the probability of having a water level indication in the control room throughout the accident event is high.

B21-N026A&B (Continued)

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N027

This instrument measures the RPV level from the bottom of the dryer skirt to the top of the RPV head.

This instrument is only required to recover from the alternate shutdown cooling mode of plant operation. The instrument will be measuring on scale when in this mode of operation; therefore, the operator will know if the instrument is operating properly. If the operator expects that the instrument has been degraded, the instrument will be replaced before the recovery operation is started. While the reactor is being cooled in this mode it is in a safe and stable condition; therefore, the replacement method is considered acceptable.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N031A-D

These switches provide a signal which starts the high and low pressure ECCS systems on low RPV level.

In the unlikely event of a LOCA the instruments will be subjected to a harsh environment due to radiation but will have served their safety function prior to any significant irradiation. On a HELB outside the drywell the instrument will be subjected to a harsh environment due to high temperature. There is a high degree of assurance that they will operate to serve their safety function since they have test data to show they will operate at the accident temperature. The test experience has shown that the potential effect of the adverse environment is to decrease the accuracy of the instrument. This decrease could cause the setpoint error to be no more than six (6) inches. The effect of this error is insignificant with respect to assuring adequate core cooling.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N036, B21-N037

These instruments provide a containment spray permissive signal and provide shroud water level indication. The accident analysis does not take credit for the containment spray function of the RHR system, therefore, the containment spray permissive function of the instruments is not required to assure plant safety.

The indication function of the instrument could be affected by the high radiation condition post LOCA. If the indication becomes erratic or ambiguous, the operator will turn on all of the low pressure ECCS systems thus filling the RPV and open one or more SRVs to allow the ECCS flow to spill out the relief valves to the suppression chamber. This operation assures adequate core cooling.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B21-N042A&B

These instruments provide an ADS permissive signal on low RPV water level which is only required post LOCA. They will be subjected to a harsh environment due to radiation but will have served its safety function prior to any significant irradiation.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

B31-F031A, B31-F031B

The above listed motor operated valve operators, which previous to this revision were considered fully qualified, are now considered as having an open item regarding the radiation qualification of the motor brake assemblies.

Recent information from the suppliers of the motor operated valve operators indicate their unwillingness to formally support the radiation qualification of their brake assemblies. However, note that brakes similar in design to the subject brakes have in fact successfully undergone both HELB/LOCA and radiation testing.

Reference to Limitorque Test Report 600376A Appendix B (F-C3441 Appendix C) states that the brake was radiated to over 2.04×10^8 rads with no apparent damage. However, the same specimen which had been radiated did not undergo a HELB/LOCA test. For this reason, each of the above listed motor operated valve operators are being replaced with a design which precludes the necessity of brake assemblies.

Based on the successful-though limited-testing and the fact the operating time requirements are minimal (30 seconds within the first 4.5 hours), operation until such time as fully qualified components can be installed is justified.

ATTACHMENT 2

C32-N005A&B

This instrument measures RPV pressure and is provided to give the operator additional information regarding plant performance. No operator actions can be taken solely as a result of the information provided by this instrument which will affect the automatic operation of the ECCS systems and, therefore, reactor safety.

Test data is available for these devices to show that they will function properly in an environment with temperatures up to 150°F. The maximum expected accident temperature in the area of these transmitters is 210°F due to a RWCU line break. Since, no improper operator action that can affect reactor safety will result from an incorrect vessel pressure indication, continued plant operation is justified.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

C71-N002A-D

These instruments monitor drywell pressure and provide a SCRAM signal on high drywell pressure.

These switches could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The switches will sense high pressure and actuate very early in a LOCA event prior to any high radiation being present and will not have to function again. The safety function of these switches is therefore satisfied.

The switches could be subjected to a harsh environment due to temperature after a HELB but are not required to assure plant safety after that event.

These pieces of equipment have been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five
(5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E11-N002A&B

These instruments measure the ΔP across the RHR Heat Exchanger and provide a signal to the RHR Service Water Outlet Valve E11-F068A&B to regulate such that service water pressure is always greater than RHR System Pressure.

The instrument may be subjected to a harsh environment due to temperature in the event of a HELB in the corner rooms where they are located but no credit is taken for the system operation in that compartment after a HELB.

The instrument could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. There is a high degree of assurance that the instrument will function as designed in this case since the instrument has test data to show that it has operated as designed after being irradiated to a dose in excess of that which it will be subjected to after this event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E11-N010A-D

These instruments monitor drywell pressure and provide an ADS permissive signal on high drywell pressure.

These switches could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The switches will sense a high pressure and actuate very early in a LOCA event prior to any high radiation being present and will not have to function again. The safety function of these switches is therefore satisfied.

The switches could be subjected to a harsh environment due to temperature after a HELB but are not required to assure plant safety after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E11-N011A-D

These instruments monitor drywell pressure and provide a signal to initiate the ECCS Systems on high drywell pressure.

These switches could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The switches will sense a high pressure and actuate very early in a LOCA event prior to any high radiation being present and will not have to function again. The safety function of these switches is therefore satisfied.

The switches could be subjected to a harsh environment due to temperature after a HELB but are not required to assure plant safety after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for five (5) years. With this limited service this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E11-NG15A&B

These instruments provide the operator with confirmatory information to assure that the LPCI system is operating as designed.

No credit is taken for operator operation of these systems in the event of a line break which creates a harsh environment in the area where the instrument is located. Therefore, the instruments are not required after a HELB.

In the event of a LOCA, the instruments will be subjected to a harsh environment due to radiation. The instruments do not have any data to demonstrate their qualification in the high radiation environment but the operator will be able to verify proper automatic system operation prior to significant radiation degradation to the instruments. In the event of erratic instrument behavior, the operator will not take an action which will compromise safety based on this indication.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E11-N016A-D

These instruments monitor the discharge pressure of the LPCI pumps to provide a signal to the ADS logic. This signal tells the ADS logic that a low pressure ECCS pump is running.

The instruments could be subjected to a harsh environment due radiation in the unlikely event of a LOCA. The switches will have operated to serve their safety function prior to any high radiation being present. This is based on the fact that the LPCI System will receive its signal and start prior to any core uncovery. Once the switch has operated it does not have to function again to serve its safety function.

The switches could be subjected to a harsh environment due to temperature after a HELB but are not required to assure plant safety after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relative limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E11-N020A-D

These instruments monitor the discharge pressure of the LPCI pumps to provide a signal to the ADS logic. This signal tells the ADS logic that a low pressure ECCS pump is running.

The instruments could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The switches will have operated to serve their safety function prior to any high radiation being present. This is based on the fact that the LPCI system will receive its signal and start prior to any core uncovery. Once the switch has operated it does not have to function again to serve its safety function.

The switches could be subjected to a harsh environment due to temperature after a HELB but are not required to assure plant safety after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E11-N021A&B

These instruments monitor LPCI flow and provide the signal to close the LPCI minimum flow valves, E11-F007A&B, when system flow is high enough to protect the pumps.

The instruments could be subjected to a harsh environment due to radiation after a LOCA. However, generally the LPCI pumps are in operation before core damage would be predicted to occur. Further, for large breaks where total LPCI flow is significant to establishing reflooding time, the minimum flow valves would be closed before any potential radiation damage. Although analyses have not been performed it is expected this would also be true for small breaks. Further, for small breaks, total LPCI (or low pressure ECCS flow) is not significant in the reflooding calculation so that failure of the minimum flow bypass valve to close would not significantly affect core reflooding time. Therefore, the instruments are expected to function sufficiently to assure adequate core cooling.

In the event of a HELB in the area where the instruments are located, no credit is taken for the systems in that compartment; therefore, the instruments are not required.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E21-N003A&B

These instruments provide the operator with confirmatory information to assure that the core spray system is operating as designed.

No credit is taken for operation of these systems in the event of a line break which creates a harsh environment in the area where the instrument is located. Therefore, the instruments are not required after a HELB.

In the event of a LOCA, the instruments will be subjected to a harsh environment due to radiation. The instruments do not have any data to demonstrate their qualification in the high radiation environment but the operator will be able to verify proper automatic system operation prior to significant radiation degradation to the instruments. In the event of erratic instrument behavior, the operator will not take an action which will compromise safety based on this indication.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E21-N006A&B

These instruments monitor core spray system flow and provide the signal to close the core spray pump minimum flow valves, E21-F031A&B, when system flow is high enough to protect the pumps.

The instruments could be subjected to a harsh environment due to radiation after a LOCA. However, generally the core spray pumps are in operation before core damage would be predicted to occur. Further, for large breaks where core spray flow may be significant to the core heatup calculation or reflooding time, the minimum flow valves would be closed before any potential radiation damage. Although analyses have not been performed it is expected this would also be true for small breaks. Further for small breaks, total core spray flow (or low pressure ECCS flow) is not significant in the reflooding calculation so that failure of the minimum flow bypass valve to close would not significantly affect core reflooding time. Therefore, the instruments are expected to function sufficiently to assure adequate core cooling.

In the event of an HELB in the area where the instruments are located, no credit is taken for the systems in that compartment; therefore, the instruments are not required.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E21-N008A&B

These instruments monitor the discharge pressure of the core spray pumps to provide a signal to the ADS logic. This signal tells the ADS logic that a low pressure ECCS pump is running.

The instruments could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The switches will have operated to serve their safety function prior to any high radiation being present. This is based on the fact that the LPCI System will receive its signal and start prior to any core uncovery. Once the switch has operated, it does not have to function again to serve its safety function.

The switches could be subjected to a harsh environment due to temperature after a HELB but are not required to assure plant safety after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E21-N009A&B

These instruments monitor the discharge pressure of the core spray pumps to provide a signal to the ADS logic. This signal tells the ADS logic that a low pressure ECCS pump is running.

The instruments could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The switches will have operated to serve their safety function prior to any high radiation being present. This is based on the fact that the LPCI System will receive its signal and start prior to any core uncovery. Once the switch has operated it does not have to function again to serve its safety function.

The switches could be subjected to a harsh environment due to temperature after a HELB but are not required to assure plant safety after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-F011

E41-F011 is the outboard common isolation valve between the HPCI and RCIC systems and the condensate storage tank. The normal and accident position of this valve is closed.

E41-F011 will only be subjected to a harsh environment due to radiation after a LOCA. This valve is assumed to be in its safety position, closed, since the only time it will be open is during system test. It is not credible to assume a system test concurrent with a LOCA. This is the reason "0" operation time is indicated on the system component evaluation work sheet. If for some reason the valve were to be open at the onset of a LOCA, the valve will receive its signal and move to its safety position in the first few minutes of an event. The time duration during which it must operate is short enough that it is not credible to assume that appreciable radiation damage will occur potentially rendering the valve inoperable prior to its reaching its fully closed position. Once in its safety position, there is no reason to assume that it will move since all its controls are fully qualified for their associated environment.

E41-F011 could experience a harsh environment due to temperature and steam in the unlikely event of a HPCI steam line break but no credit is taken for the system in the event of this break.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-F012

Valve E41-F012 is the minimum flow valve for the HPCI pump.

In the event of a LOCA, the valve could be subjected to a harsh environment due to radiation. The minimum flow valve could be called upon to open at the time of system initiation on a large LOCA. The valve will not have been subjected to irradiation at that time and will operate as designed. If the valve does not close the level could drop but the ADS system concurrent with the low pressure ECCS systems will assure adequate core cooling. In the event of a small break, the subject valve could be required to cycle on subsequent starts of the HPCI system. If the HPCI system is required to cycle the break is small enough that the flow out the break is less than the HPCI flow in which case the core will not have been uncovered. If the core is not uncovered, it is not credible to assume core damage. Therefore, the source of the high radiation will not be present.

In the event of a HELB, the valve could be subjected to a harsh environment due to temperature and pressure, but the source of the harsh environment will be a HPCI steam line break and no credit is taken for the operation of the HPCI system after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N001A-D, E41-N004, E41-N005

These instruments monitor HPCI steam line pressure and flow, and they provide an isolation signal on low pressure and/or high flow in the event of a HPCI steam line break.

The instruments could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The accident analysis takes no credit for the operation of these instruments for the mitigation of a LOCA.

The instruments could be subjected to a harsh environment due to temperature in the event of a HELB. There is a high degree of confidence the switches will operate since there is test experience to demonstrate that the instruments will operate up to a temperature of 212°F which is only 2°F below the peak predicted temperature for the area where the switches are located. The subject switches will also operate prior to reaching that peak temperature and once they have operated, they will have served their safety function and will not have to operate again. In addition, these switches are backed up by high temperature elements which will also cause an isolation signal to be generated.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N006

E41-N006 is the flow instrument which provides the signal which operates the minimum flow valve, E41-F012.

In the event of a LOCA, the instrument could be subjected to a harsh environment due to radiation. The instrument could be called upon to operate at the time of system initiation on a large LOCA. The instrument will not have been subjected to irradiation at that time and will operate as designed. If the instrument does not operate the RPV level could drop but the ADS system concurrent with the low pressure ECCS systems will assure adequate core cooling. In the event of a small break, the subject instrument could be required to cycle on subsequent starts of the HPCI system. If the HPCI system is required to cycle the break is small enough that the flow out the break is less than the HPCI flow in which case the core will not have been uncovered. If the core is not uncovered, it is not credible to assume core damage. Therefore, the source of the high radiation will not be present.

In the event of a HELB the instrument could be subjected to a harsh environment due to temperature and pressure but the source of the harsh environment would be a HPCI steam line break and no credit is taken for the operation of the HPCI system after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N008

This is a transmitter that provides control of the HPCI Turbine Control Valve position to maintain design rated HPCI flow. It also provides the control room with indication of HPCI pump flow.

The transmitter is not subjected to a harsh environment for any HELB except the HPCI System Steam Line Break, and no credit for the HPCI system is taken for this break.

In the event of a large break LOCA for which the HPCI system cannot maintain RPV level, the transmitter may be subjected to high radiation. However, in this case, the HPCI system is not required since the RPV will be depressurized by the break and/or actuation of the ADS system. Adequate core cooling is then provided by the low pressure ECCS systems.

In the event of a small break LOCA for which the HPCI system can maintain RPV level, the core never uncovers and hence core cooling is maintained and the radiation environment is not present.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N010

This instrument monitors HPCI pump suction pressure and initiates a pump trip on low suction pressure.

The instrument is not subjected to a harsh environment for any HELB except the HPCI system steam line break, and no credit for the HPCI system is taken for this break.

In the event of a small break LOCA for which the HPCI system can maintain RPV level, the core never uncovers and hence core cooling is maintained and the radiation environment is not present.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N012A-D

These instruments monitor the pressure between the rupture disks off the turbine exhaust line and initiate a turbine trip if the inboard disk fails. The purpose of the instrument is to trip the turbine if the exhaust line becomes blocked. Such a blockage is extremely unlikely so the switch should never be required to function.

In the highly unlikely event of such a blockage, line overpressurization would occur very early in the operation of the turbine, before the occurrence of a harsh environment from any LOCA or HELB. Therefore, the switch would be expected to function.

The possibility of inadvertent actuation exists due to high radiation associated with a large LOCA for which HPCI cannot maintain RPV level. In this case HPCI is not required since the reactor would be depressurized by the break and/or ADS and core cooling will be provided by the low pressure ECCS systems.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N015A&B

These instruments are level switches and monitor the suppression chamber level and provide a signal to the HPCI suction valves, E41-F042, E41-F041 and E41-F004 to switch the HPCI suction source from the condensate storage tank to the suppression chamber.

In the event of a LOCA, the instruments will be subjected to a harsh environment due to radiation. However, for any event for which the HPCI suction transfer is required, the transfer will be completed prior to the occurrence of any fuel damage. Therefore, the subsequent occurrence of high radiation is not a concern and the instrument is expected to function as required.

In the event of a HELB, the instruments will be subjected to a harsh environment due to temperature. These instruments are widely used throughout the industry for boiler level control at temperatures far in excess of those to which it will be subjected during the postulated HELB. Therefore, there is a high degree of assurance that they will function as required.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N017A&B

These instruments monitor the HPCI turbine exhaust pressure and initiate a trip signal on high pressure.

The instruments are not subjected to a harsh environment or any HELB except the HPCI system steam line break, and no credit for the HPCI system is taken for this break.

In the event of a large break LOCA for which the HPCI system cannot maintain RPV level, the instruments may be subjected to high radiation. However, in this case the HPCI system is not required since the RPV will be depressurized by the break and/or actuation of the ADS system. Adequate core cooling is then provided by the low pressure ECCS systems.

In the event of a small break LOCA for which the HPCI system can maintain RPV level, the core never uncovers and hence core cooling is maintained and the radiation environment is not present.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N027

E41-N027 is a pressure switch which senses HPCI pump operation and permits the minimum flow valve, E41-F012, to open if the system is operating and the flow is low.

In the event of a LOCA the instrument could be subjected to a harsh environment due to radiation. The instrument could be called upon to operate at the time of system initiation on a large LOCA. The instrument will not have been subjected to irradiation at that time and will operate as designed. If the instrument does not operate, the RPV level could drop but the ADS system concurrent with the low pressure ECCS systems will assure adequate core cooling. In the event of a small break the subject instrument could be required to cycle on subsequent starts of the HPCI system. If the HPCI system is required to cycle the break is small enough that the flow out the break is less than the HPCI flow in which case the core will not have been uncovered. If the core is not uncovered, it is not credible to assume core damages. Therefore, the source of the high radiation will not be present.

In the event of a HELB the instrument could be subjected to a harsh environment due to temperature and pressure but the source of the harsh environment will be a HPCI steam line break and no credit is taken for the operation of the HPCI system after that event.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E41-N030A&B, E41-N046A&B, E51-N025C&D, E51-N026C&D, E51-N027C&D

These instruments are temperature sensors which monitor temperatures in areas where the HPCI steam line is located and initiate an isolation-signal in the event of a steam leak in the HPCI steam line.

The instruments could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. No credit is taken in the accident analysis for the operation of these switches for the mitigation of a LOCA. If the switches misoperated due to a high radiation failure the HPCI system could be unnecessarily isolated. This does not cause a condition which compromises plant safety since the ADS system in conjunction with the low pressure ECCS systems will provide adequate core cooling.

In the event of a HELB the instruments could be subjected to a harsh environment due to temperature and pressure. A high degree of confidence exists that the instruments will operate to isolate the HPCI steam line break since test experience shows that the switches will operate up to a test temperature of 212°F. The setpoint of these switches is 170°F which is well below the temperature for which test experience exists.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E51-N012A-D

These instruments monitor the pressure between the rupture disks off the turbine exhaust line and initiate a turbine trip if the inboard rupture disk fails. The purpose of the instrument is to trip the turbine if the exhaust line becomes blocked. Such a blockage is extremely unlikely so the switch should never be required to function.

In the highly unlikely event of such a blockage, line over-pressurization would occur very early in the operation of the turbine, before the occurrence of a harsh environment from any LOCA or HELB. Therefore, the switch would be expected to function.

The possibility of inadvertent actuation causing a RCIC System isolation exists but no credit is taken for the operation of the RCIC system in the accident analysis.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E51-N019A-D, E51-N017, E51-N018

These instruments monitor RCIC steam line pressure and flow, and they provide an isolation signal on low pressure and/or high flow in the event of a RCIC steam line break.

The instruments could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. The accident analysis takes no credit for the operation of the RCIC System for the mitigation of a LOCA.

The instruments could be subjected to a harsh environment due to temperature in the event of a HELB. There is a high degree of confidence the switches will operate up to a temperature of 212°F which is only 2°F below the peak predicted temperature for the area where the switches are located. The subject switches will also operate prior to reaching that peak temperature and once they have operated they will have served their safety function and will not have to operate again. In addition, these switches are backed up by high temperature elements which will also cause an isolation signal to be generated.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

E51-N023A&B, E51-N026A&B, E51-N025A&B, E51-N027&B

These instruments are temperature sensors which monitor temperatures in areas where the RCIC steam line is located and initiate an isolation signal in the event of a steam leak in the RCIC steam line.

The instruments could be subjected to a harsh environment due to radiation in the unlikely event of a LOCA. No credit is taken in the accident analysis for the operation of these switches for the mitigation of a LOCA.

In the event of a HELB the instruments could be subjected to a harsh environment due to temperature and pressure. A high degree of confidence exists that the instruments will operate to isolate the HPCI steam line break since test experience shows that the switches will operate up to a test temperature of 212°F. The set point of these switches is 170°F which is well below the temperature for which test experience exists.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

G31-N016A-F, G31-N022A-F, G31-N023A-F

These instruments are temperature sensors which monitor temperature in areas where the RWCU piping is located and initiate an isolation signal in the event of a leak.

These instruments could be subjected to a harsh environment due to radiation in the event of a LOCA. No credit is taken for the operation of these switches for the mitigation of a LOCA.

In the event of a HELB the instruments could be subjected to a harsh environment due to temperature and pressure. A high degree of confidence exists that the instruments will operate to isolate the RWCU line since test experience shows that the switches will operate up to a test temperature of 212°F. The set point of these switches is substantially less than the temperature for which test experience exists.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

G31-N036, G31-N012, G31-N041

These instruments measure the flow for the RWCU system.

These instruments will be subjected to a harsh environment due to high temperature on a break in the RWCU system. The instruments will sense the break flow condition prior to being subjected to a temperature in excess of that for which we have test experience. Therefore, there is a high degree of confidence that they will function as intended and send a signal which isolates the break. Once the signal is initiated, the instrument has served its safety function.

In addition, the temperature in each room is monitored by temperature sensors which will cause an isolation signal to be generated on high temperature.

In the event of a LOCA these instruments are not required for accident mitigation.

This piece of equipment has been used during normal operation in plants similar to Hatch 1 for the past eleven (11) years. To date, no age related common mode failures have been reported. These devices have experienced relatively limited service in Hatch 1 as they have been used during normal operation for only five (5) years. With this limited service, this equipment is not expected to fail before replacement.

Based on the above, continued operation is justified.

ATTACHMENT 2

Unknown Internal Panel Wire

It is not known if this wire is part of the circuit for any safety equipment. A walkdown of Unit 2 panels where unidentified internal panel wire was, showed that no safety equipment circuits included this wire. As this wire was supplied in panels manufactured by the same vendor (as the Unit 2 panels' vendor), it is assumed the same situation exists. A similar walkdown of Unit 1 panels is planned for the next unit refueling shutdown to verify this fact.

Based on the above, continued operation is justified.

ATTACHMENT 3

E. I. HATCH PLANT UNIT 2

JUSTIFICATION FOR CONTINUED OPERATION

BALANCE OF PLANT

ATTACHMENT 3

2E11-F021A,B

Valves 2E11-F021A,B are required if the drywell spray mode of operation of the RHR system is desired. Adequate documentation has not been found to assure acceptability of the subject valves.

Subsequent to a LOCA or HELB the operation of the valve is not required since the accident analysis takes no credit for the drywell spray mode of operation to assure plant safety.

Based on the above, continued operation is justified.

ATTACHMENT 3

2E11-MOV-F016A,B

The above listed motor operated valve operators, which previous to this revision were considered fully qualified, are now considered as having an open item regarding the radiation qualification of the motor brake assemblies.

Recent information from the suppliers of the motor operated valve operators indicate their unwillingness to formally support the radiation qualification of their brake assemblies. However, note that brakes similar in design to the subject brakes have in fact successfully undergone both HELB/LOCA and radiation testing.

Reference to Limitorque Test Report 600376A Appendix D (F-C3441 Appendix C) states that the brake was radiated to over 2.04×10^8 rads with no apparent damage. However, the same specimen which had been radiated did not undergo an HELB/LOCA test. For this reason, each of the above listed motor operated valve operators are being replaced with a design which precludes the necessity of brake assemblies.

Based on the successful-though limited-testing and the fact the operating time requirements are minimal (worst case 3 minutes within 1st 25 days), operation until such time as fully qualified components can be installed is justified.

ATTACHMENT 3

2P33-P001A,B

This existing equipment is designed such that it meets the requirements of NUREG 0578. It was not known that this equipment, which in most cases, was heretofore not considered safety grade would have to have documentation to the level required by the DOR guidelines until September 30, 1980. The requirements became known when Supplement No. 2 of I. E. Bulletin 79-01B was issued. Prior to the issuance of supplement 2 of the bulletin the decision was made that all equipment required by Lessons Learned to be added to the plant would be purchased to meet IEEE 323-1974 but equipment which was existing at the plant which met the requirements of NUREG 0578 would not be replaced.

When Supplement 2 of I. E. Bulletin 79-01B was issued, which mandated that all TMI equipment must meet the new requirements, an extensive document search was undertaken. All equipment which is included in the IEB 79-01B Master List and required to meet the requirements of TMI lessons learned has either been demonstrated to be qualified or has been replaced by qualified equipment with the exception of a portion of the H_2 and O_2 Analyzer System. A new, fully qualified Comsip Delphi Analyzer has been installed and is operational. The heat tracing on the lines leading to the analyzer is undergoing its final qualification program at this time. The heat tracing is of the highest quality available and is fully expected to operate after an accident, but operability can not be demonstrated by test until such time as the qualification program is complete. The continued operation of the station is justified since the installed equipment is of the highest quality and there is a very low probability that it will not function in the unlikely event of a LOCA or HELB. This equipment is diagnostic in nature and as such does not directly affect the continued safe operation of the plant.