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**Alabama Power**

*the southern electric system*

March 14, 1983

Docket No. 50-348

Director, Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Mr. S. A. Varga

Joseph M. Farley Nuclear Plant - Unit 1  
Environmental Qualification

Gentlemen:

In response to the NRC's Safety Evaluation Report (SER) dated February 4, 1983, for the Farley Nuclear Plant - Unit 1 response to I.E. Bulletin 79-01B, Alabama Power Company has reviewed the SER and associated Technical Evaluation Report (TER) and provides the attached Report on Environmental Qualification of Class 1E electrical equipment. This submittal provides information that should resolve the NRC concerns related to environmental qualification for the Farley Nuclear Plant. It is the judgement of Alabama Power Company that all equipment required to achieve a safe shutdown condition at the Farley Nuclear Plant is environmentally qualified and, as outlined in Section A of the attached report, Justification for Continued Operation (JCO) for equipment items in NRC categories I.B., II.A. and II.B. is not necessary.

The only known outstanding action item, as outlined in the attached report, is the installation of a water-tight fitting on the Victoreen Radiation Detectors. These detectors were installed as an enhancement to the radiation monitoring system to satisfy the requirements of NUREG-0737 and would be used to detect a radiation release due to a potential breach of the reactor coolant pressure boundary. The radiation detectors will be considered qualified upon completion of the water-tight fitting installation currently being implemented during the present refueling outage.

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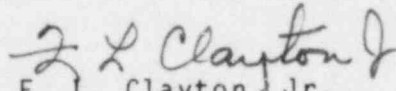
Mr. S. A. Varga  
U. S. Nuclear Regulatory Commission

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A potential action item could result for Target Rock solenoids used on the Reactor Head Vent System. The qualification reports are currently under development by Westinghouse with a scheduled completion of May 1983. Alabama Power Company will review the reports when issued and take appropriate action. Per NRC directive, the Reactor Head Vent System is not in an operating status (i.e., available for operation) on operating reactors and can not be placed into operating status without approval of the NRC.

If there are any questions, please advise.

Yours very truly,

  
F. L. Clayton, Jr.

FLCJr/DHJ:1sh-D13

Attachment

cc: Mr. R. A. Thomas  
Mr. G. F. Trowbridge  
Mr. J. P. O'Reilly  
Mr. E. A. Reeves  
Mr. W. H. Bradford

Joseph M. Farley Nuclear Plant - Unit 1

Docket No. 50-348

Environmental Qualification

Joseph M. Farley Nuclear Plant

Unit 1

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## Section A

### Introduction

In response to the NRC IE Bulletin 79-01B Safety Evaluation Report, dated February 4, 1983, Alabama Power Company (APCo) provides this report regarding the review of environmental qualification of Class 1E electrical equipment for Farley Nuclear Plant (FNP) Unit 1. The components covered by this submittal include safety-related electrical equipment and other TMI Action Plan equipment exposed to a harsh environment. The scope of this review will ensure that equipment necessary to protect the public health and safety is capable of performing its safety function if subjected to a harsh environment.

The results of the environmental qualification review of safety-related electrical equipment in a harsh environment are documented herein. It is the judgement of Alabama Power Company that all equipment required to achieve a safe shutdown condition at Farley Nuclear Plant is environmentally qualified and Justification for Continued Operation (JCO) for equipment items in NRC categories I.B., II.A. and II.B is not necessary.

The only outstanding action item is the installation of a water-tight fitting on the Victoreen radiation detectors. Upon completion of this modification, which is being installed during the present refueling outage, these detectors will be fully qualified.

Section B

Discrepancy Clarifications

This section provides the information required to resolve the concerns identified in the NRC's Safety Evaluation Report and Franklin Research Center's Technical Evaluation Report. Equipment concerns identified in NRC categories I.B, II.A, II.B, II.C, or IV have been satisfactorily resolved. Clarifications are provided for each identified concern.

EQUIPMENT ITEM NO. 1

MOTORIZED VALVE ACTUATOR LOCATED IN THE MAIN STEAM ROOM, ELEV.  
131'0"

LIMITORQUE MODEL SMB; SIZES 1, 4T

FUNCTION (PLANT ID): CONTAINMENT ISOLATION  
(MOV3350A, B, C (Q1N23V011A, B, C))

SERVICE: AUXILIARY FEEDWATER

FUNCTION (PLANT ID): CONTAINMENT ISOLATION  
(MOV3232A, B, C (Q1N21V001A-B, B-B, C-B))

SERVICE: MAIN FEEDWATER STOPCHECK VALVE

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED  
AGING DEGRADATION EVALUATED ADEQUATELY  
QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

CLARIFICATIONS:

A. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN  
ESTABLISHED

Limitorque letter dated October 13, 1980, has identified that their Qualification Test Report 600456, "Nuclear-Qualification," dated December 9, 1975, is applicable to the FNP motorized valve actuators listed in Equipment Item No. 1.

Limitorque test report "Nuclear - Qualification" has stated, "The qualifications were conducted to encompass the entire family of Limitorque Actuators - SMB, SB, SBD, and SMB/HBC in all available unit sizes (SMB-000 to SMB-5). This was accomplished by conducting the qualification testing on mid-size unit (SMB-0) subjecting the actuator to simulated seating loads equivalent to the actuators published unit rating during the procedure."

B. AGING DEGRADATION EVALUATED ADEQUATELY

Limitorque test report "Nuclear - Qualification" has discussed thermal aging under Section 3.2, which establishes the following:

1. Thermal aging of motor stator with class RH insulation for 100 hours at 180°C which envelops FNP service conditions, establishes the life in excess of 40 years at 40°C. This is based on Arrhenius Methodology and Thermal Regression Curves per IEEE 101-74 and 117-74.

EQUIPMENT ITEM NO. 1

2. The torque and limit switches have age-susceptible parts made of molded phenolic compound. Based on 10°C rule, which is an acceptable aging methodology, Limitorque has concluded the switches have a qualified life in excess of 40 years at 40°C, which envelops FNP service conditions.

C. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED (IF REQUIRED)

The motorized valve actuators are fully qualified for a life of 40 years.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. Refer "A" above.
2. All motors in the motorized valve actuators have class RH insulation.
3. Valve actuators do not have motor-brakes.
4. Not applicable since actuators do not have motor-brake assembly.
5. Motors have been manufactured by Reliance Electric Company.
6. Not applicable since actuators do not have motor-brake assembly.
7. Motors on valve actuators operate on alternating current (60 Hz).
8. Not applicable since actuators do not have motor-brake assembly.
9. Motorized valve actuators are qualified for 40 years. Refer to clarification "B."

ADDITIONAL CLARIFICATIONS TO PAGE 5g OF TER

- A. Actuator serial numbers and Limitorque order number have been identified on Limitorque letter dated October 13, 1980. SCEWS are prepared on a generic basis and do not show these numbers.
- B. See clarification "A."
- C. No comment is required.
- D. See clarification "B."



EQUIPMENT ITEM NO. 3

MOTORIZED VALVE ACTUATOR LOCATED IN THE CONTAINMENT, ELEV.  
134'-6" AND 116'-0"

LIMITORQUE MODEL SMB00,000

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3536  
(Q1E23V021))

SERVICE: COMBUSTIBLE GAS CONTROL

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3530  
(Q1E23V003))

SERVICE: COMBUSTIBLE GAS CONTROL

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3528 A, B, C,  
D (Q1E23V022A, B, C, D))

SERVICE: COMBUSTIBLE GAS CONTROL

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3835A, B  
(Q1E23V025A, B))

SERVICE: COMBUSTIBLE GAS CONTROL

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3872A, B  
(Q1E22V001A, B))

SERVICE: COMBUSTIBLE GAS CONTROL

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV8112  
(Q1E21V249A))

SERVICE: CVCS/SAFETY INJECTION

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3660  
(Q1E14V002))

SERVICE: CONTAINMENT COOLING

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3318B  
(Q1E14V004))

SERVICE: CONTAINMENT COOLING

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3046  
(Q1P17V097))

SERVICE: COMPONENT COOLING WATER

EQUIPMENT ITEM NO. 3

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3441A, B, C,  
D (Q1P16V207A, B, C, D))

SERVICE: SERVICE WATER

FUNCTION (PLANT ID): CONTAINMENT ISOLATION (MOV3131  
(Q1P16V081))

SERVICE: SERVICE WATER

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED  
AGING DEGRADATION EVALUATED ADEQUATELY  
QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

CLARIFICATIONS:

A. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN  
ESTABLISHED

Limitorque letter dated October 13, 1980, has identified that their Qualification Test Report 600456 "Nuclear Qualifications" dated December 9, 1975, is applicable to the FNP motorized valve actuators listed in Equipment Item No. 3.

Limitorque Test Report "NUCLEAR - QUALIFICATION" has stated, "The qualifications were conducted to encompass the entire family of Limitorque Actuators - SMB, SB, SBD, and SMB/HBC in all available unit sizes (SMB000 to SMB-5). This was accomplished by conducting the qualification testing on mid-size unit (SMB-0) subjecting the actuator to simulated seating loads equivalent to the actuators published unit rating during the procedure."

B. AGING DEGRADATION EVALUATED ADEQUATELY

Limitorque Test Report "Nuclear - Qualification" has discussed thermal aging under Section 3.2, which established the following:

1. Thermal aging of motor stator with class RH insulation for 100 hours at 180°C which envelops FNP service conditions, establishes the life in excess of 40 years at 50°C. This is based on Arrhenius Methodology and based on Thermal Regression Curves per IEEE 101-74 and 117-74.
2. The torque and limit switches have age-susceptible parts made of molded phenolic compound. Based on 10°C rule which is an acceptable aging methodology, Limitorque has concluded the switches have a qualified life in excess of 40 years at 50°C which envelops FNP service conditions.

EQUIPMENT ITEM NO. 3

C. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

The motorized valve actuators are fully qualified for a life of 40 years.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. Refer "A" above.
2. All motors in the motorized valve actuators have class RH insulation.
3. Valve actuators do not have motor-brakes.
4. Not applicable since actuators do not have motor-brake assembly.
5. Motors have been manufactured by Reliance Electric Company.
6. Not applicable since actuators do not have motor-brake assembly.
7. Motors on valve actuators operate on alternating current (60 Hz).
8. Not applicable since actuators do not have motor-brake assembly.
9. Motorized valve actuators are qualified for 40 years. Refer to Clarification "B."

ADDITIONAL CLARIFICATIONS TO PAGE 5g of TER

- A. Actuator serial numbers and Limitorque order number have been identified on Limitorque letter dated October 13, 1980. SCEWS are prepared on generic basis and do not show these numbers.
- B. See Clarification "A."
- C. No comment is required.
- D. See Clarification "B."

EQUIPMENT ITEM NO. 4

SOLENOID VALVES LOCATED IN THE CONTAINMENT, ELEV. 129'-0"

ASCO MODEL NP/206 SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1P13SV2867B, 2866B)

SERVICE: CONTAINMENT MINI-PURGE

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1E12SV3999A, B)  
REFER ITEM 5 FOR DISCUSSION

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1E21SV8871)

SERVICE: ACCUMULATOR TEST

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1G21SV7126)

SERVICE: REACTOR COOLANT DRAIN TANK OUT

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1B31SV8047)

SERVICE: WASTE PROCESSING SYSTEM TO PRT

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1P17SV3443)

SERVICE: EXCESS LETDOWN ISOLATION

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1P17SV3184)

SERVICE: CCW ISOLATION

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1P15SV3103, 3765, 3766, 3179A, B, C)

SERVICE: SAMPLE SYSTEM ISOLATION

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1P15SV3103, 3180A, B, C; 3181A, B, C;  
3104)

SERVICE: SAMPLE SYSTEM ISOLATION

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED  
CRITERIA REGARDING SUBMERGENCE SATISFIED

EQUIPMENT ITEM NO. 4

CLARIFICATIONS:

A. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method of addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the NP/206 series ASCO solenoid valves located inside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP/206 series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations.

EQUIPMENT ITEM NO. 4

B. CRITERIA REGARDING SUBMERGENCE SATISFIED

The solenoid valves listed above should be considered exempt from the submergence portion of the qualification requirements as they are all located above maximum flooding elevation in the containment.

Additional Clarifications to Notes on Page 5f of TER

1. No comment is required.
2. See clarification "A."
3. See clarification "B."

EQUIPMENT ITEM NO. 5

SOLENOID VALVE LOCATED IN THE CONTAINMENT, ELEV. 105'-0"

AUTOMATIC VALVE MODEL C5439

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1E12SV3999A, B)

SERVICE: REACTOR CAVITY COOLING SYSTEM

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

In Revision 6 to APC's July 30, 1980 submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to the NRC I.E. Bulletin 79-01B," which was forwarded to the NRC dated December 28, 1981, it was stated that these solenoid valves would be replaced during the fourth refueling outage.

The modification to replace the automatic valve Model C5439 with qualified ASCO Model NP 8316 A74E was completed during the 4th refueling outage. These units are certified to be similar to units qualified by ASCO on Qualification Test Report AQR 67368 which envelops FNP service conditions.

B. QUALIFIED LIFE OF ASCO NP SERIES SOLENOIDS

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

EQUIPMENT ITEM NO. 5

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the NP series ASCO solenoid valves located inside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the result of inspections, and manufacturers recommendations. The ASCO NP series solenoid valves are included in this program.



EQUIPMENT ITEM NO. 6

SOLENOID VALVES LOCATED IN THE CONTAINMENT, ELEV. GREATER THAN 115'0"

ASCO MODEL NP SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION (N1B31SVO444BA, BB; 445AA, AB)

SERVICE: PRESSURIZER PORV

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

CLARIFICATIONS:

QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

EQUIPMENT ITEM NO. 6

APC Response:

The qualified life of the NP/206 series ASCO solenoid valves located inside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP/206 series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. No comment is required.
2. See clarifications.

EQUIPMENT ITEM NO. 7

SOLENOID VALVE LOCATED IN THE CONTAINMENT

TARGET ROCK MODEL 79AB001

FUNCTION (PLANT ID): REACTOR VESSEL HEAD VENTILATION  
(Q1B13SV2213A, B; 2214A, B)

SERVICE: REACTOR VESSEL HEAD VENTILATION

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

The best available equipment was installed to comply with the NUREG-0737 installation schedule even though environmental qualification testing was not completed. The installation of equipment, lacking environmentally qualified documentation was provided for in NUREG-0737 if later qualification was demonstrated. Westinghouse is scheduled to complete the qualification reports in May 1983.

This equipment was installed by APC in response to NUREG-0737 and requires NRC approval before the system can be placed into operation.

EQUIPMENT ITEM NO. 8

SOLENOID VALVES LOCATED IN THE CONTAINMENT, ELEV. 111'-0"

ASCO MODEL: 206-381-6RF

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1E21SV8149AB, BB, CB)

SERVICE: REGEN HX SHELL DISCHARGE

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(N1G21SV1003B)

SERVICE: REACTOR COOLANT DRAIN

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED  
CRITERIA FOR SUBMERGENCE SATISFIED

CLARIFICATIONS:

A. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

EQUIPMENT ITEM NO. 8

APC Response:

The qualified life of the NP/206 series ASCO solenoid valves located inside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP/206 series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

B. CRITERIA REGARDING SUBMERGENCE SATISFIED

NRC Position:

(DOR GUIDELINES SECTION 4.1, SUB-ITEM 3; AND SECTION 4.3.2, SUB-ITEM 3)

Equipment submergence (inside or outside containment) should be addressed where the possibility exists that submergence of equipment may result from HELBs or other postulated occurrences. Supplement 2 to IE Bulletin 79-01B (20) provides the following additional criterion: If the equipment satisfies the guidance and other requirements of the DOR Guidelines or NUREG-0588 for the LOCA and HELB accidents, and the licensee demonstrates that its failure will not adversely affect any safety-related function or mislead the operator after submergence, the equipment can be considered exempt from the submergence portion of the qualification requirements.

APC Response:

With the qualified life clarification provided in Part A above, the ASCO NP/206 series solenoid valves located inside the containment satisfy the guidance and other requirements of the DOR guidelines or NUREG-0588 for the LOCA and HELB accidents.

Appendix 1, Section II.D, which was included in Rev. 5 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant Unit - 1 Response to the NRC IE Bulletin 79-01B," and was forwarded to the NRC on August 25, 1981, demonstrated that solenoid valves (Q1E21SV8149AB, BB, CB) and (Q1E21SV1003B) will perform their safety function prior to becoming submerged, their further operation is not required, and their failure does not affect other safety-related equipment or mislead the operator. Therefore, these solenoid valves should be considered exempt from the submergence portion of the qualification requirements.

EQUIPMENT ITEM NO. 8

ADDITIONAL CLARIFICATIONS TO NCTES ON PAGE 5f OF TER

1. No comment is required.
2. See Clarification "A."
3. As discussed in Appendix 1, Section II.D, the solenoid valves addressed above will perform their safety functions prior to being submerged. Their safety functions are to go to the vent position following de-energization of the solenoid which permits air to be vented from the operator of the air operated isolation valve. Venting the air permits the isolation valve to go to its fail safe position (closed). These solenoid valves will not be required to change position after being submerged. Appendix 1, Section II.D, provided a failure mode analysis for the solenoid coil under the submerged condition. There are no other solenoid valve internal components which due to submergence or in-leakage could effect the isolated (closed) position of the isolation valve.

EQUIPMENT ITEM NO. 9

SOLENOID VALVE LOCATED IN THE CONTAINMENT, ELEV. 109'-0"

ASCO MODEL NP SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1G21SV3376)

SERVICE: CONTAINMENT SUMP PUMP DISCHARGE

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED  
CRITERIA FOR SUBMERGENCE SATISFIED

CLARIFICATIONS:

A. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

EQUIPMENT ITEM NO. 9

APC Response:

The qualified life of the NP/206 series ASCO solenoid valves located inside the containment has been determined based on type testing material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP/206 series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection and manufacturers recommendations.

B. CRITERIA REGARDING SUBMERGENCE SATISFIED

NRC Position:

(DOR GUIDELINES SECTION 4.1, SUB-ITEM 3; AND SECTION 4.3.2, SUB-ITEM 3)

Equipment submergence (inside or outside containment) should be addressed where the possibility exists that submergence of equipment may result from HELBs or other postulated occurrences. Supplement 2 to IE Bulletin 79-01B (20) provides the following additional criterion: If the equipment satisfies the guidance and other requirements of the DOR Guidelines or NUREG-0588 for the LOCA and HELB accidents, and the licensee demonstrates that its failure will not adversely affect any safety-related function or mislead the operator after submergence, the equipment can be considered exempt from the submergence portion of the qualification requirements.

APC Response:

With the qualified life clarification provided in part A above, the ASCO NP/206 series solenoid valves located inside the containment satisfy the guidance and other requirements of the DOR guidelines or NUREG-0588 for the LOCA and HELB accidents.

Appendix 4, Section II.C, of "Joseph M. Farley Nuclear Plant Unit 1 Response to the NRC I.E. Bulletin 79-01B," and was forwarded to the NRC on August 25, 1981, demonstrated that solenoid valve (Q1G21SV3376) will perform its safety function prior to becoming submerged. Alabama Power Company has concluded that its failure does not affect other safety related equipment nor mislead the operator. Therefore, this solenoid valve should be considered exempt from the submergence portion of the qualification requirements.



EQUIPMENT ITEM NO. 9

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. No comment is required.
2. See Clarification "A."
3. As discussed in Appendix 1, Section II.D, the solenoid valves addressed above will perform their safety functions prior to being submerged. Their safety functions are to go to the vent position following de-energization of the solenoid which permits air to be vented from the operator of the air operated isolation valve. Venting the air permits the isolation valve to go to its fail safe position (closed). These solenoid valves will not be required to change position after being submerged. Appendix 1, Section II.D, provided a failure mode analysis for the solenoid coil under the submerged condition. There are no other solenoid valve internal components which due to submergence or in-leakage could effect the isolated (closed) position of the isolation valve.

EQUIPMENT ITEM NO. 10

SOLENOID VALVE LOCATED IN THE MAIN STEAM ROOM, ELEV. 131'-0"

ASCO MODEL HT8300 SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1N12SV3235A, B)

SERVICE: STEAM SUPPLY TO TURBINE DRIVEN AFW PUMP

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1N25SV3772A, B, C)

SERVICE: CHEMICAL ADDITION TO STEAM GENERATOR FEEDWATER

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1N23SV3228AA, BA, CA; 3227AA, BA, CA)

SERVICE: FLOW CONTROL VALVES FOR AUXILIARY FEEDWATER

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(N1C22SV0478A, B; 0488A, B; 498A, B)

SERVICE: FLOW CONTROL VALVES FOR MAIN FEEDWATER

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

In Revision 6 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to the NRC I.E. Bulletin 79-01B," which was forwarded to the NRC dated December 28, 1981, it was stated that these solenoid valves would be replaced by the end of the fourth refueling outage.

The modification to replace the ASCO model HT8300 series solenoid valves with qualified ASCO model NP 8316E36V was completed during the third refueling outage for solenoid valves SV3235A and B. The modification to replace the ASCO model HT8300 series solenoid valves with qualified ASCO model NP 8316A74V was completed during the third refueling outage for solenoid valves SV3772A, B, and C. The modification to replace the ASCO model HT8300 series solenoid valves with qualified ASCO model NP 8320A196E was completed during the fourth refueling outage for solenoid valves SV3228AA, BA, CA; and SV3227AA, BA, CA. The modification to replace the ASCO model HT8300 series valves with qualified ASCO model HV 206-381-2RVU was completed during the third refueling outage for solenoid valves SV478A, B; SV488A, B; SV498A, B.

EQUIPMENT ITEM NO. 10

These units are certified to be similar to units qualified by ASCO on Qualification Test Report AQR 67368 which envelops FNP service conditions.

B. QUALIFIED LIFE FOR ASCO NP SERIES SOLENOIDS

NRC Position:

Section 7 of the DOR Guidelines and Section 4.1, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress level encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Position:

The qualified life of the ASCO NP series solenoid valves located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 11

SOLENOID VALVES LOCATED IN THE MAIN STEAM ROOM ELEV. 131'-0"

ASCO MODEL NP SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1N11SV3368AA, BA, CA; 3976A, B, C)

SERVICE: MAIN STEAMLINE ISOL. BYPASS

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

CLARIFICATIONS:

QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradations through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the ASCO NP/206 series solenoid valves located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative

EQUIPMENT ITEM NO. 11

Program is being implemented which includes for the ASCO NP/206 series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. No comment is required.
2. See clarifications.

EQUIPMENT ITEM NO. 12

SOLENOID VALVE LOCATED IN AUXILIARY BUILDING ELEV. 131'-0"

ASCO MODEL NP SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1N12SV3234A, B)

SERVICE: STEAM TO T.D. AFW PUMP

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

CLARIFICATIONS:

QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to a significant degradation due to thermal and radiation aging, the schedule for inspection of an/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

In Revision 6 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to the NRC I.E. Bulletin 79-01B," which was forwarded to the NRC dated

EQUIPMENT ITEM NO. 12

December 28, 1981, the SCEWS of these valves were corrected to show an unqualified model of the solenoid valve. Since then these valves were replaced during the 3rd refueling outage by qualified ASCO Model NP8320A186V.

The qualified life of the ASCO NP/206 series solenoid valves located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP/206 series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. No comment is required.
2. See clarifications.

EQUIPMENT ITEM NO. 13

SOLENOID VALVE LOCATED IN THE MAIN STEAM ROOM, ELEV. GREATER THAN 131'-0"

ASCO MODEL HT 8200 SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION (Q1N11SV3369BC, 3369CC, 3370BC, 3370CC)

SERVICE: MAIN STEAM STOP VALVES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION (Q1N11SV3369BA, 3370BA)

SERVICE: MAIN STEAM STOP VALVES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION (N1C22SV0479A, B)

SERVICE: MAIN FEEDWATER BYPASS VALVES

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

In Revision 6 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to the NRC I.E. Bulletin 79-01B," which was forwarded to the NRC dated December 28, 1981, it was stated that these solenoid valves would be replaced by the end of the fourth refueling outage.

The modification to replace ASCO model HT8200 series solenoid valves with qualified ASCO model NP 8316E36V was completed during the third refueling outage for solenoid valves SV3369BC, 3369CC, 3370BC, 3370CC. The modification to replace ASCO model HT8200 series solenoid valves with qualified ASCO model NP 8316E36V was completed during the third refueling outage for solenoid valves SV3369BA, 3370BA. The modification to replace ASCO model HT8200 series solenoid valves with qualified ASCO model HV-206-381-4RVU on SV479A, B was completed during the third refueling outage. These units are certified to be similar to units qualified by ASCO on Qualification Test Report AQR 67368, which envelops FNP service conditions.



B. QUALIFIED LIFE FOR ASCO NP SERIES SOLENOIDS

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress level encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the ASCO NP series solenoid valves located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 14

SOLENOID VALVE LOCATED IN THE MAIN STEAM ROOM, ELEV. 121'-0"

ASCO MODEL HV2023013U

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(N1C22SV0489A, B; 499A, B)

SERVICE: MAIN FEEDWATER BYPASS VALVES

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

The modification to replace the ASCO solenoids with qualified ASCO model HV-206-381-4RVU was installed during the fourth refueling outage for solenoid valves SV0489A, B; SV0499A, B.

These units are certified to be similar to units qualified by ASCO on Qualification Test Report AQR 67368, which envelops FNP service conditions.

B. QUALIFIED LIFE FOR ASCO NP SERIES SOLENOIDS

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress level encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to

EQUIPMENT ITEM NO. 14

significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the ASCO NP series solenoid valves located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP series solenoid valves a preventive maintenance/surveillance program which equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 15

SOLENOID VALVE LOCATED IN THE MAIN STEAM ROOM, ELEV. 131'-0"

ASCO MODEL HT8200 SERIES

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1N11SV3369CA, 3370CA)

SERVICE: THESE ARE INVALID NUMBERS

FUNCTION (PLANT ID): ACTUATE AIR OPERATED VALVE FOR ISOLATION  
(Q1N11SV3369AC, 3370AC)

SERVICE: MAIN STEAM STOP VALVES

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

The modification to replace the ASCO model HT8200 series solenoid valves with qualified ASCO model NP 8316E36V was installed during the fourth refueling outage for solenoid valves SV3369AC, 3370AC. Solenoid valves SV3369CA, 3370CA were deleted due to the use of 3-way valves.

These units are certified to be similar to units qualified by ASCO on Qualification Test Report AQR 67368, which envelops FNP service conditions.

B. QUALIFIED LIFE FOR ASCO NP SERIES SOLENOIDS

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and

EQUIPMENT ITEM NO. 15

materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the ASCO NP series solenoid valves located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the ASCO NP series solenoid valves a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 17

ELECTRIC MOTOR LOCATED IN THE CONTAINMENT ELEV. 155'-0"

JOY MANUFACTURING MODEL TYPE P

FUNCTION (PLANT ID): HYDROGEN CONCENTRATION REDUCTION  
(Q1E22M001A, B)

SERVICE: POST-LOCA H<sub>2</sub> CONTROL

FUNCTION (PLANT ID): HYDROGEN CONCENTRATION REDUCTION  
(Q1E19M001A, B, C, D)

SERVICE: POST-LOCA H<sub>2</sub> CONTROL

FUNCTION (PLANT ID): CONTAINMENT COOLING (Q1E12M001A,  
B, C, D)

SERVICE: CONTAINMENT HEAT REMOVAL

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED

CLARIFICATIONS:

By their letter dated June 30, 1977, American Air Filter forwarded Joy Manufacturing Company's Report X-604 dated April 6, 1977, as applicable to the motor-fan units supplied for Unit 1 containment coolers (H001A, B, C, D) (Q1E12M001A, B, C, D).

A review of the motor data for motors (Q1E22M001A, B; Q1E19M001A, B, C, D) used in the POST-LOCA Hydrogen Control system, indicates that these motors are generically the same as the motor tested in Joy's Test Report X-604 dated April 6, 1977, and hence are fully qualified for use inside the FNP containment.

The following parameters are the same as the tested motor:

Manufacturer: Reliance Electric Company  
Motor Type: Induction  
Insulation Class: RN  
Enclosure: Totally enclosed

EQUIPMENT ITEM NO. 18

RTD LOCATED IN THE CONTAINMENT, ELEV. 124'0"

ROSEMOUNT MODEL 176KF

FUNCTION (PLANT ID): REACTOR TRIP (N1B13TE412B, D;  
422B, D; 432B, D)

DISCREPANCY: AGING DEGRADATION EVALUATED ADEQUATELY  
QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED  
CRITERIA REGARDING SPRAY SATISFIED  
CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED  
CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

CLARIFICATIONS:

A. AGING DEGRADATION EVALUATED ADEQUATELY

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOE Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

An Environmental Qualification Administrative Program is being implemented for the RTDs which includes a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations. These RTDs have been determined to have a 40-year qualified life based on a thermal and radiation evaluation described below.

B. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

Following are the results of the Westinghouse Thermal Aging Analysis, which were transmitted to APC in their letter APW-A-6006, dated June 14, 1982.

1. Lead Wrapping - Silicone-Impregnated Fiberglass

Thermal data on silicone-varnished glass cloth yields a 40-year-life temperature of 140-180°C using 50 percent retention of dielectric strength.

2. Insulating Tubing - Polyolefin

Testing of Polyolefin cable insulation was conducted by aging samples in ovens and periodically subjecting them to 2000 volts after soaking them in water and wrapping them around mandrels. The criterion used for end of life was dielectric failure under such conditions. The extrapolated 40-year life for samples wrapped on a 2X mandrel is 100°C.

3. Epoxy - Novalac

The 40-year extrapolated life based on 70 percent retention of initial flexural and impact strength is 90°C for an anhydride-cured epoxy Novalac.

4. Packing - Mica Quartz

This material does not contain organic substances and is not evaluated for aging effects.

5. Swaged Insulation - N/A (Crimped)

6. Wire Insulation - Silicone Rubber

Testing of silicone rubber has indicated that degradation is extremely slow at temperatures from 150°C to 230°C. The 40-year-life temperature is 70°C which envelops the Farley Nuclear Plant conditions.



EQUIPMENT ITEM NO. 18

7. Insulator and Seal - Silica Glass

The life expectancy for this type of material is much greater than 40 years and is considered to be inert for an indefinite period at temperatures below 120°C.

8. Cement - PBX (Serital) .

This material does not contain organic substances and has not been evaluated for aging effects.

The material aging analysis reports are applicable to FNP and are maintained on file at Westinghouse Water Reactor Division.

C. CRITERIA REGARDING SPRAY SATISFIED

Spray was injected via main inlet steam piping to test chamber over the first 24 h at a range of 6.0 gal/h and a concentration of 1.14 weight percent boric acid and 0.17 percent sodium hydroxide dissolved in water.

D. CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED

The RTDs are calibrated by the vendor at 32°F, 525°F, and 625°F, which demonstrates accuracy over the temperature range of interest. Although it is difficult to provide an exact accuracy statement during the transient (the sensing end was exposed), the HELB test does demonstrate that the RTDs responded to the HELB temperature without exhibiting noticeable errors. Calibration checks after the test also provide additional support.

E. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

The temperature deviation was expressed as a percent of the span between the selected test temperatures when, in reality, the error expressed as a percent of the real span (670°F) would be much lower. The test report concludes that the environmental test results demonstrate that the RTDs meet or exceed all minimum performance requirements.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGES 5f-5j OF TER

1. APC complies with the Westinghouse recommendation that model 176KF be utilized for narrow range operation and model 176KS be utilized for the wide range.
2. The only requirement was to expose the head of the RTD to the accident environment. The sensing end was also exposed for ease of testing.

EQUIPMENT ITEM NO. 18

3. Electrical connections, e.g., splices, connectors, were not part of the RTD qualification program. Nonetheless, Alabama Power Company has provided fully qualified cabling, cable splices, and other necessary electrical components to ensure that electrical signals are transmitted under accident conditions.
5. The W test program was not intended to prove Rosemount's internal acceptance criteria. The W specification does require a repeatability throughout the range of +0.2°F. As the report states, difficulties were encountered with the calibration equipment which tended to cause excessive deviations in a few sensors.  
  
The 2 out of 3 acceptance criteria is based on Westinghouse engineering judgement and experience.
6. See Clarification "E."
7. No comment is required.
8. The operating time requirements for the narrow range RTD may be found in the safety analysis report. However, the total test time should provide adequate assurance since this far exceeds trip time requirements. Margins for trip function requirements are contained in the HELB envelopes which encompass a full spectrum of break sizes and are also justified by the fact that the signal generated by the sensor is "locked-in" by the protection system and will not reset should the sensor fail after the designated trip time requirement.
9. No comment is required.
10. As stated in WCAP-9157 the Rosemount Model 176KS and 176KF RTDs have been qualified in the qualifications program to a total integrated dose of  $1 \times 10^8$  R gamma. The wide range RTDs used to measure  $T_{HOT}$  and  $T_{COLD}$  are Rosemount Model 176KS and are located on the RCS hot and cold leg piping. The narrow range RTDs used to measure RCS temperature are Rosemount Model 176KF and are located on the RTD bypass manifold. A material evaluation of the Rosemount Model 176KS and 176KF RTDs has determined that there are no radiation susceptible materials contained in the portion of the RTDs which is in contact with the reactor coolant. All radiation susceptible materials are located in the portion of the RTDs which is external to the RCL pipe and the bypass manifold pipe.

An analysis has been performed for the wide range RTDs (176KS) based on a 40-year normal operating dose (WCAP 8587, Rev. 4) and a two week post-DBE integrated gamma dose taking into consideration the relative position of the

EQUIPMENT ITEM NO. 18

radiation susceptible materials to the RCL pipe. Modifications have been performed to provide beta radiation shielding on the wide range  $T_{HOT}$  and  $T_{COLD}$  RTDs. With the completed installation of the beta shielding, based on material qualification to a total integrated dose of  $1 \times 10^8 R$  gamma per WCAP-9157, and based on the normal and accident integrated dose analysis considering the relative position of the radiation susceptible materials to the RCL pipe, the Model 176KS RTDs are radiation qualified for greater than 40 years of operation.

The narrow range RTDs Rosemount Model 176KF do not perform any long-term post-accident monitoring function. They will perform their intended reactor trip function approximately 30 s after the DBE. An analysis has been performed for the narrow range RTDs (176KF) based on a 40 year normal operating gamma dose and a 1-h post-DBE integrated gamma dose taking into consideration the relative position of the radiation susceptible materials to the RTD bypass manifold pipe and the RCL piping. Based on material qualification to a total integrated dose of  $1 \times 10^8 R$  gamma per WCAP-9157 and based on the normal and accident integrated dose analysis considering the relative position of the radiation susceptible materials to the RTD bypass manifold and RCL piping, the Model 176KF RTDs are radiation qualified for greater than 40 years of operation.

11. Refer to comment on note 10.
12. Test pressure control actually corresponded to saturated conditions at 320°F which exceeds FNP service condition requirements.
13. No comment is required.
14. See Clarification "C."
15. Estimated air velocities in the area of RTD head are considered sufficient to limit the temperature rise due to convection so that the total head temperature is approximately 200°F. Operating experience has not shown adverse effects due to high temperatures. The material list in Clarification "B" has been corrected from that shown in WCAP-9157. No ethylene propylene is contained in these RTDs.

EQUIPMENT ITEM NO. 19

RTD LOCATED IN THE CONTAINMENT, ELEV. 122'9"

ROSEMOUNT MODEL 176KS

FUNCTION (PLANT ID): REACTOR TRIP (N1B21TE410, 413, 420,  
423, 430, 433)

DISCREPANCY: AGING DEGRADATION EVALUATED ADEQUATELY  
QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED  
CRITERIA REGARDING SPRAY SATISFIED  
CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED  
CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

CLARIFICATIONS:

A. AGING DEGRADATION EVALUATED ADEQUATELY

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

An Environmental Qualification Administrative Program is being implemented for the RTDs which includes a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations. These RTDs have been determined to have a 40-year qualified life based on a thermal and radiation evaluation described below.

B. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

Following are the results of the Westinghouse Thermal Aging Analysis, which were transmitted to APC in their letter APW-A-6006, dated June 14, 1982.

1. Lead Wrapping - Silicone-Impregnated Fiberglass

Thermal data on silicone-varnished glass cloth yields a 40-year-life temperature of 140-180°C using 50 percent retention of dielectric strength.

2. Insulating Tubing - Polyolefin

Testing of Polyolefin cable insulation was conducted by aging samples in ovens and periodically subjecting them to 2000 volts after soaking them in water and wrapping them around mandrels. The criterion used for end of life was dielectric failure under such conditions. The extrapolated 40-year life for samples wrapped on a 2X mandrel is 100°C.

3. Epoxy - Novalac

The 40-year extrapolated life based on 70 percent retention of initial flexural and impact strength is 90°C for an anhydride-cured epoxy Novalac.

4. Packing - Mica Quartz

This material does not contain organic substances and is not evaluated for aging effects.

5. Swaged Insulation - N/A (Crimped)

6. Wire Insulation - Silicone Rubber

Testing of silicone rubber has indicated that degradation is extremely slow at temperatures from 150°C to 230°C. The 40-year-life temperature is 70°C which envelops the Farley Nuclear Plant conditions.

7. Insulator and Seal - Silica Glass

The life expectancy for this type of material is much greater than 40 years and is considered to be inert for an indefinite period at temperatures below 120°C.

8. Cement - PBX (Serital) X

This material does not contain organic substances and has not been evaluated for aging effects.

The material aging analysis reports are applicable to FNP and are maintained on file at Westinghouse Water Reactor Division.

C. CRITERIA REGARDING SPRAY SATISFIED

Spray was injected via main inlet steam piping to test chamber over the first 24 h at a range of 6.0 gal/h and a concentration of 1.14 weight percent boric acid and 0.17 percent sodium hydroxide dissolved in water.

D. CRITERIA REGARDING FUNCTIONAL TESTING SATISFIED

The RTDs are calibrated by the vendor at 32°F, 525°F, and 625°F, which demonstrates accuracy over the temperature range of interest. Although it is difficult to provide an exact accuracy statement during the transient (the sensing end was exposed), the HELB test does demonstrate that the RTDs responded to the HELB temperature without exhibiting noticeable errors. Calibration checks after the test also provide additional support.

E. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

The temperature deviation was expressed as a percent of the span between the selected test temperatures when, in reality, the error expressed as a percent of the real span (670°F) would be much lower. The test report concludes that the environmental test results demonstrate that the RTDs meet or exceed all minimum performance requirements.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGES 5f-5j OF TER

1. APC complies with the Westinghouse recommendation that model 176KF be utilized for narrow range operation and model 176KS be utilized for the wide range.
2. The only requirement was to expose the head of the RTD to the accident environment. The sensing end was also exposed for ease of testing.

EQUIPMENT ITEM NO. 19

3. Electrical connections (e.g., splices, connectors) were not part of the RTD qualification program. Nonetheless, Alabama Power Company has provided fully qualified cabling, cable splices, and other necessary electrical components to ensure that electrical signals are transmitted under accident conditions.
4. See Clarification "D."
5. The W test program was not intended to prove Rosemount's internal acceptance criteria. The W specification does require a repeatability throughout the range of  $+0.2^{\circ}\text{F}$ . As the report states, difficulties were encountered with the calibration equipment which tended to cause excessive deviations in a few sensors. The two-out-of-three acceptance criteria is based on Westinghouse Engineering judgement and experience.
6. See Clarification "E."
7. The test method described in WCAP-9157 is a more conservative method than the Arrhenius methodology accepted by NUREG-0588.
8. No comment is required.
9. No comment is required.
10. As stated in WCAP-9157 the Rosemount Model 176KS and 176KF RTDs have been qualified in the qualifications program to a total integrated dose of  $1 \times 10^8\text{R}$  gamma. The wide range RTDs used to measure  $T_{\text{HOT}}$  and  $T_{\text{COLD}}$  are Rosemount Model 176KS and one located on the RCS hot and cold leg piping. The narrow range RTDs used to measure RCS temperature are Rosemount Model 176KF and are located on the RTD bypass manifold. A material evaluation of the Rosemount Model 176KS and 176KF RTDs has determined that there are no radiation susceptible materials contained in the portion of the RTDs which is in contact with the reactor coolant. All radiation susceptible materials are located in the portion of the RTDs which is external to the RCL pipe and the bypass manifold pipe.

An analysis has been performed for the wide range RTDs (176KS) based on a 40-year normal operating dose (WCAP 8587, Rev. 4) and a two week post-DBE integrated gamma dose taking into consideration the relative position of the radiation susceptible materials to the RCL pipe.

- Modifications have been performed to provide beta radiation shielding on the wide range  $T_{\text{HOT}}$  and  $T_{\text{COLD}}$  RTDs. With the completed installation of the beta shielding, based on material qualification to a total integrated dose of  $1 \times 10^8\text{R}$  gamma per WCAP-9157, and based on the normal and accident integrated dose analysis considering the relative position

EQUIPMENT ITEM NO. 19

of the radiation susceptible materials to the RCL pipe, the Model 176KS RTDs are radiation qualified for greater than 40 years of operation.

The narrow range RTDs Rosemount Model 176KF do not perform any long-term post-accident monitoring function. They will perform their intended reactor trip function approximately 30 s after the DBE. An analysis has been performed for the narrow range RTDs (176KF) based on a 40 year normal operating gamma dose and a 1-h post-DBE integrated gamma dose taking into consideration the relative position of the radiation susceptible materials to the RTD bypass manifold pipe and the RCL piping. Based on material qualification to a total integrated dose of  $1 \times 10^8$  R gamma per WCAP-9157 and based on the normal and accident integrated dose analysis considering the relative position of the radiation susceptible materials to the RTD bypass manifold and RCL piping, the Model 176KF RTDs are radiation qualified for greater than 40 years of operation.

11. Refer to comment on note 10.
12. Test pressure control actually corresponded to saturated conditions at 320°F, which exceeds FNP service condition requirements.
13. No comment is required.
14. See Clarification "C."
15. Estimated air velocities in the area of RTD head are considered sufficient to limit the temperature rise because of convection so that the total head temperature is approximately 200°F. Operating experience has not shown adverse effects due to high temperatures. The material list in Clarification "B" has been corrected from that shown in WCAP-9157. No ethylene propylene is contained in these RTDs.



EQUIPMENT ITEM NO. 20

RADIATION DETECTOR LOCATED IN THE CONTAINMENT, ELEV. 155'-0"

VICTOREEN MODEL 877-1

FUNCTION (PLANT ID): RADIATION MONITOR (Q1D21RE0027A-A,  
B-B)

SERVICE: HIGH RANGE CONTAINMENT RADIATION MONITOR

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED

CLARIFICATION:

Victoreen, Inc., Qualification Test Report No. 950.301, dated June 19, 1981, fully supports the qualification of the detector model 877-1 and the cable Model 878-1, which are located inside the containment when the detector cables/connectors are sealed from the accident moisture environment of the containment atmosphere. This was accomplished in the test configuration by enclosing the detector cables/connectors in stainless steel from the inner penetration surface of the test chamber to the detectors.

Design for sealing the detector cable/connectors by duplicating the sealing procedure followed in Victoreen Test Report No. 950.301 has been completed. The sealing modification will be completed during the current refueling outage.

The best available equipment was installed to comply with the NUREG-0737 installation schedule even though environmental qualification testing was not completed. The installation of equipment, lacking environmentally qualified documentation was provided for in NUREG-0737 if later qualification was demonstrated.

EQUIPMENT ITEM NO. 21

PRESSURE TRANSMITTER LOCATED IN THE CONTAINMENT, ELEV. 115'-0"

BARTON MODEL 763 (LOT 1)

FUNCTION (PLANT ID): POST-ACCIDENT MONITOR (N1B21PT402, 403)

DISCREPANCY: AGING DEGRADATION EVALUATED ADEQUATELY AND  
QUALIFIED LIFE ESTABLISHED  
CRITERIA REGARDING SUBMERGENCE SATISFIED  
CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

CLARIFICATIONS:

- A. AGING DEGRADATION EVALUATED ADEQUATELY AND QUALIFIED LIFE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

An Environmental Qualification Administrative Program is being implemented which includes a preventive maintenance/surveillance program with equipment and component

EQUIPMENT ITEM NO. 21

refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations.

B. CRITERIA REGARDING SUBMERGENCE SATISFIED

In Revision 6 to APC's July 30, 1980 submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to the NRC I. E. Bulletin 79-01B," which was forwarded to the NRC dated December 28, 1981, it was stated that these pressure transmitters would be relocated above the flood level during the 3rd refueling outage. The subject transmitters were relocated above the flood level during the third refueling outage as stated in the reference submittal.

C. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

The Barton Lot 1 transmitters are used only for wide range pressure, pressurizer level and steam generator level functions at FNP. Therefore, the +14 percent error noted in the report for narrow range pressure does not require evaluation. The results provided in NS-TMA-1950 for the functions noted are further supported by the supplemental testing reported in NS-TMA-2120, which confirms the conclusions derived from the threshold tests.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGES 5f-5k of TER

1. No comment is required.
2. No comment is required.
3. No comment is required.
4. No comment is required.
5. No comment is required.
6. No comment is required.
7. See Clarification "C."
8. See Clarification "C."

EQUIPMENT ITEM NO. 22

PRESSURE TRANSMITTER LOCATED IN THE CONTAINMENT, ELEV. 166'6"

FOXBORO MODEL E11GM (MCA)

FUNCTION (PLANT ID): REACTOR TRIP (Q1B31PT455, 456, 457)

DISCREPANCY: AGING DEGRADATION EVALUATED ADEQUATELY AND  
QUALIFIED LIFE ESTABLISHED  
CRITERIA REGARDING RADIATION SATISFIED  
CRITERIA REGARDING TEST SEQUENCE SATISFIED

CLARIFICATIONS:

- A. AGING DEGRADATION EVALUATED ADEQUATELY AND QUALIFIED LIFE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

An Environmental Qualification Administrative Program is being implemented which includes a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations.

B. CRITERIA REGARDING RADIATION SATISFIED

The pressurizer pressure application for reactor trip signal generation only requires an operating time of 5 minutes post accident. The radiation test reported in Appendix C of WCAP 8541 demonstrates the ability of four out of five 4-20 MA transmitters to perform up to a TID of  $2.2 \times 10^8$  rads. The one failure occurred at  $8.6 \times 10^7$  rads. Even if this is not considered a random failure, all of these units' performance far exceeded the 5-minute requirement of approximately  $2 \times 10^5$  rads. This certainly demonstrates that these units do not contain materials that are susceptible to radiation damage. The materials, including the seals, were selected by Foxboro for high radiation service.

C. CRITERIA REGARDING TEST SEQUENCE SATISFIED

The DOR Guidelines indicate that test sequence is not required if susceptible materials are not present. Since there exist no problems with radiation in Clarification "B," it was concluded that susceptible materials to aging did not exist in the FNP pressure transmitters.

EQUIPMENT ITEM NO. 23

LEVEL SWITCH LOCATED IN THE MAIN STEAM ROOM, ELEV. 127'-6"

DELAVAL MODEL LS36497

FUNCTION (PLANT ID): MAIN FEED PUMP TRIP (Q1N21LSH2828A,  
B, C; 2829A, B, C)

SERVICE: FLOOD LEVEL SENSOR

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED  
AGING DEGRADATION EVALUATED ADEQUATELY  
CRITERIA REGARDING TEST FAILURES OR SEVERE  
ANOMALIES SATISFIED

CLARIFICATIONS:

- A. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN  
ESTABLISHED

The environmental qualification documentation for the  
Gems-DeLaval level transmitters (FIRL Test Report F-C3834,  
March 1974) is also applicable to the Gems-DeLaval level  
switches. Applicability of the report to the level switches  
is documented on Gems-DeLaval drawing LS-36497 dated  
June 8, 1975.

- B. AGING DEGRADATION EVALUATED ADEQUATELY

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II  
of NUREG-0588, do not require a qualified life to be  
established for all safety-related electrical equipment  
located in harsh environments.

An acceptable method for addressing in-service degradation  
is through a preventive maintenance/surveillance program  
with equipment and component refurbishment and/or  
replacement based on known susceptibility to aging  
degradation, the results of inspections, or manufacturers  
recommendations. These elements of the program lead to an  
understanding on a device-specific basis of the nature and  
extent of the increased stress levels encountered during  
Design Basis Accidents and resultant degradation (if any)  
which may occur. Arrhenius or other appropriate accelerated  
aging methodologies may be used to establish replacement and  
refurbishment schedules if the component's design and  
materials application are sufficiently simple and the  
necessary data are available to allow a meaningful  
application.

EQUIPMENT ITEM NO. 23

In plants subject to the qualification requirements of either the DOF Guidelines or NUREG-0588 Category II for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

An Environmental Qualification Administrative Program is being implemented which will include for the Gems-DeLaval level switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

C. CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES  
SATISFIED

Based on the letter dated February 25, 1983, from Transamerica DeLaval Inc. to Southern Company Services, the deficiency listed in page 5f of the Franklin Research Center Review regarding the FIRL Report S-C3834 (1888) Supplement was a supplemental test run at the Franklin Institute for Gems-DeLaval which subjected the units to a temperature of 346°F at a pressure of 126 psig to the point of failure at less than 90 minutes. This test was a destructive test and was not meant as part of the unit qualification test. As documented in previous Alabama Power Company submittals, the maximum surface temperature of these FNP components is 214°F in the main steam valve room. The maximum pressure at FNP is 5.8 psig in the main steam valve room. As stated in the subject letter and test report F-C3834 the unit is qualified for 280°F and 55 psig. Since the qualification temperature and pressure are not exceeded, the FNP DeLaval level sensors are qualified and the supplemental report, referenced in the TER, is not applicable to FNP.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. See Clarification "C."
2. See Clarificaton "B."
3. See Clarification "B."

EQUIPMENT ITEM NO. 24

LEVEL SENSOR LOCATED IN THE CONTAINMENT

DELAVAL MODEL XM54854323

FUNCTION (PLANT ID): LEVEL INDICATION (Q1G21LT3282A, B)

SERVICE: CONTAINMENT SUMP (3-FOOT LEAKAGE COLLECTION SUMP)

DISCREPANCY: DOCUMENTED EVIDENCE OF QUALIFICATION ADEQUATE

CLARIFICATIONS:

These level transmitters were installed as a result of a commitment for a monitor for a narrow range containment sump to satisfy NUREG-0588. The actual test was completed during the fourth quarter of 1982 and the test results were issued from Wyle Laboratories on December 8, 1982, as NEQ Test Report 45700-1. Based on the results of this test report, the Gems-DeLaval level monitor in the containment leakage collection sump is environmentally qualified for use in the FNP containment.



EQUIPMENT ITEM NO. 25

LEVEL TRANSMITTER LOCATED IN THE CONTAINMENT, ELEV. 116'0"

DELAVAL MODEL XM36495

FUNCTION (PLANT ID): POST-ACCIDENT LEVEL MONITOR  
(Q1E11LT3594A, B)

SERVICE: WIDE RANGE CONTAINMENT SUMP LEVEL MONITOR - POST-LOCA

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED  
AGING DEGRADATION EVALUATED ADEQUATELY  
CRITERIA REGARDING TEST FAILURES OR SEVERE  
ANOMALIES SATISFIED

CLARIFICATIONS:

- A. ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST SPECIMEN  
ESTABLISHED

Franklin Institute Research Laboratories Report F-C3834 page 2-1 describes the test specimen under test as "P/N XM 39495," which is identical to the model number XM 39495 installed at the Farley plant. The difference between the test specimen that underwent the test and the unit installed is the overall length of the probe. The test specimen was 2 feet long, and the actual probe is 10 feet long. This should not affect the results of a temperature/pressure environmental test.

- B. AGING DEGRADATION EVALUATED ADEQUATELY

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and

EQUIPMENT ITEM NO. 25

materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

An Environmental Qualification Administrative Program is being implemented which will include for the Gems-DeLaval level monitors a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

C. CRITERIA REGARDING TEST FAILURES OR SEVERE ANOMALIES SATISFIED

Based on the letter dated February 25, 1983, from Transamerica DeLaval Inc. to Southern Company Services, the deficiency listed in page 5F of the Franklin Research Center Review regarding the FIRL Report S-C3834 (1888) Supplement was a supplemental test run at the Franklin Institute for Gems-DeLaval which subjected the units to a temperature of 346°F at a pressure of 126 psig to the point of failure at less than 90 minutes. This test was a destructive test and was not meant as part of the unit qualification test. As documented in previous APC submittals, the maximum surface temperature of these FNP components is 270°F in the containment. The maximum pressure at FNP is 47.5 psig in the containment. As stated in the subject letter and test report F-C3834, the unit is qualified for 280°F and 55 psig. Since the qualification temperature and pressure are not exceeded, the FNP DeLaval level sensors are qualified and the supplemental report, referenced in the TER, is not applicable to FNP.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. See Clarification "C."
2. See Clarification "B."
3. See Clarification "B."

EQUIPMENT ITEM NO. 26

LEVEL TRANSMITTER LOCATED IN THE CONTAINMENT, ELEV. 159'0"

BARTON MODEL 164 (LOT 1)

FUNCTION (PLANT ID): PRESSURIZER LEVEL (Q1B31LT459, 460, 461)

FUNCTION (PLANT ID): FEEDWATER CONTROL (Q1C22LT474 TO 476,  
484 TO 486, 494 TO 496)

DISCREPANCY: AGING DEGRADATION EVALUATED ADEQUATELY AND  
QUALIFIED LIFE ESTABLISHED  
CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

CLARIFICATIONS:

- A. AGING DEGRADATION EVALUATED ADEQUATELY AND QUALIFIED LIFE  
ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

EQUIPMENT ITEM NO. 26

APC Response:

An Environmental Qualification Administrative Program is being implemented which includes a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations.

B. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

The differential pressure transmitter used for pressurizer level and steam generator level applications did not exceed the +10% span tolerance for automatic protective function initiation before going negative. Therefore, the +14 percent error noted in the report for narrow range pressure does not require evaluation. The results provided in NS-TMA-1950 for the functions noted are further supported by the supplemental testing reported in NS-TMA-2120, which confirms the conclusions derived from the threshold tests.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGES 5f-5k OF TER

1. No comment is required.
2. No comment is required.
3. No comment is required.
4. No comment is required.
5. No comment is required.
6. No comment is required.
7. See Clarification "B."
8. See Clarification "B."

EQUIPMENT ITEM NO. 27

FLOW TRANSMITTER LOCATED IN THE CONTAINMENT, ELEV. 180'0"

FOXBORO MODEL E13DM

FUNCTION (PLANT ID): FEEDWATER CONTROL (Q1C22FT474, 475, 484,  
485, 494, 495)

DISCREPANCY: AGING DEGRADATION EVALUATED ADEQUATELY AND  
QUALIFIED LIFE ESTABLISHED  
CRITERIA REGARDING RADIATION SATISFIED  
CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED  
TEST DURATION MARGIN SATISFIED

CLARIFICATIONS:

- A. AGING DEGRADATION EVALUATED ADEQUATELY AND QUALIFIED LIFE  
ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

EQUIPMENT ITEM NO. 27

APC Response:

An Environmental Qualification Administrative Program is being implemented which includes a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations.

B. CRITERIA REGARDING RADIATION SATISFIED

Westinghouse Qualification Test Report WCAP 9157 documented a total dose of  $4 \times 10^4$  rads in the Foxboro transmitter irradiation test. APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to the NRC I.E. Bulletin 79-01B," provided a SCEW sheet which identified the radiation specification for these Foxboro flow transmitters to be  $5 \times 10^7$  rads. The SCEW sheet was in error because it presented a higher radiation dose than would be expected for these transmitters. The transmitters, which are required to perform their intended function during HELB accident conditions, would receive a total of  $3.9 \times 10^4$  rads over a 40-year period considering normal and accident conditions as documented in WCAP-8587. Since these transmitters would not be exposed to a total radiation dose in excess of that documented in the Westinghouse qualification test report, the FNP transmitters are qualified.

C. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

The test documented in WCAP-9157 demonstrated that the unit performed its intended safety function.

D. TEST DURATION MARGIN SATISFIED

The test was not intended to demonstrate a 1-hour margin, but only to show that the unit would survive long enough to perform its safety function. Margins for trip function requirements are contained in the HELB envelopes, which encompass a full spectrum of break sizes and are also justified by the fact that the signal generated by the sensor is "locked-in" by the protection system and will not reset should the sensor fail after the designated trip time requirement. This evaluation also considers what consequences failure of the device would have on the operator and the mitigation of the event.

EQUIPMENT ITEM NO. 27

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. See Clarifications "C" and "D."
2. See Clarification "A."
3. See Clarification "B."

EQUIPMENT ITEM NO. 28

LIMIT SWITCH LOCATED IN THE CONTAINMENT, ELEV. GREATER THAN  
115'-0"

NAMCO MODEL EA180

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1B13ZS2034, 2035, 2036)

SERVICE: PRESSURIZER SAFETY VALVE

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(N1B31ZS0444B, 445A)

SERVICE: PRESSURIZER PORV

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

CLARIFICATIONS:

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.



EQUIPMENT ITEM NO. 28

APC Response:

The qualified life of the NAMCO EA180 limit switches located inside containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes for the NAMCO EA180 limit switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations.

EQUIPMENT ITEM NO. 29

LIMIT SWITCH LOCATED IN THE MAIN STEAM ROOM, ELEV. 131'0"

NAMCO MODEL D2400X

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1N25ZS3772A, B, C)

SERVICE: ISOLATION OF CHEMICAL INJECTION TO STEAM GENERATORS

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

These NAMCO Model D2400X limit switches have been replaced with qualified NAMCO EA180 limit switches as documented in Rev. 6 to APC's July 30, 1980, submittal "Joseph M. Farley Nuclear Plant - Unit 1 Response to NRC I.E. Bulletin 79-01B," which was submitted to the NRC on December 28, 1981.

B. QUALIFIED LIFE FOR NAMCO EA180

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the

EQUIPMENT ITEM NO. 29

susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the NAMCO EA180 limit switches located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the NAMCO EA180 limit switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 30

LIMIT SWITCH LOCATED IN THE MAIN STEAM ROOM, ELEV. 131'0"

MICRO SWITCH MODEL OPDAR

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1N12ZS3235A, B)

SERVICE: T.D. AFW PMP STEAM ISOLATION

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1N11ZS3368B, 3976B)

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

These MICRO SWITCH MODEL OPDAR limit switches have been replaced with qualified NAMCO EA180 limit switches as documented in Rev. 6 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to NRC I.E. Bulletin 79-01B," which was submitted to the NRC on December 28, 1981.

B. QUALIFIED LIFE FOR NAMCO EA180

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to

EQUIPMENT ITEM NO. 30

significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the NAMCO EA180 limit switches located in harsh environments outside of the containment was determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the NAMCO EA180 limit switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 31

LIMIT SWITCH LOCATED IN THE MAIN STEAM ROOM, ELEV. 131'0"

NAMCO MODEL EA170

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(N1C22ZS0478, 488, 498, 489, 499)

SERVICE: STEAM GENERATOR FEEDWATER

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1N11ZS3368A, C; 3976A, C)

SERVICE: MAIN STEAM LINE ISOLATION BYPASS

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1N23ZS3228A, B, C; 3227A, B, C)

SERVICE: AFWP DISCHARGE

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1N23ZS3228A, B, C; 3227A, B, C)

SERVICE: AFWP DISCHARGE

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1N12ZS3234A, B)

SERVICE: STEAM TO T.D. AFWP

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

As documented in Rev. 6 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to NRC I.E. Bulletin 79-01B," which was submitted to the NRC on December 28, 1981, the following NAMCO EA170 limit switches were replaced with qualified NAMCO EA180 limit switches: (Q1N11ZS3368A, C; 3976A, C), (Q1N23ZS3228A, B, C; 3227A, B, C), and (Q1N12ZS3234A, B). The remaining NAMCO EA170 limit switches were replaced with qualified NAMCO EA180 limit switches during the third refueling outage.

B. QUALIFIED LIFE FOR NAMCO EA180

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

EQUIPMENT ITEM NO. 31

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the NAMCO EA180 limit switches located in harsh environments outside of the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the NAMCO EA180 limit switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 32

LIMIT SWITCH LOCATED IN THE CONTAINMENT, ELEV. 117'-0"

NAMCO MODEL EA180

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1P17ZS3184, 3443)

SERVICE: CCW ISOLATION, EXCESS LETDOWN ISOLATION

FUNCTION (PLANT ID): VALVE POSITION INDICATION (Q1P15ZS3103,  
3765, 3766, 3179A, B, C)

SERVICE: SAMPLE SYSTEM ISOLATION

FUNCTION (PLANT ID): VALVE POSITION INDICATION (Q1P15ZS3180A, B  
C; 3181A, B, C; 3104)

SERVICE: SAMPLE SYSTEM ISOLATION

FUNCTION (PLANT ID): VALVE POSITION INDICATION (Q1P13ZS3196,  
2867B, 3197, 2866B)

SERVICE: CONTAINMENT PURGE/MINI-PURGE

FUNCTION (PLANT ID): VALVE POSITION INDICATION (Q1E21ZS8871)

SERVICE: ACCUMULATOR TEST

FUNCTION (PLANT ID): VALVE POSITION INDICATION (Q1G21ZS7126)

SERVICE: REACTOR COOLANT DRAIN TANK OUT

FUNCTION (PLANT ID): VALVE POSITION INDICATION (N1B31ZS8047)

SERVICE: WASTE PROCESSING SYSTEM TO PRT

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

CLARIFICATIONS:

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers



EQUIPMENT ITEM NO. 32

recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Position:

All of the limit switches identified under Equipment Item No. 32 are NAMCO EA180 except for limit switches Nos. Q1P13ZS2866B and 2867B, which are NAMCO EA 740. These limit switches were identified as NAMCO EA740 models in Rev. 6 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit No. 1 Response to NRC I.E. Bulletin 79-01B," which was submitted to the NRC on December 28, 1981.

The qualified life of the NAMCO EA180/EA740 limit switches located inside containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes for the NAMCO EA180/EA740 limit switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

EQUIPMENT ITEM NO. 33

LIMIT SWITCH LOCATED IN THE CONTAINMENT, ELEV. 109'0" AND 110'0"

NAMCO MODEL EA180

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1E12ZS3999A, B)

SERVICE: REACTOR CAVITY COOLING SYSTEM

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(N1E21ZS8149A, B, C)

SERVICE: REGEN HX SHELL DISCHARGE

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1E21ZS8808AB, BB, CB)

SERVICE: ACCUMULATOR TANK DISCHARGE

FUNCTION (PLANT ID): VALVE POSITION INDICATION  
(Q1G21ZS3376; N1G21ZS1003B)

SERVICE: CONT SUMP PMP DISCHARGE: REACTOR COOLANT DRAIN TK HX  
DISCHARGE

DISCREPANCY: QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED  
CRITERIA REGARDING SUBMERGENCE SATISFIED

CLARIFICATIONS:

A. QUALIFIED LIFE OR REPLACEMENT SCHEDULE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and

EQUIPMENT ITEM NO. 33

materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the NAMCO EA180 limit switches located inside containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 8 years. An Environmental Qualification Administrative Program is being implemented which includes for the NAMCO EA180 limit switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

B. CRITERIA REGARDING SUBMERGENCE SATISFIED

NRC Position:

(DOR GUIDELINES SECTION 4.1, SUB-ITEM 3; AND SECTION 4.3.2, SUB-ITEM 3)

Equipment submergence (inside or outside containment) should be addressed where the possibility exists that submergence of equipment may result from HELBs or other postulated occurrences. Supplement 2 to IE Bulletin 79-01B (12) provides the following additional criterion: If the equipment satisfies the guidance and other requirements of the DOR Guidelines or NUREG-0588 for the LOCA and HELB accidents, and the licensee demonstrates that its failure will not adversely affect any safety-related function or mislead the operator after submergence, the equipment can be considered exempt from the submergence position of the qualification requirements.

APC Response:

With the Qualified Life clarification provided in part A above, the NAMCO EA180 limit switches located inside containment satisfy the guidance and other requirements of

the DOR Guidelines or NUREG-0588 for the LOCA and HELB accidents.

Appendix 4, Section II.C, of "Joseph M. Farley Nuclear Plant - Unit 1 Response to NRC I.E. Bulletin 79-01B," and was forwarded to the NRC on August 25, 1981, demonstrated that submergence of limit switches (N1E21ZS8149A, B, C), (Q1E21ZS8808AB, BB, CB), and (Q1G21ZS3376; N1G21ZS1003B) will not adversely affect any safety-related function. In addition, Alabama Power Company has determined that these limit switches would perform their intended function prior to becoming submerged and any circuit shorts that could occur would not mislead the operator. Therefore, these limit switches should be considered exempt from the submergence portion of the qualification requirements.

Limit switches (Q1E12ZS3999A, B) are located in the reactor cavity and will not be subject to submergence. Therefore, these limit switches should also be considered exempt from the submergence position of the qualification requirements.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f OF TER

1. See Clarification "A."
2. See Clarification "B."

EQUIPMENT ITEM NO. 39

ELECTRICAL CABLE, INSTRUMENT LOCATED IN THE MAIN STEAM ROOM,  
ELEV. 131'-0"

BOSTON INSULATED WIRE

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: SAFETY SYSTEM - AUXILIARY STEAM

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: SAFETY SYSTEMS - AUXILIARY FEEDWATER

DISCREPANCY: DOCUMENTATION NOT MADE AVAILABLE

CLARIFICATIONS:

The FNP cables have been fully qualified by Boston Insulated Wire and Cable Company's Test Report 73E062, dated September 7, 1973, and their clarification letter dated August 21, 1981. The test conditions envelope the FNP service requirements.

EQUIPMENT ITEM NO. 40

ELECTRICAL CABLE, INSTRUMENT LOCATED IN THE CONTAINMENT, ELEV.  
115'-0"

BOSTON INSULATED WIRE

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEMS - FEEDWATER CONTROL

DISCREPANCY: DOCUMENTATION NOT MADE AVAILABLE

CLARIFICATIONS:

The FNP cables have been fully qualified by Boston Insulated Wire and Cable Company's Test Report 73E062, dated September 7, 1973, and their clarification letter dated August 25, 1981. The test conditions envelop the FNP service requirements.

EQUIPMENT ITEM NO. 41

ELECTRICAL CABLE, INSTRUMENT LOCATED IN THE CONTAINMENT  
BOSTON INSULATED WIRE

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEM - HYDROGEN RECOMBINER

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEM - LIQUID WASTE DISPOSAL

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEM - MAIN STEAM

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEM - CONT. COOLING AND PURGE

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEM - REACTOR COOLANT

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEM - REACTOR COOLANT;  
STEAM GENERATOR

FUNCTION (PLANT ID): ELECTRICAL INSTRUMENTATION (VARIOUS)

SERVICE: ELECTRICAL SAFETY SYSTEM - REACTOR COOLANT;  
PRESSURIZER

DISCREPANCY: DOCUMENTATION NOT MADE AVAILABLE

CLARIFICATIONS:

The FNP cables have been fully qualified by Boston Insulated Wire and Cable Company's Test Report 73E062 dated September 7, 1973, and their clarification letter dated August 21, 1981. The test conditions envelop the FNP service requirements.

EQUIPMENT ITEM NO. 42

ELECTRICAL CABLE, CONTROL LOCATED IN MAIN STEAM ROOM, ELEV.  
131'-0"

OKONITE

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEMS - CHEMICAL INJECTION

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEMS - AUXILIARY FEEDWATER

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEMS - MAIN STEAM

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEMS - MAIN FEEDWATER AND COND.

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEMS - AUXILIARY STEAM

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEMS - FEEDWATER CONTROL

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED

CLARIFICATIONS:

In a letter dated June 22, 1981, the Okonite Company has certified that all power and control cables supplied by them for Joseph M. Farley Nuclear Plant Unit 2 are qualified by their Test Report N-1, dated July 3, 1978.

The cables for Joseph M. Farley Nuclear Plant Unit 1 were procured to the same specifications as the Unit 2 cables and are identical in construction to the Unit 2 cables. Therefore, all qualified power and control cables supplied for Unit 1 and Unit 2 by the Okonite Company are fully qualified by Test Report-N-1, dated July 3, 1978.



EQUIPMENT ITEM NO. 43

ELECTRICAL CABLE, CONTROL LOCATED IN THE CONTAINMENT, ELEV.  
115'-0"

OKONITE

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - COMP. COOLING WATER

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - SERVICE WATER

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - SAMPLING SYSTEM

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - SAFEGUARD SYSTEM RHR/LHSI

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - CONT. COOLING AND PURGE

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - H2 RECOMBINER

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - POST-LOCA AIR MIXING

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - CHEMICAL VOLUME CONTROL

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - REACTOR CAVITY DILUTION

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - COMBUSTIBLE GAS CONTROL

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: ELECTRICAL SYSTEM - LIQUID WASTE DISPOSAL

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

EQUIPMENT ITEM NO. 43

SERVICE: ELECTRICAL SYSTEM - REACTOR COOLANT PRESSURIZER

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED

CLARIFICATIONS:

In a letter dated June 22, 1981, the Okonite Company has certified that all power and control cables supplied by them for Joseph M. Farley Nuclear Plant Unit 2 are qualified by their Test Report N-1, dated July 3, 1978.

The cables for Joseph M. Farley Nuclear Plant Unit 1 were procured to the same specifications as the Unit 2 cables and are identical in construction to the Unit 2 cables. Therefore, all qualified power and control cables supplied for Unit 1 and Unit 2 by the Okonite Company are fully qualified by Test Report N-1, dated July 3, 1978.

EQUIPMENT ITEM NO. 44

ELECTRICAL CABLE, CONTROL LOCATED IN THE CONTAINMENT

OKONITE

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: CONTAINMENT SUMP LEVEL

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: PRESSURIZER SAFETY VALVE POSITION INDICATION

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: PRESSURIZER RELIEF AND SAFETY VALVES

FUNCTION (PLANT ID): ELECTRICAL POWER AND CONTROL (VARIOUS)

SERVICE: REACTOR COOLANT SYSTEM (HEAD VENT)

DISCREPANCY: ADEQUATE SIMILARITY BETWEEN EQUIPMENT AND TEST  
SPECIMEN ESTABLISHED

CLARIFICATIONS:

In a letter dated June 22, 1981, the Okonite Company has certified that all power and control cables supplied by them for Joseph M. Farley Nuclear Plant Unit 2 are qualified by their Test Report N-1, dated July 3, 1978.

The cables for Joseph M. Farley Nuclear Plant Unit 1 were procured to the same specifications as the Unit 2 cables and are identical in construction to the Unit 2 cables. Therefore, all qualified power and control cables supplied for Unit 1 and Unit 2 by the Okonite Company are fully qualified by the Test Report-N-1, dated July 3, 1978.

EQUIPMENT ITEM NO. 45

LEVEL TRANSMITTER LOCATED IN THE CONTAINMENT, ELEV. 115'-0"

BARTON MODEL 764 (LOT 1)

FUNCTION (PLANT ID): LEVEL INDICATION (Q1N11LT477, 487, 497)

DISCREPANCY: AGING DEGRADATION EVALUATED ADEQUATELY AND  
QUALIFIED LIFE ESTABLISHED  
CRITERIA REGARDING SUBMERGENCE SATISFIED  
CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

CLARIFICATIONS:

- A. AGING DEGRADATION EVALUATED ADEQUATELY AND QUALIFIED LIFE ESTABLISHED

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

An Environmental Qualification Administrative Program has been implemented which includes a preventive maintenance/

EQUIPMENT ITEM NO. 45

surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspection, and manufacturers recommendations.

B. CRITERIA REGARDING SUBMERGENCE SATISFIED

In Revision 6 to APC's July 30, 1980 submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to the NRC I.E. Bulletin 79-01B," which was forwarded to the NRC dated December 28, 1981, it was stated that these pressure transmitters would be relocated above the flood level during the third refueling outage. The subject transmitters were relocated above the flood level during the third refueling outage as stated in referenced submittal.

C. CRITERIA REGARDING INSTRUMENT ACCURACY SATISFIED

The Barton Lot 1 transmitters are used only for wide range pressure, pressurizer level, and steam generator level functions at Farley. Therefore, the +14 percent error noted in the report for narrow range pressure does not require evaluation. The results provided in NS-TMA-1950 for the functions noted are further supported by the supplemental testing reported in NS-TMA-2120, which confirms the conclusions derived from the threshold tests.

ADDITIONAL CLARIFICATIONS TO NOTES ON PAGE 5f-5k OF TER

1. No comment is required.
2. No comment is required.
3. No comment is required.
4. No comment is required.
5. No comment is required.
6. No comment is required.
7. See clarification "C".
8. See clarification "C".

EQUIPMENT NO. 46

LIMIT SWITCH LOCATED IN THE MAIN STEAM ROOM, ELEV. 128'-0"

NAMCO MODEL EA170

FUNCTION (PLANT ID): VALVE POSITION INDICATION (Q1N11ZS3369A,  
B, C; 3370A, B, C)

SERVICE: MAIN STEAM LINE ISOLATION; STEAM LINE STOP/CHECK VALVE

FUNCTION (PLANT ID): VALVE POSITION INDICATION (Q1N11ZS3369AJ,  
BJ, CJ; 3370AJ, BJ, CJ)

SERVICE: MAIN STEAM LINE ISOLATION; STEAM LINE STOP/CHECK VALVE

FUNCTION (PLANT ID): VALVE POSITION INDICATION (N1C22ZS0479)

SERVICE: STEAM GENERATOR FEEDWATER BYPASS

DISCREPANCY: EQUIPMENT QUALIFICATION PENDING MODIFICATION

CLARIFICATIONS:

A. EQUIPMENT QUALIFICATION PENDING MODIFICATION

Limit switches (Q1N11ZS3369AJ, BJ, CJ; 3370AJ, BJ, CJ) are not required to mitigate the consequences of an HELB or LOCA and were removed from the APC 79-01B response. (See Rev. 6 to APC's July 30, 1980, submittal, "Joseph M. Farley Nuclear Plant - Unit 1 Response to NRC I.E. Bulletin 79-01B," which was submitted to the NRC on December 28, 1981.)

As documented in Rev. 6 to APC's 79-01B submittal, the NAMCO EA170 limit switches were replaced with qualified NAMCO EA180 limit switches for switches (Q1N11ZS3369A, B, C; 3370A, B, C).

The remaining NAMCO EA170 limit switches were replaced with qualified NAMCO EA180 limit switches during the third refueling outage.

B. QUALIFIED LIFE FOR NAMCO EA180

NRC Position:

Section 7 of the DOR Guidelines and Section 4.2, Category II of NUREG-0588, do not require a qualified life to be established for all safety-related electrical equipment located in harsh environments.

EQUIPMENT ITEM NO. 46

An acceptable method for addressing in-service degradation is through a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, or manufacturers recommendations. These elements of the program lead to an understanding on a device-specific basis of the nature and extent of the increased stress levels encountered during Design Basis Accidents and resultant degradation (if any) which may occur. Arrhenius or other appropriate accelerated aging methodologies may be used to establish replacement and refurbishment schedules if the component's design and materials application are sufficiently simple and the necessary data are available to allow a meaningful application.

In plants subject to the qualification requirements of either the DOR Guidelines or NUREG-0588 Category II, for equipment that has been identified as being susceptible to significant degradation due to thermal and radiation aging, the schedule for inspection of and/or replacement of the susceptible components in that equipment must be incorporated into the preventive maintenance and surveillance programs.

APC Response:

The qualified life of the NAMCO EA180 limit switches located in harsh environments outside the containment has been determined based on type testing, material analysis using Arrhenius Methodology, and/or operating experience to be 18 years. An Environmental Qualification Administrative Program is being implemented which includes for the NAMCO EA180 limit switches a preventive maintenance/surveillance program with equipment and component refurbishment and/or replacement based on known susceptibility to aging degradation, the results of inspections, and manufacturers recommendations.

Section C

Justification for Continued Operation

It is the judgement of Alabama Power Company that all equipment required to achieve a safe shutdown condition at Farley Nuclear Plant is qualified and justification for continued operation for equipment items in NRC categories I.B., II.A. and II.B. is not necessary.

The information provided in Section B should resolve all NRC concerns related to environmental qualification of FNP equipment except for Victoreen Radiation Detectors. The only outstanding action item related to Victoreen Radiation Detectors is the installation of a watertight fitting.

These detectors were installed as an enhancement to the radiation monitoring system to satisfy the requirements of NUREG-0737 and would be used to detect a radiation release due to a potential breach of the reactor coolant pressure boundary.

The installation of the water tight fitting is currently in progress and will be completed during the current refueling outage. Upon completion of this modification the FNP Victoreen Radiation Detectors will be fully qualified.