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Fred Dacimo
Site Vice President
Administration

August 16, 2007

Re: Indian Point Unit No. 3
Docket No. 50-286

NL-07-084

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

SUBJECT: **Supplement to the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2 for Indian Point Nuclear Generating Unit No. 3 (TAC No. MD2671)**

REFERENCES:

1. Entergy letter dated July 24, 2006, F.R. Dacimo to Document Control Desk, "Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2"

2. NRC Letter and SER dated January 7, 1987, S.A. Varga to J.C. Brons (NYPA), "Indian Point 3 Nuclear Power Plant – Exemption from Certain Requirements of Section III.G and III.J of Appendix R to 10 CFR Part 50"

3. NRC letter dated March 15, 2007, J.P. Boska to M.R. Kansler, "Indian Point Nuclear Generating Unit No. 3 - Request for Additional Information Regarding the Revision of Existing Exemptions from Title 10 of the Code of Federal Regulations Part 50, Appendix R Requirements (TAC No. MD2671)"

4. Entergy letter dated April 30, 2007, F.R. Dacimo to Document Control Desk, "Response to Request for Additional Information Regarding the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2 for Indian Point Nuclear Generating Unit No. 3"

5. Entergy letter dated May 23, 2007, F.R. Dacimo to Document Control Desk, "Supplemental Response to Request for Additional Information Regarding the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2 for Indian Point Nuclear Generating Unit No. 3 (TAC No. MD2671)"

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NRR

Dear Sir or Madam:

By letter dated July 24, 2006 (Reference 1), Entergy Nuclear Operations, Inc. submitted a "Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2." The letter requested revision of the January 7, 1987 NRC SER (Reference 2) to reflect that the installed Hemyc Electrical Raceway Fire Barrier System (ERFBS) configurations provide a 30-minute fire resistance rating, in lieu of the previously stated one-hour fire resistance rating. This applies to Hemyc ERFBS that is installed on conduit, cable tray, and a box-type enclosure in Fire Areas ETN-4 and PAB-2. The NRC staff requested additional information by letter dated March 15, 2007 (Reference 3) in order to complete its review of the request. Responses to questions 2 through 6 were provided by letter dated April 30, 2007 (Reference 4), and the response to question 1 was provided in a letter dated May 23, 2007 (Reference 5).

The purpose of this letter is to revise the request made in Reference 1 relative to the cable tray Hemyc ERFBS configurations, in light of new information obtained since the letter was submitted. Entergy herein requests revision of the January 7, 1987 SER to reflect that the installed Hemyc ERFBS configurations in Fire Area ETN-4 on the cable tray provide a 24-minute fire resistance rating, in lieu of the previously stated one-hour fire resistance rating in the January 7, 1987 NRC SER. The revised request for a 24-minute fire resistance rating for the cable tray Hemyc ERFBS configurations is in lieu of the 30-minute fire resistance rating requested in our July 24, 2006 letter. Attachment 1 contains supporting information for this revised request. We consider this conservatively interpreted fire resistance rating for the cable tray Hemyc ERFBS configurations to provide an adequate level of protection for the enclosed safe-shutdown cables in Fire Area ETN-4, given the limited amounts and types of hazards in the area and the active and passive fire protection features that are provided.

Commitments made in this letter are identified in Attachment 2. If you have any questions or require additional information, please contact Mr. R.W. Walpole, Manager, Licensing at (914) 734-6710.

I declare under penalty of perjury that the foregoing is true and correct. Executed on 8/16/2007.

Sincerely,

For Fred R. Dacimo
Site Vice President
Indian Point Energy Center

Attachments:

1: Supplement to the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2

2: Commitments made in Supplement to the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2

cc: Mr. John P. Boska, Senior Project Manager, NRC NRR DORL

Mr. Samuel J. Collins, Regional Administrator, NRC Region 1

NRC Resident Inspector, IPEC

Mr. Peter R. Smith, President, NYSERDA

Mr. Paul Eddy, New York State Dept. of Public Service

ATTACHMENT 1 to NL-07-084

Supplement to the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

Supplement to the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2

By letter dated July 24, 2006 (Reference 1), Entergy requested revision of the January 7, 1987 NRC SER (Reference 2) to reflect that the installed Hemyc Electrical Raceway Fire Barrier System (ERFBS) configurations in Fire Areas ETN-4 and PAB-2 provide a 30-minute fire resistance rating, in lieu of the previously stated one-hour fire resistance rating. This applies to Hemyc ERFBS that is installed on conduit, cable tray, and a box-type enclosure. Responses to a request for additional information (Reference 3) were provided by letters dated April 30, 2007 (Reference 4) and May 23, 2007 (Reference 5). In the referenced Entergy correspondence, information was provided to support a revision of the 1-hour fire resistance rating, establishing that a 30-minute fire resistance rating would provide adequate protection for the safe-shutdown cables, in light of the hazards and fire protection features of the areas. The information herein supplements and revises the request for revision of the January 7, 1987 SER for the installed cable tray Hemyc ERFBS configurations in Fire Area ETN-4 from a one-hour fire resistance rating to a 24-minute fire resistance rating.

Cable Tray Sections

As stated in Reference 1, the installed cable tray Hemyc ERFBS configurations consist of the following:

> Seven 18" cable tray sections, with a cable percent fill in these trays ranging from approximately 10% to 25%. Also wrapped are two 24" cable tray sections, each with a cable percent fill of approximately 50%. All cable trays are wrapped using 1-1/2" thick Hemyc blanket with a 2" air gap between the blanket and the protected raceway.

In preparing Reference 1 and as documented in Reference 6, the results from several test configurations from the NRC Hemyc fire test program conducted in 2005 were applied to those of comparable Indian Point 3 (IP3) installed Hemyc ERFBS configurations in the affected fire areas. For the cable tray configurations, Entergy referenced the fire test results (Reference 7) of cable tray Configurations 2B and 2D, noting that Configuration 2B provided thermal protection for the enclosed cables of at least 30 minutes, and Configuration 2D provided thermal protection for approximately 27 minutes before exceeding the temperature rise acceptance criteria. Recognizing that Configuration 2D failed to provide 30 minutes of thermal protection, and interpreting Hemyc joint separation as a contributing factor, it was proposed to install additional stainless steel over-banding on the installed cable tray Hemyc ERFBS configurations in the affected fire zones of Fire Area ETN-4 to minimize the potential for mechanical failure of the ERFBS under fire exposure conditions in the belief that this would enable the installed configurations to better resist a 30-minute exposure fire.

As of the date of the Entergy submittal (Reference 1), additional Hemyc fire testing by the industry had not yet been completed, and thus further meaningful comparative data was not available for consideration. By NRC letter dated March 15, 2007 (Reference 3), Entergy was requested to consider the results of other industry Hemyc fire testing to assess whether the results of this testing impacted any of the conclusions reached in Entergy's July 24, 2006 request.

In the response to Reference 3 provided by letter dated May 23, 2007 (Reference 5), the results for tested cable tray Hemyc ERFBS Configurations A-1, A-2, and A-3 from industry fire testing (documented in Reference 8), all constructed with zero percent fill and a 2" air gap, were used to evaluate comparable IP3 installed cable tray Hemyc configurations. Configuration A-2 consisted of multiple 24" cable trays, while Configurations A-1 and A-3 each consisted of a single 24" cable tray. Configurations A-2 and A-3 provided thermal protection for at least 30 minutes before exceeding the temperature rise acceptance criteria, but Configuration A-1 exceeded the temperature rise acceptance criteria at approximately 24 minutes into the exposure period. To compensate for the failure of Configuration A-1, which Entergy attributed to the apparent infiltration of hot gases due to joint separation, it was reiterated in Reference 5 that Entergy intended to install over-banding on the installed cable tray configurations to minimize the potential for joint separation in an effort to achieve a 30-minute fire resistance rating.

Subsequent to Entergy letter dated May 23, 2007 (Reference 5), discussions with the Staff were held and further review of the industry Hemyc fire test data in Reference 8 was performed. Despite the successful minimum 30-minute performance of Configurations A-2 and A-3, the postulated success of a third comparable Configuration (A-1) to perform for a minimum of 30 minutes via the use of over-banding cannot be definitively demonstrated. Moreover, the affected IP3 cable trays contain at least 10% cable fill versus the zero percent fill in the tested configurations, and although not qualifiable the heat sink afforded by the copper conductors can be expected to moderate the temperature inside the IP3 installed cable tray Hemyc ERFBS configurations. As a result, it has been determined that the more limiting performance of Configuration A-1 should be used as the basis for the installed cable tray Hemyc ERFBS configurations fire resistance rating. Therefore, for purposes of this request, Entergy considers the fire resistance capability of the installed cable tray Hemyc ERFBS configurations in Fire Area ETN-4 to be 24 minutes without the use of over-banding.

A comparison of the 24-minute fire resistance rating to the fire hazards in Fire Area ETN-4 demonstrates the adequacy of this rating. The subject cable trays provided with Hemyc ERFBS configurations are located in Fire Zones 7A, 60A, and 73A. These fire zones have computed combustible loading values as shown below, with electrical cable insulation in the cable trays being the dominant contributor in each zone.

Fire Zone	Total Combustible Load (BTU/ft^2)	Equivalent Fire Severity (Minutes)	Combustible Load Contributed by Cables (BTU/ft^2)	Incidental Combustible Loading, (BTU/ft^2)	Equivalent Fire Severity, Combustibles Other Than Cables (Minutes)
7A	78,716	59	78,316	400	< 1
60A	90,991	68	90,591	400	< 1
73A	127,239	95	126,839	400	< 1

The electrical cables installed in cable trays in Fire Area ETN-4, inclusive of the fire zones listed above, are of flame-retardant construction, and will not constitute a significant component of the fuel source for credible fire scenarios in this area. In an SER dated February 2, 1984 (Reference 9), the NRC Staff stated that (given the flame-retardant cable construction and the results of testing as described in a NYPA letter dated November 22, 1982 (Reference 10)), "... a postulated fire commensurate with the transient fire hazard [in Fire Area ETN-4] would not cause propagation along the cables to a significant degree." This was the basis for the granting of an exemption in that SER from the requirement to consider electrical cable in the Electrical Tunnels as an intervening combustible. Therefore, the electrical cables in the fully-suppressed cable trays in Fire Area ETN-4 are considered to be a negligible contributor to any credible fire scenario in that area.

The fuel loading contribution from the credible fire hazards in the area, exclusive of the cable insulation and inclusive of transient and incidental combustibles, represents an insignificant fire challenge to systems, structures, and components in Fire Area ETN-4. For the range of credible fire scenarios, a 24-minute fire resistance rating provided by the installed cable tray Hemyc ERFBS configurations will provide adequate protection, with margin, of the credited safe-shutdown capability.

Conclusions

In light of the limited amounts and types of hazards in Fire Area ETN-4, the full-area coverage fire detection system, the fixed automatic cable tray fire suppression system, and available manual suppression features, the conservative fire resistance rating of 24 minutes of the IP3 installed cable tray Hemyc ERFBS configurations is considered to provide adequate protection, with margin, for the enclosed safe-shutdown cables in Fire Area ETN-4.

Therefore, by this letter, Entergy Nuclear Operations, Inc.:

1. Requests revision of the January 7, 1987 SER to reflect that the installed Hemyc ERFBS configurations in Fire Area ETN-4 on the cable tray provide a 24-minute fire resistance rating, in lieu of the previously stated one-hour fire resistance rating in the January 7, 1987 NRC SER. The revised request for a 24-minute fire resistance

rating for the cable tray Hemyc ERFBS configurations is in lieu of the 30-minute fire resistance rating requested in our July 24, 2006 letter.

2. Modifies the Commitment (Number 3) originally presented in Attachment 2 to Reference 11 and subsequently modified as presented in Attachment 2 to Reference 5, to clarify the commitment on installation of stainless steel over-banding. Given that a definitive solution for the failure of test Configuration A-1 to meet temperature rise criteria has not been demonstrated, the value of installing over-banding on the installed cable tray Hemyc ERFBS configurations is indeterminate. As such, Entergy will not install such over-banding on IP3 installed cable tray Hemyc ERFBS configurations as discussed in References 1 and 5. This revised commitment is contained in Attachment 2 to this letter.

References

1. Entergy letter dated July 24, 2006, F.R. Dacimo to Document Control Desk, "Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2"

2. NRC Letter and SER dated January 7, 1987, S.A. Varga to J.C. Brons (NYPA), "Indian Point 3 Nuclear Power Plant – Exemption from Certain Requirements of Section III.G and III.J of Appendix R to 10 CFR Part 50"

3. NRC letter dated March 15, 2007, J.P. Boska to M.R. Kansler, "Indian Point Nuclear Generating Unit No. 3 - Request for Additional Information Regarding the Revision of Existing Exemptions from Title 10 of the Code of Federal Regulations Part 50, Appendix R Requirements (TAC No. MD2671)"

4. Entergy letter dated April 30, 2007, F.R. Dacimo to Document Control Desk, "Response to Request for Additional Information Regarding the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2 for Indian Point Nuclear Generating Unit No. 3"

5. Entergy letter dated May 23, 2007, F.R. Dacimo to Document Control Desk, "Supplemental Response to Request for Additional Information Regarding the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2 for Indian Point Nuclear Generating Unit No. 3 (TAC No. MD2671)"

6. Entergy Engineering Report IP-RPT-06-00062, Revision 0; "Comparison of IP3 Hemyc Electrical Raceway Fire Barrier System to NRC Hemyc Fire Test Results"

7. Hemyc (One-Hour) Electrical Raceway Fire Barrier Systems Performance Testing; Cable Tray, Cable Air Drop, and Junction Box Raceways (Omega Point Laboratories Fire Test Report, Project 14790-123264, dated April 18, 2005)

8. Report of Testing Hemyc 1-Hour ERFBS for Compliance with the Applicable Requirements of the Following Criteria: Generic Letter 86-10, Supplement 1 (Intertek Testing Services NA Inc. Fire Test Report 3106846, dated January 16, 2007; Revised February 5, 2007)

9. NRC letter dated February 2, 1984, D.G. Eisenhut to J.P. Bayne, "Exemptions from the Requirements of 10 CFR 50, Appendix R, for the Indian Point Nuclear Generating Plant, Unit No. 3 (IP-3)"

10. NYPA letter dated November 22, 1982, J.P. Bayne to H.R. Denton, "Indian Point 3 Nuclear Power Plant, Docket No. 50-286, Appendix R"

11. Entergy letter dated June 8, 2006, F.R. Dacimo to Document Control Desk, "Response to Generic Letter 2006-03, Potentially Nonconforming Hemyc and MT Fire Barrier Configurations"

ATTACHMENT 2 to NL-07-084

Commitments made in Supplement to the Request for Revision of Existing Exemptions from 10 CFR 50, Appendix R: One-Hour Hemyc Electrical Raceway Fire Barrier System, Fire Areas ETN-4 and PAB-2

ENTERGY NUCLEAR OPERATIONS, INC
INDIAN POINT NUCLEAR GENERATING UNIT 3
DOCKET NO. 50-286

This table identifies actions discussed in this letter for which Entergy commits to perform. Any other actions discussed in this submittal are described for the NRC's information and are not commitments.

Number	Commitment	Type	Scheduled Completion Date
3	Complete modification (including supporting engineering evaluation) to install additional protection of the electrical raceway supports and protection of certain metallic penetrating items associated with the existing Hemyc ERFBS located outside containment, and to install stainless steel over-banding on the box-type configuration (as described) located outside containment. [This is a further clarification of commitment 3 (licensee reference number COM-07-00034) which was initially made in Entergy Letter NL-06-060 dated June 8, 2006, and which was clarified in Entergy Letter NL-07-061 dated May 23, 2007]	One-Time Action	12/01/2008