

L. M. Stinson (Mike)
Vice President

**Southern Nuclear
Operating Company, Inc.**
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201

Tel 205.992.5181
Fax 205.992.0341



January 19, 2005

Docket No: 50-348

NL-04-2357

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

Joseph M. Farley Nuclear Plant - Unit 1
Request For Exemption from Fire Protection Requirements at Farley Nuclear Plant

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.12, Southern Nuclear Operating Company (SNC) requests the Nuclear Regulatory Commission (NRC) approve a permanent exemption for the Joseph M. Farley Nuclear Plant (FNP) Unit 1. Consistent with Generic Letter (GL) 86-10, SNC is requesting a permanent exemption from 10 CFR Appendix R Section III.G.2 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 control circuits located in fire areas 1-013 and 1-042. NRC approval of this exemption will satisfy the NRC's exemption requirements in 10 CFR 50.12 for the reasons discussed in this correspondence.

The justification for the permanent exemption request is provided in Enclosure 1. It concludes that the application of fire rated electrical cable (Mineral Insulated (MI) cable) manufactured by Meggitt Safety Systems, Inc. to protect safe shutdown control circuits in fire areas 1-013 and 1-042 provides an equivalent level of protection as would be provided by a one hour rated raceway fire barrier enclosure as described by 10 CFR 50, Appendix R, Section III.G.2. In addition, it concludes that the exemption request meets the criteria of 10 CFR 50.12(a)(2)(ii) where application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule.

Enclosure 1 references information owned by Meggitt Safety Systems Inc., which they consider proprietary. In accordance with 10 CFR 2.790, Enclosure 2 contains an application and affidavit from Meggitt Safety Systems, Inc. supporting the withholding of this information from public disclosure. Enclosure 3 contains Meggitt Safety Systems, Inc. fire test report ER 04-040, Revision B.

A006

This permanent exemption 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.

SNC has demonstrated that the proposed application of fire rated electrical cable for fire areas 1-013 and 1-042 provides an equivalent level of protection as would be provided by a one hour rated raceway fire barrier enclosure as described by 10 CFR 50, Appendix R, Section III.G.2. The proposed changes to the licensing basis satisfy all of the NRC criteria for an exemption under 10 CFR 50.12. The NRC, in accordance with 10 CFR 50.12, may grant an exemption if it is authorized by law, will not adversely affect public health and safety, is consistent with the common defense and security, and is supported by a showing of special circumstances.

In this case, the NRC is authorized by law to grant revisions to exemptions from 10 CFR 50, Appendix R because that requirement was promulgated solely under the NRC's authority in the Atomic Energy Act of 1954, as amended, and so may be modified under that same statutory authority. Approval of the exemption will not adversely affect public health and safety because the proposed changes to the fire protection program have been shown to maintain or enhance fire safety. The changes SNC proposes to make to the current licensing basis satisfy the acceptance criteria in the standard fire protection license conditions. Approval of the permanent exemption will have no effect on common defense and security because plant security plans and programs are not affected by the proposed exemption. Special circumstances support granting of the permanent exemption because strict application of the requirements in this case is not necessary to achieve the underlying fire protection purposes of the rule [Reference: 10 CFR 50.12(a)(2)(ii)]. Plant modifications and the approved permanent exemption request demonstrate that the fire protection program will continue to maintain or enhance plant safety while avoiding the unnecessary regulatory burden that would result from strict compliance with 10 CFR 50, Appendix R.

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).

SNC requests NRC approval by January 21, 2006. Modifications to install the fire rated electrical cable are planned to be completed during the spring 2006 refueling outage. SNC will maintain current compensatory measures for fire areas 1-013 and 1-042 until these modifications are completed and NRC approval of the proposed permanent exemption is received.

(Affirmation and signature provided on the following page)

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.

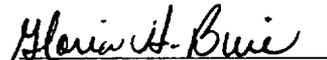
Respectfully submitted,

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. Justification for Permanent Exemption Request
 2. Application and Affidavit from Meggitt Safety Systems, Inc.
 3. 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# 14181

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

Joseph M. Farley Nuclear Plant Unit 1
Request For Exemption from Fire Protection Requirements at Farley Nuclear Plant

Enclosure 1

Justification for Permanent Exemption Request

Background

Joseph M. Farley Nuclear Plant (FNP) Unit 1 was licensed to operate before the Nuclear Regulatory Commission (NRC) adopted Appendix R. As with many other plants of that vintage, FNP Unit 1 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 electrical 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 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 1-013 and 1-042, SNC plans to use 1 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 1 was licensed to operate prior to January 1, 1979, and 10 CFR 50.48(a) establishes the requirement that Unit 1 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." Nuclear power plants licensed to operate prior to January 1, 1979, must satisfy the applicable requirements of Appendix R to 10 CFR 50, including specifically the requirements of sections III.G, III.J, and III.O, pursuant to 10 CFR 50.48(b). The fire protection program including Appendix R requirements is 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 1 Operating License Condition 2.C.(4)

“Southern Nuclear shall implement and maintain in effect all provisions of the approved fire protection program as described on 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.”

10 CFR 50.12 (a)(1) Specific Exemptions

The NRC, in accordance with 10 CFR 50.12, may grant an exemption if it is authorized by law, will not adversely affect public health and safety, is consistent with the common defense and security, and is supported by a showing of special circumstances. In this case, the NRC is authorized by law to grant revisions to exemptions from 10 CFR 50, Appendix R because that requirement was promulgated solely under the NRC’s authority in the Atomic Energy Act of 1954, as amended, and so may be modified under that same statutory authority. Approval of the exemption will not adversely affect public health and safety because the proposed changes to the fire protection program have been shown to maintain or enhance fire safety. The changes SNC proposes to make to the current licensing basis satisfy the acceptance criteria in the standard fire protection license conditions. Approval of the permanent exemption will have no effect on common defense and security because plant security plans and programs are not affected by the proposed exemption. Special circumstances support granting of the permanent exemption because strict application of the requirements in this case is not necessary to achieve the underlying fire protection purposes of the rule [Reference: 10 CFR 50.12(a)(2)(ii)]. Plant modifications and the approved permanent exemption request demonstrate that the fire protection program will continue to maintain or enhance plant safety while avoiding the unnecessary regulatory burden that would result from strict compliance with 10 CFR 50, Appendix R.

10 CFR 50.12 (a)(2)(ii) Special Considerations

The justification that special circumstances are present which demonstrate that the regulation is not necessary to achieve the underlying purpose of the rule is based on the following. The basis for using MI cable is the Meggitt Safety Systems, Inc. (MSSI) test report that documents the fire performance of silicone dioxide insulated cable with factory splices and cable support. The MI cable 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 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. Plant modifications and the approved permanent exemption request will demonstrate that the fire protection program will continue to maintain or enhance plant safety while avoiding the unnecessary regulatory burden that would result from strict

compliance with 10 CFR 50, Appendix R.

MI Cable Functions For Fire Areas 1-013 and 1-042

Twelve (12) MI cables totaling approximately 1700 linear feet will be used as the equivalent of one hour rated raceway fire barriers along with automatic fire suppression and detection to protect one train of redundant Appendix R safe shutdown (SSD) circuits in fire areas 1-013 and 1-042:

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 1-013 & 1-042 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 1-013 or 1-042 could also potentially impact the function of the Train B 4KV emergency diesel generator 1B 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 1-013 or 1-042. 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 and other SSD circuits located in fire areas 1-013 & 1-042:

1. 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).
2. Protection of the control circuitry that could potentially disable the operation of the 4KV power supply breakers to the Train A CCW Pump 1C, Train A Charging Pump 1A, and Train A Motor Driven Auxiliary Feed-water Pump 1A.
3. Protection of the control circuitry that could potentially disable the operation of the 600V load center power supply breaker to Train A Pressurizer Heater Group 1A.

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 MSSSI installation requirements and is bounded by the tested configurations in MSSSI fire test report ER 04-040, Revision B, provided in Enclosure 2. This test report documents the fire performance of MSSSI silicone dioxide insulated 8 conductor #12 AWG cable with factory splice and cable support. The MSSSI 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 MSSSI 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 MSSSI fire testing.

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

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 for fire areas 1-013 and 1-042. Full area automatic fire suppression and detection systems are also available to protect these fire areas. 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 1-013 and 1-042.

Conclusion

Therefore, the proposed application in fire areas 1-013 and 1-042 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. MSSSI 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 MSSSI 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 MSSSI testing.
4. MI cable splices installed within fire areas 1-013 and 1-042 will be factory splices of the type which were included in the MSSSI 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.

Based upon the above, additional modifications would not augment or materially enhance plant safety since the existing and proposed design features provide adequate protection to prevent fire damage to cables and associated non-safety related circuits of redundant trains. Therefore, the exemption request meets the criteria of 10 CFR 50.12(a)(2)(ii) where application of the regulation in the particular circumstances is not necessary to achieve the underlying purpose of the rule.

Joseph M. Farley Nuclear Plant Unit 1
Request For Exemption from Fire Protection Requirements at Farley Nuclear Plant

Enclosure 2

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 part 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.

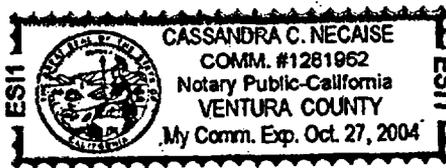
Diana Cox *Diana Cox* 8/17/04
~~Sr. Contracts Administrator~~
Name and position

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

Cassandra C. Necaise
Notary Public

My commission expires:

10/29/04



Joseph M. Farley Nuclear Plant Unit 1
Request For Exemption from Fire Protection Requirements at Farley Nuclear Plant

Enclosure 3

Meggitt Safety Systems, Inc. Fire Test Report ER 04-040, Revision B