

April 30, 2004

MEMORANDUM TO: Ledyard B. Marsh, Director
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

John Flack, Chief
Regulatory Effectiveness Assessment and Human Factors Branch
Division of Systems Analysis and Regulatory Effectiveness
Office of Nuclear Regulatory Research

FROM: Patrick W. Baranowsky, Chief /RA/
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Office of Nuclear Regulatory Research

SUBJECT: TRANSMITTAL OF PRELIMINARY QUAD CITIES UNIT 2 ASP
ANALYSIS FOR INTERNAL AND EXTERNAL PEER REVIEW

This memorandum provides a preliminary Accident Sequence Precursor (ASP) analyses of a loss of off-site power event which occurred at Quad Cities Unit 2 in August 2001. This analysis is being issued for simultaneous staff and licensee peer review.

As stated in SECY-03-0049 (dated March 31, 2003), there have been delays in issuing ASP analyses due to the program's focus on several more complex and potentially risk important events. We have developed, and are currently implementing, a plan for the completion of the backlog of ASP analyses. Consistent with our plan, an ASP analysis will undergo internal and external peer reviews for a potential precursor in cases where there is no significance determination process (SDP) analysis. Such events are typically initiating events where no performance deficiencies were identified by the SDP. For the analysis that is being transmitted in this memorandum, we will resolve staff and licensee comments prior to finalizing the analysis.

NRC peer review requested. Please review the preliminary ASP analysis and provide us with any comments that you may have. We are requesting that DLPM coordinates reviews from SPSB, IIPB, and the appropriate region. In order to facilitate incorporation of licensee and staff comments and preparation of the final report in a timely manner, consistent with the NRR and RES agreement on peer review, please provide your comments to us within 60 calendar days from the date of this memorandum.

Licensee peer review requested. We are also requesting NRR/DLPM to send the preliminary ASP analysis to the licensee for peer review. Since each preliminary ASP analysis undergoes an in-house independent review before it is sent out by OERAB, peer review by NRR and the region can be performed concurrently with the licensee's review. This process is also consistent with the NRR/RES peer review agreement. The analyses and a transmittal letter will

be provided separately to the NRR ASP Program liaison (Stacey Rosenberg). This letter reflects the modifications made by NRR/DLPM based on recent preliminary analyses sent to licensees, as well as the instruction added to the letter regarding the transmittal of comments by the licensee that may contain potentially sensitive information.

Summary of the Preliminary ASP Analysis: The event was a loss of offsite power at due to failure of main power transformer following a lightning strike at Quad Cities Unit 2 in August 2001 (LER 265/01-001). The ASP analysis calculated the mean conditional core damage probability (CCDP) of 5.4×10^{-6} .

On August 2, 2001, at 0813 hours, lightning struck a 345-kv line that connected to the Quad Cities switchyard. Both Unit 1 and Unit 2 were at 100% power. The lightning strike caused the Unit 2 main power transformer to rupture and catch fire, leading to an automatic shutdown of the Unit 2 reactor. Subsequently, additional breakers in the switchyard supplying offsite power to the Unit 2 reserve auxiliary transformer (RAT) opened. Consequently, Unit 2 lost all offsite power. All offsite power sources to Unit 1 remained normal.

The fire in the Unit 2 main power transformer was extinguished at approximately 0845 hours (approximately 32 minutes after the lightning strike) by (1) the automatic actuation of the transformer's fire protection deluge system, (2) actions of the station fire brigade, and (3) actions of the local fire department. Offsite electrical power to Unit 2 emergency buses (buses 23-1 and 24-1) from the Unit 2 RAT was restored at approximately 1047 hours. EDG 1/2 and EDG 2 were then shut down. The Unit 2-centered LOOP lasted approximately 2.5 hours.

The mean CCDP is 5.4×10^{-6} and point estimate is 5.5×10^{-6} . The confidence interval is defined by 5% value of 7.2×10^{-7} and the 95% value of 1.7×10^{-5} .

The ASP analysis can be found at ML041210941. If you have any questions about the analysis, please contact Eli Goldfeiz (415-4439).

Sensitive information. The detailed ASP analyses are classified as "SENSITIVE - NOT FOR PUBLIC DISCLOSURE." This classification is based on the guidance provided by the EDO in the memorandum to the Commission (dated April 4, 2002) concerning the release of information to the public that could provide significant assistance to support an act of terrorism. In particular, Criteria 1 was determined to apply to ASP analysis reports:

Plant-specific information, generated by NRC, our licensees, or our contractors, that would clearly aid in planning an assault on a facility. An example might be drawings depicting the location of certain safety equipment within plant buildings. Examples may include portions of Final Safety Analysis Reports (FSARs), Individual Plant Examination (IPE) material, and other risk and facility vulnerability information.

This classification could change in the future based on revised Agency guidance and office (NRR and RES) procedures in response to the Staff Requirements Memorandum, "Staff Requirements - COMSECY-02-0015 - Withholding Sensitive Homeland Security Information From the Public," dated April 4, 2002. Future changes in the transmittal of ASP analyses will be coordinated with the NRR ASP Program liaison. The detailed ASP analysis, referenced above as an ADAMS document, is sensitive and cannot be released to the public.

If you have any questions about the individual analyses, please contact the reviewer for that analysis. For questions concerning the transmittal letter or the ASP Program, please call Gary DeMoss (415-6225).

MEMORANDUM DATED: 4/30/04

SUBJECT: TRANSMITTAL OF PRELIMINARY QUAD CITIES UNIT 2 ASP ANALYSIS FOR
INTERNAL AND EXTERNAL PEER REVIEW

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