Commonwealth Edison Company
1400 Opus Place
Downers Grove, IL 60515

ComEd

March 30, 1995

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Key Probabilistic Risk Assessment Results

Braidwood Nuclear Power Station, Units 1 and 2
NPF-72 and NPF-77; NRC Docket Nos. 50-456 and 50-457

Byron Nuclear Power Station, Units 1 and 2
NPF-37 and NPF-66; NRC Docket Nos. 50-454 and 50-455

Dresden Nuclear Power Station, Units 2 and 3
DPR-19 and DPR-25; NRC Docket Nos. 50-237 and 50-249

LaSalle County Nuclear Power Station, Units 1 and 2
NPF-11 and NPF-18; NRC Docket Nos. 50-373 and 50-374

Quad Cities Nuclear Power Station, Units 1 and 2
DPR-29 and DPR-30; NRC Docket Nos. 50-254 and 50-265

Zion Nuclear Power Station, Units 1 and 2
DPR-39 and DPR-48; NRC Docket Nos. 50-295 and 50-304

Gentlemen:

On March 8, 1995, the Commonwealth Edison Company (ComEd) senior engineering management team met with their Nuclear Regulatory Commission (NRC) Staff counterparts in Rockville, Maryland. At the conclusion of that meeting ComEd agreed to provide the Staff with the attached information regarding key probabilistic risk assessment (PRA) results for each of the six ComEd nuclear power stations.

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Attached are charts containing a "One Minute PRA" overview and key PRA results for each station which are being used in PRA familiarization training for station personnel. The important/key equipment figures for each station contain the factor increase in core damage frequency (CDF) for taking the most risk significant equipment out-of-service. For Quad Cities and Zion Stations, the key results represent the baseline Individual Plant Examination (IPE) model submitted to the Staff. For Braidwood, Byron, and Dresden Stations, the key results represent the baseline IPE model, modified as a result of implementation of procedural enhancements described in the IPE submittals.

Please address any comments or questions regarding this matter to this office.

Very truly yours,

Harold D. Pontious, Jr.
Nuclear Licensing Administrator

Attachments

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M. N. Leach, Senior Resident Inspector - Dresden
P. G. Brochman, Senior Resident Inspector - LaSalle County
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J. R. Roton, Senior Resident Inspector - Zion
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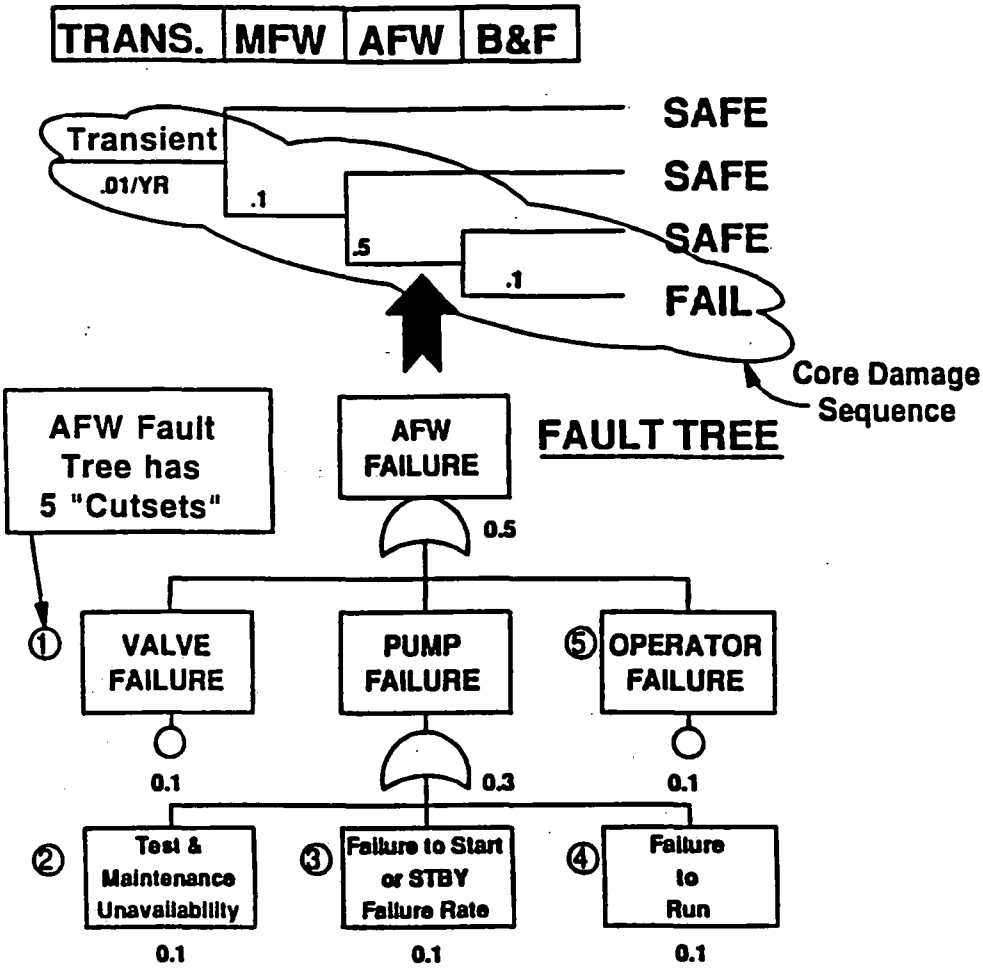
THE ONE MINUTE PRA

EVENT TREE



CORE DAMAGE FREQUENCY

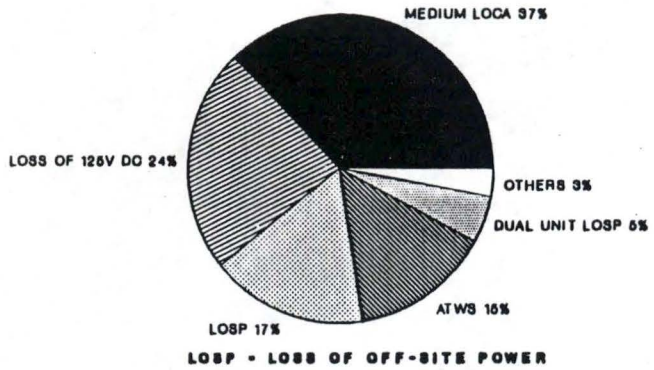
TRANS MFW AFW B&F

.01/YR X .1 X .5 X .1 = $5X10^{-5}$/YR

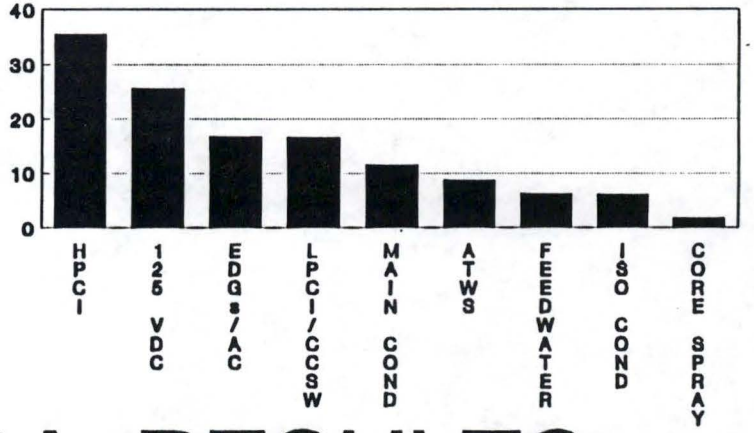
NOTE: PRA Credits

- Defense in Depth
- Non - Safety Related Systems
- Equipment OOS
- Equipment Reliability
- Operator Actions
- System Interdependency

DRESDEN INITIATING EVENTS
("Enhanced Model" CDF=4E-06)

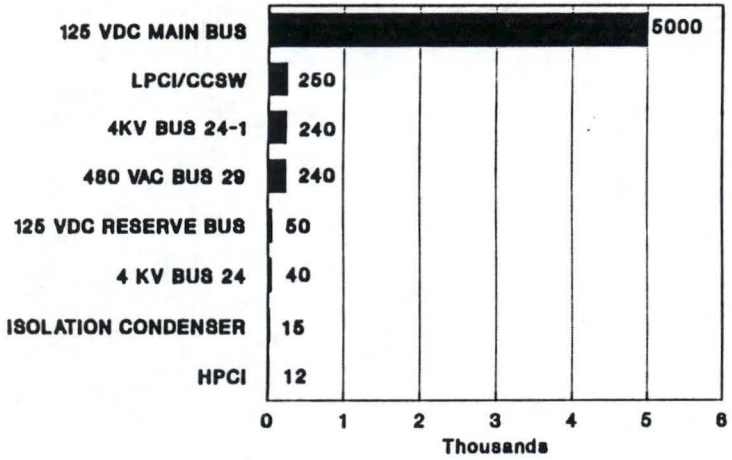


KEY SYSTEMS
% DECREASE IN CDF IF SYSTEM NEVER FAILS
(I.E. SYSTEM IS ALWAYS AVAILABLE)



KEY DRESDEN PRA RESULTS

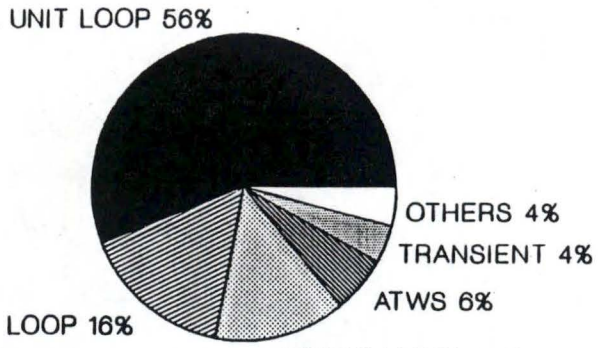
KEY EQUIPMENT
(FACTOR INCREASE IN CDF IF SYSTEM FAILS)



DRESDEN KEY OPERATOR ACTIONS

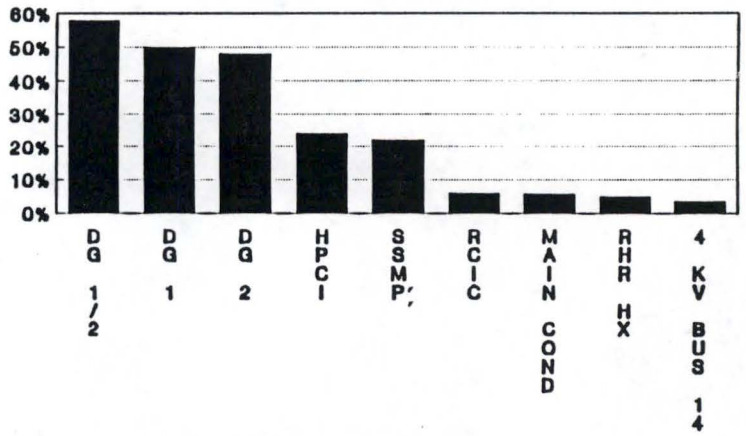
- ALIGNING LPCI & CORE SPRAY PUMPS TO CST
- INITIATING TORUS COOLING
- INITIATING DEPRESSURIZATION
- INITIATING MAKE-UP TO ISOLATION CONDENSER
- OPENING ISOLATION CONDENSER ISOLATION VALVE BREAKERS

QUAD CITIES INITIATING EVENTS
(CONTRIBUTION TO CORE DAMAGE)



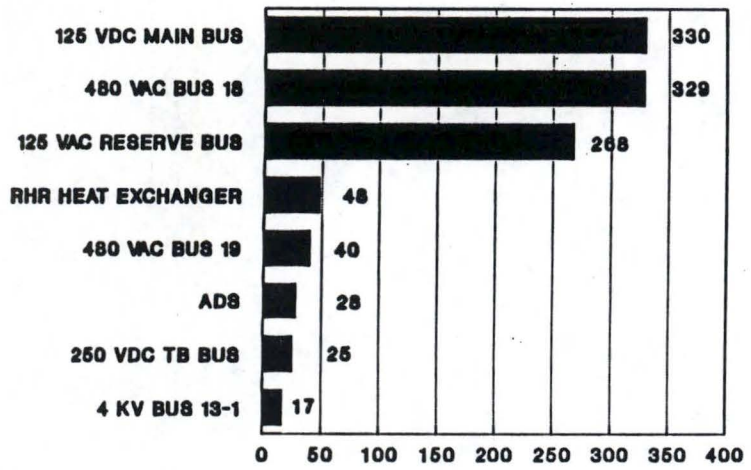
LOOP - LOSS OF OFFSITE POWER

QUAD CITIES KEY SYSTEMS
% DECREASE IN CDF IF SYSTEM NEVER FAILS
(I.E. SYSTEM IS ALWAYS AVAILABLE)



QUAD CITIES KEY PRA RESULTS

QUAD CITIES KEY EQUIPMENT - RAW
(FACTOR INCREASE IN CDF IF SYSTEM FAILS)



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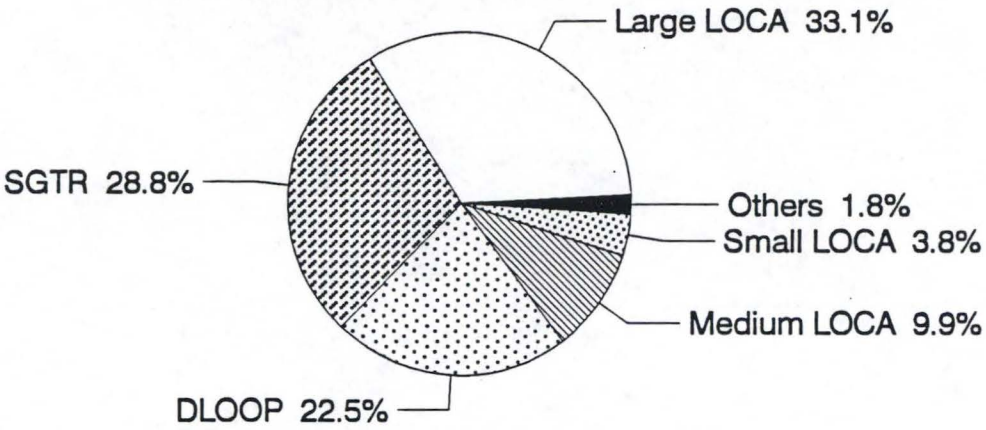
QUAD CITIES KEY OPERATOR ACTIONS

- INITIATING DEPRESSURIZATION
- ALIGNING RHR & CORE SPRAY PUMPS TO CST
- INITIATING TORUS COOLING
- INITIATING STANDBY LIQUID CONTROL
- INITIATING SAFE SHUTDOWN MAKE-UP

KEY ZION PRA RESULTS

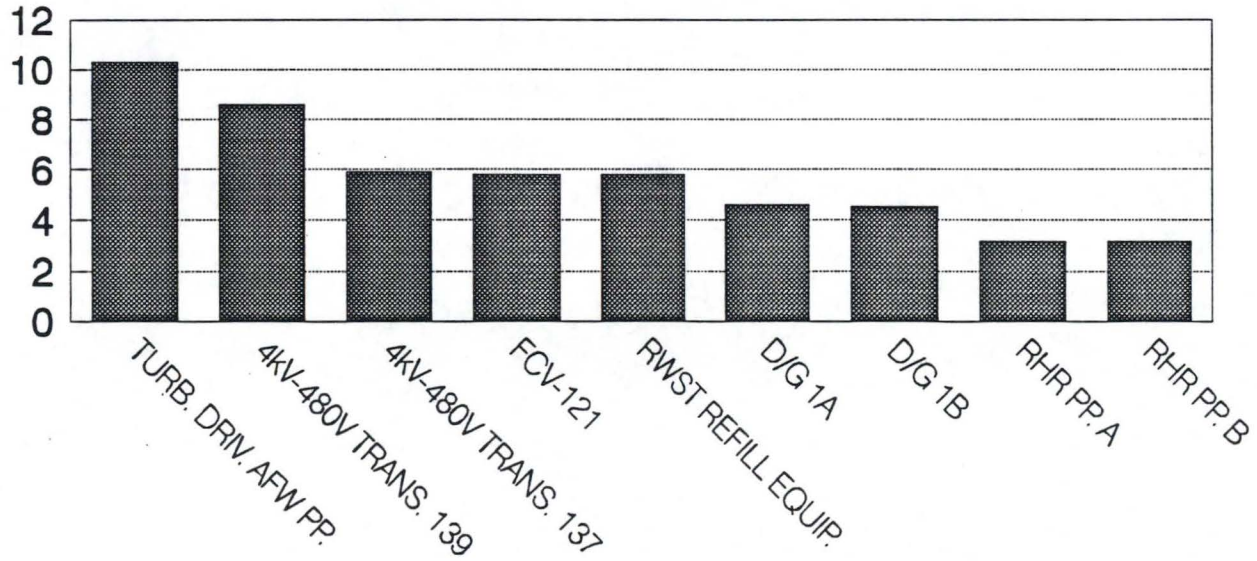
INITIATING EVENTS



SGTR = Steam Generator Tube Rupture
DLOOP= Dual-Unit Loss of Offstie Power

KEY EQUIPMENT

(Factor Increase In CDF if Equipment is OOS)

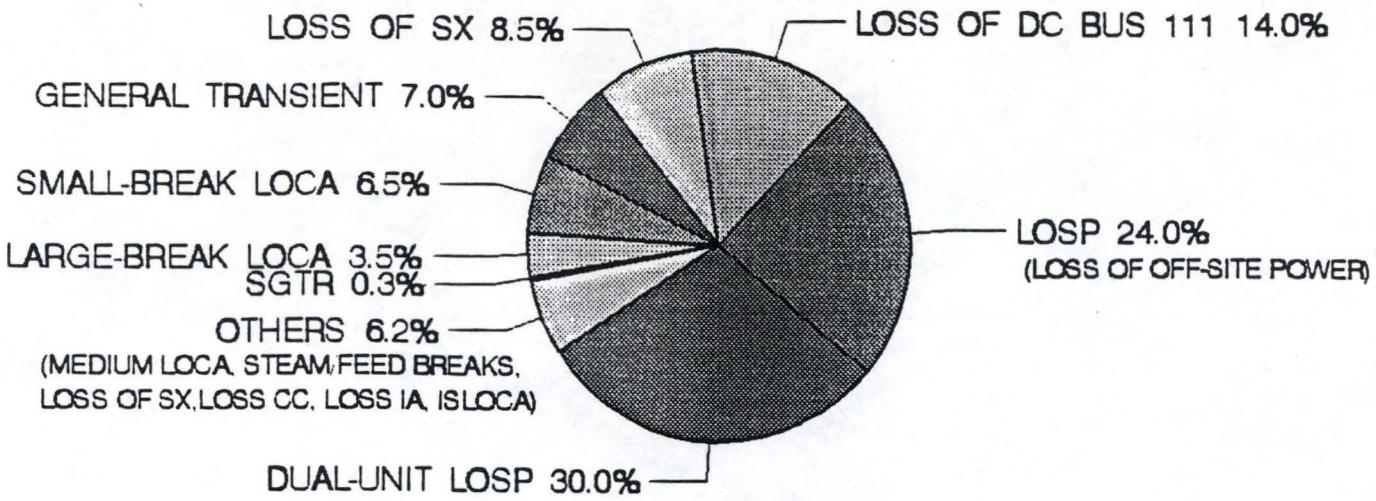


IMPORTANT OPERATOR ACTIONS

- REFILLING THE RWST
- ALIGNING ECCS FOR COLD LEG RECIRC.
- COOLING DOWN THE PRIMARY SYSTEM FOR SGTR
- REDUCING INJECTION AND RE-ALIGNING TO NORMAL CHG.
- RESTORING EQUIP. AFTER RECOV. OF OFFSITE PWR.

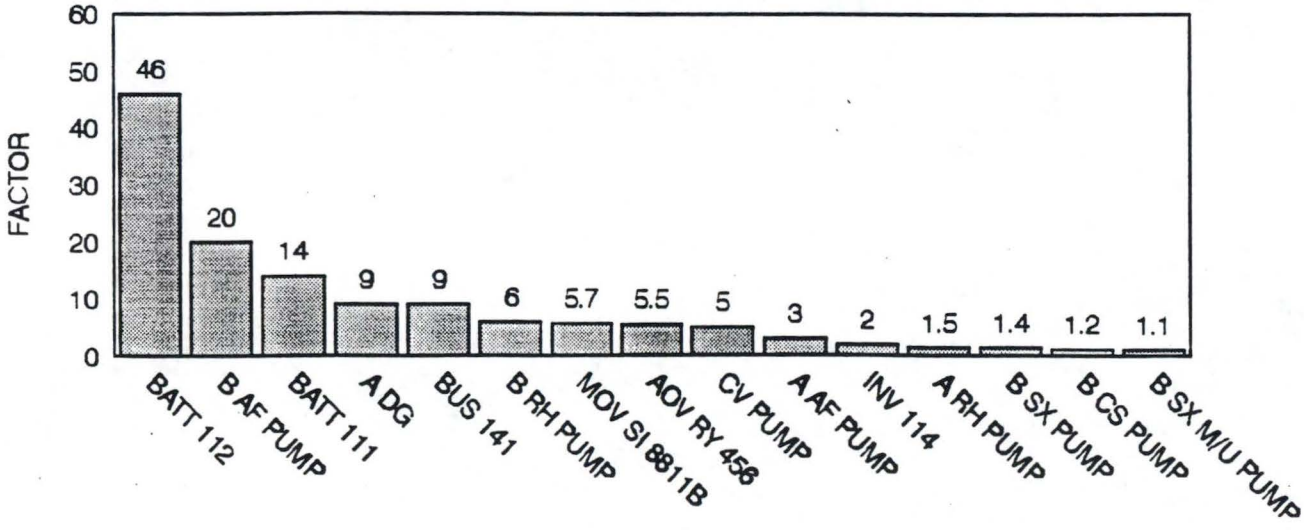
KEY BYRON PRA RESULTS

INITIATING EVENTS



IMPORTANT EQUIPMENT

(FACTOR BY WHICH CORE DAMAGE INCREASES IF EQUIPMENT OOS)



IMPORTANT OPERATOR ACTIONS

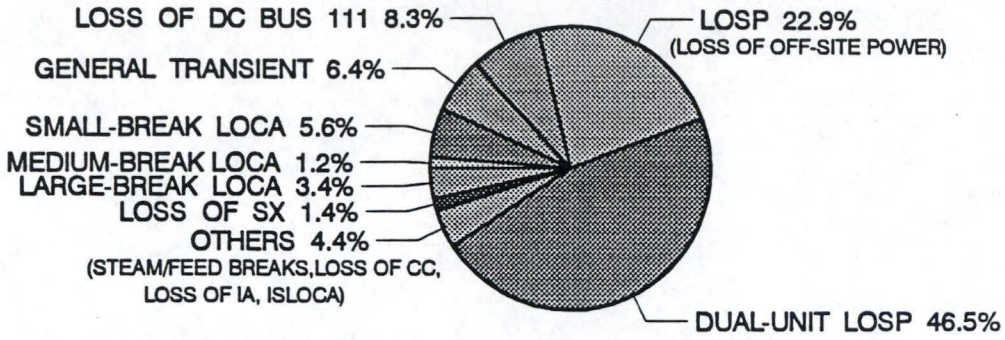
* REFILLING THE RWST per BCA-1.1
* ALIGNING ALTERNATE FEEDWATER per BFR-H.1
* INITIATING SI FOR FEED & BLEED per BFR-H.1
* REALIGN NORMAL CHARGING AFTER SGTR per BEP-3
* ESTABLISHING ECCS RECIRCULATION per BEP ES-1.3

KEY BRAIDWOOD PRA RESULTS

BASE IPE CORE DAMAGE FREQUENCY (CDF) = 2.7E-5/yr
ENHANCED MODEL (w/ 4KV CROSS-TIE) CDF = 1.1E-5/yr

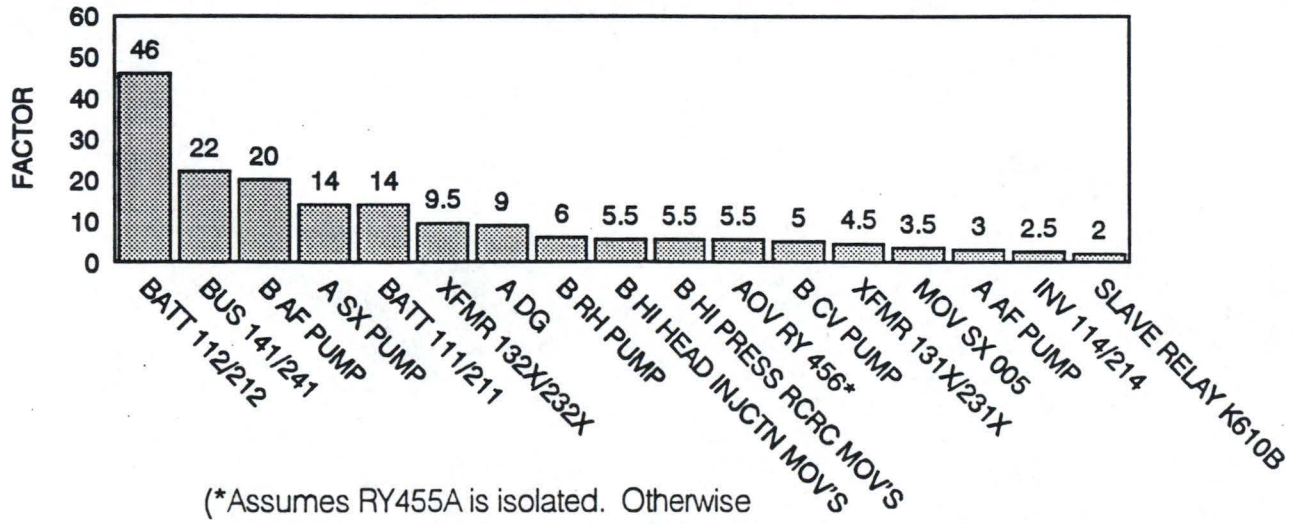
CDF CONTRIBUTION BY INITIATING EVENTS

(BASED ON ENHANCED MODEL)



IMPORTANT EQUIPMENT

(FACTOR BY WHICH CDF INCREASES IF EQUIPMENT OOS - BASE MODEL))



(*Assumes RY455A is isolated. Otherwise CDF increases by only ~1.05)

IMPORTANT OPERATOR ACTIONS

* RE-ENERGIZING A 4KV ESF BUS per BwOA ELEC-3
* REFILLING THE RWST per BwCA-1.1
* ALIGNING ALTERNATE FEEDWATER per BwFR-H.1
* INITIATING SI FOR FEED & BLEED per BwFR-H.1
* REALIGNING NORMAL CHARGING per BwEP-3

LASALLE "PRA RESULTS"

- LIST OF "PRA IMPORTANT" SYSTEMS, IN DECREASING ORDER OF IMPORTANCE RELATIVE TO PREVENTION OF CORE DAMAGE (FROM SIMILAR PLANT PRA, WITH ENGINEERING JUDGEMENT)

  - DIESEL GENERATORS
  - AC DISTRIBUTION SYSTEM
  - RESIDUAL HEAT REMOVAL/LOW PRESSURE COOLANT INJECTION (RHR/LPCI)
  - CONTAINMENT VENT
  - HIGH PRESSURE CORE SPRAY (HPCS)
  - CORE STANDBY COOLANT SUPPLY (CSCS) SYSTEM

  - REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM
  - EMERGENCY DC DISTRIBUTION SYSTEM
  - AUTOMATIC DEPRESSURIZATION SYSTEM (ADS)
  - REACTOR PROTECTION SYSTEM (RPS) SYSTEM
  - LOW PRESSURE CORE SPRAY (LPCS) SYSTEM
  - STANDBY LIQUID CONTROL (SBLC) SYSTEM
  - FEEDWATER/CONDENSATE SYSTEMS

- RECOMMEND INSTALLING MINOR MODIFICATION FOR RCIC "SNEAK CIRCUIT" - "INSIGHT FROM INTERNAL PRA

- OTHER INSIGHTS - DEVELOPED 137 IPE AND 81 ACCIDENT MANAGEMENT INSIGHTS