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SOUTHERN COMPANY
Energy to Serve Your World℠

January 19, 2005

Docket No.: 50-364

NL-04-2361

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

Joseph M. Farley Nuclear Plant – Unit 2
Final Safety Analysis Report Change Request for Fire Protection Requirements

Ladies and Gentlemen:

In accordance with the provisions of 10 CFR 50.90, Southern Nuclear Operating Company (SNC) proposes to revise the Farley Nuclear Plant (FNP) Updated Final Safety Analysis Report (UFSAR) Chapter 9. SNC is requesting an amendment to use fire rated electrical cable which has been demonstrated to provide an equivalent level of protection as would be provided by a one hour rated electrical cable raceway fire barrier enclosure as described by 10 CFR 50, Appendix R, Section III.G.2 for protection of safe shutdown circuits located in fire areas 2-013 and 2-042. Enclosure 1 provides the basis for the proposed change, including an evaluation determining that the proposed change involves no significant hazards consideration as defined in 10 CFR 50.92 and an evaluation that this change satisfies the criteria of 10 CFR 51.22 for categorical exclusion from the requirements for an environmental assessment. Enclosure 2 contains markups of the affected UFSAR pages. These markups include changes to the Unit 1 fire protection program which, because Unit 1 was licensed prior to 1979, are implemented via an exemption to Appendix R as documented in SNC letter NL-04-2357. The proposed change to UFSAR Chapter 9 is provided for your review and approval. Upon approval, these changes will be incorporated into the appropriate UFSAR revision. In accordance with 10 CFR 2.790, Enclosure 3 contains an application and affidavit from Meggitt Safety Systems, Inc. supporting the withholding of this information from public disclosure. Enclosure 4 contains Meggitt Safety Systems, Inc. fire test report ER 04-040, Revision B.

This amendment request is part of SNC's comprehensive plan to respond to the NRC's concerns about Kaowool raceway fire barrier material. SNC has performed and will perform additional analysis and modifications, which eliminate the need to rely on Kaowool for plant fire areas where this material has been used to demonstrate compliance with 10 CFR 50, Appendix R or as part of the bases for an exemption. Approximately six million dollars is expected to be spent for analysis, design, material, and implementation of these modifications.

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The NRC has accepted the use of fire rated electrical cable manufactured by Meggitt Safety Systems, Inc. in lieu of the alternatives provided in Appendix R as documented in letter dated January 13, 2003 for McGuire Nuclear Station Unit 1 (TAC NO. MB6528).

A copy of the proposed changes has been sent to Dr. D. E. Williamson, the Alabama State Designee, in accordance with 10 CFR 50.91(b)(1).

Consistent with the NRC Staff request for a one year review, SNC requests NRC approval by January 21, 2006. Modifications to install the fire rated electrical cable are planned to be completed during the fall 2005 refueling outage. SNC will maintain current compensatory measures for fire areas 2-013 and 2-042 until these modifications are completed and NRC approval of the proposed amendment request is received.

Mr. L. M. Stinson states he is a Vice President of Southern Nuclear Operating Company, is authorized to execute this oath on behalf of Southern Nuclear Operating Company and to the best of his knowledge and belief, the facts set forth in this letter are true.

This letter contains no NRC commitments. If you have any questions, please advise.

Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY

L. M. Stinson

Sworn to and subscribed before me this 19 *day of* January, *2005.*

Notary Public

My commission expires: 6-7-05

LMS/was/sdl

Enclosures:
1. Basis for Proposed Change
2. Markups of the affected UFSAR pages
3. Application and Affidavit from Meggitt Safety Systems, Inc.
4. Meggitt Safety Systems, Inc. Fire Test Report ER 04-040, Revision B

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. J. R. Johnson, General Manager – Plant Farley
RTYPE: CFA04.054; LC# 14182

U. S. Nuclear Regulatory Commission
Dr. W. D. Travers, Regional Administrator
Mr. S. E. Peters, NRR Project Manager – Farley
Mr. C. A. Patterson, Senior Resident Inspector – Farley

Alabama Department of Public Health
Dr. D. E. Williamson, State Health Officer

Enclosure 1

Joseph M. Farley Nuclear Plant – Unit 2
Final Safety Analysis Report Change Request for Fire Protection Requirements

Basis for Proposed Change

Description

The proposed license amendment request is to revise the Updated Final Safety Analysis Report (UFSAR) to use fire rated electrical cable as an equivalent level of protection as would be provided by a one hour rated electrical cable raceway fire barrier enclosure as described by 10 CFR 50, Appendix R, Section III.G.2 for protection of safe shutdown control circuits located in fire areas 2-013 and 2-042.

Background

Joseph M. Farley Nuclear Plant (FNP) Unit 2 was licensed to operate subsequent to the Nuclear Regulatory Commission (NRC) adoption of Appendix R. As with many other plants of that vintage, FNP Unit 2 was granted exemptions from certain requirements in Section III.G.2 of Appendix R to 10 CFR 50. Some of those exemptions were based in part on the installation of a fire barrier material called Kaowool to enclose raceways for protection of cable function.

SNC Response to NRC Kaowool Concerns

A number of years after the exemptions had been granted, the NRC concluded that the information relied on by Southern Nuclear Operating Company (SNC) and the other licensees who had installed Kaowool was not sufficient to demonstrate the raceway fire barrier rating required by NRC GL 86-10, Supplement 1. After extensive interactions between these licensees and the NRC, the licensees initiated programs to eliminate reliance on Kaowool as a means of demonstrating compliance with Appendix R. SNC conducted an extensive re-analysis of its post-fire safe shutdown program to identify alternative compliance strategies that would eliminate reliance on Kaowool. Based on this re-analysis, SNC determined that a combination of plant modifications and program changes for some fire areas could result in the elimination of reliance on substantial quantities of Kaowool. SNC plans to spend approximately six million dollars in re-analyses and modifications to eliminate reliance on Kaowool for nearly 6000 linear feet of electrical raceways. For fire areas 2-013 and 2-042, SNC plans to use one hour fire rated Mineral Insulated (MI) cable rather than Kaowool to meet 10 CFR 50 Appendix R, Section III.G.2.

Licensing Basis

FNP Unit 2 was licensed to operate after January 1, 1979, and 10 CFR 50.48(a) establishes the requirement that Unit 2 must have a fire protection plan that satisfies Criterion 3, "Fire Protection," of 10 CFR 50 Appendix A, "General Design Criteria for Nuclear Power Plants." NUREG-0117, Supplement 5 to the Safety Evaluation Report NUREG-75/034, documents that modifications required for FNP Unit 1 would be implemented for FNP Unit 2 for 10 CFR Appendix R, Section III.G, Section III.J, and Section III.O. Following the NRC guidance contained in GL 86-10, the FNP fire protection program including applicable Appendix R requirements were incorporated into the UFSAR.

Appendix R Requirements

Appendix R, III.G.2 states:

"Except as provided for in paragraph G.3 of this section, where cables or equipment including associated non-safety circuits that could prevent operation or cause maloperation ... of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided:

a. Separation of cables and equipment...of redundant trains by a fire barrier having a 3-hour fire rating...
b. Separation of cables and equipment... of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or
c. Enclosure of cable and equipment ...of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area..."

Unit 2 Operating License Condition 2.C.(6)

"Southern Nuclear shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report for the facility, which implements the fire protection requirements of 10 CFR 50.48 and 10 CFR 50 Appendix R. Southern Nuclear may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown."

MI Cable Functions For Fire Areas 2-013 and 2-042

MI cable will be used as the equivalent of a one hour rated raceway fire barrier along with automatic fire suppression and detection to protect one train of redundant Appendix R safe shutdown (SSD) circuits in fire areas 2-013 and 2-042. Approximately 600 feet of MI cable will be installed in these two fire areas.

Fire Areas 2-013 & 2-042:

A postulated fire in either of these fire areas could cause loss of offsite power to both redundant trains of Appendix R SSD 4KV electrical distribution system buses (fire areas 2-013 and 2-042 contain the cable bus ducts from the startup transformers to both trains of the 4KV Appendix R SSD buses). A postulated fire in fire area 2-013 or 2-042 could also potentially impact the function of the Train B 4KV emergency diesel generator 2B control circuitry. The Train A onsite electrical power system will be physically separated and protected from fire damage, and will be capable of supplying power to the Train A Appendix R SSD electrical distribution system. The majority of the Train A onsite electrical power system components required for Appendix R SSD are not located in fire area 2-013 or 2-042. One hour fire rated MI cable along with automatic fire suppression and detection will be applied to protect the following Train A onsite power system related SSD circuits located in fire areas 2-013 & 2-042:

Protection of control circuitry that could potentially disable the supply of the onsite power from the Train A 4KV emergency diesel generators 1-2A & 1-C, or disable supply of Train A onsite power due to inadvertent loading of ESS loads onto diesel generator 1-C:

a. Control interlocks for the automatic alignment of the Train A swing emergency diesel generator 1C incoming breaker 1-DH07 or 2-DH07 to provide onsite AC power due to loss of offsite power to the shutdown buses.
b. Control interlocks for the automatic alignment of the Train A swing emergency diesel generator 1-2A incoming breaker 1-DF08 or 2-DF08 to provide onsite AC power due to loss of offsite power to the shutdown buses.
c. Control interlocks for the automatic alignment of Unit 1 600V Load Center 1D breaker 1-ED13 or Unit 2 600V Load Center 2D breaker 2-ED13 to MCC 1S (power to the Train A swing emergency diesel generator 1-2A auxiliaries) so that the MCC is aligned to the same unit as the DG 1-2A.
d. Control interlock from Unit 2 ESS Sequencer that blocks Unit 1 ESS Sequencer on a Unit 2 safety injection actuation signal (This signal is to prevent inadvertent loading of ESS loads on smaller DG 1C).
e. Control interlock from Unit 1 ESS Sequencer that blocks Unit 2 ESS Sequencer on a Unit 1 safety injection actuation signal (This signal is to prevent inadvertent loading of ESS loads on smaller DG 1C).

Technical Evaluation

The MI cables are for control circuit applications rated at 125 VDC nominal. The design has been verified to be in accordance with Meggitt Safety Systems, Inc. installation requirements and is bounded by the tested configurations in Meggitt Safety Systems, Inc. (MSSI) fire test report ER 04-040, Revision B provided in Enclosure 4. This test report documents the fire performance of MSSI silicone dioxide insulated 8 conductor #12 AWG cable with factory splice and cable support. The MSSI cable P/N 300283-5 was subjected to a one hour ASTM E-119 fire exposure followed by a hose stream test in accordance with NRC Generic Letter 86-10, Supplement 1. The cable insulation resistance was monitored during the test and the cable conductor continuity was monitored before and after the test.

The FNP MI cable support installation spacing and material will be enveloped by the MSSI testing. An acceptable insulation resistance was calculated for the circuits where MI cables will be used, and it was verified that the calculated values are bounded by the MSSI fire testing. The specific acceptance criteria and actual insulation resistance test results are documented in Enclosure 4.

The electrical circuits met all required acceptance criteria during and following the test. Installed splices within fire areas 2-013 and 2-042 will be factory splices of the type which were included in the fire testing and transition splices from MI cable to conventional cables will be located outside fire areas 2-013 and 2-042.

In particular, the following design requirements have been verified for the MI cable installation:

1) The MI cable support span is specified to be within the fire test configurations.

2) The materials specified for the MI cable supports are bounded by the fire test configurations.

3) The MI cable installation hardware specified is in accordance with the fire test configurations.

4) The MI cable conductor to conductor and conductor to sheath minimum insulation resistance measured during the fire test and during the post-fire hose test would not affect the functioning of the components connected to the control cables. The evaluation included the effects of the reduced insulation resistance for the potential spurious actuation of the associated control devices and the control power supply protection breaker or fuse due to an increase in the leakage current.

5) The cable conductor resistance of the MI cables at 1700°F has been evaluated and found to be acceptable for the minimum required control circuit voltage at the components during a fire event. The maximum temperature from the ASTM E119 curve for a one hour fire test is 1700°F.

6) The fire areas which take credit for the one hour fire rating of the MI cables to meet the safe shutdown requirements of FSAR Appendix 9B, Section 9B.3.J are provided with smoke detection and automatic fire suppression throughout the fire area.

The design change does not result in any change to the logic for the operation of the associated components.

Revised Compliance Strategy

SNC plans to install new fire rated MI cables with a minimum one hour rating to protect the functions of existing safe shutdown control circuits located in fire areas 2-013 and 2-042. The use of MI cable allows the most efficient means to achieve the underlying purpose of the rule.

Compliance with 10 CFR 50 Appendix R, Section III.G.2 will be demonstrated by MI cable and fire detectors and an automatic fire suppression system installed in fire areas 2-013 and 2-042.

Conclusion

Therefore, the proposed application in fire areas 2-013 and 2-042 of MI cable manufactured by Meggitt Safety Systems, Inc. provides an equivalent level of protection as would be provided by a one hour rated fire barrier as described by 10 CFR 50, Appendix R, Section III.G.2. The proposed features provide an adequate level of protection based on the following:

1. MSSI MI cable meets the one hour ASTM E-119 fire exposure followed by a hose stream test in accordance with NRC Generic Letter 86-10, Supplement 1.
2. The FNP MI cable support installation spacing and material will be enveloped by the MSSI fire testing.
3. An acceptable insulation resistance was calculated for the circuits where MI cables will be used, and it was verified that the calculated values are bounded by the MSSI fire testing.
4. MI cable splices installed within fire areas 2-013 and 2-042 will be factory splices of the type which were included in the MSSI fire testing. MI cable to conventional cable transition splices will be located outside these fire areas.
5. The tested configuration is representative of the design installation configuration.

Regulatory Analysis

No Significant Hazards Consideration

The proposed change revises the Farley Nuclear Plant (FNP) Updated Final Safety Analysis Report (UFSAR) chapter 9 to address the use of mineral insulated (MI) cable for fire areas 2-013 and 2-042.

Southern Nuclear Operating Company (SNC) has evaluated whether or not a significant hazards consideration is involved with the proposed change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   The proposed change does not adversely affect accident initiators or precursors nor alter the design assumptions, conditions, or configuration of the facility. The proposed change does not alter or prevent the ability of structures, systems, and components (SSCs) from performing their intended function to mitigate the consequences of an initiating event within the assumed acceptance limits. This is a revision to the FSAR to use MI cable in fire areas 2-013 and 2-042. The MI cable has been tested to applicable requirements and the implementation design reflects the test results. Therefore, the probability of any accident previously evaluated is not increased. Equipment required to mitigate an accident remain capable of performing the assumed function. Therefore, the consequences of any accident previously evaluated are not increased.

   Therefore, it is concluded that this change does not significantly increase the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not alter the requirements or function for systems required during accident conditions. No new or different accidents result from implementing MI cable for fire areas 2-013 and 2-042. The MI cable has been tested to applicable requirements, and the implementation design reflects the test results. The use of MI cable is not a significant change in the methods governing normal plant operation. The proposed change is consistent with the safety analysis assumptions and current plant operating practice.

   Therefore, the possibility of a new or different kind of accident from any accident previously evaluated is not created.

3. Does the proposed change involve a significant reduction in a margin of safety?

   The proposed change does not alter the manner in which safety limits, limiting safety system settings or limiting conditions for operation are determined. The safety analysis acceptance criteria are not affected by this change. The proposed change will not result in plant operation in a configuration outside the design basis for an unacceptable period of time without mitigating actions. The proposed change does not affect systems that respond to safely shutdown the plant and to maintain the plant in a safe shutdown condition.

   Therefore, it is concluded that this change does not involve a significant reduction in the margin of safety.

Based on the above, SNC concludes that the proposed change presents no significant hazards considerations under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

Environmental Consideration

SNC has reviewed the proposed change pursuant to 10 CFR 50.92 and determined that it does not involve a significant hazards consideration. In addition, there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite and there is no significant increase in individual or cumulative occupational radiation exposure. Consequently, the proposed change has no significant effect on the human environment and satisfies the criteria of 10 CFR 51.22 for categorical exclusion from the requirements for an environmental assessment.

Joseph M. Farley Nuclear Plant – Unit 2
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Enclosure 2

Markups of the affected UFSAR pages

17.3 REFERENCE

Use of kaowool for raceway fire barriers at FNP, as described above, was acknowledged in NRC SER dated April 13, 1979, SER supplement 5 dated March 1981, SERs dated November 19, 1985, September 10, 1986, and December 29, 1986. The above analysis concerning structural steel supports was accepted by a NRC Safety Evaluation Report dated December 29, 1986 in response to exemption request number 2-38.

18.0 MINERAL INSULATED FIRE RATED CABLES

18.1 CONDITION REQUIRING EXEMPTION/DEVIATION

One hour fire rated Mineral Insulated (MI) cable will be used as the equivalent of a one hour rated raceway fire barrier along with automatic fire suppression and detection to protect one train of redundant Appendix R safe shutdown (SSD) circuits in fire areas 1-013, 1-042, 2-013 and 2-042. The MI cable provides an equivalent level of protection as would be provided by a one hour rated fire barrier as described by 10 CFR 50, Appendix R, Section III.G.2.

18.2 DISCUSSION/RATIONALE

For fire areas 1-013, 1-042, 2-013, and 2-042, MI cable is used for certain safe shutdown circuits. The MI cables for the control circuit applications are rated at 125 VDC nominal. The MI cable support installation spacing and material have been verified to be in accordance with Meggitt Safety Systems, Inc. installation requirements and are bounded by the tested configurations in Meggitt Safety Systems, Inc. fire test report ER 04-040, Revision B. This test report documents the fire performance of Meggitt Safety Systems, Inc. (MSSI) silicone dioxide insulated 8 conductor #12 AWG cable with factory splice and cable support. The MSSI cable P/N 300283-5 was subjected to a one hour ASTM E-119 fire exposure followed by a hose stream test in accordance with NRC Generic Letter 86-10, Supplement 1. The cable insulation resistance was monitored during the test and the cable conductor continuity was monitored before and after the test.

An acceptable insulation resistance was calculated for the circuits where MI cables will be used and it was verified that the calculated values are bounded by the MSSI fire testing. The specific acceptance criteria and actual insulation resistance test results are documented in test report ER 04-040, Revision B.

The electrical circuits met all required acceptance criteria during and following the test. Installed splices within fire areas 1-013, 1-042, 2-013, and 2-042 are factory splices of the type which were included in the fire testing. Transition splices from MI cable to conventional cables are located outside fire areas 1-013, 1-042, 2-013, and 2-042.

In particular, the following design requirements have been verified for the MI cable installation:

1) The MI cable support span is within the fire test configurations.

2) The materials for the MI cable supports are bounded by the fire test configurations.

3) The MI cable installation hardware is in accordance with the fire test configurations.

4) The MI cable conductor to conductor and conductor to sheath minimum insulation resistance measured during the fire test and during the post-fire hose test would not affect the functioning of the components connected to the control cables. The evaluation included the effects of the reduced insulation resistance for the potential spurious actuation of the associated control devices and the control power supply protection breaker or fuse due to an increase in the leakage current.

5) The cable conductor resistance of the MI cables at 1700°F has been evaluated and found to be acceptable for the minimum required control circuit voltage at the components during a fire event. The maximum temperature from the ASTM E119 curve for a one hour fire test is 1700°F.

6) The fire areas which take credit for the one hour fire rating of the MI cables to meet the safe shutdown requirements of FSAR Appendix 9B, Section 9B.3.J are provided with smoke detection and automatic fire suppression throughout the fire area.

The use of MI cable does not result in any change to the logic for the operation of the associated components.

Compliance with 10 CFR 50 Appendix R, Section III.G.2 will be demonstrated by MI cable and fire detectors and an automatic fire suppression system installed in fire areas 2-013 and 2-042.

18.3 REFERENCE

The use of MI cable was acknowledged in NRC SER dated _____.

Joseph M. Farley Nuclear Plant – Unit 2
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Enclosure 3

Application and Affidavit from Meggitt Safety Systems, Inc.

AFFIDAVIT

1. I am Sr. Contracts Admin. of Meggitt Safety Systems Inc. and as such have the responsibility for reviewing information sought to be withheld from public disclosure in connection with nuclear power plant licensing; and am authorized on the past of said corporation (Meggitt) to apply for the withholding.

2. I am making this affidavit in conformance with the provisions of 10CFR 2.790 of the regulations of the Nuclear regulatory Commission (NRC) and in conjunction with Meggitt's application for withholding, which accompanies this affidavit.

3. I have knowledge of the criteria used by Meggitt in designating information as proprietary or confidential.

4. Pursuant to the provisions of paragraph (b) (4) of 10CFR 2.790, the following is furnished for consideration by the NRC in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned by Meggitt and has been held in confidence by Meggitt and its consultants.

(ii) The information is of a type that would customarily be held in confidence by Meggitt. The information consists of analysis methodology details, analysis results, supporting data, and aspects of development programs relative to a method of analysis that provides a competitive advantage to Meggitt.

(iii) The information was transmitted to the NRC in confidence and under the provisions of 10CFR 2.790, it is to be received in confidence by the NRC.

(iv) The information sought to be protected is not available in public to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is contained in Meggitt document ER04-040. This information has substantial commercial value and provides a competitive position to Meggitt since:

a. Meggitt intends to sell the information to utilities, vendors and consultants for commercial gain

b. Meggitt's competitors would require substantial effort to duplicate this information.

c. The subject information could only be duplicated by competitors at similar expense to that incurred by Meggitt.

5 Public disclosure of this information is likely to cause harm to Meggitt because it would allow competitors to benefit from the results of a significant development program without requiring commensurate expense or allowing

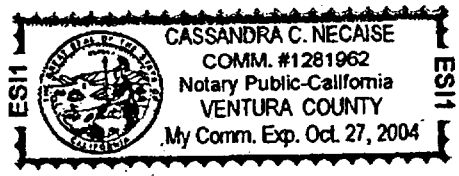
Meggitt to recoup a portion of the expenditures or benefit from the sale of the information.

Name, being duly sworn, states that he/she is the person who subscribed his/her name to the foregoing statement, and that all the matters and facts set forth within are true and correct to the best of his/her knowledge.

Diana Cox Diana Cox 8/17/04
Sr. Contracts Administrator
Name and position

Subscribed and sworn to on this 17 day of August ,2004.

Cassandra C. Necaise
Notary Public



My commission expires:

10/29/04