April 17, 2008

MEMORANDUM TO: Donald Harrison, Chief
Balance of Plant Branch
Division of Safety Systems
Nuclear Reactor Regulation

FROM: Edward T. Smith /RA/
Balance of Plant Branch
Division of Safety Systems
Nuclear Reactor Regulation

SUBJECT: SUMMARY OF FEBRUARY 29, 2008 PUBLIC MEETING TO DUSCUSS REGULATORY ISSUE SUMMARY 2008-XX USE OF THE TORMIS COMPUTER CODE FOR TORNADO MISSILE PROTECTION

On February 29, 2008, a public meeting was held to discuss draft Regulatory Issue Summary (RIS) 2008-XX, "Use of the TORMIS Computer Code for Tornado Missile Protection."

The Nuclear Energy Institute (NEI) described its Regulatory Issue Screening Process and how the draft RIS on the use of TORMIS fits into the process. NEI presented their comments on the draft RIS (see Enclosure). Subsequent to the meeting additional comments were received from Mr. L. Twisdale.

The NRC responses to the comments are contained in ML081050468.

As a result of the meeting the following action items were identified:

Item	Description	Responsibility
1	Provide clarification that the review of applications to use TORMIS is against the plant's current licensing basis.	E. Smith
2	Provide clear statement that the design-basis tornado characteristic defined contained in Regulatory Guide 1.176, Revision 1 are acceptable	E. Smith
3	Provide clarification of footnote 2 on page 3 of the draft RIS on risk-significant, non-safety-related equipment.	E. Smith
4	Clarify that once approved for a plant, TORMIS can be used for additional situations where the plant does not meet its tornado missile protection licensing basis up to a cumulative probability complying with the acceptance criteria.	E. Smith

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5.	Clarify what type of information may be provided in applications to use TORMIS that would help the staff conduct its review.	E. Smith
6	Make public in ADAMS the safety evaluation report approving the use of TORMIS	E. Smith

PARTICIPANTS

NRC and external stakeholders, including members of NEI, industry representatives, consultants to the nuclear industry and any interested members of the public.

NRC		INDUSTRY / OTHERS	
NAME	ORGANIZATION	NAME	ORGANIZATION
Mark Rubin	NRR/DA/APLA	Victoria Anderson	NEI
Jared Wermiel	NRR/DSS	Richard Barr	First Energy
Michael Case	NRR/ADRO/DPR	Richard Freudenberger	Duke Energy
Donald Harrison	NRR/DSS/SBPB	Craig Sly	Dominion Energy - Kewaunee
Edward Smith	NRR/DSS/SBPB	C. Alan Ford	Dominion
James Tatum	NRO/DSRA/SBPA	Michael Schoppman	NEI
Steve Jones	NRR/DSS/SBPB	Dave Sommers	Dominion
Adrian Muniz	NRR/DORL/LPL3-1	Dennis Zercher	NMC
		Lee M. Kanipe	Duke Energy
		Deann Raleigh	Scientech (tele.)
		Nancy Chapman	Bechtel (tele)
		Gerald Riste	Dominion Energy - Kewauneee (tele)
		Jim Bouchard	Polestar Applied Technologies (tele)
		Larry Twisdale	Applied Research Associates (tele)
		Rodney Johnson	Detroit Edison (tele)
		Steve Newman	Duke Energy
		Stephen Hess	EPRI

Enclosure:
As stated

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DATE	4/17/08	4/17/08

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NRC/NEI Meeting to Discuss Draft RIS 2008-XX
Use of TORMIS Computer Code for Assessment of Tornado Missile Protection

NEI Handout

Regulatory Issue Screening Process (RISP)

1. Industry screens plant-specific data (mostly RAIs and URIs)
2. Industry identifies data points that could be bundled into generic issues
3. Industry proposes selected issues to NRC for resolution via RISP
4. NRC/Industry meet to choose high-value RISP issues to work on
5. NRC/Industry meet to clarify expectations and seek consensus
6. NRC/Industry establish attributes of a standardized success-path
   a. scope
   b. level of detail
   c. key attributes of the issue (e.g., variables, assumptions, ranges of values)
   d. checklists
   e. templates
   f. acceptance criteria
   g. etc.
7. NRC documents the “applicable staff position”
8. Industry implements based on to 6 & 7

ENCLOSURE

NEI Handout

TORMIS Issue Outline

Resolve tornado missile-protection issues identified by NRC

- Exhausts, vents, walls.
- Many of the issues do not appear risk significant.
- The current situation (URIs/ROP/SDP) is driving high-cost plant modifications.
- There is no apparent cost-beneficial success path.

Summary

- At this point, the effective alternatives for resolving tornado missile-protection issues for older plants range from “do nothing” to “implement multi-million dollar modifications” with little in between.
- NEI proposes a joint NRC/Industry effort to identify a middle ground based on a standardized risk-informed guidance (e.g., a LAR template) that could be documented in an NRC generic communication as the “applicable staff position.”
- The current draft RIS is a first step, but could be expanded to provide more detailed guidance on scope, level of detail, assumptions, failure modes, acceptance criteria, statistical factors, etc. that the NRC staff will expect in licensee submittals.

Projected Alternatives (may not be the complete list)

1. TORMIS
    - strike/damage probabilities
    - constrained at present by the SER and the draft RIS
2. Modify TORMIS
    - the method and/or the code
    - possibly by means of a topical report submitted for NRC review
3. NRC update the 1983 TORMIS SER
4. Standardize to updated tornado assumptions (e.g., enhanced Fujita)
5. Develop a risk informed approach
    - based on risk significance
    - independent of TORMIS
    - phenomenology → impact on plant → metrics (CDF/LERF) → compare with Reg Guides (1.174/1.177)
6. Modifications
    - high cost, minimal safety benefit
    - questionable cost-benefit

NEI Handout

NEI Comments on Draft RIS[1]

1. **Compared to TORMIS-related license amendment requests (LARs) and NRC safety evaluations (SEs) from the late 1990s and early 2000s, the NRC review scope seems to have increased. Does the NRC staff consider the review scope to have changed between the earlier time period and now? This will be an important point of discussion during the public meeting scheduled for February 29, 2008.**

   For example, missile spectrum, tumbling, and near-ground windspeed. With respect to near-ground windspeed, the assumptions are well understood at this point, but licensees continue to receive RAIs that request greater detail, and the topic is not addressed in the RIS.

2. **The draft RIS does not address whether NRC would review LARs based on methodologies other than TORMIS, for example, methods that evaluate potential targets to determine the probability for loss of design function. Further NRC/Industry dialogue is needed to determine the LAR options available for assessing tornado missile protection.**

3. **NEI recommends that NRC review TORMIS and the TORMIS SER to ensure they are consistent with the latest NRC tornado criteria.**

4. **Which NRR Branch has lead responsibility for reviewing TORMIS LARs? Which NRR Branch provides PRA expertise? To what extent does the PRA branch participate in the review of a TORMIS LAR?**

5. **TORMIS acceptance criteria were developed before the emergence of risk-informed regulation and the resulting set of objectives and standards for regulating based on risk estimates. The principle figures of merit are core damage frequency (CDF) and large early release frequency (LERF). The evolving risk standards were applied in the IPE/IPEEE programs (GL 88-20), and they matured into formal regulatory guidance for evaluating proposed changes to the licensing basis (e.g., RG 1.174). Current guidelines seek to minimize any increase in plant risk due to a proposed licensing action, but do not explicitly limit the increase in annual core damage risk to 1E-06 (1E-07 for LERF) if other requirements are met (e.g., defense-in-depth, overall plant risk as measured by CDF and LERF, and the cumulative impact of risk-informed changes). Therefore, risk-informed relief rather than deterministic compliance should be the first option when assessing a discrepancy in the tornado-missile licensing basis. It is not logical to**

[1] This listing contains the comments submitted to NRC on February 22, 2008, by e-mail from M. Schoppman to E. Smith (in **Bold**), supplemented by additional comments developed during an NEI meeting of February 28, 2008 (in *Italics*)

modify the plant to meet a deterministic requirement that you could turn around and eliminate with a risk-informed submittal.

6. **Are pre-SRP plants held to the same standard as SRP plants?**

7. **The Systematic Evaluation Program (SEP) concluded that a pre-SRP plant could justify the licensing basis for tornado winds and missiles with acceptable IPEEE results. Generally, a total plant CDF of less than 1E-04 per year and a total LERF of less than 1E-05 per year were considered acceptable. For a pre-SRP plant faced with a low-risk, high-cost discrepancy, is the acceptance criterion 1E-05 or 1E-06? Does NRC accept the SEP results as the licensing basis?**

8. **Page 2, first full paragraph, last sentence: Further NRC/Industry dialogue is needed to understand the cost factors associated with this statement.** *[At what point does the cost of a modification become a potential misdirection of licensee resources that warrants re-consideration? $100,000? $1,000,000? Especially given that the modification may result in no risk-reduction.]*

9. **Page 2, first item (2) on F scales: Is the updated (EF) intensity scale acceptable?**

10. **Page 3, footnote 2: Further NRC/Industry dialogue is needed to understand how footnote 2 relates to risk-significant, non-safety equipment. Does it apply to indirect or collateral damage effects?**

11. **Page 3, item (3)c: This item indicates that TORMIS is not approved for plant modifications. However, the TORMIS SER states that TORMIS applies to the evaluation of specific plant features where additional costly missile protection barriers or alternative systems are under consideration. The SER does not seem to be as limiting as the draft RIS.**

12. **Page 4, section on Applying the TORMIS Code, second sentence: Licensees attempt to provide adequate and sufficient information in all LARs to enable prompt reviews by the NRC staff. They use the precedent established by NRC guidance, industry guidance, LARs and SEs on other dockets, and plant-specific licensing basis documentation, supplemented by engineering judgment, to determine whether an LAR is adequate and sufficient. However, this approach has not led to a success path for TORMIS LARs in 2008. Therefore, further NRC/Industry dialogue is needed to determine if (1) licensees are misinterpreting the existing set of precedent documents, (2) licensees and NRC are using different criteria, (3) NRC review criteria are not detailed enough for licensees to determine NRC expectations, (4) NRC expectations have changed, or (5) there is some other reason for the current situation.**

13. *Pg. 3 – (2).f – What is basis for the admonition to consider all "significant non-safety equipment?" This is a generalized, overly broad target set. The RIS could*

be improved if it included a checklist or template for what constitutes an acceptable LAR. So far, industry is seeing an open-ended accumulation of items that reviewers find missing or deficient in LARs, without any indication of why it is needed or what reviewers would find acceptable.

14. *The NRC's position seems to be that licensee's cannot implement TORMIS pursuant to 10 CFR 50.59. Please discuss.*

15. *The staff's approach to evaluating tornado missiles appears to be inconsistent with other current regulatory policies. For example, the RIS requires aggregation of discrepancies, but fire PRA does not.*

16. *Request clarification with respect to apparent difference between:*

RIS Pg. 4 – Use of TORMIS – last paragraph ("Once the NRC approves the use of the TORMIS methodology at a plant, it can be used to address future identified deficiencies, consistent with the staff's approval. This generally means that the TORMIS methodology can be used for additional instances that meet the criteria without NRC approval, as long as the cumulative probability remains below the acceptance limit.")

- compared to –

TORMIS SER page 6 ("Further, use of the EPRI PRAs or any tornado missile probabilistic study should be limited to the evaluation of specific plant features where additional costly tornado missile protective barriers or alternative systems are under consideration")