

# ACCELERATED DOCUMENT DISTRIBUTION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 9406300276      DOC. DATE: 94/06/23      NOTARIZED: NO      DOCKET #  
 FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha      05000410  
 AUTH. NAME      AUTHOR AFFILIATION  
 SYLVIA, B.R.      Niagara Mohawk Power Corp.  
 RECIP. NAME      RECIPIENT AFFILIATION  
                                  Document Control Branch (Document Control Desk)

SUBJECT: Provides comments of evaluation of preliminary accident sequence precursor analysis.

DISTRIBUTION CODE: A001D      COPIES RECEIVED: LTR 1 ENCL 1      SIZE: 3  
 TITLE: OR Submittal: General Distribution

NOTES:

	RECIPIENT ID CODE/NAME	COPIES	L	T	R	ENCL	RECIPIENT ID CODE/NAME	COPIES	L	T	R	ENCL
	PD1-1 LA	1				1	PD1-1 PD	1				1
	BRINKMAN, D	2				2						
INTERNAL:	ACRS	6				6	NRR/DE/EELB	1				1
	NRR/DORS/ONDD	1				1	NRR/DRCH/HICB	1				1
	NRR/DRPW	1				1	NRR/DSSA/SPLB	1				1
	NRR/DSSA/SPSB	1				0	NRR/DSSA/SRXB	1				1
	NUDOCS-ABSTRACT	1				1	OC/LFDCB	1				0
	OGC/HDS3	1				0	<u>REG FILE</u> 01	1				1
EXTERNAL:	NRC PDR	1				1	NSIC	1				1

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK,  
 ROOM P1-37 (EXT. 504-2065) TO ELIMINATE YOUR NAME FROM DISTRIBUTION  
 LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTR      23      ENCL      20

R  
I  
D  
S  
/  
A  
D  
D  
S  
/  
A  
D  
D  
S

EC-4



11  
12  
13

B. Ralph Sylvia  
Executive Vice President  
Nuclear

June 23, 1994  
NMP2L 1478

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

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

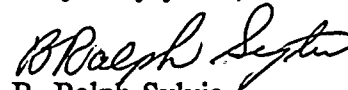
**Subject: Evaluation of Preliminary Accident Sequence Precursor Analysis**

Gentlemen:

As requested in your May 20, 1994 letter, the Niagara Mohawk Engineering Department has reviewed the preliminary accident sequence precursor (ASP) analysis related to our Licensee Event Report 93-010 regarding the High Pressure Core Spray (HPCS) system. Overall the analysis accurately modeled Nine Mile Point 2 (NMP2) and was consistent with the Individual Plant Examination (IPE). One assumption was made, however, regarding HPCS operability that, when further data is reviewed, appears overly conservative. Niagara Mohawk's evaluation indicates that a HPCS failure rate of 4.05 E-2 per demand is more realistic than the rate of 1.0 per demand used in the preliminary ASP analysis. The attachment to this letter provides additional explanation of this conclusion.

Niagara Mohawk appreciates the opportunity to comment on this analysis. If you have any questions about the attached information, please contact our NRC Program Director, Mr. W. D. Baker at (315) 349-4245.

Very truly yours,

  
B. Ralph Sylvia

Executive Vice President Nuclear

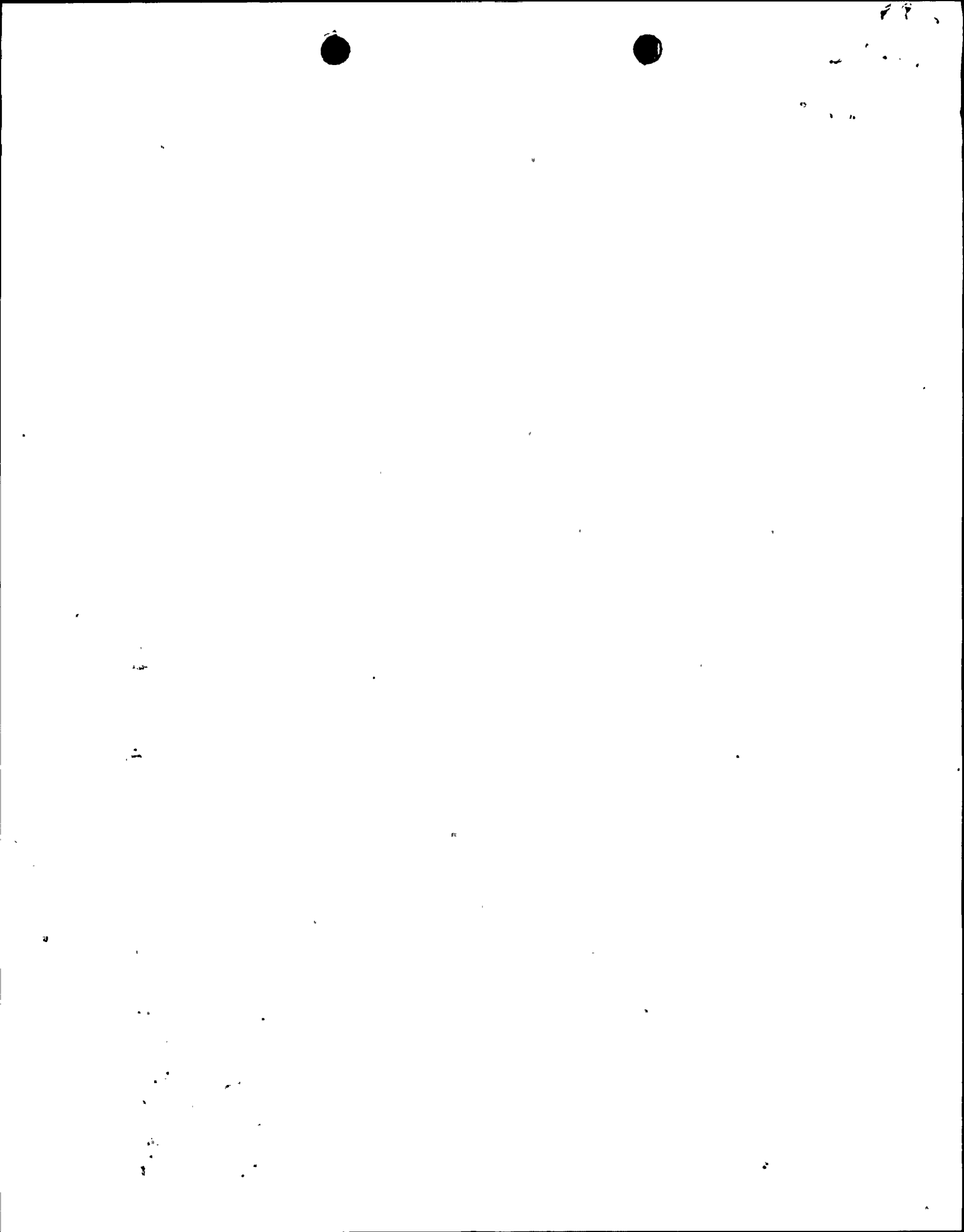
BRS/AFZ/ksj

Attachment

xc: Regional Administrator, Region I  
Mr. B. S. Norris, Senior Resident Inspector  
Mr. M. L. Boyle, Acting Director, Project Directorate I-1, NRR  
Mr. D. S. Brinkman, Senior Project Manager, NRR  
Records Management

3000 7406300276 740623  
PDR ADDCK 05000410  
PDR

*Adol*  
*6/21/94*



## Attachment

### Comments on NMP2 HPCS Accident Sequence Precursor Evaluation

Nine Mile Point Unit 2 (NMP2) Licensee Event Report (LER) 50-410/93-010 reported a failure in the High Pressure Core Spray (HPCS) system which could have rendered the HPCS system inoperable during a system initiating event while coincident with a degraded bus voltage. After receiving this LER, the NRC initiated a Probabilistic Safety Assessment (PSA) evaluation under the Accident Sequence Precursor (ASP) program. The preliminary results of this analysis have been received by NMPC for comment. This document will provide the comments associated with our review of the preliminary ASP program results.

Overall, the analysis accurately modeled NMP2 and was consistent with the NMP2 Individual Plant Examination (IPE). However, one assumption was made regarding HPCS operability that, when further data is reviewed, appears overly conservative. The ASP analysis states:

"Since information was not provided concerning expected control circuit voltages at the other HPCS components, it was not possible to evaluate the likelihood that the other components would have functioned properly on demand. Therefore, a bounding analysis was performed, it was conservatively assumed that these components were not operable."

In this regard, NMPC has reviewed bus voltage data over the period of concern regarding HPCS operability. This data was collected during routine surveillance tests in accordance with plant procedures. At the 4 KV level measured voltages ranged from 4100 V. to 4400 V. Voltages at the 600 V. level were not routinely measured, but those recorded ranged from 580 V. to 630 V. This data represents a sample for the probability, at any instant in time, the system would not be operable. In accordance with the methodology outlined in calculation EC-57 Rev. 4, a voltage of 4140 V. @ the 4 KV level or a voltage in excess of 570.3 V. @ the 600 V. level was more than sufficient for HPCS operability. Although components would be operable to some voltage below 4140 V., datapoints below this point are assumed conservatively to represent voltages at which HPCS would not operate. This is suggested since no absolute value is calculated and 4140 V. is a point where we can be confident that HPCS would operate.

During the period of concern, there were five voltage datapoints of the 240 total surveillance datapoints collected for the HPCS 4 KV bus voltage that were less than 4140 V. This would suggest that HPCS low voltage failure probability would be  $5/240=2E-2$ . However, in some cases data was available for the 600 V. level and this reveals that for 2 of the 5 above-mentioned datapoints below 4140 V., the 600 V. readings were in excess of 580 V. Since this voltage is greater than the minimum 570.3 V. in the calculation, these 2 datapoints were censored from the suspect voltage group. The corresponding voltages at the 600 V. level for the remaining 3 instances below 4140 V. were not recorded. Under this treatment HPCS low voltage failure probability is  $3/240=1.25E-2$ .

The NMP2 IPE calculated HPCS failure rate, for cases where offsite power is available, is  $2.8E-2$  per demand. Adding the low voltage probability to this value yields a value of  $4.05E-2$  per demand. This value represents a reasonable estimate of the actual HPCS system failure rate during the subject period. Consistent with the ASP analysis, we have not considered cases where HPCS must operate from its emergency diesel generator. This is reasonable since degraded voltage is far less likely when operating from the emergency diesel generators.



21  
6

**Attachment - Continued**  
**Comments on NMP2 HPCS Accident Sequence Precursor Evaluation**

The above estimate is conservative, although not as conservative as the original ASP estimate, due to a number of considerations. First, the three datapoints where degraded voltage existed most likely still represent conditions where HPCS would have functioned. Calculation EC-57 demonstrated margin available below the assumed lower limit. In that regard, the three assumed failures might have represented adequate voltages. Also, during other cases of degraded 4.160 KV bus voltage, the critical 600 V. bus voltage was adequate. None of the 78 recorded measurements at the 600 V. level were less than 580 V. If all 600 V. bus measurements had been recorded, it is likely that they too would have demonstrated adequate 600 V. bus voltage.

In summary, our single comment on the ASP evaluation is that a HPCS system failure rate of  $4.05E-2$  per demand is a more realistic value than 1.0 per demand.

