NIAGARA MOHAWK

GENERATION
BUSINESS GROUP

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MARTIN J. MCCORMICK JR.
Vice President Nuclear Engineering

February 14, 1997
NMP1L 1182

Mary Drouin
Office of Nuclear Regulatory Research
Mail Stop T-10-E50
US Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Nine Mile Point Unit 1
Docket No. 50-220
DPR-63

Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Subject: ***Comments on Draft NUREG-1560***

Dear Ms. Drouin:

A December 11, 1996 letter from F. J. Miraglia (NRC) to B. R. Sylvia requested comments on draft NUREG-1560 by February 14, 1997. The purpose of this letter is to provide Niagara Mohawk's comments, which are attached.

Since the NUREG discusses issues of broad industry interest as well as issues specific to Nine Mile Point Units 1 and 2, our comments, attached, are grouped accordingly. The first group of comments deals with general industry issues. The second group of comments deals with issues specific to Nine Mile Point Unit 1. The final group of comments deals with issues specific to Nine Mile Point Unit 2.

It is requested that my office be kept informed of the resolution of our comments. Thank you for your cooperation in this regard.

A001/1

Questions can be referred to Robert F. Kirchner at 315-349-7323. If we can be of further assistance, please call.

Very truly yours,

Martin J. McCormick Jr.
Vice President Nuclear Engineering

Attachments

cc: Document Control Desk
Mr. H. J. Miller, NRC Regional Administrator
Mr. S. S. Bajwa, Acting Director, Project Directorate I-1, NRR
Mr. B. S. Norris, Senior Resident Inspector
D. S. Hood, Senior Project Manager, NRR
Records Management

Draft NUREG-1560 General Comments

G-1 The definition of a quality PRA outlined in the NUREG is subjective and should not necessarily be derived from comparison of IPE results. While the information on PRA quality is useful, the PRA quality section of this NUREG should be characterized as specifically applicable only to the NUREG comparison effort. Any applicability to the creation of an industry standard should be classified as developmental in nature. An industry-wide standard for PRA quality should be based on a broader and more deliberative development effort that involves practitioners from various organizations. This effort should include, among other things, an assessment of the benefit versus cost of additional analytical detail in specific areas of PRA.

G-2 (Page xix) The NUREG indicates that MAAP is not a comprehensive computer code. MAAP models the complete progression of a severe accident and is comprehensive in its treatment. MAAP can be characterized as limited by the uncertainty in severe accident phenomena and simplification due to the need for relatively fast computation in PC and Vax environments, but we believe it should not be called non-comprehensive.

G-3 (Page xix) The NUREG indicates that invalid HRA assumptions have been used in IPEs. However, in section 13 of the NUREG such HRA issues are classified as inconsistencies with potential explanations. The characterization of apparent HRA anomalies is more appropriately described in section 13. In fact, on Page 1-3 the authors indicate that they did not consider the accuracy of the information in the IPEs. It would appear that references to invalid HRA assumptions cannot be defended by the body of the NUREG and it is premature to label such issues as invalid.

G-4 (Page 3-1) Statement "*However, BWRs only remove heat directly from the primary system ...*" ignores the shutdown cooling function and, for a few older BWRs, emergency condensers.

G-5 (Page 12-13) The NUREG indicates that isolation is a negligible contributor to early release partly because the containment is inerted and isolation failure can be easily detected. A number of valves are open during normal operation and event response. For containment isolation success, a portion of these valves must transfer closed on demand. An inerted containment has no bearing on this failure mode. The reliability of such containment penetrations is more tied to design issues (i.e., use of fail closed AOVs and check valves). It should be pointed out that containment isolation, while reliable, is not a negligible contributor to risk. The risk achievement worth of such valves can be significant in terms of large-early release.

G-6 (Page 6-16) The use of 1/3 failure in place of zero failures is called inappropriate. The use of a fraction of a failure is a common technique for dealing with censored

data. While not always appropriate, it should not be characterized as inappropriate in all circumstances.

G-7 Section 18 presents a comparison of NUREG-1150 results with IPE results as a whole. A more interesting comparison would be between the individual NUREG-1150 results and the corresponding IPEs. This would provide more detailed information on specific modeling issues.

Draft NUREG-1560 Comments Directly Relating to NMP1

NMP1-1 (Page 3-13) "*New pump seal materials have been implemented at Nine Mile Point 1...*" should read "*New reactor recirculation pump seal...*"

NMP1-2 (Page 10-12, 10-13, 11-16) The report indicates that NMP1 feedwater coolant injection function is emergency diesel backed. NMP1 is not designed to use diesel generators to power feedwater pumps. NMP1 CRD can be powered from EDGs. Combined with the emergency condensers, this provides NMP1 with a reliable system functionally similar to HPCI at other plants. In addition, NMP1 has a dedicated hydro power plant available along with procedures to align it as necessary.

NMP1-3 (Page 11-19) The NUREG indicates that no details are available for NMP1 LOSP DHR sequences. LOSP DHR sequences are similar to other DHR sequences except LOSP is the initiator. While low frequency, the dominant LOSP DHR sequences include failure to align heat removal systems, failure to align emergency condenser make-up, failure of an EDG, and failure of an emergency service water pump. The equipment failures result in a loss of service water which in turn fails RBCLC, instrument air (which fails containment venting), and shutdown cooling.

NMP1-4 (Page 12-16) The statement relating to footnote 12.4 is based on an incorrect interpretation of the NMP1 IPE. The treatment of the timing of shell melt through at NMP1 is similar to that of other plants. The footnote indicates that NMP1 is an exception in this regard and it is not. The incorrect interpretation appears to result from a different definition of early containment failure. NMPC defines an early failure as one that occurs within 6 hours of the initiator. Thus, the timing for Level I, II, and III considerations are based on the same reference point. NMPC believes this definition provides the best input to issues relating to accident management and emergency planning (i.e., timeframe for evacuation). The NUREG defines early containment failure as within a short timeframe around RPV failure. When RPV failure occurs later in a sequence, NMPC bins any associated shell failure correspondingly. Thus, such a late containment failure at NMP1 would actually be an early failure using the NUREG definition.

NMP1-5 (Page 13-18, 13-19) The range of SLC initiation HEPs attributed to NMP1 is incorrect. The NUREG indicates that NMP1 SLC initiation failure probability ranges from 2E-3 per demand to 1E-4 per demand. The range described in the NMP1 IPE is from 0.4 per demand to 1E-4 per demand. In addition, the NUREG indicates that the 1E-4 value is an exception and no obvious reasons for such a low value could be found (other BWR 1/2 licensees have SLC initiation in the 0.1 to 0.01 range). The 1E-4 value applies in specific ATWS sequences where the operator has previously successfully prevented MSIV closure and lowered vessel level to control power. These actions give the operators an expanded time window for SLC injection. Per our operator action dependency approach, if the operator is not successful in the preceding actions, the 1E-4

value is not used. By considering the need for prerequisite successful operator actions in the model and the long timeframe available, the NUREG authors should find a measure of comfort in the 1E-4 value. If the operator is unsuccessful at maintaining the MSIVs open, the reduced timeframe and operator dependency issues lead to a 0.4 per demand HEP for SLC initiation. Other values (e.g., 2E-3) are used under a separate top event which considers the mitigative effects of SLC injection later in the scenario. In terms of comparison with regard to the 1E-4 value, it is likely that the corresponding case (i.e., MSIVs open) is binned to success or a longer term sequence by other licensees. In terms of comparison with regard to the 0.4 value, while higher than other older BWRs, the value is in the range of BWRs as a whole.

Draft NUREG-1560 Comments Directly Relating to NMP2

NMP2-1 (Page 4-20) The NUREG claims that nearly all the venting probability is associated with drywell venting and presumes that this relates primarily to containment flooding. This is true only in the level II portion of the model. The NMP2 model includes all containment venting modes. Containment pressure control is the primary mode relative to level I logic. For level II, flood related venting is more noteworthy because either the sequence is successful in the level I model or equipment failures occur such that the pressure control mode is of little benefit in level II. Combustible gas venting is used for a very small number of sequences. Thus, the statement on Page 4-20 should be revised to make it clear that drywell venting is only predominate when focusing solely on the level II portion of the NMP2 IPE model.

NMP2-2 (Page 9-34) The NUREG makes reference to a hardened containment vent to be installed in 1993. NMP2 has had a hardened vent since original design. The modification discussed in the IPE dealt with making the system more reliable. It was subsequently determined that the modification was not necessary.

NMP2-3 (Page 11-41) The NUREG refers to RCIC failure due to failure to over-ride a steam-tunnel temperature trip and indicates that only River Bend and Perry identify this failure mode. NMP2 includes this along with other RCIC isolation signals in Top Event OA. This top event requires operators to over-ride RCIC isolation within 2 hours of the initiator. In the NMP2 linked event tree approach, failure modes related to a given system are not always directly modeled in the system's "main" top event. In this case there are several top events that relate to the RCIC system.

NMP2-4 (Page 11-49) "*RCIC is assumed to fail because of high temperature trips since no DHR is available*" should read "*RCIC is assumed to fail because of high temperature trips since no room cooling is available*"