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GNRO-2005/00050

August 17, 2005

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: License Amendment Request
Proposed Resolution of Kaowool Issues at Grand Gulf
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCES: 1. Letter GNRO-2004/00042 from M. A. Krupa to USNRC,
"Update on Plans to Address Kaowool Issues" dated
July 22, 2004
2. Letter GNRO-2001/00020 from J. C. Roberts to USNRC,
"Update on Plans to Address Kaowool Issues" dated
March 8, 2001
3. Letter GNRO-2000/00042 from J. C. Roberts to USNRC,
"Plans to Address Kaowool Issues" dated June 1, 2000

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Operations, Inc. (Entergy) hereby requests the following amendment for Grand Gulf Nuclear Station, Unit 1 (GGNS). Entergy proposes to amend GGNS Operating License Condition 2.C (41) to allow the use of codified fire protection methods in selected fire areas of Grand Gulf.

The proposed changes have been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c) and it has been determined that the changes involve no significant hazards considerations. The bases for these determinations are included in the attached submittal. Entergy's evaluation includes traditional engineering analyses as well as a risk-informed approach as set forth in Regulatory Guide 1.174, *An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*.

The proposed changes include new commitments as summarized in Attachment 2.

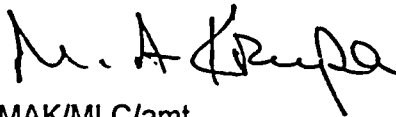
Entergy requests approval of the proposed amendment by June 1, 2006. Once approved, the amendment shall be implemented within 90 days. Although this request is neither exigent nor emergency, your prompt review is requested.

A001
A006

If you have any questions or require additional information, please contact Matt Crawford at 601-437-2334.

I declare under penalty of perjury that the foregoing is true and correct. Executed on August 17, 2005.

Sincerely,



MAK/MLC/amt

Attachments:

1. Proposed License Amendment Request
2. List of Regulatory Commitments
3. Change Analysis for GGNS License Amendment Request for Kaowool Resolution
 - Enclosure 1, Analysis 0021.0006.001.02, Grand Gulf Nuclear Station, Fire Model Evaluation of Cable Interactions in the Auxiliary Building
 - Enclosure 2, Grand Gulf Nuclear Station, Fire PRA Refinements

cc: NRC Senior Resident Inspector
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Mr. N. S. Reynolds
Mr. J. N. Compton

Attachment 1

GNRO-2005/00050

Proposed License Amendment Request

1.0 DESCRIPTION

This letter is a request to amend Operating License, NPF-29 Condition 2.C.(41) for Grand Gulf Nuclear Station, Unit 1 (GGNS).

The proposed changes will revise the Operating License Condition (OLC) 2.C. (41) to add reference to a Nuclear Regulatory Commission (NRC) Safety Evaluation (SE) that allows the application of NFPA 805 risk-informed, performance based fire protection methods and tools that have been approved by the NRC. Specifically, the SE will provide an evaluation of the use of NFPA 805 methodology to resolve Kaowool issues. The use of this methodology will reduce the need for fire wrap in certain fire areas of the GGNS Auxiliary Building. The use of NFPA 805 methods and tools will provide for the elimination of reliance on the Kaowool as a rated raceway fire barrier material and reduce the scope of 3M Interam® wrap that is required to be installed replacing Kaowool.

2.0 PROPOSED CHANGE

Per the current licensing basis, GGNS is committed to providing a one-hour fire rated wrap to satisfy the fire separation of redundant safe shutdown components in accordance 10 CFR 50, Appendix R, Section III.G.2. GGNS utilizes Thermolag and Kaowool raceway fire barrier wrap systems to satisfy the separation requirements in the Auxiliary and Control Buildings in accordance with 10 CFR 50, Appendix R, Section III.G.2.b and c, and as a "Radiant Energy Shield" to satisfy Appendix R, Section III.G.2.f separation requirements in the Containment Building.

Due to issues documented in SECY 99-204 and the results of subsequent investigations at GGNS, the Kaowool wrap was determined to be deficient (References 1 and 2). GGNS is currently replacing the installed deficient Kaowool raceway fire barrier material with one-hour fire rated 3M Interam® wrap. Due to unforeseen complications and increased use of resources during the replacement effort, GGNS decided to consider an alternative strategy for resolution of the Kaowool issues. The strategy consists of applying "state of the art" fire protection engineering methods recently approved by the NRC.

The proposed change to the GGNS fire protection license condition will add a reference to a Safety Evaluation that will allow the use of methods and tools in NFPA 805 endorsed by the NRC to modify the GGNS resolution strategy for the Kaowool deficiencies as follows:

OLC 2.C(41) Fire Protection Program

Entergy Operations, Inc. shall implement and maintain in effect all provisions of the approved Fire Protection Program as described in Revision 5 to the Updated Final Safety Analysis Report and as approved in the Safety Evaluation dated August 23, 1991, and in the Safety Evaluation dated (Month, Day, Year) subject to the following provisions:

The licensee 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 in the event of a fire.

Specifically, the results of a risk-informed, performance-based evaluation of the following fire zones in the Auxiliary Building of the GGNS will provide for the elimination of reliance on the Kaowool as a rated raceway fire barrier material and reduce the scope of 3M Interam® wrap that is required to be installed replacing Kaowool.

- Fire Zone 1A101 – Passage Elevation 93' and 103'
- Fire Zone 1A117 – Miscellaneous Equipment Area Elevation 93' and 103'
- Fire Zone 1A211 – Miscellaneous Equipment Area Elevation 119'
- Fire Zone 1A316 – Motor Control Center Elevation 139'
- Fire Zone 1A417 – Miscellaneous Equipment Area Elevation 166'

Evaluation of the areas were performed using the guidance of NFPA 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants* and Regulatory Guide 1.174, *An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*.

Key conditions for the acceptance of this risk-informed, performance-based assessment, in addition to the technical discussion, include Grand Gulf's commitment to the following. These items are further delineated in sections of Attachment 3 of this submittal.

- Completion of 1 hour fire wrap installation on raceways that the analysis determines require it and maintenance of portions of the existing Kaowool wrap.
- Revision of the combustible exclusion areas as determined by this assessment.
- Revision of the combustible storage areas as determined by this assessment.
- Relocation of security lockers to an area outside of combustible exclusion areas.
- Upgrade to the existing fire protection program to ensure the plant is maintained in accordance with the bases for this analysis.

As committed, GGNS will complete the required installation of 3M Interam® wrap in the Control and Containment Buildings by December 31, 2005. The GGNS commitment to install 3M Interam® wrap in the Auxiliary Building is modified by this proposed amendment whereby installation of the wrap designated by the analysis will be made. No further installation will be made pending NRC approval of the changes proposed by this OLC amendment request and subsequent implementation. Also, GGNS will continue to maintain the compensatory measures for the Auxiliary Building committed to in Reference 1 until the amendment is approved.

3.0 BACKGROUND

SECY 99-204 documents the NRC Staff review of Kaowool fire barriers at the Joseph M. Farley Nuclear Plants Units 1 and 2 (FNP) and found that the fire rating of this design is less than the 1-hour needed to meet the Appendix R requirements.

Grand Gulf (GGNS) raceway fire barrier system was determined to be similar to the FNP Kaowool system in the GGNS Control, Containment and Auxiliary Buildings. The deficient Kaowool fire wrap system was used as a 1-hour fire rated wrap system in these buildings to meet Appendix R, Section III.G.2.b, c, and f separation requirements. Entergy initiated hourly fire watch rounds for these areas in accordance with Technical Requirements Manual (TRM/UFSAR) Section 6.2.8.

In June 2000, GGNS submitted a compliance strategy to address the deficient fire wrap (Reference 3). GGNS intended to re-qualify the fire resistance rating and determine overall acceptability of the Kaowool Fire wrap system. Subsequent field walk downs and destructive examinations of representative samples of the Kaowool configuration identified additional installation deficiencies. After review of these additional deficiencies, it became apparent that the Kaowool wrap would have to be completely reworked.

In March 2001, GGNS submitted a revised strategy and established an initial completion date of December 31, 2004 to resolve the deficiency. The strategy was to replace the Kaowool with a fire wrap system which provided the regulatory required fire resistance rating. In July 2004 due to a significant increase in the estimated man-hours required to complete the scope of work, GGNS submitted an extension for completion of the modifications from December 31, 2004 to December 31, 2005.

In December 2004, Entergy informed the NRC in a Site meeting that GGNS had re-evaluated the remaining work scope and was considering an alternate strategy involving the use of risk-informed, performance based methods for the Auxiliary Building.

4.0 TECHNICAL ANALYSIS

Entergy proposes to change the resolution strategy for the remaining Kaowool issues at GGNS by eliminating reliance on the Kaowool as a rated raceway fire barrier material and reducing the scope of 3M Interam® wrap that is required to be installed in place of Kaowool. The following technical analysis concludes that the proposed change maintains an acceptable level of safety, sufficient safety margins, and adequate defense-in-depth.

4.1 DISCUSSION

On July 16, 2004, the NRC amended 10 CFR 50.48, *Fire Protection*, to add a new subsection (c), which established acceptable fire protection requirements. The change to 10 CFR 50.48 endorses NFPA 805 as an alternative for demonstrating compliance. Nuclear Energy Institute (NEI) 04-02, *Guidance for Implementing A Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c)*, Rev 0 was issued as the guidance for implementing the requirements of this rule change. NEI 04-02 states that "licensees need not transition their fire protection licensing bases to comply with NFPA 805 in order to use its methods and tools to support changes to their current fire protection licensing bases. A licensee may use the appropriate methods and tools to support a License Amendment Request (LAR) under 10 CFR 50.90, an exemption under 10 CFR 50.12, a deviation, and any other request to the NRC".

The advantage of using the methods and tools from NFPA 805 is that the NRC has already determined that these tools and methods are valid, when used appropriately. Per NEI 04-02 a plant change evaluation is a required step in the methodology for all changes to previously approved fire protection program elements.

NFPA 805 Section 2.2.9 states that:

In the event of a change to a previously approved fire protection program element, a risk-informed plant change evaluation shall be performed and the results used as described in 2.4.4

to ensure that the public risk associated with fire-induced nuclear fuel damage accidents is low and the adequate defense-in-depth and safety margins are maintained. [NFPA 805, Section 2.2.9]

Section 2.4.4 of NFPA 805 provides the criteria against which the change evaluations are evaluated. It states that:

A plant change evaluation shall be performed to ensure that a change to a previously approved fire protection program element is acceptable. The evaluation process shall consist of an integrated assessment of acceptability of risk, defense-in-depth, and safety margins. [NFPA 805, Section 2.4.4]

The key difference in the change process under risk-informed, performance-based regulatory framework is the consideration of risk. The evaluation of risk is limited to the determination of whether an increase has occurred, and if so, whether the increase is within acceptable limits. A comprehensive risk-informed, performance-based analysis also includes consideration of defense-in-depth and safety margin as part of an integrated evaluation of risk considerations.

In Regulatory Guide 1.174, *An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis*, the NRC staff has defined an acceptable approach to analyzing and evaluating proposed licensing basis changes. This approach relies on the results of traditional engineering evaluations, supported by insights (derived from the use of PRA methods) about the risk significance of the proposed changes.

The licensing basis changes are expected to meet the following set of key principles:

1. The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change, i.e., a "specific exemption" under 10 CFR 50.12 or a "petition for rulemaking" under 10 CFR 2.802.
2. The proposed change is consistent with the defense-in-depth philosophy.
3. The proposed change maintains sufficient safety margins.
4. When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.
5. The impact of the proposed change should be monitored using performance measurement strategies.

4.2 ASSESSMENT OVERVIEW

A risk-informed, performance-based assessment of fire protection in the GGNS Auxiliary Building was conducted to determine the acceptability of an alternative approach to resolving the Kaowool raceway fire barrier issue for the areas of concern. The assessment was conducted after a preliminary review determined that a risk-informed, performance-based approach had merit and could help to provide a cost-effective solution.

The assessment was conducted using the guidance contained in National Fire Protection Association (NFPA) 805, *Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants*. The assessment consisted of a review of current licensing basis for combustible exclusion zones in four elevations of the Auxiliary Building to establish a baseline understanding, followed by a detailed review of the likelihood and consequences of potential fire scenarios. The four elevations encompassed the following fire zones:

- Fire Zone 1A101 – Passage Elevation 93' and 103'
- Fire Zone 1A117 – Miscellaneous Equipment Area Elevation 93' and 103'
- Fire Zone 1A211 – Miscellaneous Equipment Area Elevation 119'
- Fire Zone 1A316 – Motor Control Center Elevation 139'
- Fire Zone 1A417 – Miscellaneous Equipment Area Elevation 166'

That review showed that the detailed modeling of the following three general fire scenarios spanned the risk concerns in these zones:

- 1) **Scenario 1** – Small (350 kW) transient combustible fire(s) in the combustible exclusion zones,
- 2) **Scenario 2** – Large (3500 kW or 1230 kW depending on elevation) transient combustible fires adjacent to the exclusion zones,
- 3) **Scenario 3** – Scenarios involving fires in combustible storage areas to determine if the potential to develop a hot gas layer existed.

The detailed fire analysis is provided in Attachment 3, Enclosure 1, "Fire Model Evaluation of Cable Interactions in the Auxiliary Building". The following is a summary of the methodology and results:

The goal of the analysis is met by determining and comparing the Maximum Expected Fire Scenario (MEFS) and the Limiting Fire Scenario (LFS) for each interaction area. The MEFS is defined as the fire scenario(s) that represent the most challenging fires that could be reasonably expected for the occupancy type and conditions present. The LFS is the fire scenario that results in a target exceeding the acceptance or performance criteria for the particular target.

The fire modeling revealed that unacceptable damage would not occur as a result of MEFSs and that there was substantial margin between the MEFSs and the LFSs.

The fire risk analysis focused only on elements of the program that had been or were proposed to be changed from the current licensing basis. These elements are associated with total loss of one division in the combustible exclusion areas under consideration. The risk analysis determined that a conservative estimate of the cumulative core damage frequency associated with all elevations would be approximately $6.2E-08/\text{yr}$.

Changes in safety margin and defense-in-depth also were considered as part of a comprehensive risk-informed, performance based analyses. Modifications are planned to improve fire safety and to ensure a reasonable balance of defense-in-depth elements. Under these conditions, the calculated risk increase, in conjunction with the minimal impacts on defense-in-depth and increase in the safety margin, is considered acceptable under the guidelines of Regulatory Guide 1.174.

The safety margin is determined by comparing the LFS and MEFS. Typically, the LFS involves increasing the fire size to the point where the acceptance criteria for a given target are exceeded.

A semi-iterative approach has been adopted to identify which raceways require upgraded one-hour fire rated wrap protection such that one safe-shutdown division is maintained free of damage during a maximum expected fire scenario. The trays and conduit protected, in

combination with other measures such as establishing combustible exclusion zones, and the presence of existing, unrated Kaowool wrap that is maintained as-is, provide a minimum safety margin of two, and in most cases three or more.

4.2.1 Acceptance Criteria

Temperature and heat flux acceptance criteria are established for individual cables, conduit, and instrumentation based on values recommended by the NRC for thermoset cables and on environmental qualification testing of individual components and are summarized below:

Acceptance Criteria for Cable, Conduit, and Instrument Targets in the Auxiliary Building.

Component	Acceptance Criteria		Reference
	Temperature °C (°F)	Incident Heat Flux kW/m ² (Btu/s-ft ²)	
Thermoset cable in a cable tray	329 (625)	11.4 (1.0)	NUREG 1805
Thermoset cable in a conduit	329 (625)	11.4 (1.0)	NUREG 1805
Rosemount Transmitter	121 (250)	1.37 (0.12)	Rosemount Report 98017A, Rev. A

4.2.2 Fire Scenarios

The fire scenarios are selected based on the location and potential for various fuel packages to be located. As noted above, given the fuel package, an ignition source is assumed.

Transient fuel packages vary with the requirements for a given floor area. Combustible exclusion zones by procedure have no transients staged or stored. It is assumed in this evaluation that these requirements are not met and that a transient fuel package may be located anywhere within the exclusion zone.

A conservative transient fuel package in non-combustible exclusion zones on three elevations is assumed to be a trash collection bin, used to transport and collect trash bags throughout the area having a capacity to hold ten trash bags. The transient fuel package on the remaining elevation is based on a conservative estimate of the amount of combustibles that may be present on that elevation. A fire involving these fuel packages would represent a bounding transient fire scenario in areas beyond a combustible exclusion zone.

Combustible storage areas are remotely located from the interaction areas and thus represent an indirect fire exposure hazard only. On the three upper floor levels, the largest combustible storage area is evaluated to determine the most severe indirect fire exposure hazard to the targets in the interaction area. On the lowest elevation, no transient combustible storage areas will be allowed.

4.2.3 Fire Risk Analysis

The development of conditional core damage probabilities (CCDP) and conditional large early release probabilities (CLERP) is provided in Attachment 3 Enclosure 2, "Fire PRA Refinements". The CCDPs and CLERPs are then utilized in Enclosure 1 to develop estimates of core damage frequency and LERF for the various scenarios.

Regulatory Guide 1.174 and NFPA 805 specify that the risk associated with a plant change is determined by considering the change in core damage frequency (CDF) and large early release frequency (LERF) that result from the plant change. These changes in CDF and LERF are typically calculated by comparing the CDF and LERF values for the entire fire area before and after the change to ensure that all contributors to risk are included. However, the fire risk analysis focused only on elements that had been or were proposed to be changed from the current licensing basis and used CDF and LERF for the areas as surrogates for Δ CDF and Δ LERF. These elements were associated with transient combustible fires previously described.

4.2.3.1 Core Damage Frequency (CDF)

The fire analysis provided in Enclosure 1 finds that at most, one safe shutdown train may be damaged due to a fire, if the wrap as noted in the changes is installed, and these were all from transient fires. Therefore, the risk assessment considers both transient fires that fail only Division 1 safe shutdown equipment and transient fires that fail only Division 2 equipment within each area of concern. The transient fire frequency for each scenario is weighted based on the area that a fire must be in to result in damage to a given division. Guidance for the acceptance of risk impact on changes in CDF is provided in Reg Guide 1.174.

The cumulative CDF associated with this change is presented in Attachment 3 and is below the threshold that is considered negligible (less than $1.0\text{E-}07/\text{yr}$) and therefore, it can be concluded that the ΔCDF is well below the guidance threshold.

In addition, the CDF is expected to be much lower, based on the following conservative assumptions:

- The analysis does not credit either manual or automatic suppression.
- Where one raceway of safe shutdown equipment can be damaged in a zone, it is assumed that all equipment associated with that division in that zone is rendered unavailable, as opposed to just those cables installed in the raceway.

This change is thus acceptable for implementation without the need to track future cumulative changes.

4.2.3.2 Large Early Release Frequency (LERF)

Guidance for the acceptance of risk impact on changes in LERF is provided in Reg Guide 1.174. An area with proposed changes $<1.0\text{E-}08/\text{yr}$ are acceptable regardless of the cumulative total LERF from all initiators. Tracking of these changes is not required.

The cumulative LERF associated with this change is presented in Attachment 3 and is below the threshold that is considered negligible (less than $1.0\text{E-}08$) and therefore, it can be concluded that the ΔLERF is well below the guidance threshold. In addition, the LERF is expected to be much lower, based on the following conservative assumptions:

- The analysis does not credit either manual or automatic suppression.
- Where one raceway of safe shutdown equipment can be damaged in a zone, it is assumed that all equipment associated with that division in that zone is rendered unavailable, as opposed to just those cables installed in the raceway.

This change is thus acceptable for implementation without the need to track future cumulative changes.

4.2.3.3 PSA Quality

The original GGNS Individual Plant Examination (IPE) was developed by Entergy with the assistance of Science Applications International Corporation (SAIC) and was submitted to the NRC in 1992. The Level 1 portion was revised in 1997 and was renamed the GGNS PSA, Revision 1. An independent assessment of the Revision 1 GGNS PSA has been completed to ensure that the GGNS PSA was comparable to other PSA programs in use throughout the industry. This assessment applied the Self-Assessment Process developed as part of the Boiling Water Reactor Owners' Group (BWROG) PSA Peer Review Certification Program. The PSA Certification Team, which was a group of industry and utility experts selected by the BWROG, performed an inspection and review of the GGNS PSA in August 1997 and completed a PSA Certification Report in November 1997. The models and methodology used in Revision 1 of the GGNS PSA were included in the PSA Certification review. The quality of the PSA and completeness of the PSA documentation were also assessed. The certification team found that the GGNS PSA is capable of supporting risk-informed applications with a few enhancements.

In October 2002, Revision 2 of the GGNS PSA was issued. This revision of the PSA addressed most of the important observations resulting from the peer review and updated various elements of the analysis. This internal events model was used along with the detailed fire scenario and cable routing information from the GGNS Fire IPEEE analysis to develop an updated Fire PSA model that was used in the risk calculations for this analysis. The GGNS Fire IPEEE analysis used fire PRA methods and was submitted by letter dated November 15, 1995 as part of Entergy's response to Generic Letter 88-20, Supplement 4. The NRC issued a SE by letter dated March 16, 2001 which concluded that the IPEEE met the intent of Generic Letter 88-20, Supplement 4.

4.2.4 Defense in Depth

In general, defense-in-depth involves consideration of the extent to which a proposed change affects the balance among the three echelons of fire-protection:

- Preventing fires from starting
- Rapidly detecting fires and controlling and extinguishing promptly those fires that do occur, thereby limiting fire damage
- Providing an adequate level of fire protection for structures, systems, and components important to safety, so that a fire that is not promptly extinguished will not prevent essential plant safety functions from being performed

The proposed change maintains an adequate balance in the elements of defense-in-depth. All three elements remain intact, even when the Kaowool material is not credited as a rated fire barrier. Impacts of common cause failures are unchanged and the overall independence of barriers is not degraded because a qualified one hour barrier is being added to ensure one train of safe shutdown equipment is not damaged by fire. Overall, defenses against human errors are unchanged and the intent of GDC 3 is met.

Additional defense-in-depth is indirectly provided via existing active and passive fire protection features that are not credited, including the presence of the automatic detection system and the reliability of manual suppression. Based on this balance, the defense-in-depth requirements of Regulatory Guide 1.174 and in NFPA 805 are considered to have been satisfied.

The elements of defense-in-depth and how the proposed changes affect these elements are shown in Enclosure 1.

4.2.5 Safety Margins

An evaluation of the effects of a proposed change on safety margin involves consideration of the extent to which:

- Codes and standards or their alternatives approved for use by the NRC are met, and
- Safety analysis acceptance criteria in the licensing basis (e.g., FSAR, supporting analyses) are met, or account for analysis and data uncertainty.

The concept of safety margin when applied to fire modeling involves a comparison between the MEFS and LFS.

The analysis assumes that the transient fire will cause the total heat value of the available inventory to be released into the room. In addition, the heat release rate that is assumed is several times that which is considered typical in the industry. For instance, the heat release rate value for the assumed small transient combustible fire in this analysis is 350 kW. By contrast, the postulated heat release values for transient fires in the NRC Significance Determination Process (SDP) process is 75 kW for a normal fire, and 200 kW for a 95th percentile fire. As a result, there is an additional margin of 1.75 introduced when comparing the value assumed in the analysis compared to the worst case transient fire assumed by the NRC.

The MEFS safety margin is the minimum safety margin relative to the LFS heat release rate. The SDP safety margin is the minimum safety margin relative to the NRC SDP 95th percentile heat release rate for transient fuel packages. These values are summarized as follows:

Summary of Vertical and Horizontal Exposures to Horizontal and Vertical Raceways

Elevation	Fire Scenario Location	MEFS Safety Margin	SDP Safety Margin
93/103'	Combustible Exclusion Zone	~ 2-3	~3.5-5.25
	General Floor Area	~ 2	~ 4
	15.2 m (50 ft) south of the RHR B minimum flow transmitter	~ 2	~ 4
119'	Combustible Exclusion Zone	~ 3	~ 5.25
	General Floor Area	~ 3	~ 17.5
	Combustible Storage Area	6.5	3.5
139'	Combustible Exclusion Zone	~ 3	~ 5.25
	General Floor Area	~ 3	~ 17.5
	Combustible Storage Area	5.8	3.3
166'	Combustible Exclusion Zone	~ 3	~ 5.25
	General Floor Area	~ 3	17.5
	Combustible Storage Area	2.0	2.4

Based on the selection of the analysis acceptance criteria, the analytical method, and the selection of input parameters, the safety margin requirement is considered to have been satisfied.

4.2.6 Conclusions

The risk-informed, performance-based assessment revealed that the change in the fire protection configuration for the Auxiliary Building is acceptable, and with implementation of the proposed recommendations, represent a configuration that maintains an acceptable level of safety while maintaining safety margins and defense-in-depth. The changes meet the key principles of risk-informed decision making, as discussed in Regulatory Guide 1.174:

Principle	Discussion
The proposed change meets the current regulations unless it is explicitly related to a requested exemption or rule change, i.e., a "specific exemption" under 10 CFR 50.12 or a "petition for rulemaking" under 10 CFR 2.802.	The proposed change is being proposed as a license amendment request in accordance with 10 CFR 50.90 as a deviation from the previously approved program.
The proposed change is consistent with the defense-in-depth philosophy.	The proposed changes maintain defense-in-depth, as evidenced by maintaining fire protection systems and features not specifically credited in the risk model, and by having substantial margin between the limiting and maximum expected fire scenario.
The proposed change maintains sufficient safety margins.	Safety margins are maintained primarily by the substantial margin between the limiting and maximum expected fire scenario. Fire protection design features also ensure safety margins are maintained
When proposed changes result in an increase in core damage frequency or risk, the increases should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.	Proposed change in core damage frequency is small and consistent with the intent of the Commission's Safety Goal Policy Statement.
The impact of the proposed change should be monitored using performance measurement strategies.	Impacts of the changes are in regions that do not require the tracking of future cumulative changes.

5.0 REGULATORY ANALYSIS

5.1 Applicable Regulatory Requirements/Criteria

The proposed changes have been evaluated to determine whether applicable regulations and requirements continue to be met.

Entergy has determined that the proposed changes do not require any exemptions or relief from regulatory requirements, other than the license condition, and do not affect conformance with any General Design Criterion (GDC) differently than described in the Updated Final Safety Analysis Report (UFSAR). It is noted that Regulatory Guide 1.174, *An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis* establishes guidance on the acceptance criteria for changes in risk that may result from a plant change. The guidance was used in assessing the nature and impact of licensing bases changes by considering engineering issues and applying risk insights.

The NRC amended 10 CFR 50.48, *Fire Protection*, to add a new subsection (c) that established acceptable fire protection requirements. The change to 10 CFR 50.48 endorses NFPA 805 as an alternative for demonstrating compliance. NEI 04-02, *Guidance for Implementing A Risk-Informed, Performance-Based Fire Protection Program Under 10 CFR 50.48(c), Rev 0* was issued as the guidance for implementing the requirements of this rule change. The proposed changes to the GGNS fire protection program will continue to meet established fire protection requirements as demonstrated by the technical discussion and supporting analysis.

5.2 No Significant Hazards Consideration

Entergy has evaluated whether or not a significant hazards consideration is involved with the proposed activity 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?

Response: No. The proposed activity involves the use of a risk-informed, performance-based method to identify those circuits where a single fire could damage more than one safe shutdown train. These circuits would then be provided with one hour rated fire wrap. With the exception of the fire wrap itself, the proposed activity does not result in any physical changes to safety-related structures, systems, or components (SSCs), or the manner in which safety-related SSCs are operated, maintained, modified, tested, or inspected. The proposed activity does not degrade the performance or increase the challenges of any safety-related SSCs assumed to function in the accident analysis. As a result, the proposed activity does not introduce any new accident initiators. In addition, fires are not an accident that is previously evaluated in Chapter 15. Regardless, the proposed activity does not change the probability of a fire occurring since fire ignition frequency is independent of the presence of the fire wrap. The consequences of the proposed activity are bounded by the fire safe shutdown analysis, which assumes one train is free of fire damage.

Therefore, providing one hour rated fire wrap for those circuits where a single fire could damage more than one safe shutdown train does not involve a significant increase in 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?

Response: No. The proposed activity involves the use of a risk-informed, performance-based method to identify those circuits where a single fire could damage more than one safe shutdown train. These circuits would then be provided with one hour rated fire wrap. With the exception of the fire wrap itself, the proposed activity does not result in any physical changes to safety-related structures, systems, or components (SSCs), or the manner in which safety-related SSCs are operated, maintained, modified, tested, or inspected. The proposed activity does not degrade the performance or increase the challenges of any safety-related SSCs assumed to function in the accident analysis. As a result, the proposed activity does not introduce nor increase the number of failure mechanisms of a new or different type than those previously evaluated. The fire safe shutdown analysis assumes one train is maintained free of fire damage.

Therefore, providing one hour rated fire wrap for those circuits where a single fire could damage more than one safe shutdown train does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response: No. The proposed activity involves the use of a risk-informed, performance-based method to identify those circuits where a single fire could damage more than one safe shutdown train. These circuits would then be provided with one hour rated fire wrap. With the exception of the fire wrap itself, the proposed activity does not result in any physical changes to safety-related structures, systems, or components (SSCs), or the manner in which safety-related SSCs are operated, maintained, modified, tested, or inspected. The proposed activity does not degrade the performance or increase the challenges of any safety-related SSCs assumed to function in the accident analysis.

The proposed activity does not impact plant safety since the conclusions of the fire safe shutdown analysis remain unchanged.

Therefore, providing one hour rated fire wrap for those circuits where a single fire could damage more than one safe shutdown train does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed changes to the Grand Gulf Nuclear Station Fire Protection Program present 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 Considerations

The proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 PRECEDENCE

There is precedence for requesting risk informed changes to the fire protection programs at nuclear power plants. The NRC recently granted an exemption from the requirements of 10 CFR Part 50, Appendix R, Section III.G.3 to install a fixed fire suppression system in a fire area at the Davis-Besse Nuclear Power Station, Unit 1. The staff compared the request to the acceptance criteria described in Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," Revision 1. (ADAMS ML050610249)

Also by letter dated April 17, 2003, Millstone Power Station Unit 3 (MPS3) submitted a license amendment request related to proposed changes to the cable spreading area carbon dioxide fire suppression system. This request and related submittals are currently under evaluation according to Regulatory Guide 1.174 guidance. (ADAMS ML042680306)

By letter dated August 28, 2003, and supplemented on December 28, 2004, Southern Nuclear Operating Company requested a revision to an existing exemption concerning the Service Water Intake Structure for Farley Nuclear Plant (FNP), Units 1 and 2. Specifically, to eliminate the FNP reliance on Kaowool, the proposal would allow an alternate compliance strategy based on a combination of changes to the current FNP fire protection program and an application of the risk-informed, performance-based methods of NFPA 805, "Performance Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants." (ML032450036 and ML050060177)

This amendment request will provide for the use of similar risk-informed, performance based methods.

Attachment 2

GNRO-2005/00050

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE- TIME ACTION	CONTINUING COMPLIANCE	
Entergy is making the following regulatory commitments: <ul style="list-style-type: none"> • Completion of 1 hour fire wrap installation on raceways that the analysis determines require it and maintenance of portions of the existing Kaowool wrap. • Revision of the combustible exclusion areas as determined by this assessment. • Revision of the combustible storage areas as determined by this assessment. • Relocation of security lockers to an area outside of combustible exclusion areas. • Upgrade to the existing fire protection program to ensure the plant is maintained in accordance with the bases for this analysis. 		X	Within 90 days of amendment issuance.
GGNS will continue to maintain the compensatory measures committed to in letter GNRO-2004/00042.		X	Until changes proposed by this OLC amendment request are implemented