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November 18, 2005

Docket Nos.: 50-348
50-364

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

Joseph M. Farley Nuclear Plant - Units 1 and 2
Requests for Exemption/Amendment from Fire Protection Requirements

Ladies and Gentlemen:

In letters dated January 19, 2005, Southern Nuclear Operating Company (SNC) requested an exemption for Joseph M. Farley Nuclear Plant (FNP) Unit 1 from 10 CFR 50, Appendix R, Section III.G.2 and an amendment for FNP Unit 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 FNP fire areas 1-013, 1-042, 2-013, and 2-042. By letter dated June 9, 2005, SNC submitted a letter including Document ER 04-040 Revision C, to replace the proprietary-marked Meggitt Safety Systems Inc. Test Report in the initial submittals, with a non-proprietary version.

During telecoms with the NRC, the NRC requested revisions of the Meggitt documents to be used during their review. This request was due to a discrepancy in an attachment to the January 19, 2005 letters and the June 9, 2005 letter. The discrepancy was that the attached Meggitt Document ER 04-040 made reference to a Meggitt Document ER 04-033 Revision C, but the document attached to the enclosed Appendix A was ER 04-033 Revision A.

The purpose of this letter is to transmit the revisions of the Meggitt Safety Systems documents which are to be used during the NRC review, Document ER 04-033, Revision D and Document ER 04-040, Revision D (minus Appendix A). Appendix A to ER 04-040 is not being resubmitted because it has not changed. The enclosed revisions supersede those in the January 19, 2005 letters and the June 9, 2005 letter.

As stated in the January 19, 2005 letters, SNC requests NRC approval of the Unit 1 exemption and the Unit 2 amendment by January 21, 2006.

(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.

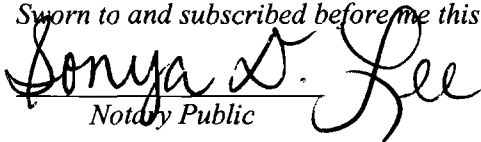
Respectfully submitted,

SOUTHERN NUCLEAR OPERATING COMPANY



L. M. Stinson

Sworn to and subscribed before me this 18th day of November, 2005.


Notary Public

My commission expires: 7/1/2006

LMS/jls/sdl

Enclosure: Meggitt Safety Systems, Inc. documents ER 04-033, Revision D and ER 04-040,
Revision D

cc: Southern Nuclear Operating Company
Mr. J. T. Gasser, Executive Vice President
Mr. J. R. Johnson, General Manager – Plant Farley
RTYPE: CFA04.054; LC# 14352

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

Joseph M. Farley Nuclear Plant - Units 1 and 2
Requests for Exemption/Amendment from Fire Protection Requirements at
Farley Nuclear Plant

Enclosure

Meggitt Safety Systems, Inc. documents ER 04-033, Revision D and ER 04-040, Revision D



**MEGGITT SAFETY
SYSTEMS INC**

ENGINEERING DEPARTMENT

DOCUMENT

ER 04-033

TITLE

**UNPACKING, INSPECTION, INSTALLATION AND
STANDARD PRACTICES FOR
8/C #12 AWG SI 2400 FIRE RATED CABLE FOR
J.M. FARLEY NUCLEAR POWER PLANT**

APPROVALS

**CONTROLLED
DISTRIBUTION**

| | | | | | |
|---|---------------------------------|-------------------------------------|-------------------------|-----------------------------------|---------------------|
| PREPARED: A.Luterstein 6/4/04 | ENG: A.Neminov 6/4/04 | Q.A.: G. Griffiths 6/4/04 | SIZE A | CAGE CODE: 25693 | ER 04-033 |
| MFG: N/A | CHECKED A.Neminov | | | REV. D | SHEET 1 of 8 |

| REV. | DATE | DESCRIPTION | APPROVALS | |
|------|---------------|------------------------|-----------|-----------|
| A | 040604 | INITIAL RELEASE | AN | AL |
| B | 040614 | Revised per ECO 04-666 | AN | AL |
| C | 040622 | Revised per ECO 04-682 | AL | VB |
| D | <u>051009</u> | Revised per ECO 05-841 | <u>AL</u> | <u>VB</u> |

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1.0 **PURPOSE**

The purpose of this document is to provide guidelines for installation and field handling of MSSl Fire Cable.

2.0 **INSTALLATION AND STANDARD PRACTICES**

- a. A Si 2400 cable is designed for use in Class 1, Division 1, Group A, B, C and D locations. When properly installed, it easily withstands extreme temperatures and high humidity. In fire danger applications, it continues to perform at temperatures in excess of 2000°F. Cable construction consists of a thin-wall, stainless steel outer sheath, silicon dioxide dielectric, and nickel or nickel coated copper conductors. Other types of sheaths and conductors are also available if specified in the purchase order. When installed in areas where chemicals corrosive to stainless steel are present, an outer covering of a cross-linked polyethylene or similar PVC material can be provided. Cables may be cut to length and terminated in the field, using ordinary tools and equipment.
- b. Meggitt is staffed to provide formal training in the handling and installation of Si 2400 cables, tailored to specific customer needs. Supervision during actual installation can be provided to augment classroom instruction and offers the customer's craftsmen the advantage of on-the-job training (OJT).
- c. This document provides basic guidelines for handling and installing Si 2400 cables, from receipt to completion of installation. Field terminations are described in an accompanying document, MPP-658.

3.0 **UNPACKING AND INSPECTION**

- a. Do not remove cable from reels or factory coils until ready to install.
- b. Visually inspect cables for evidence of shipping damage, such as dents, gouges, or kinks. Small superficial scratches in the cable sheath will not degrade performance.
- c. Do not unroll the cable from its shipping container to perform electrical tests. IMMEDIATELY FOLLOWING ELECTRICAL TESTING, RESEAL CABLE ENDS. The dielectric must be protected from prolonged exposure to the atmosphere or direct exposure to water. Cable ends may be resealed with epoxies provided in the termination kits or with heat shrink boots. Use of electrical tape for sealing cable ends for extended periods is not recommended.

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4.0

ROUTING AND INSTALLATION

NOTE: EMPHASIS SHOULD BE ON "PLACING" AND "FORMING" RATHER THAN "PULLING" AND BENDING" THROUGHOUT THE INSTALLATION PROCESS.

- a. Visually inspect the routing path of the cable and note areas that pose a hazard for the cable. Hazards may include:
 1. Sharp metal edges, which the cable might be dragged across.
 2. Moving machinery or equipment along or adjacent to the planned cable route.
 3. Extremely sharp or restrictive bends along the cable path.
 4. Live electrical circuits near the planned routing path.
- b. Station a person at each routing hazard noted and at all locations where a change of direction occurs. As a rule of thumb, the cable should be manned about every 20 feet during initial installation.
- c. Structural interferences, which the cable must pass over or around, should be padded. Bell rollers may be used, but are seldom needed.
- d. Cables must be uncoiled as the cable is fed out along the routing path. Whether on a reel or in factory coils, the cable must be unrolled in a tangential (circular) manner. **DO NOT UNCOIL BY PULLING ON THE END AND HELICALLY STRETCHING.**
- e. Si 2400 can withstand a high pull force as noted in Table 1. In virtually all installations, only a fraction of the allowable pull tension is utilized. Pushing the cable from one manning point to the next is by far the easiest technique and has added advantages when negotiating restricted areas and interferences.
- f. When changing direction or bypassing a routing hazard, use large sweeping loops, rather than tight radii turns. This loose or excess cable will be dressed after the cable is in place at both ends.
- g. Ensure sufficient length is available to install field terminations prior to final forming. A minimum of two feet of wrinkle free, round cable is required for the termination, so ensure the cable end was not bent, twisted, or flattened during cable installation. If this occurs, the deformed cable segment must be removed prior to final cable positioning.

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- h. See Table 1 for minimum advisable bend radius of Si 2400, but be aware repeated bending/straightening in the same location is potentially more harmful than a tight bend that is left in position. The stainless steel sheath may become weakened or work hardened during repeated bending, resulting in severe wrinkles, kinks or stress cracks.

TABLE 1 – Cable Parameters

| CABLE DIAMETER | WALL THICKNESS | MINIMUM BEND RADIUS | MAXIMUM PULL FORCE |
|----------------|----------------|---------------------|--------------------|
| 0.592 in. | 0.015 in. | 6 in. (nom) | 500 lbs. |

Any smooth surface or appropriate radius may be used to form the cable. EMT tube benders modified to eliminate sharp edges are suitable and are normally readily available. In many cases, the cable can be hand formed.

- i. Cable runs should be supported at least every eighty-one inches and within approximately three feet of the beginning or end of a bend or $\geq 45^\circ$. See Table 2 for recommended cable mounting and support options for cable runs.
- j. Si 2400 Fire Cable may be routed in cable trays; Stainless steel trays are recommended. Cable should not be installed in galvanized trays and should NOT be in direct contact with galvanized or aluminum trays or structures.

TABLE 2 – Cable Mounting and Attachment

| | |
|----|---|
| 1. | B-line 304 stainless steel strut, or a 304 stainless steel shim for installation against a non-stainless steel surface. |
| 2. | B-Line Part No B2088SS4 clamps for a 0.592 inch dia. Cable. |
| 3. | Standard B-line hardware for single hole clamp. |

5.0

POST INSTALLATION INSPECTION OF SI 2400 FIRE CABLE

- a. Smooth, contour changes such as dents, dings, ripples, or wrinkles are acceptable except in areas where termination kits must be installed. See Figure 1.
- b. Kinks or wrinkles whose upper radii are extremely pronounced or touching indicate a potential problem area, as straightening may result in cracking the sheath. See Figure 1.
- c. Gouges or cuts in the cable sheath which exceed 10% of cable wall thickness may be cause for rejection. Wall thickness is normally .015". The depth of gouges or cuts should be calculated based on a measurement of the distance from the root point of the gouge or

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cut to the direct opposite point on the cable O.D. and known O.D. of the cable.

Recommend measuring instrument blade or point micrometer.

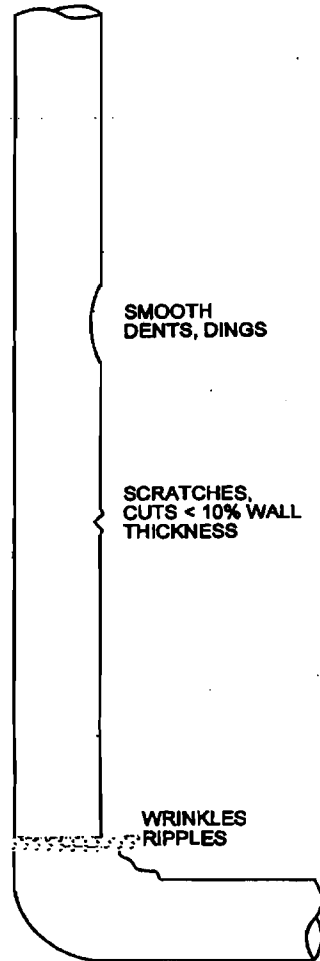
- d. Electrical continuity and insulation resistance should remain essentially the same as pre-installation test results. Any significant difference should be investigated.

6.0 **TERMINATIONS**

- a. Si 2400 Fire Cable may be purchased with factory terminating pigtails on one or both ends, or terminating kits are available for field use.
- b. Terminations, whether factory or field installed, are designed for attachment to junction or terminal boxes such as Hoffman's. Standard fittings such as Myer hubs or lock nuts and bushings are acceptable.

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ACCEPT



REJECT

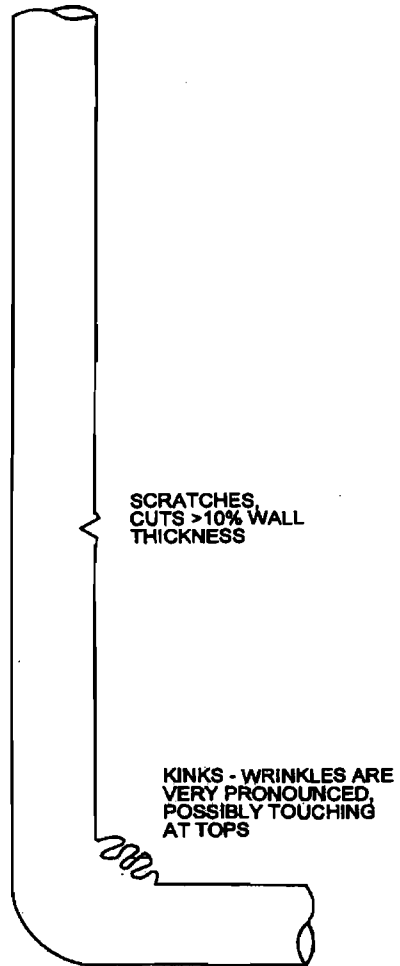


FIGURE 1 – Si 2400 Fire Cable Inspection Criteria

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**MEGGITT SAFETY
SYSTEMS INC**

ENGINEERING DEPARTMENT

DOCUMENT

ER 04-040

TITLE

**APPENDIX R, ONE-HOUR FIRE RESISTIVE, MINERAL INSULATED
CONTROL CABLE FIRE TEST REPORT
FOR
SOUTHERN NUCLEAR OPERATING COMPANY, INC.**

| APPROVALS | | | CONTROLLED DISTRIBUTION | | | | | | |
|------------------------------------|--------------------------------|---------------------------|----------------------------|---------------------|--|--------------|--|--|--|
| PREPARED: A. Luterstein 7/30/04 | ENG: Vahid Badli 7/30/04 | Q.A.: G.Griffs 7/30/04 | SIZE A | CAGE CODE: 25693 | | ER 04-040 | | | |
| MFG: N/A | CHECKED Ark Nemirov 7/30/04 | | | REV. D | | SHEET 1 of 4 | | | |

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|------|---------------|------------------------|-----------|-----------|
| A | 040730 | INITIAL RELEASE | AL | VB |
| B | 040813 | Revised per ECO 04-887 | AL | VB |
| C | 050422 | Revised per ECO 05-363 | AL | VB |
| D | <u>051009</u> | Revised per ECO 05-842 | <u>AL</u> | <u>VB</u> |



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1.0 OBJECTIVE

The objective of this program is to validate the fire performance of Meggitt Safety Systems Inc. (MSSI) silicone dioxide Insulated 8 conductor #12 AWG cable with factory splice and cable support for use in nuclear power facilities.

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 US NRC Generic Letter 86-10 Supplement 1. The cable insulation resistance and cable conductor resistance were monitored during the test.

2.0 TEST RESULTS

The test results presented in Appendix A demonstrate that cable and support performances meet the acceptance criteria specified in the Appendix R One-hour Fire test Plan, ER 04-029 (AREVA Document No. 51-5045887-01).

The Omega Point Laboratories Test Report (Project No. 14980-119368, Revision 1) attached in Appendix A includes Revision A of the document ER 04-033 in Appendix D" Quality Assurance".

The document ER 04-033, Revision D, "Unpacking, Inspection, Installation and Standard Practices for 8/C #12 AWG SI 2400 Fire Rated Cable for J.M. Farley Nuclear Power Plant", is the version approved for installation of the MI cables for Southern Nuclear Operating Company project. The test specimen installed configuration for the fire test conformed to the details in ER 04-033, Revision D.

3.0 CONCLUSION

The MSSI 8 conductor #12 AWG Appendix R control cable is certified to be implemented by design change packages (DCPS 03-1-9901, 03-1-9902, and 03-2-9906) at Farley Nuclear Plant (FNP).

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APPENDIX A

Appendix R, One-Our Fire Resistive Control Cable Test Report

(132 pages)



"119368 Rev1
Report.pdf"

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