

AUG 20 1985

Docket Nos.: STN 50-454
and STN 50-455

APPLICANT: Commonwealth Edison Company
FACILITIES: Byron Station, Units 1 and 2
SUBJECT: MEETING SUMMARY - STATUS REPORT ON REVIEW OF BYRON LCO
RELAXATION PROGRAM

On August 15, 1985, at a meeting held in Bethesda, Maryland, Brookhaven National Laboratory (BNL) presented the status of its review of the Byron LCO (Limiting Conditions for Operation) Relaxation Program. Members of the NRC, Commonwealth Edison (the applicant) and Westinghouse were present at the meeting. A list of attendees is given in Enclosure 1. The slides used by BNL are included in Enclosure 2.

The results presented by BNL were preliminary; a draft of BNL's report is due by September 30, 1985. BNL's review indicated that a static fault tree analytical approach, such as that utilized in the Byron study, was adequate for assessing the risk impact of an increase in Technical Specification Allowed Outage Times (AOTs). The BNL evaluation shows that the maintenance outage time contribution to core damage frequency (CDF) is approximately linearly dependent on maintenance outage time. As shown in the second figure in Enclosure 2, the BNL results indicate a relatively weak CDF dependence on maintenance outage times for a number of systems, including ECCS injection and AFWs. BNL identified a number of shortcomings in the Byron analysis, but overall, preliminary findings indicate approximate agreement between BNL results and the Byron study results with regard to CDF.

The NRC indicated the end of 1985 to be a target date for possible resolution of the applicant's request for an increase in the allowable outage time of certain equipment from 72 hours to 7 days.

(5)

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Enclosures: As stated

cc: See next page

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ENCLOSURE 1-

STATUS OF REVIEW OF BYRON LCO RELAXATION PROGRAM

AUGUST 15, 1985

NRC

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ENCLOSURE 2

REVIEW OF BYRON LCO RELAXATION STUDY
(FIN A-3810)

RISK EVALUATION GROUP
DEPARTMENT OF NUCLEAR ENERGY
BROOKHAVEN NATIONAL LABORATORY

AUGUST 15, 1985

- BACKGROUND

COMMONWEALTH EDISON PROPOSED TO EXTEND AOTs FROM 3 DAYS TO 7 DAYS FOR THE FOLLOWING BYRON SYSTEMS:

- DGs
- ESWS
- AFWS
- CCWS
- CHRS (CF, CS)
- ECCS (CHARGING, SI, RHR)

- OBJECTIVES

TO ASSESS: (1) THE METHODS

(2) AN ESTIMATE OF CHANGE IN RISK

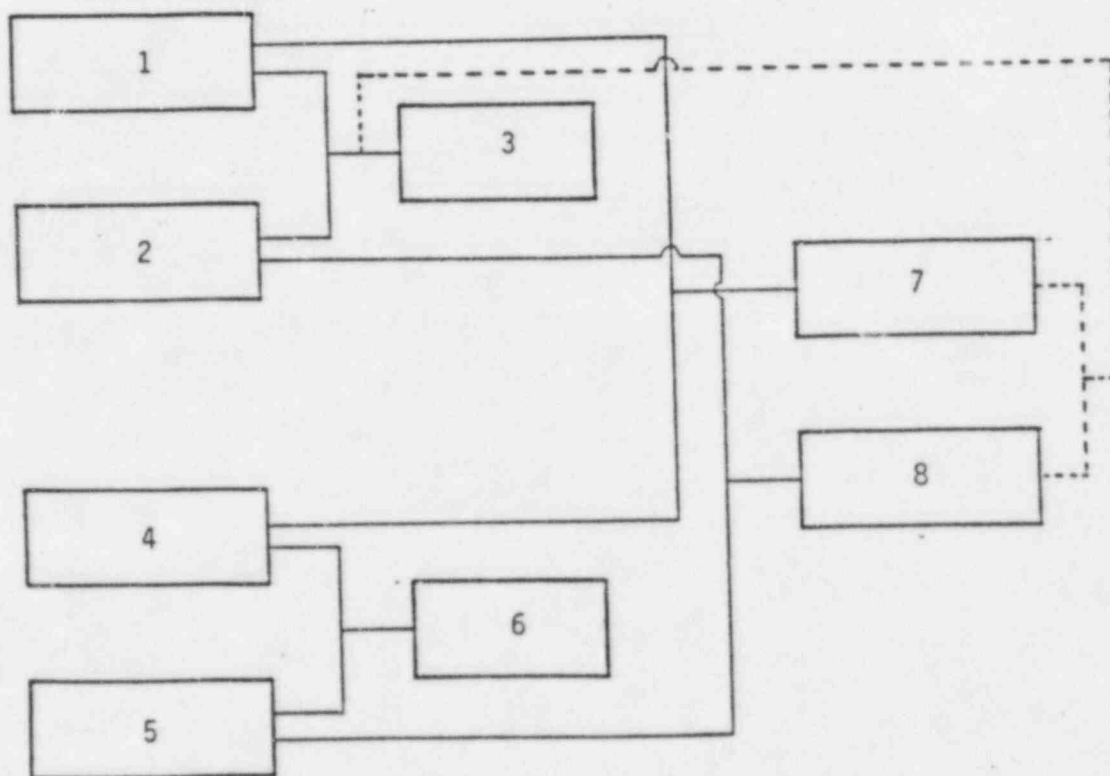


Figure 2.1 Block configuration of a sample problem.

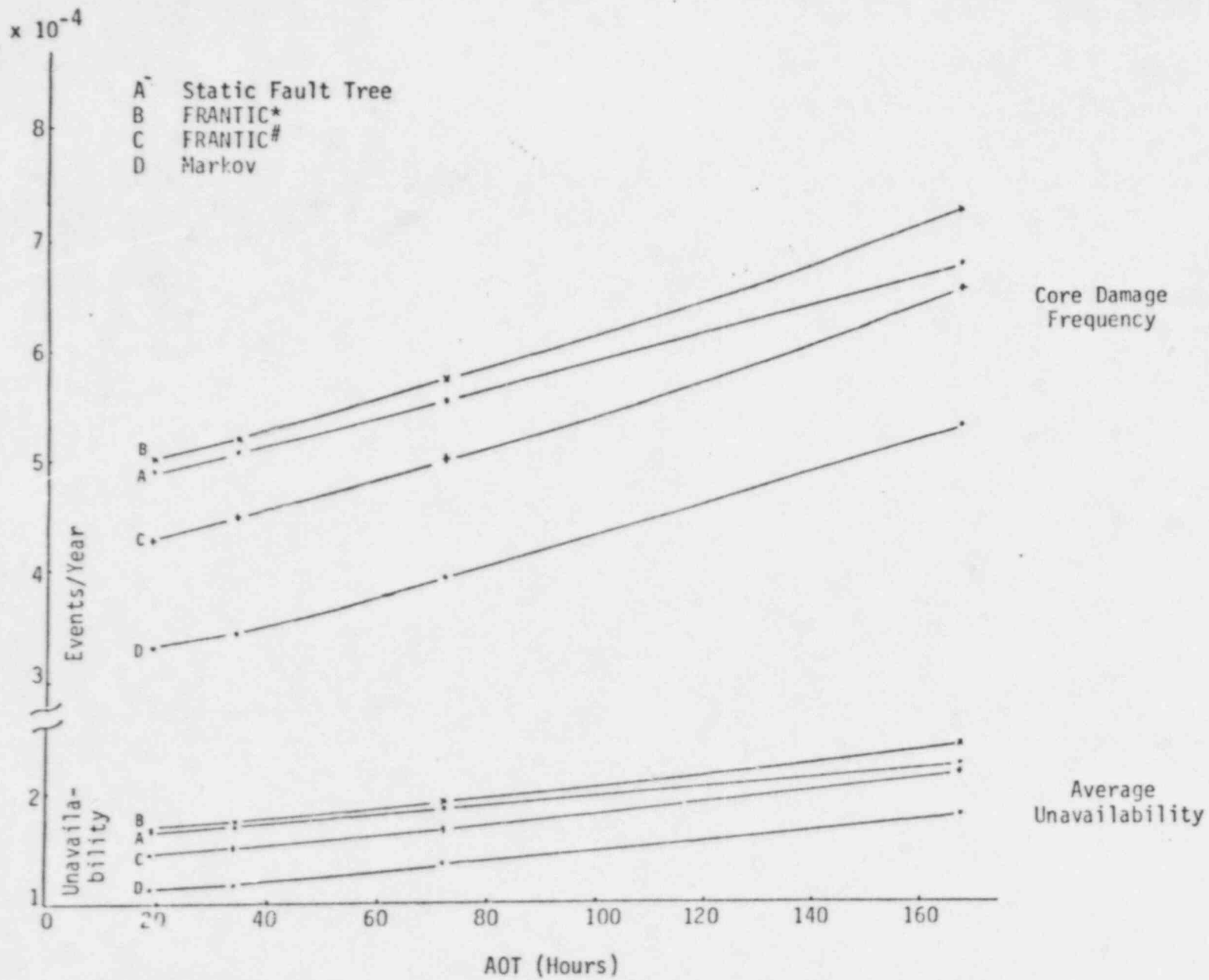


Figure 2.2 Average Unavailability and Core Damage Frequency as Functions of AOT.

OUTLINE

- SURVEY OF METHODS
 - STATIC FAULT TREE
 - TIME DEPENDENT UNAVAILABILITY
 - MARKOV
- REEVALUATION OF BYRON LCO STUDY
 - METHODS AND LIMITATIONS
 - FAULT TREE MODEL MODIFICATIONS
 - EVENT TREE MODEL MODIFICATIONS
 - DATA
- RESULTS
 - FOR 8 CASES BETWEEN AOT1 AND AOT2
 - MINIMAL CUT SETS
 - SYSTEM LEVEL
 - SEQUENCE LEVEL
 - PLANT DAMAGE STATE LEVEL
 - CORE DAMAGE FREQUENCY LEVEL
 - IMPORTANCE MEASURES
 - SINGLE EVENT IMPORTANCE
 - PAIRWISE IMPORTANCE
 - PLANT DAMAGE STATE FREQUENCIES
 - CORE DAMAGE FREQUENCIES

REEVALUATION OF BYRON LCO STUDY

- METHODS AND THEIR LIMITATIONS AS APPLIED IN BYRON "STANDARD" PRA METHODS
 - INITIATORS (ZION PSS)
 - ISSUES OF COMPLETENESS: NO CONSIDERATIONS OF LOSS OF DC BUS AND LOSS OF SERVICE WATER AS INITIATORS
 - EVENT TREES (SLIGHTLY MODIFIED ZION PSS)
 - FAULT TREES (DEVELOPED FOR BYRON)
 - COMPONENT UNAVAILABILITY = $1/2 \lambda_s T + P_D + \lambda_0 T_M + \tau/T + M_F T_R + H_E$
 - MEAN TIME TO REPAIR (MTTR) FOR T_R
 - SINGLE T_R FOR ALL SYSTEMS
 - $P_D' = 1/2 \lambda_s T + P_D$ FOR ACTIVE COMPONENTS
 - LARGE EVENT TREE/SUPPORT SYSTEM DECOMPOSITION APPROACH
 - 6 SUPPORT STATES
 - CCWS IN EVENT TREES
 - UNWARRANTED SEQUENCES IN EVENT TREE DEVELOPMENT
 - NO SYSTEM SUCCESS IN EVENT TREE MODELING

- REEVALUATION APPROACH

- FAULT TREE LINKING APPROACH
CUTSETS, IMPORTANCE MEASURES
- TWO BOUNDING CALCULATIONS USING 2 AOTs EASILY PROVIDES
QUANTITIES FOR ANY AOTs BETWEEN THE 2 BOUNDING AOTs.
- SYSTEM LEVEL FAULT TREE MODIFICATIONS
 1. TECHNICAL SPECIFICATIONS
MAINTENANCE OVERLAPS WERE DELETED WITHIN A SYSTEM,
BETWEEN FRONTLINE AND SUPPORT SYSTEMS
 2. RECONFIGURATION
 3. SYMMETRIC TRAINS
 - o OPERATING VS STANDBY TRAINS
 - o TEST INTERVALS
- EVENT TREE MODIFICATIONS
 1. REMOVED NAOH SYSTEM
 2. TREATED CCWS AS A SUPPORT SYSTEM
 3. REMOVED UNWARRANTED SEQUENCES
 4. COMBINED EVENT TREE 12 (LOSS OF OFFSITE POWER WITH
ON SITE POWER AVAILABLE) WITH EVENT TREE 12A (LOSS OF
OFFSITE POWER WITH NO ON SITE POWER AVAILABLE)

5. EVENT TREE NODE E60 IN ET12A WAS DELETED BECAUSE IT WAS INCLUDED IN SUPPORT SYSTEMS
6. ET14-42 DELETED
7. 1 WAS USED FOR S₀ IN ET16
8. SIMPLE LOGIC DEVELOPED FOR THE FOLLOWING EVENT TREE NODES (BYRON USED ZION QUANTITIES) TO REFLECT DEPENDENCY ON SUPPORT SYSTEMS:

$$SA2=SA1+HH2.$$

$$OP1=OP1-QD+PORV12CCF+(PORV1HW+JBS141D)*(PORV2HW+JBS142D).$$

$$OP2=OP2-QD+OP2-QA*OP2-QR+HH2+OP1.$$

$$OP3=OP3-QD+ESWAU+JBS141D*JBS142D.$$

$$OP4=OP4-QD+JBS141D+JBS142D.$$

$$OP5-1=OP5-1QD+JBS141D*JBS142D.$$

$$OP5-2=OP5-2QD+JBS141D*JBS142D.$$

$$OP8-1=OP3.$$

$$OP8-2=OP8-2QD+ESWAU+JBS141D*JBS142D.$$

$$LK-1=LK-1QD+JBS141D*JBS142D.$$

$$PR2=PR2-QD+JBS141D*JBS142D.$$

$$S2=S2-QA*ESWAU+S2-QB*(JBS141D+JBS142D)+S2-QC.$$

- QUANTIFICATION

1. THE SETS CODE WAS USED TO GENERATE AND QUANTIFY MINIMAL CUT SET EQUATIONS
2. AOT2 AND VERY SMALL CUTOFF PROBABILITIES WERE USED TO MINIMIZE THE POSSIBILITY OF MAINTENANCE EVENTS BEING TRUNCATED

- DATA

1. INITIATOR FREQUENCIES (EVENTS/YEAR)

INITIATOR

<u>GROUP #</u>	<u>INITIATOR</u>	<u>BYRON</u>	<u>THIS STUDY</u>
1	LARGE LOCA	9.40(-4)	9.40(-4)
2	MEDIUM LOCA	9.40(-4)	9.40(-4)
3	SMALL LOCA	3.54(-2)	3.54(-2)
4	SG TUBE RUPTURE	3.70(-2)	3.70(-2)
5	STEAM BREAK INSIDE CONTAINMENT	9.40(-4)	9.40(-4)
6	STEAM BREAK OUTSIDE CONTAINMENT	9.40(-4)	9.40(-4)
7	LOSS OF MFW	3.00	3.00
8	CLOSURE OF MSIV	2.52(-1)	6.00(-1)
9	LOSS OF RCS FLOW	3.58(-1)	3.58(-1)
10	CORE POWER EXCURSION	2.28(-2)	2.28(-2)
11	TURBINE TRIP	4.00	4.00
12A	LOSS OF OFFSITE POWER	5.76(-2)	9.10(-2)
13	SPURIOUS SAFETY INJECTION	8.00(-2)	1.60(-1)
14	REACTOR TRIP	3.00	4.11
15	INTERFACING LOCA	2.10(-7)	7.80(-7)
(16)	ATWS		1.36(-5)

2. BASIC EVENT DATA

- HARDWARE FAILURE DATA --- ZION PSS
- MAINTENANCE FREQUENCY --- ZION PSS
- COMMON CAUSE FAILURES --- EG&G
- OPERATOR FAILURES --- SWAIN BOOK
- NONRECOVERY OF OFFSITE AND --- ZION RESPONSE
ON SITE POWERS TO BNL REVIEW

RESULTS

- AOT1: $T_R = 19$ HOURS
AOT2: $T_R = 168$ HOURS

- 8 CASES

<u>CASES</u>	<u>AOT1</u>	<u>AOT2</u>
1	ALL SYSTEMS	NONE
2	NONE	ALL SYSTEMS
3	ALL OTHERS	DGs
4	ALL OTHERS	ESW
5	ALL OTHERS	CHRS (CF, CS)
6	ALL OTHERS	CHG, SI
7	ALL OTHERS	RHR
8	ALL OTHERS	AFWS

SYSTEM UNAVAILABILITIES

	<u>LOSP</u>			<u>NON LOSP</u>		
	<u>AOT1</u>	<u>AOT2</u>	<u>SLOPE/HR</u>	<u>AOT1</u>	<u>AOT2</u>	<u>SLOPE/HR</u>
ESWS	1.08(-3)	4.66(-3)	2.40(-5)	2.98(-5)	1.47(-4)	7.87(-7)
AFWS	1.42(-3)	3.22(-3)	1.21(-5)	8.54(-4)	1.50(-3)	4.34(-6)
CS	1.71(-3)	5.24(-3)	2.37(-5)	5.58(-4)	7.27(-4)	1.13(-6)
CF	1.35(-3)	6.69(-3)	3.58(-5)	3.38(-5)	3.89(-4)	2.38(-6)
CCW(A)	1.20(-3)	4.86(-3)	2.46(-5)	5.49(-5)	1.73(-4)	7.93(-7)
CCW(B)	1.18(-3)	4.86(-3)	2.47(-5)	3.45(-5)	1.53(-4)	7.95(-7)
SIM(HH1)	1.40(-3)	6.11(-3)	3.16(-5)	3.50(-5)	1.74(-4)	9.33(-7)
SIS(HH2)	1.08(-3)	4.66(-3)	2.40(-5)	2.98(-5)	1.47(-4)	7.87(-7)
LPI	1.19(-3)	4.19(-3)	2.01(-5)	2.35(-4)	2.69(-4)	2.28(-7)
R-1	2.01(-3)	3.38(-3)	9.19(-6)	1.68(-3)	1.88(-3)	1.34(-6)
R-2	8.83(-4)	1.88(-3)	6.69(-6)	5.02(-4)	6.43(-4)	9.46(-7)

CORE DAMAGE FREQUENCY FROM ONE UNIT OPERATION

<u>CASE</u>	<u>BYRON</u>	<u>THIS STUDY</u>
1	1.41(-4)	1.24(-4)
2	--	4.19(-4)
3	--	2.63(-4)
4	--	2.25(-4)
5	--	1.24(-4)
6	--	1.31(-4)
7	--	1.31(-4)
8	--	1.50(-4)
9*	1.67(-4)	1.54(-4)

*AOT = 34 HOURS FOR ALL SYSTEMS

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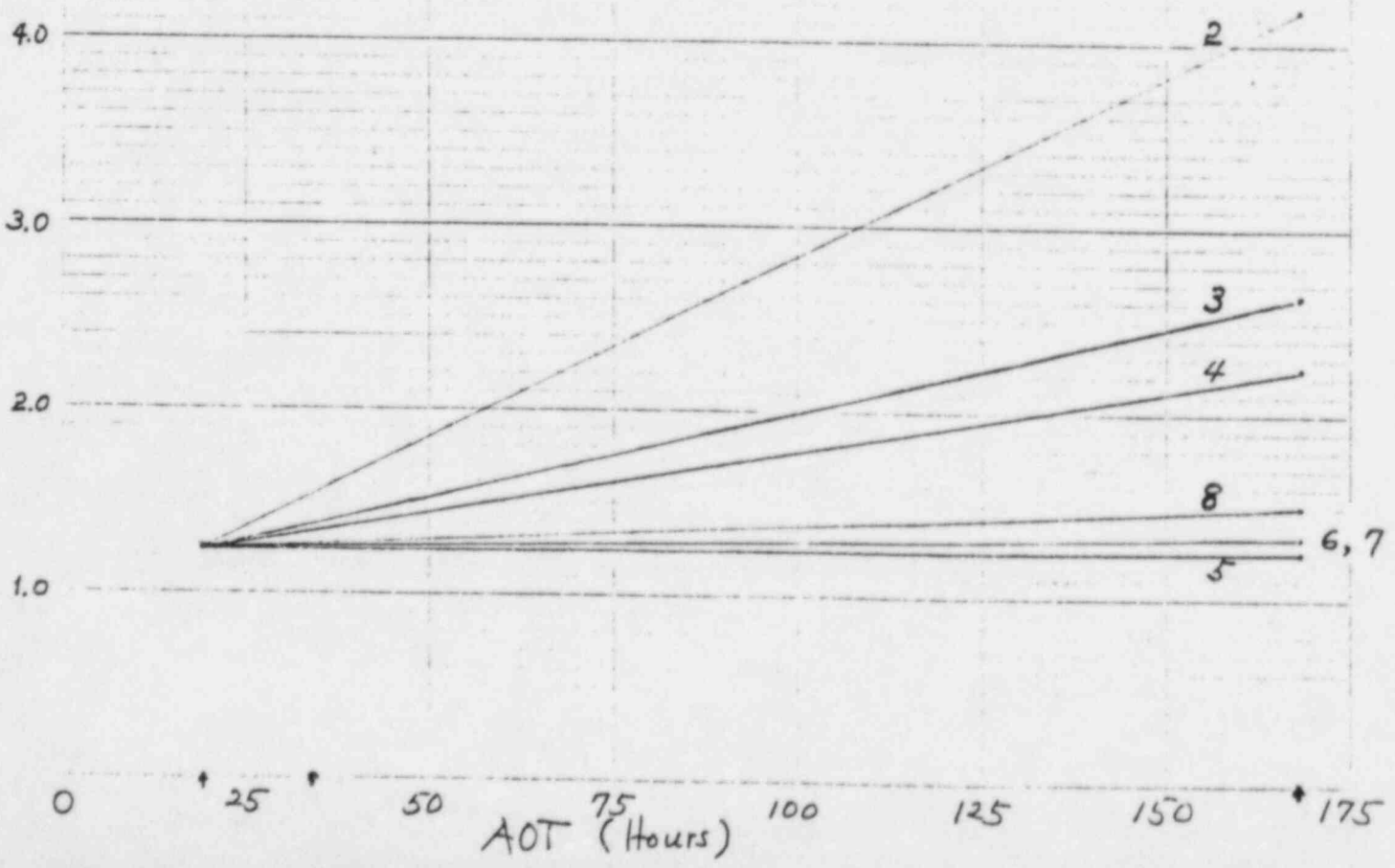
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CORE DAMAGE / YEAR

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Core Damage: Case 1

PAIRWISE
F-V IMPORTANCE

CONTRIBU
TOP

1	(27) LO SPNONREC	(33) DGBNONREC	3.0947D-01	3.7282D-05
2	(27) LO SPNONREC	(35) DGBFR	1.7961D-01	2.1638D-05
3	(27) LO SPNONREC	(34) DGBFS	9.1059D-02	1.0970D-05
4	(27) LO SPNONREC	(32) DGBM	7.3513D-02	8.8564D-06
5	(28) DGBNONREC	(32) DGBM	6.7429D-02	8.1234D-06
6	(31) DGAM	(33) DGBNONREC	6.6262D-02	7.9828D-06
7	(30) DGAFR	(32) DGBM	4.4215D-02	5.3268D-06
8	(31) DGAM	(35) DGBFR	4.3450D-02	5.2346D-06
9	(147) PAF01PAM	(153) OP1-QD	3.9109D-02	4.7116D-06
10	(147) PAF01PAM	(178) OP2-QD	3.9001D-02	4.6986D-06
1	(29) DGAFS	(32) DGBM	2.2445D-02	2.7041D-06
2	(31) DGAM	(34) DGBFS	2.2057D-02	2.6572D-06
3	(147) PAF01PAM	(169) OP8-2QD	1.4023D-02	1.6894D-06
4	(179) OP2-QA	(180) OP2-QR	4.7163D-03	5.6818D-07
5	(147) PAF01PAM	(180) OP2-QR	2.5002D-03	3.0120D-07
6	(147) PAF01PAM	(179) OP2-QA	2.5002D-03	3.0120D-07
7	(147) PAF01PAM	(161) OP3-QD	2.1750D-03	2.6203D-07
8	(27) LO SPNONREC	(136) PRH01PBT	3.2746D-04	3.9450D-08
9	(27) LO SPNONREC	(178) OP2-QD	3.1759D-04	3.8261D-08
10	(27) LO SPNONREC	(153) OP1-QD	3.1759D-04	3.8261D-08
1	(147) PAF01PAM	(4) PRH01PBM	2.8743D-04	3.4628D-08

2	(26) LO SP	(32) DGBM	2.3271D-04	2.8035D-08
3	(26) LO SP	(33) DGBNONREC	2.2290D-04	2.6853D-08
4	(26) LO SP	(35) DGBFR	1.6935D-04	2.0402D-08
5	(31) DGAM	(136) PRH01PBT	8.9902D-05	1.0831D-08
6	(31) DGAM	(178) OP2-QD	8.6653D-05	1.0439D-08
7	(31) DGAM	(153) OP1-QD	8.6653D-05	1.0439D-08
8	(26) LO SP	(34) DGBFS	5.3549D-05	6.4512D-09
9	(161) OP3-QD	(4) PRH01PBM	2.8224D-05	3.4003D-09
10	(2) PRH01PAM	(161) OP3-QD	2.8224D-05	3.4003D-09
1	(47) AVRHO618HM	(4) PRH01PBM	1.5591D-05	1.8783D-09
2	(10) AVRHO606HM	(4) PRH01PBM	1.5591D-05	1.8783D-09
3	(2) PRH01PAM	(58) AVRHO619HM	1.5591D-05	1.8783D-09
4	(2) PRH01PAM	(13) AVRHO607HM	1.5591D-05	1.8783D-09
5	(160) OP5-2QD	(4) PRH01PBM	7.1835D-06	8.6541D-10
6	(158) OP5-1QD	(4) PRH01PBM	7.1835D-06	8.6541D-10
7	(2) PRH01PAM	(160) OP5-2QD	7.1835D-06	8.6541D-10
8	(2) PRH01PAM	(158) OP5-1QD	7.1835D-06	8.6541D-10
9	(133) PRH01PAT	(32) DGBM	3.0264D-06	3.6459D-10
10	(64) ICC01PAM	(65) OCC01PM	2.4691D-06	2.9746D-10
1	(31) DGAM	(58) AVRHO619HM	2.2900D-06	2.7589D-10
2	(31) DGAM	(13) AVRHO607HM	2.2900D-06	2.7589D-10
3	(27) LO SPNONREC	(58) AVRHO619HM	2.2900D-06	2.7589D-10
4	(27) LO SPNONREC	(13) AVRHO607HM	2.2900D-06	2.7589D-10
5	(178) OP2-QD	(32) DGBM	1.9657D-06	2.3681D-10
6	(153) OP1-QD	(32) DGBM	1.9657D-06	2.3681D-10

PAIRWISE
B IMPORTANCE

(147) PAF01PAM	(153) OP1-QD	3.9778D-01
(147) PAF01PAM	(178) OP2-QD	3.9668D-01
(47) AVRHO618HM	(4) PRH01PBM	3.6800D-02

CORE DAMAGE : CASE 2

			BASIC EVENT PROBABILITY	SINGLE EVENT F-V IMPORTANCE	CONTRIBUT TOP EVENT
1	(184)	IF-ET12A	9.10000E-02	5.71900E-01	2.34650E-04
2	(27)	LOSPNONREC	2.60000E-01	5.41200E-01	2.22440E-04
3	(189)	S2-QA	5.89000E-01	5.15180E-01	2.11750E-04
4	(197)	E12C-2	7.42000E-01	4.23110E-01	1.73910E-04
5	(28)	DGANONREC	7.50000E-01	2.89820E-01	1.19120E-04
6	(33)	DGBNONREC	7.50000E-01	2.79950E-01	1.15060E-04
7	(32)	DGBM	1.35900E-01	1.95150E-01	8.02110E-05
8	(149)	AF11PBFS	2.33000E-02	1.91340E-01	7.86450E-05
9	(31)	DGAM	1.35900E-01	1.90830E-01	7.84340E-05
10	(33)	DGAER	3.58210E-02	1.83190E-01	7.52930E-05
11	(35)	DGBFR	3.58200E-02	1.76620E-01	7.25950E-05
12	(185)	E12C-1	2.60000E-01	1.47780E-01	6.07410E-05
13	(105)	FLAGESFPBM	5.00000E-01	1.11920E-01	4.60000E-05
14	(85)	FLAGESFPAM	5.00000E-01	1.11920E-01	4.60000E-05
15	(107)	1PSXC1PBM	3.96500E-02	1.08920E-01	4.47690E-05
16	(87)	1PSXC1PAM	3.96500E-02	1.08920E-01	4.47690E-05
17	(148)	PAF01PBM	2.11700E-02	1.08070E-01	4.44170E-05
18	(198)	IF-ET14	4.11000E-00	1.05950E-01	4.35460E-05
19	(183)	IF-ET11	4.00000E-00	1.03110E-01	4.23800E-05
20	(29)	DGAES	1.82000E-02	9.28170E-02	3.81490E-05
21	(34)	DGBFS	1.82000E-02	8.95910E-02	3.68230E-05
22	(147)	PAF01PAM	3.14260E-02	8.31940E-02	3.41340E-05
23	(175)	IF-ET7	3.00000E-00	7.73340E-02	3.17850E-05
24	(123)	IF-ET3	3.75000E-02	7.15950E-02	2.94260E-05
25	(150)	AF01PBFR	6.45000E-03	4.96400E-02	2.04430E-05
26	(92)	FLAGESCEFM	5.00000E-01	4.73730E-02	1.94710E-05
27	(74)	FLAGESCARM	5.00000E-01	4.73730E-02	1.94710E-05
28	(79)	FSX03GBFS	1.17000E-03	4.28000E-02	1.75910E-05
29	(76)	FSX03CAFS	1.17000E-03	4.28000E-02	1.75910E-05
30	(97)	FSX03CEFS	1.17000E-03	4.26060E-02	1.75120E-05
31	(94)	FSX03CEFS	1.17000E-03	4.26060E-02	1.75120E-05
32	(153)	OP1-QD	8.80000E-04	4.06600E-02	1.67120E-05
33	(178)	OP2-QD	8.80000E-04	4.05490E-02	1.66660E-05
34	(115)	FLAGESFANE	5.00000E-01	3.14150E-02	1.29120E-05
35	(114)	FLAGESFANE	5.00000E-01	3.14150E-02	1.29120E-05
36	(117)	FLAGESFANE	5.00000E-01	3.14150E-02	1.29120E-05
37	(109)	FLAGESFANA	5.00000E-01	3.14150E-02	1.29120E-05
38	(132)	FRH-1PACFS	2.24000E-04	3.12540E-02	1.28460E-05
39	(156)	IF-ET4	3.82000E-02	2.90490E-02	1.19400E-05
40	(89)	1PSXL1PAFS	7.21000E-04	2.59070E-02	1.06480E-05
41	(103)	1PSXC1PBFS	7.21000E-04	2.57880E-02	1.05990E-05
42	(95)	FSX03CFM	9.82860E-03	2.36870E-02	9.73550E-06
43	(91)	FSX03CEM	9.82860E-03	2.36870E-02	9.73550E-06
44	(77)	FSX03GBM	9.82860E-03	2.36870E-02	9.73550E-06
45	(73)	FSX03CAM	9.82860E-03	2.36870E-02	9.73550E-06
46	(71)	GGE-SHU1	1.20000E-05	2.30000E-02	9.45510E-06
47	(146)	AF11PFS	5.02000E-03	2.03980E-02	8.38380E-06
48	(116)	FLAGESPBFS	5.00000E-01	1.89410E-02	7.78490E-06
49	(112)	FLAGESPAFS	5.00000E-01	1.89410E-02	7.78490E-06
50	(145)	AFHSGGFAIL	2.25100E-04	1.85420E-02	7.62120E-06
51	(124)	CCAC	6.30000E-04	1.62330E-02	6.67190E-06
52	(181)	IF-ET4	0.00000E-01	1.52490E-02	6.31470E-06
53	(109)	OP0-2QD	1.00000E-01	1.44960E-02	5.95820E-06
54	(82)	1SSX01FAQ	2.40000E-04	1.40430E-02	5.77190E-06
55	(111)	1SSX01FBQ	2.40000E-04	1.40430E-02	5.77190E-06

CORE DAMAGE: CASE 1

		BASIC EVENT PROBABILITY	SINGLE EVENT F-V IMPORTANCE	CONTRIBUT TOP EVENT
1	(184) IF-ET12A	9.1000D-02	4.4655D-01	5.3797D-05
2	(27) LOSPNUNREC	2.6000D-01	4.2457D-01	5.1149D-05
3	(189) S2-QA	5.0000D-01	4.0646D-01	4.8967D-05
4	(190) E120-2	7.4000D-01	3.3122D-01	3.9903D-05
5	(28) DGANONREC	7.5000D-01	3.1450D-01	3.7889D-05
6	(33) DGBNONREC	7.5000D-01	3.0947D-01	3.7282D-05
7	(149) AF01PBFS	2.3300D-02	2.0054D-01	2.4159D-05
8	(30) DGAFR	3.5820D-02	1.8314D-01	2.2063D-05
9	(35) DGBFR	3.5820D-02	1.7961D-01	2.1638D-05
10	(123) IF-ET3	3.6800D-02	1.6113D-01	1.9412D-05
11	(147) PAF01PAM	1.3460D-02	1.1701D-01	1.4097D-05
12	(185) E120-1	2.6000D-01	1.1533D-01	1.3894D-05
13	(198) IF-ET14	4.1100D+00	1.0416D-01	1.2549D-05
14	(183) IF-ET11	4.0000D+00	1.0138D-01	1.2213D-05
15	(29) DGAFS	1.8200D-02	9.2554D-02	1.1150D-05
16	(34) DGBFS	1.8200D-02	9.1059D-02	1.0970D-05
17	(132) PRH01PACFS	2.2400D-04	9.0237D-02	1.0871D-05
18	(153) OP1-QD	8.8000D-04	7.9818D-02	9.6159D-06
19	(178) OP2-QD	8.8000D-04	7.9606D-02	9.5904D-06
20	(175) IF-ET7	3.0000D+00	7.6031D-02	9.1597D-06
21	(31) DGAM	1.5370D-02	7.3538D-02	8.8593D-06
22	(32) DGBM	1.5370D-02	7.3513D-02	8.8564D-06
23	(71) CCESWU1	1.2000D-05	6.3569D-02	7.6583D-06
24	(145) AFWSCCFail	2.2510D-04	6.0083D-02	7.2383D-06
25	(146) AF01PFS	5.0200D-03	5.3575D-02	6.4543D-06
26	(150) AF01PBFR	6.4500D-03	5.3172D-02	6.4058D-06
27	(148) PAF01PBM	9.0720D-03	4.3582D-02	5.2505D-06
28	(156) IF-ET4	3.8200D-02	4.0321D-02	4.8576D-06
29	(126) HPRECIRCOP	1.0000D-04	4.0039D-02	4.8236D-06
30	(124) CCAC	6.3000D-04	3.9832D-02	4.7987D-06
31	(105) FLAGESFPBM	5.0000D-01	3.6876D-02	4.4426D-06
32	(85) FLAGESFPAM	5.0000D-01	3.6876D-02	4.4426D-06
33	(107) IPSX01PBM	4.4820D-03	3.5865D-02	4.3207D-06
34	(87) IPSX01PAM	4.4820D-03	3.5865D-02	4.3207D-06
35	(169) OP8-2QD	1.0000D-01	2.8581D-02	3.4433D-06
36	(69) LPRECIRCOP	1.5000D-03	2.3408D-02	2.8200D-06
37	(79) FSX03CBFS	1.1700D-03	1.9984D-02	2.4075D-06
38	(76) FSX03CAFS	1.1700D-03	1.9984D-02	2.4075D-06
39	(97) FSX03CFFS	1.1700D-03	1.9952D-02	2.4037D-06
40	(94) FSX03CEFS	1.1700D-03	1.9952D-02	2.4037D-06
41	(128) MVCC9412CC	4.6500D-05	1.8424D-02	2.2196D-06
42	(127) MVS18811CC	4.6500D-05	1.8424D-02	2.2196D-06
43	(7) IF-ET1	9.4000D-04	1.8080D-02	2.1781D-06
44	(92) FLAGESCEFM	5.0000D-01	1.5720D-02	1.8938D-06
45	(74) FLAGESCABM	5.0000D-01	1.5720D-02	1.8938D-06
46	(181) IF-ET8	6.0000D-01	1.5064D-02	1.8148D-06
47	(119) IF-ET2	9.4000D-04	1.4714D-02	1.7726D-06
48	(89) IPSX01PAFS	7.2100D-04	1.2305D-02	1.4825D-06
49	(103) IPSX01PBFS	7.2100D-04	1.2286D-02	1.4801D-06
50	(152) AOVX178D	1.4400D-03	1.0392D-02	1.2519D-06
51	(151) AOVX173D	1.4400D-03	1.0392D-02	1.2519D-06

CORE DAMAGE : CASE 2

PAIRWISE
F-V IMPORTANCE

CONTR

1	(27) LOSPNONREC	(33) DGBNONREC	2.7995D-01	1.15160
2	(27) LOSPNONREC	(32) DGBM	1.9515D-01	8.32110
3	(28) DGBNONREC	(32) DGBM	1.7881D-01	7.34920
4	(27) LOSPNONREC	(35) DGBFR	1.7662D-01	7.25950
5	(31) DGAM	(33) DGBNONREC	1.7175D-01	7.05910
6	(31) DGBFR	(32) DGBM	1.1725D-01	4.81910
7	(31) DGAM	(35) DGBFR	1.1262D-01	4.62890
8	(27) LOSPNONREC	(34) DGBFS	8.9591D-02	3.68230
9	(29) DGAFS	(32) DGBM	5.9520D-02	2.44630
10	(31) DGAM	(34) DGBFS	5.7168D-02	2.34970
11	(147) PAF01PAM	(153) OP1-QD	2.6761D-02	1.19990
12	(147) PAF01PAM	(178) OP2-QD	2.6685D-02	1.19680
13	(147) PAF01PAM	(169) OP8-2QD	9.5949D-03	3.94360
14	(179) OP2-QA	(181) OP2-QR	2.4687D-03	1.11470
15	(147) PAF01PAM	(4) PRH01FBM	1.7463D-03	7.17740
16	(147) PAF01PAM	(181) OP2-QR	1.7107D-03	7.13160
17	(147) PAF01PAM	(179) OP2-QA	1.7107D-03	7.13130
18	(147) PAF01PAM	(161) OP3-QD	1.4882D-03	6.11670
19	(26) LOSP	(32) DGBM	7.7509D-04	3.18570
20	(26) LOSP	(33) DGBNONREC	4.8732D-04	2.05320
21	(26) LOSP	(35) DGBFR	3.4826D-04	1.43140
22	(27) LOSPNONREC	(136) PRH01FBT	3.2613D-04	1.34140
23	(27) LOSPNONREC	(178) OP2-QD	3.1944D-04	1.31290
24	(27) LOSPNONREC	(153) OP1-QD	3.1944D-04	1.31290
25	(31) DGAM	(136) PRH01FBT	2.3300D-04	9.57650
26	(31) DGAM	(178) OP2-QD	2.2458D-04	9.23130
27	(31) DGAM	(153) OP1-QD	2.2458D-04	9.23130
28	(26) LOSP	(34) DGBFS	1.3916D-04	5.71560
29	(161) OP3-QD	(4) PRH01FBM	7.3458D-05	3.01920
30	(2) PRH01PAM	(161) OP3-QD	7.3458D-05	3.11920
31	(64) OCC01PAM	(65) OCC01PM	5.7622D-05	2.36840
32	(47) AVRHC618HM	(4) PRH01FBM	4.1349D-05	1.69950
33	(10) AVRHC606HM	(4) PRH01FBM	4.1349D-05	1.69950
34	(2) PRH01PAM	(58) AVRHC619HM	4.1349D-05	1.69950
35	(2) PRH01PAM	(13) AVRHC607HM	4.1349D-05	1.69950
36	(133) PRH01PAT	(32) DGBM	2.7912D-05	1.14680
37	(160) OP5-2QD	(4) PRH01FBM	1.8696D-05	7.68430
38	(158) OP5-1QD	(4) PRH01FBM	1.8696D-05	7.68430
39	(2) PRH01PAM	(160) OP5-2QD	1.8696D-05	7.68430
40	(2) PRH01PAM	(158) OP5-1QD	1.8696D-05	7.68430
41	(31) DGAM	(58) AVRHC619HM	5.9350D-06	2.43940
42	(31) DGAM	(13) AVRHC607HM	5.9350D-06	2.43940
43	(27) LOSPNONREC	(58) AVRHC619HM	5.9350D-06	2.43940
44	(27) LOSPNONREC	(13) AVRHC607HM	5.9350D-06	2.43940
45	(178) OP2-QD	(32) DGBM	5.6944D-06	2.19390
46	(153) OP1-QD	(32) DGBM	5.4944D-06	2.19390

PAIRWISE
B IMPORTANCE

1	(147) PAF01PAM	(153) OP1-QD	3.9780D-01	
2	(147) PAF01PAM	(178) OP2-QD	3.9668D-01	
3	(47) AVRHC618HM	(4) PRH01FBM	3.7500D-02	
4	(10) AVRHC606HM	(4) PRH01FBM	3.7500D-02	
5	(2) PRH01PAM	(58) AVRHC619HM	3.7500D-02	
6	(2) PRH01PAM	(13) AVRHC607HM	3.7500D-02	

AUG 20 1985

MEETING SUMMARY DISTRIBUTION

Docket File

NRC PDR

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PRC System

LB#1 Reading File

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