



Constellation Energy

• Nine Mile Point Nuclear Station

P.O. Box 63
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May 17, 2004
NMP1L 1837

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

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

Review and Comment: Nine Mile Point Unit 1 Preliminary Accident
Sequence Precursor Analysis of the August 14, 2003 Operational Event

Gentlemen:

By letter dated March 18, 2004, the NRC forwarded for review and comment a preliminary Accident Sequence Precursor (ASP) Analysis for Nine Mile Point Unit 1 (NMP1) of the August 14, 2003, operational event involving loss of offsite power associated with the regional transmission grid blackout of the same date. The March 18 letter provided a risk assessment of the event based upon current NRC models and solicited licensee comment on the technical adequacy of the preliminary analysis, including the depiction of plant equipment and equipment capabilities. Written guidance was provided for peer review and comment, including specific supporting documentation requirements.

The requested review has been completed for NMP1. Results based upon the current NMP1 Probabilistic Risk Assessment (PRA) model are in general agreement with those of the preliminary ASP analysis, but show a lower conditional core damage probability. Details and supporting documentation are provided by attachment to this letter.

If you have any questions, please contact Mr. Ted Kulczycky, Principal Engineer, Reliability Engineering, at 315-349-1949.

Very truly yours,

William C. Holston
Manager, Engineering Services

WCH/JRH/jm
Attachment

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector
Mr. P. S. Tam, Senior Project Manager, NRR (2 copies)

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ATTACHMENT 1 to NMP1L 1837

NINE MILE POINT 1

**Review of NRC Preliminary Precursor Analysis (PPA)
of August 14, 2003
NMP1 Grid Disturbance Event**

**Review of NRC Preliminary Precursor Analysis (PPA) of
August 14, 2003 NMP1 Grid Disturbance Event**

In a letter dated 3/18/2004¹ the Nuclear Regulatory Commission (NRC) provided a preliminary analysis of the risk significance of the August 14, 2004 offsite grid related event at Nine Mile Point Unit 1 (NMP1). The NRC letter solicited comment on the preliminary analysis and this "White Paper" provides the comments from the NMP Probabilistic Risk Assessment (PRA) Team.

We agree with the overall conclusion of the PPA. Namely, that the event represented a significant plant challenge and should be included in the Accident Sequence Precursor Program (ASP) database. However, we note some conservatisms in the analysis and believe that the reported conditional core damage probability (CCDP) of $3.4E-5$ is slightly high.

The conservatisms that we recommend should be reviewed and adjusted are as follows:

EDG Recovery:

No basis for the assumption that Emergency Diesel Generators (EDGs) cannot be recovered is provided in the PPA. The NMP1 PRA model includes credit for EDG recovery based on NUREG-1032. It is recommended that the PPA consider crediting EDG recovery.

Direct Current (DC) Load Shedding:

The model used for the PPA includes a basic event for DC Load Shedding under Station Blackout (SBO) conditions. Basic event "OEP-XHE-XM-LSHED" models operators beginning to shed DC loads within 15 minutes. The value of 2E-2 and associated logic is similar to the O15 Top Event used in the NMP1 PRA. In the model used for the PPA, failure of the load shed action leads to a 2 hour Alternating Current (AC) power recovery requirement. However, given failure of this action, the NMP1 model asks, conditionally, if operators begin load shedding within 30 minutes. This is treated with top event O30 which has a value of 0.5. The combined time-dependent DC Load shedding criteria allows a 8 hour AC power recovery if O15 is successful, 4 hours for AC recovery if O15 is failed and O30 is successful, and 2 hours if both O15 and O30 fail.

Please consider the following options to more closely match the NMP1 model as the DC Load Shedding basic event shows up in the most dominant cutsets reported in the PPA analysis:

- 1) Multiply the OEP-XHE-XM-LSHED basic event by the O30 conditional value (0.5) to allow the PPA Event tree node "DCL" to represent the conditions that lead to a 2 hour AC power recovery requirement.
- 2) Add an additional event tree node for the 30 minute conditional action so that the 2, 4, and 8 hour recovery windows are applied, as appropriate.

Offsite Power Recovery:

In the PPA analysis, the values for failing to recover AC power were increased significantly. This appears to be due to the time window available between when load dispatchers declared the grid stable and the expiration of the various time windows. Even if it were assumed that operators would have waited for the load dispatchers before trying to recover offsite power given EDG failures, it is highly doubtful that they would also wait for the load dispatchers before staging their actions. In this regard, the reductions are overly conservative. Operator focus regarding offsite power recovery would have been keen throughout the event. If EDGs had failed, operators would have aggressively staged offsite power recovery actions, per procedures, and would not have been significantly slowed by interactions with the load dispatchers. It should be noted that Electrical Design Data has shown that offsite power voltage and frequency were within normal limits at 1 hr and 45 minutes following event initiation. This is consistent with the PPA assumptions wherein the 30 minute and 60 minute offsite power basic events are set to failed. However, the 2, 4, 8, and 10 hour values should not be penalized to the degree specified in the PPA.

ATTACHMENT 1 to NMP1L 1837

References:

- 1) Boska, J.P, "Nine Mile Point Nuclear Station, Unit No. 1 Re: Review of Preliminary Accident Sequence Precursor Analysis Of August 14, 2003, Operational Event," Letter to Spina, J.A, March 18, 2004.