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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

November 17, 1993

MEMORANDUM FOR: Robert C. Jones, Chief
Reactor Systems Branch
Division of Systems Safety and Analysis

THRU: Laurence E. Phillips, Section Chief *LEP*
Core Performance Section
Reactor Systems Branch
Division of Systems Safety and Analysis

FROM: Tony P. Ulses, Reactor Engineer
Core Performance Section
Reactor Systems Branch
Division of Systems Safety and Analysis

SUBJECT: NRC/BWROG MEETING DISCUSS ISSUES RAISED IN NRR SIMULATION
OF PROPOSED EPG'S

A meeting was held at One White Flint North in Rockville, Maryland on October 28, 1993 between representatives of the BWROG and NRR to discuss the current schedule of the ATWS Long Term Solutions (LTS) and the concerns with the proposed Emergency Procedures Guidelines's (EPG) raised by NRR in a recent simulator exercise.

The meeting began with a short presentation regarding the status of the plans to choose and implement the LTS. Speaking on behalf of the owner's group, Mr. Tom Rausch stated that some plants had already tentatively made their choice of which LTS to adopt and the remaining plants should be choosing shortly. Mr. Rausch also outlined the proposed implementation schedule for options I-A and III. Attachment 1 contains the slides from Mr. Rausch's presentation.

Following this presentation, Mr. Taggart Rogers of OEI began discussing the owner's group response to the NRR letter. The issues raised in the NRR letter are as follows:

1. RPV depressurization appears to be the only course of action following isolation in plants without high pressure injection
2. The proposed EPG changes may lead to unnecessary isolations in plants without isolation key-lock bypass
3. The proposed EPG changes provide no guidance to maintain RPV water level above the isolation setpoint

The owner's group responded to the first issue by stating the all plants have or are planning to have either motor-driven feedpumps, a key-lock bypass, or in excess of 95 in. between the operating water level and the MSIV isolation setpoint. The owner's group feels that this coupled with the fact that recent

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DEW (atg)
XR0-8-2
XR050 (Spill)
Phillips

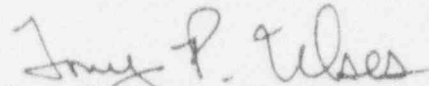
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calculations suggest that boron is more effective than originally assumed is responsive to issue 1. Regarding the second issue, Mr. Roger's stated that the proposed EPG's do increase the probability of MSIV isolation, but most plants have either quick isolation bypass, feedwater spargers well above the isolation setpoint, or, in the event of an isolation, sufficient high pressure injection to control water level. In response to the third issue, Mr. Roger's stated that maintaining RPV water level above the isolation setpoint is not always appropriate, but its importance can be emphasized in training. Mr. Roger's slides are included as Attachment 2.

An attendance list is included as Attachment 3.



Tony P. Ulises, Reactor Engineer
Core Performance Section
Reactor Systems Branch
Division of Systems Safety and Analysis

cc: T. Ulises
L. Phillips
SRXB R/F

calculations suggest that boron is more effective than originally assumed show that the position of issue 1 is not true. Regarding the second issue, Mr. Roger's stated that the proposed EPG's do increase the probability of MSIV isolation, but most plants have either quick isolation bypass, feedwater spargers well above the isolation setpoint, or, in the event of an isolation, sufficient high pressure injection to control water level. In response to the third issue, Mr. Roger's stated that maintaining RPV water level above the isolation setpoint is not always appropriate, but its importance can be emphasized in training. Mr. Roger's slides are included as Attachment 2.

An attendance list is included as Attachment 3.

/s/

Tony P. Uises, Reactor Engineer
Core Performance Section
Reactor Systems Branch
Division of Systems Safety and Analysis

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ATTACHMENT 1

**BWROG/NRC MEETING
ON
STABILITY LONG-TERM SOLUTION
STATUS**

OCTOBER 28, 1993

LTS STATUS

- o OPTION SELECTION UNDERWAY
 - SOME UTILITIES HAVE MADE COMMITMENTS
 - DECISION PROCESS COMPLEX (MAY TAKE TIME TO COMPLETE)

- o STABILITY COMMITTEE REORGANIZED TO EXPEDITE DEVELOPMENT OF OPTION METHODOLOGY AND COMPLETION OF RELOAD REVIEW PROCEDURES
 - GENERIC COMMITTEE (SINGLE POINT NRC INTERFACE)
 - DETECT & SUPPRESS METHODOLOGY
 - OPTION III HARDWARE (ABB) *C SOFTWARE*
 - OPTION I-A (HARDWARE & METHODS) *GE*
 - OPTION I-D
 - OPTION III COMBINED WITH POWER RANGE MONITOR UPGRADE (GE)

- o UNOFFICIAL POLL OF UTILITY PREFERENCE TAKEN
 - OPTION III (ABB & GE) 9-11
 - OPTION II 2
 - OPTION I-A 4-5
 - OPTION I-D 4
 - UNDECIDED 2

- o ALL UTILITIES PARTICIPATING TO DATE, MAY TAKE SEVERAL VOTE CYCLES TO COMPLETE BWROG OPTION SELECTION

LTS STATUS

- o SOME UTILITIES REQUIRE FINAL GENERIC LETTER BEFORE COMMITTING TO A PROGRAM OF THIS SIZE
 - PUC PRUDENCY CONSIDERATIONS
 - SOME UTILITIES PROCEEDING AT RISK
 - AMBIGUITY OF DRAFT GENERIC LETTER REGARDING POSSIBLE LONG-TERM USE OF ICAs
 - ELIMINATION OF INTERIM CORRECTIVE ACTIONS (ICAs) FOLLOWING LTS IMPLEMENTATION ESSENTIAL TO UTILITY COMMITMENT (INCLUDING TECH. SPEC. REMOVAL WHERE APPLICABLE)
- o UTILITY CONSIDERATIONS INCLUDE COST/BENEFIT AND COMPETITION FOR LIMITED RESOURCES
- o BWROG IS WORKING TO FACILITATE OWNER RESPONSES TO FINAL GENERIC LETTER
 - IMPROVED INTERIM ACTIONS
 - OPTION-SPECIFIC DESIGN AND INSTALLATION SCHEDULES

LTS SCHEDULE INFORMATION

4Q/93 STABILITY COMMITTEE ORGANIZED INTO FUNCTIONAL GROUPS
4Q/93-1Q/94 DEVELOP UTILITY RESPONSE TO NRC GENERIC LETTER

OPTION I-A ACTIVITIES

4Q/93 INITIATE DESIGN WORK
1Q/94 SELECT LEAD PLANT(S)
1Q/94 PROVIDE UPDATE ON ANALYSIS/HARDWARE SCHEDULE FOR
NRC (INCLUDE I & C STAFF)
1994 NRC STAFF INVOLVEMENT IN DESIGN, TEST PLAN, ETC.
1Q/94 SUBMIT OPTION I-A METHODOLOGY TOPICAL REPORT
SUPPLEMENT
1Q/95 SUBMIT OPTION I-A HARDWARE TOPICAL REPORT
1995 OPTION I-A READY FOR INSTALLATION AT LEAD
PLANTS DURING OUTAGES
1996 OPTION I-A READY FOR INSTALLATION AT ALL PLANTS
DURING OUTAGES

OPTION III ACTIVITIES (ABB)

1Q/94 INITIATE DESIGN WORK
2-3Q/94 MEETINGS W/NRC ON SOFTWARE DEVELOPMENT PROCESS
4Q/94 SELECT LEAD PLANTS
4Q/94 DETECT & SUPPRESS TOPICAL REPORT (FIRST TIME
APPLICATION AND RELOAD REVIEW)
1Q/95 OPTION III HARDWARE/SOFTWARE TOPICAL REPORTS
1Q/95 FABRICATE AND TEST PROTOTYPE
4Q/95-1Q/96 OPTION III READY FOR INSTALLATION AT LEAD PLANT
1997 OPTION III AVAILABLE FOR INSTALLATION AT ALL
PLANTS DURING OUTAGES (ASSUMING SUCCESSFUL LEAD
PLANT, SCHEDULE TO BE DEFINED BY UTILITIES/NRC)

Concerns
identified in
NRC ATWS Simulator Exercises

BWR Owners' Group
October 28, 1993

Simulator Exercise Concerns

- RPV depressurization appears to be the only course of action following isolation in plants without high pressure injection
- The proposed EPG changes may lead to unnecessary isolations in plants without isolation key-lock bypass
- The proposed EPG changes provide no guidance to maintain RPV water level above the isolation setpoint

BWR Owners' Group Response

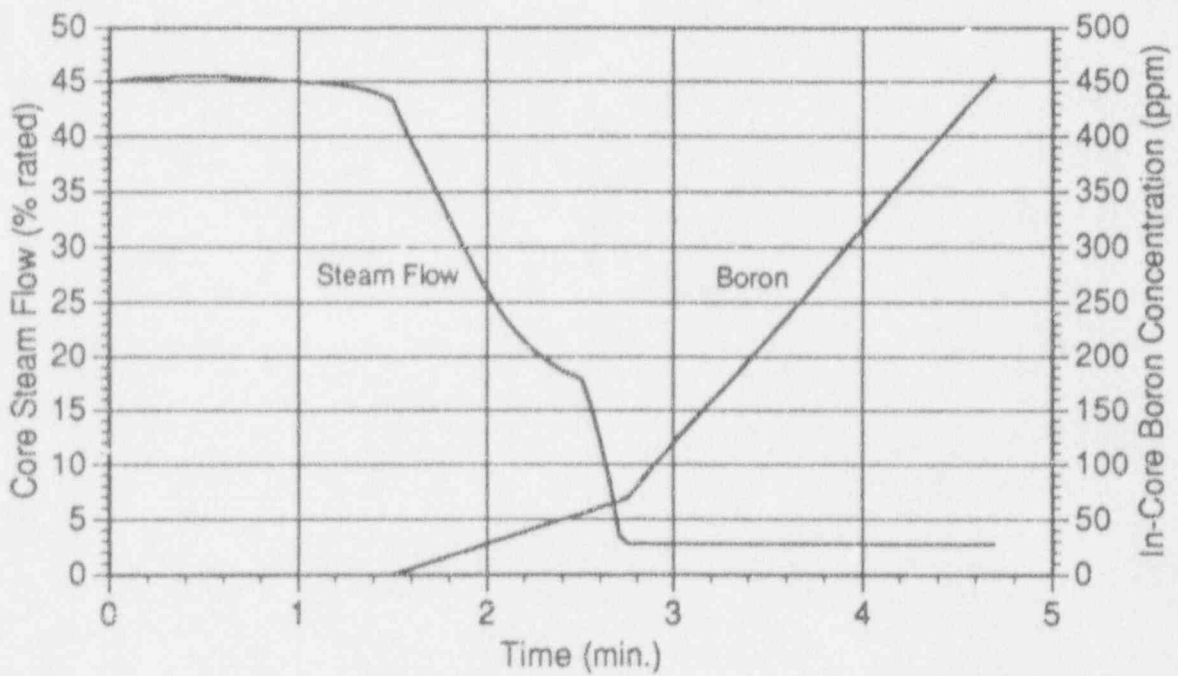
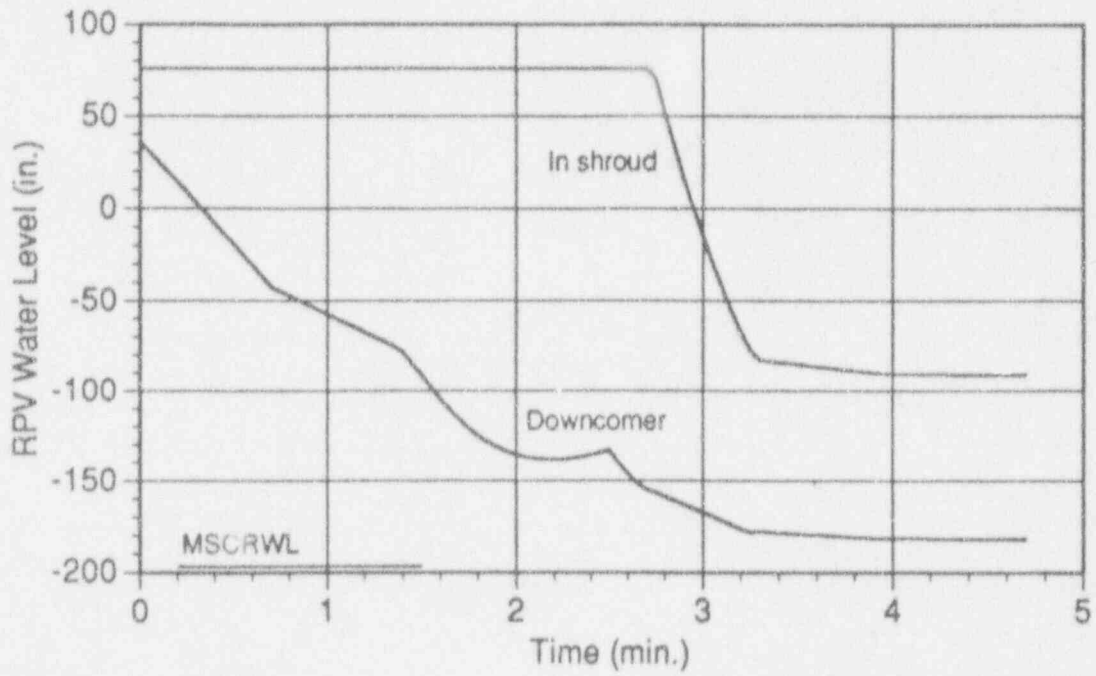
- RPV depressurization is not expected to be required to control RPV water level in HPCS plants because:
 - 5/7 HPCS plants have motor-driven feedpumps
 - 2/7 HPCS plants have quick isolation bypass
 - 6/7 HPCS plants have feedwater spargers > 95 in. above the MSIV isolation setpoint

All HPCS plants have either motor-driven feedpumps, quick isolation bypass planned or installed, or significant water level margin to isolation

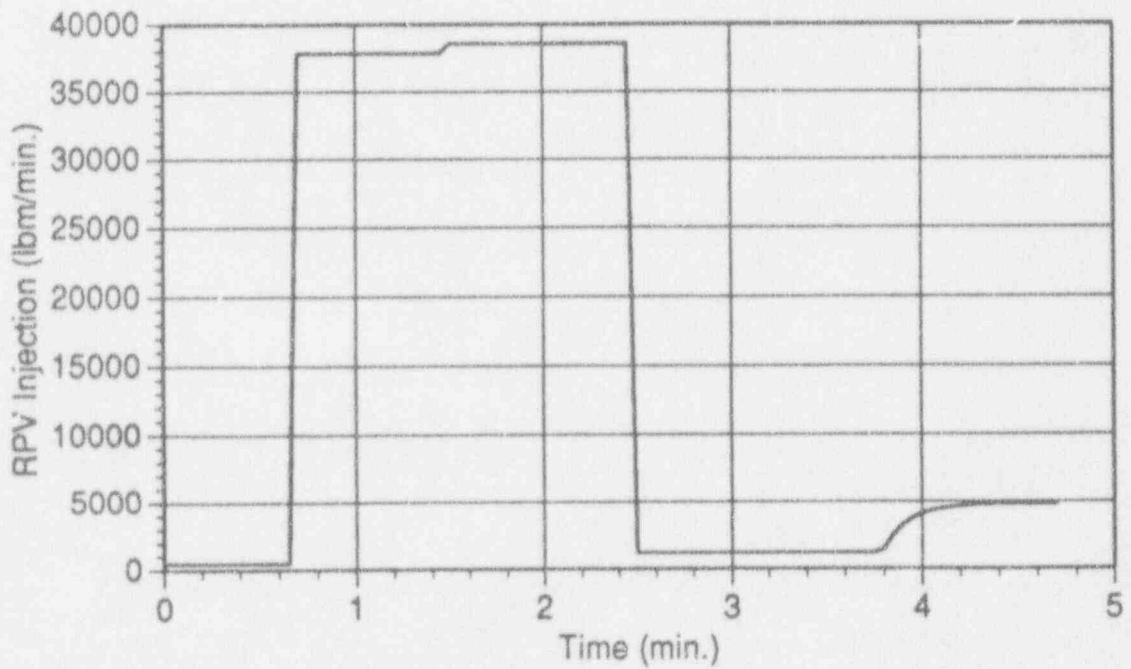
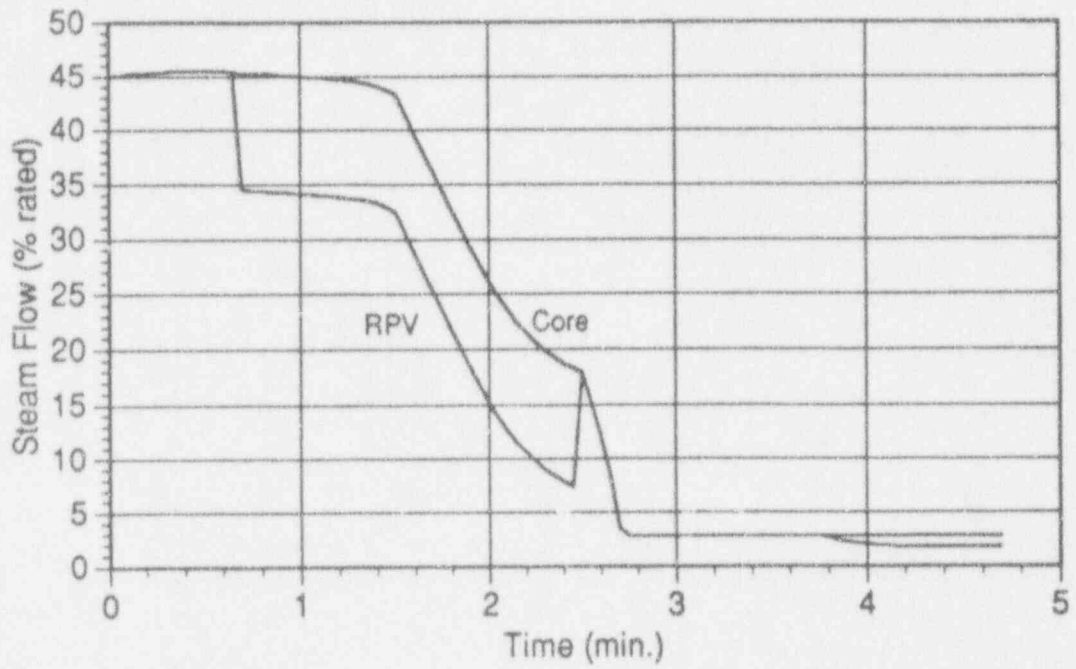
- In-shroud boron injection rapidly reduces reactor power
 - Preliminary calculations for a BWR/6 follow

HPCS Plant Status

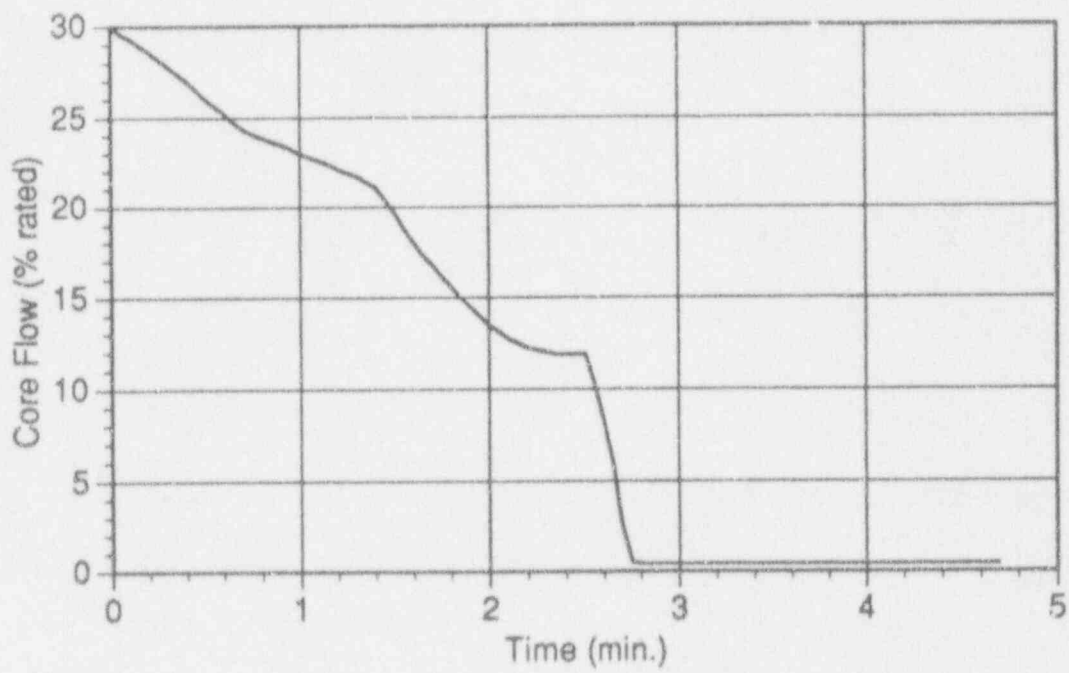
Plant	Motor Feedpump	Isolation Bypass	FW Sparger to MSIV Isolation (in.)
A	Yes	No	95
B	Yes	No	94
C	No	Planned	16
D	Yes	No	110
E	No	No	111
F	Yes	Yes	108
G	Yes	Yes	106



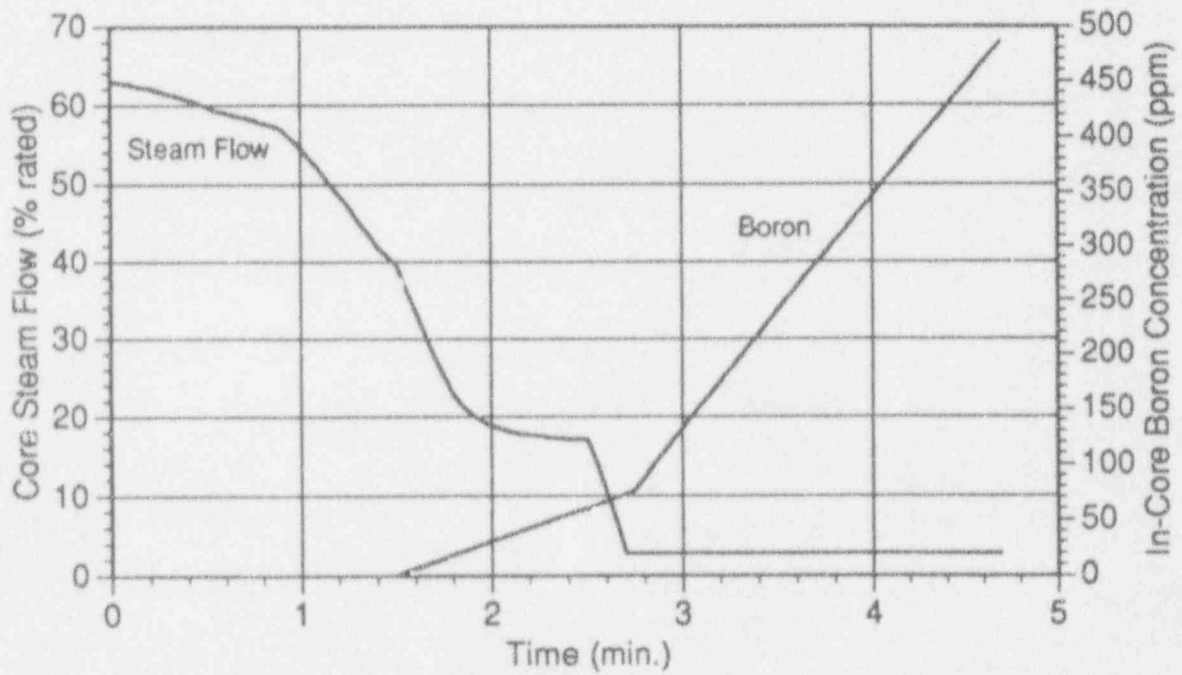
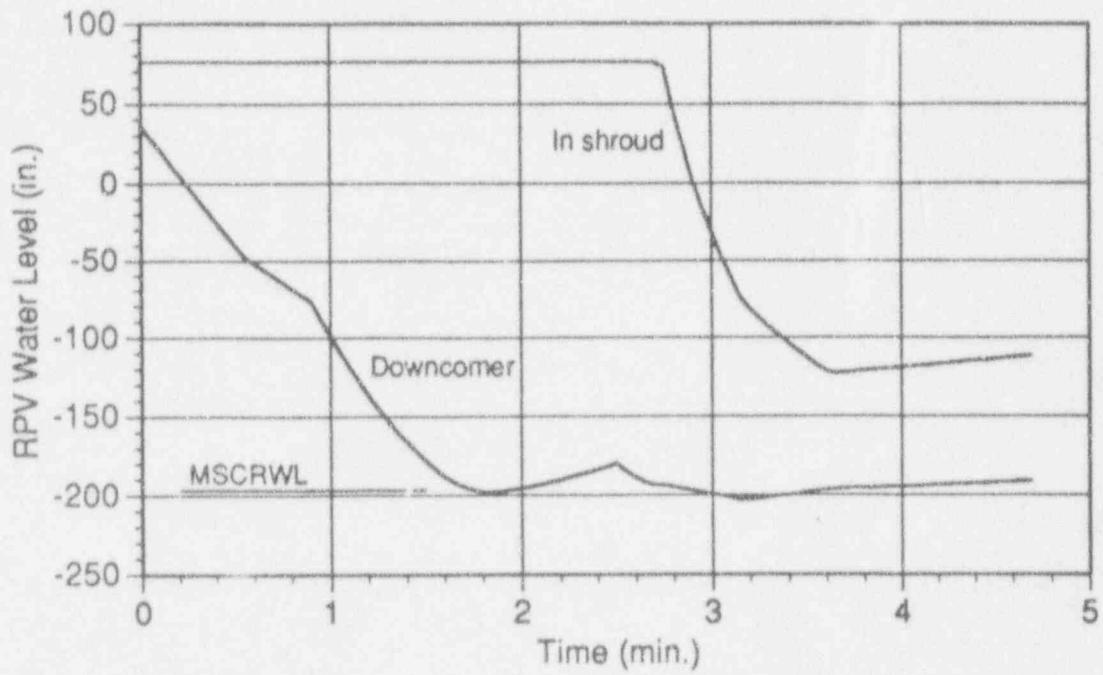
BWR/6 Scram Failure from 100% Rod Line



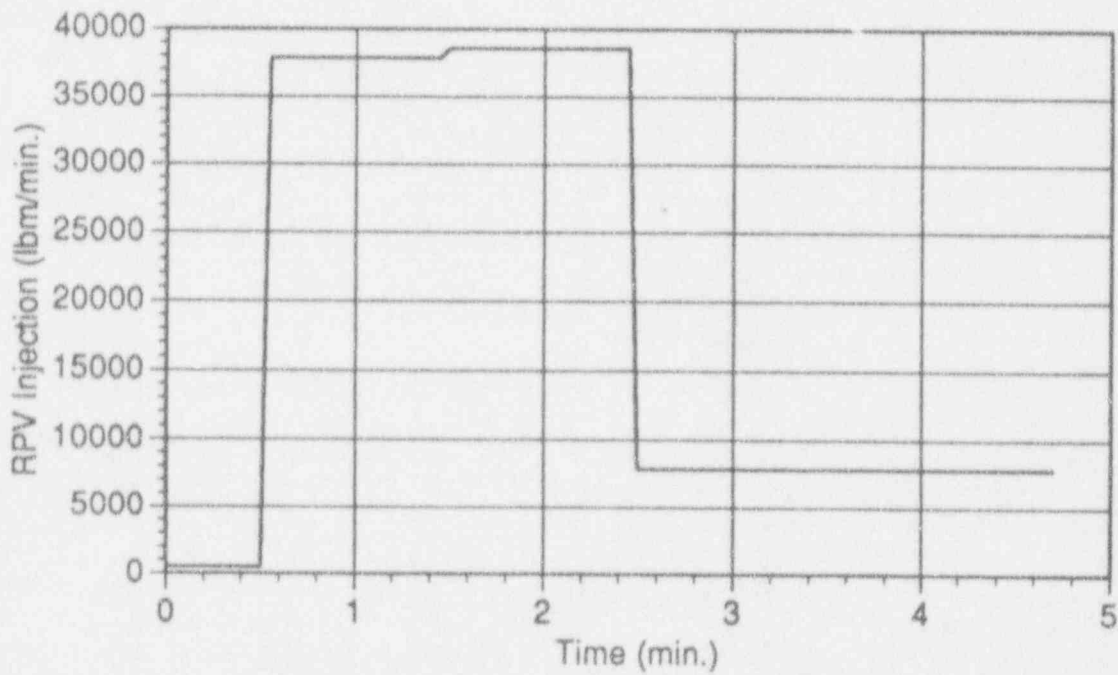
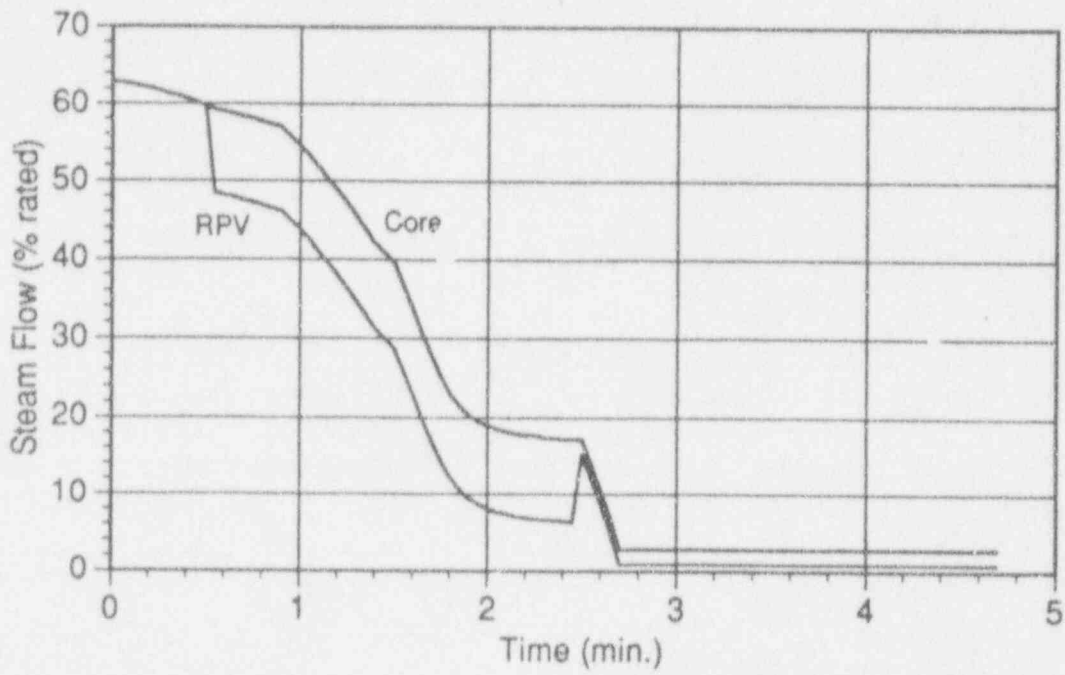
BWR/6 Scram Failure from 100% Rod Line



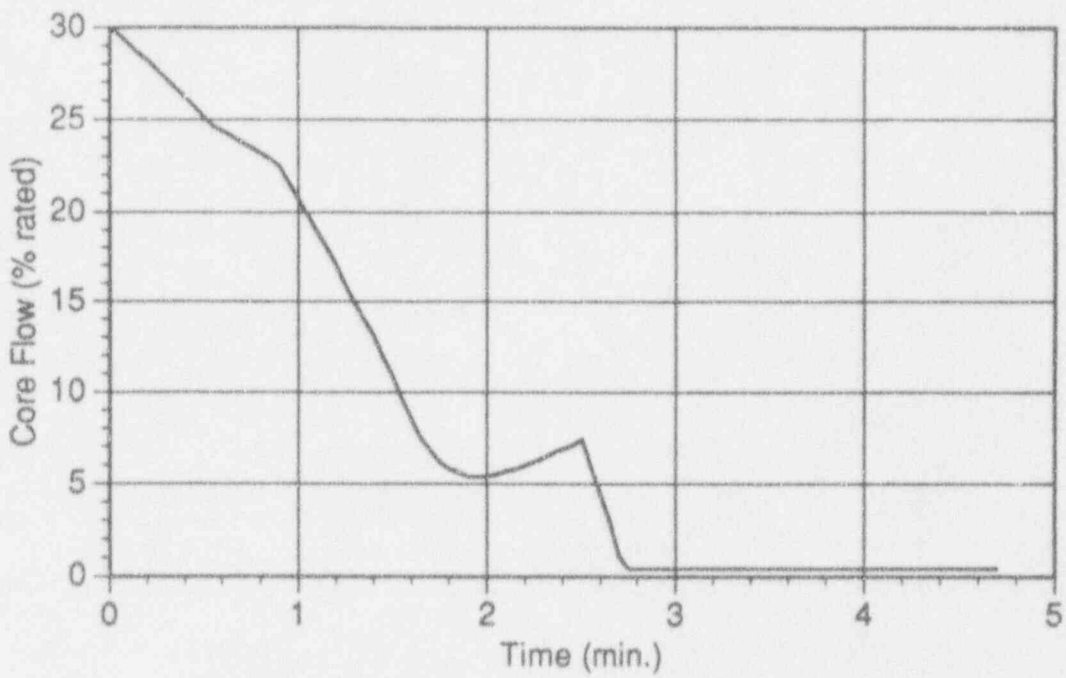
BWR/6 Scram Failure from 100% Rod Line



BWR/6 Scram Failure from MEOD



BWR/6 Scram Failure from MEOD




BWR/6 Scram Failure from MEOD

BWROG Response (continued)

- The proposed EPG changes do increase the probability of MSIV isolation, but:
 - Most plants have either quick isolation bypass or feedwater spargers well above the isolation setpoint
 - All non-HPCS plants have sufficient high pressure injection to control RPV water level after MSIV isolation
- Requiring that RPV water level be maintained above the isolation setpoint is not always appropriate, but its importance can be emphasized in training

Schedule for EPG Submittal

- 11/9  General Electric design review
- 12/93 Design review issues resolved
- 2/94 Emergency Procedures Committee approval
- 3/94 BWROG approval and submittal

HUNTERDON 5

NRC/BWROG MEETING

BWR STABILITY: LTS & ATWS

8:30 - 10/28/93 - OWFN

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TAGGART ROGERS	OES/BWROG	510 770-8321
Bill Williamson	TVA/BWROG	205-729-2455
Tom Rausch	CEO/BWROG	
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