

CONTROL BLOCK:

--	--	--	--	--	--

 (1)

0	1	N	C	B	E	P	2	2	0	0	-	0	0	0	0	-	0	0	3	4	1	1	1	1	4			5
7	8	14						15	25										26	30					57	CAT	58	
		LICENSEE CODE							LICENSE NUMBER											LICENSE TYPE								

REPORT SOURCE: 0 1
DOCKET NUMBER: L 6 0 5 0 - 0 3 2 4 7 0 6 2 4 8 1 8 0 7 0 8 8 1 9
EVENT DATE: 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80
REPORT DATE: 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 00

0 2 Notification was received from the Brunswick Engineering Support Unit that an analysis
0 3 by United Engineers & Construction (UE&C) and EDS Nuclear, Inc., on CRD pipe supports
0 4 indicated that 38 supports (17 on Unit No. 1 and 21 on Unit No. 2) would have failed
0 5 in their original as-designed/as-installed condition during a Design Basis Seismic
0 6 Event. This could have caused a failure of the CRD insert and withdrawal lines. This
0 7 event did not affect the health or safety of the public.

[illegible]

0	9	R	B	11	B	12	A	13	S	U	P	O	R	T	14	B	15	Z	16											
7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26											
LER/RO REPORT NUMBER		EVENT YEAR		SEQUENTIAL REPORT NO.		OCCURRENCE CODE		REPORT TYPE		REVISION NO.		ACTION TAKEN		FUTURE ACTION		EFFECT ON PLANT		SHUTDOWN METHOD		HOURS		ATTACHMENT SUBMITTED		NPRD-4 FORM SUB.		PRIME COMP. SUPPLIER		COMPONENT MANUFACTURER		
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
F	18	F	19	Z	20	Z	21	0	0	0	0	Y	23	N	24	X	25	R	1	4	0	26								

1 0 All supports identified in the analysis were upgraded such that the stresses would not

1 1 exceed structural integrity. The analysis indicated that a higher than normal

1 2 slenderness ratio existed for these supports.

14 _____

7 8 9

FACILITY STATUS (1) 5 (2) D (28)

% POWER (10) 0 (11) 0 (12) 0 (29)

OTHER STATUS (30) NA

METHOD OF DISCOVERY (31) A/E Notification

DISCOVERY DESCRIPTION (32)

ACTIVITY CONTENT
RELEASED OF RELEASE

1 6 Z 33 Z 34

2 8 9 10 11

AMOUNT OF ACTIVITY (35)

NA

44

LOCATION OF RELEASE (36)

NA

45 84

PERSONNEL EXPOSURES									
NUMBER		TYPE		DESCRIPTION					
1	7	0	0	0	(37)	Z	(38)	NA	

PERSONNEL INJURIES		NUMBER		DESCRIPTION	
1	8	0	0	0	40
NA					

		LOSS OF OR DAMAGE TO FACILITY		(43)
		TYPE	DESCRIPTION	
1	9	Z	(42) NA	
7	8	9	10	8108030317 810708

PUBLICITY
 ISSUED (44) DESCRIPTION (45) PDR ADOCK 05000324 S PDR NA
 7 8 9 10 68 69 80

NRC USE ONLY

NAME OF PREPARER. R. M. Poulk, Jr.

PHONE (919) 457-9521

LER 2-81-56 ATTACHMENT

Facility: BSEP Unit No. 2

Date: June 24, 1981

During a review of CRD supports, 60 CRD supports were identified as Potential Short-Term Fixes (STF). These supports were immediately upgraded in December 1981 and January 1981 and an analysis performed on the as-found condition. The initial premise for identifying sixty (60) gang frames as Potential Short-Term Fixes was that the " $K\ell/r$ " ratios of all the frames exceeded the accepted limit of 200. The ratios in excess of 200 were determined in association with a "K" factor of 2.1, which assumes that the structures will act as pure cantilevers. In this regard the analysis concurred that a less conservative "K" factor could be considered for assessing "Short-Term" operability. As it is probable that the lower portions of the frames, surrounding the CRD bundles, will remain in a nearly vertical attitude when subjected to out-of-plane displacement, the structures will act similar to guided cantilevers in most cases. The "K" factor for guided cantilevers is 1.2 as per the AISC Manual's "Recommended Design Value When Ideal Conditions Are Approximated." Thus, a "K" factor of 1.2 was considered in the reanalysis of the gang frames.

Since there were two (2) major generic types of gang frames identified as Potential Short-Term Fixes, two (2) supports from each type were chosen to be analyzed. The major criteria used for choosing the "best" and "worst" frames from each category was the total load imposed on the frames, the overall dimensions of the frame and the end connections used in construction. The frames which were not analyzed were grouped according to their similarity to the frames being analyzed.

Support 1-BSEP-7-4 was considered to be representative of the "best" of the large gang frames directly outside of containment. Reanalysis of the frame indicates that it did not meet the Short-Term Criteria. The support considered to be the "worst" of the large gang frames was not analyzed since the "best" case configuration was found to be deficient. Based on the reanalysis of Support 1-BSEP-7-4, it is projected that all four (4) of the large gang frames in each unit were Short-Term Fixes.

Support 2-BSEP-6-7 was considered to be representative of the "best" of the smaller gang frames outside containment. Reanalysis of the frame indicates that it meets the Short-Term Criteria. Based on the Short-Term qualification of Support 2-BSEP-6-7, it is projected that twelve (12) of the Unit No. 1 smaller gang frames and ten (10) of the Unit No. 2 smaller gang frames initially identified as Potential Short-Term Fixes are acceptable in association with the Short-Term Criteria.

Support 2-BSEP-7-16 was considered to be representative of the "worst" of the smaller gang frames outside containment. Reanalysis of the frame indicates that it did not meet the Short-Term Criteria. Based on the reanalysis of Support 2-BSEP-7-16, it is projected that thirteen (13) of the Unit No. 1 smaller gang frames and seventeen (17) of Unit No. 2 smaller gang frames initially identified as Potential Short-Term Fixes did not meet the Short-Term Criteria.

In view of the locations of the frames projected to be Short-Term Fixes, it appears that all of the Insert and Withdrawal Lines did not meet the Short-Term Criteria, due to seismic inertial effects.

Note that the number of gang frames identified as Short-Term Fixes is based on the reanalysis of three (3) frames. In this regard, it is conceivable that a detailed analysis of each individual frame may reduce the number of frames identified as Short-Term Fixes. However, since all of the frames initially identified as Potential Short-Term Fixes have subsequently been modified in the field to meet the Short-Term Criteria, we do not consider it beneficial to continue the analysis of structures that no longer exist in the plant.

The design and installation of the CRD System was a turn-key scope project by a subcontractor who performed no other work at the Brunswick site. Therefore, this is considered an isolated case with no generic implications with respect to other plant systems. As explained in letters on December 31, 1981, and February 25, 1981, a detailed line-by-line review of all plant systems is underway to ensure compliance with IE Bulletins 79-02, 79-07, and 79-14. Long-Term Fixes to the CRD lines will be completed by the completion of each unit's next respective refueling outage.