

MEETING SUMMARY DISTRIBUTION

Docket No(s): 50-244/400/412/413/414/423/498/499/443/444/424/425/445 and 50-446
NRC PDR
Local PDR
NSIC
PRC System
LB3 Reading
Attorney, OELD
GWKnighton
Project Manager B. K. Singh
JLee

NRC PARTICIPANTS

B. K. Singh
A. J. Szukiewicz
Francis Akstulewicz
Brian Sheron
J. B. Henderson
Frank Orr
Frank J. Witt
S. Mann
L. B. Marsh
V. Nerses

bcc: Applicant & Service List

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PDR ADOCK 05000244
P PDR

JUL 3 1 1984

Docket Nos.: 50-244, 50-400, 50-412, 50-413, 50-414, 50-423, 50-498,
50-499, 50-443, 50-444, 50-424, 50-425, 50-445, and 50-446

APPLICANT: Westinghouse Owners Steam Generator Tube Rupture (SGTR) Subgroup

FACILITY: Beaver Valley 2, Catawba, Ginna, Millstone 3, Seabrook, Shearon
Harris, South Texas, Vogtle, and Commanche Peak

SUBJECT: MEETING SUMMARY

On July 17, 1984, NRC staff and Westinghouse Owners SGTR Subgroup representatives met in Bethesda, Maryland to discuss the proposed Westinghouse SGTR generic program. A meeting notice and attendance roster are enclosed (Enclosures 1 and 2 respectively).

Westinghouse presented their SGTR analysis program overview which consisted of design basis analysis and best estimate analysis (Enclosure 3). The Westinghouse proprietary information is excluded from Enclosure 3. The Westinghouse approach is to preclude the steam generator from overfilling. Because of this, it is important to establish the operator response time methodology since operator action is required to preclude overfilling. Operator response times have been established based on simulator runs factoring in the effect of complicating situations. Westinghouse will issue a WCAP report, tentatively scheduled for September 1984, providing the results of these analyses.

Additionally, Westinghouse will perform studies to determine the effects of overfill including evaluation of steamline integrity, potential for water-hammer, and effect on safety valve actuation. The results of these studies will be documented in a supplement to the above mentioned WCAP, to be issued in March 1985.

It was agreed that the staff would review the materials submitted to them and provide their comments at a later date.

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B. K. Singh, Project Manager
Licensing Branch No. 3
Division of Licensing

Enclosures: As stated

cc: See next page

DL:LB#3
BKSingh/ch
7/24/84

DL:LB#3
GNKnighton
7/30/84

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 11 1984

MEMORANDUM FOR: George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

FROM: Victor Nerses, Project Manager
Licensing Branch No. 3
Division of Licensing

SUBJECT: Meeting with Westinghouse and the Westinghouse Owners Group

DATE & TIME: July 17, 1984
9:00 am - 4:00 pm

LOCATION: Room 1713
Maryland National Bank Building
Bethesda, Maryland

PURPOSE: Presentation of Steam Generator Tube Rupture (SGTR) issues
by SGTR Subgroup of the Westinghouse Owners Group

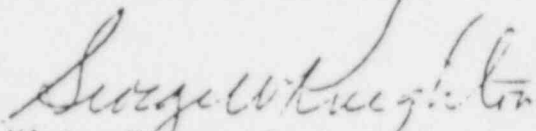
AGENDA: See enclosure

PARTICIPANTS: Westinghouse
H. Julian, B. Monty, E. Volpenhein
Westinghouse Owners Group
R. Eliaz (RG&E-Ginna), R. Sharpe (Duke Power Co. - Catawba),
F. Thompson (CP&L - Shearon Harris), A. Ladieu (Yankee Atomic-
Seabrook), R. Joshi (Northeast Utilities-Millstone 3), S. Head
(HL&P - South Texas), K. Troxler (Duquesne Light Co. - Beaver
Valley #2), K. Kopecky (Southern Services, Georgia Power),
P. Sherwsberry (Texas Utilities).

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NRC Staff

V. Nerses, B. K. Singh, B. Sheron, L. Marsh, S. Diab, B. Mann,
P. Akstulewicz, F. Orr, C. McCracken, A. Szukiewicz

for 
Victor Nerses, Project Manager
Licensing Branch No. 3
Division of Licensing

Enclosure: As stated

cc: See next page

MEETING AGENDA

- I. INTRODUCTION - A. LADIEU, YAEC 9:00 - 9:10 AM
- II. SGTR ANALYSIS PROGRAM OVERVIEW 9:10 - 9:30 AM
- ° DESIGN BASIS ANALYSIS
 - ° BEST ESTIMATE ANALYSIS
- III. DESIGN BASIS ANALYSIS 9:30 - 11:30 AM
- ° OPERATOR RESPONSE TIME
 - ° MODEL DEVELOPMENT
 - ° ANALYSIS METHODOLOGY
 - ° DESIGN BASIS ANALYSIS
- IV. BEST ESTIMATE ANALYSIS 12:30 - 2:00 PM
- ° CONSEQUENCES OF S.G. OVERFILL
 - OVERFILL TRANSIENT
 - EVALUATION OF STEAMLINTEGRITY
 - RADIATION DOSE ANALYSIS
 - ° REDUCED POWER ANALYSIS
- V. DISCUSSION 2:00 - 4:00 PM

MEETING NOTICE DISTRIBUTION:

Docket No(s):
NRC PDR
Local PDR
TIC
NSIC
PPC System
LB3 Reading
H. Denton/E. Case
D. Eisenhut/R. Purple
T. Novak
J. Youngblood
A. Schwencer
E. Adensam
F. Miraglia
E. Butcher
D. Crutchfield
C. Grimes, Acting
G. Holahan
C. Thomas
G. Lainas
S. Varga
D. Vassallo
J. Miller
J. Stolz
R. Vollmer
W. Johnston
J. P. Knight
R. Mattson
L. Rubenstein
W. Houston
D. Muller
T. Speis
F. Schroeder
F. Rowsome
H. Thompson
T. W. Russell
ACRS (16)
Attorney, OELD
E. L. Jordan
N. Grace
F. Ingram, PA
Receptionist (Only if meeting is held in Bethesda)
Project Manager V. Nerses
J. Lee

NRC PARTICIPANTS

V. Nerses
B. K. Singh
B. Sheron
L. Marsh
S. Diab
B. Mann
P. Akstulewicz
F. Orr
C. McCracken
A. Szukiewicz

bcc: Applicant & Service List

Attendance List

<u>Name</u>	<u>Organization</u>	<u>Title</u>
B. K. Singh	NRC/NRR/DL/LB#3	Project Manager
A. J. Szukiewicz	NRR/DSI/GIB	USI A47 Task Manager
Francis Akstulewicz	NRR/DSI/AEB	Nuclear Engineer
Brian Sheron	NRR/DSI/RSB	Branch Chief
Eric Volpenhein	Westinghouse	Engineer
Ken Rubin	Westinghouse	Engineer
Ping Huang	Westinghouse	Engineer
H. Julian	Westinghouse	OSA Manager
J. B. Henderson	NRC/IE	
John O'Neill	Shaw, Pittman	Representing CP&L
Doug Hance	Bechtel Power SERCH Licensing	Licensing Engineer
Frank Orr	NRR/DSI/PSRB	Engineer
Ravi Joshi	Northeast Utilities	St. Licensing Engineer
Ken Kopecky	So. Co. Sus (Vogtle Project)	Licensing Engineer
R. C. Meredy	Rochester Gas & Electric	Mgr., Nuclear Engineer
R. W. Eliase	Rochester Gas & Electric	Nuclear Engineer
Frank J. Witt	NRC/NRR/DE/CMEB	Chemical Engineer
Scott Head	Houston Lighting & Power	Licensing Engineer
B. Mann	NRC/NRR/RSB	Nuclear Engineer
Tom Lordi	Westinghouse	Project Manager
Lowell Snow	Duke Power Company	Design Engineer
J. P. Shrewsberry	TUGCO	Engineer
Siva Kumar	Gibbs Hill/TUGCO	Group Supervisor
Kirk Troxler	Duquesne Light Company	Engineer
L. B. Marsh	US NRC/NRR/DSI	Section Leader
Victor Nerses	NRC/NRR/DL/LB#3	Project Manager

OPERATOR RESPONSE TIMES

1. EVALUATED SIMULATOR DATA TO DETERMINE OPERATOR ACTION TIMES FOR SGTR
 - ZION TESTS ON OPERATOR RESPONSE
 - VERIFICATION AND VALIDATION OF WOG EMERGENCY RESPONSE GUIDELINES
 - OTHER PLANT SPECIFIC SIMULATOR DATA

2. EVALUATED PLANT SGTR DATA TO DETERMINE APPLICABILITY TO NTOL PLANTS
 - GINNA
 - PRAIRIE ISLAND
 - SURRY
 - DOEL

3. EVALUATED EFFECTS OF COMPLICATING SITUATIONS
 - UPPER HEAD VOIDING
 - LOSS OF OFFSITE POWER
 - VARIOUS EQUIPMENT FAILURES

1. CONSIDERATIONS FOR ACCEPTABILITY OF DATA

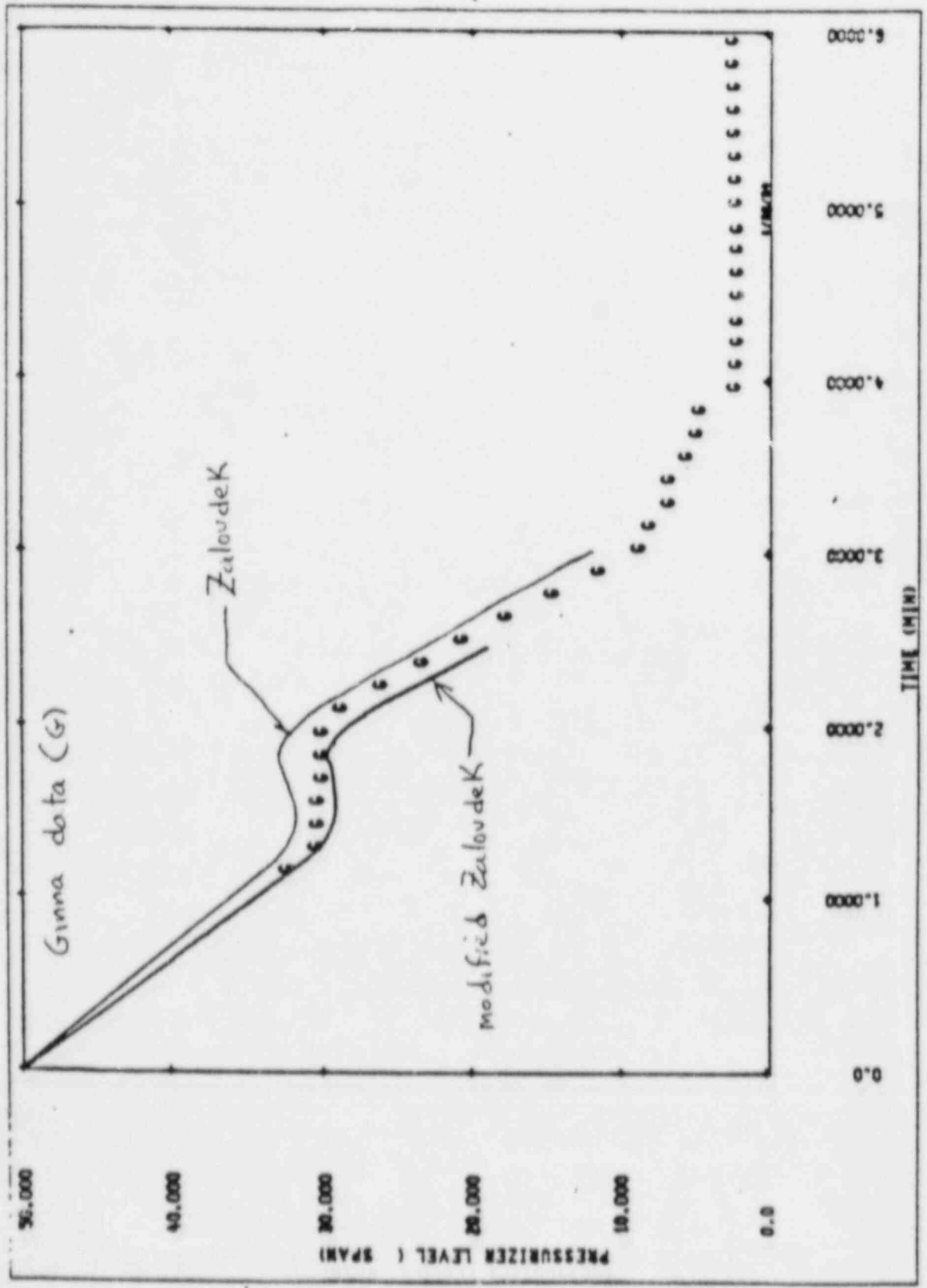
- DOCUMENTATION MUST BE ADEQUATE TO PERMIT DETERMINATION OF OPERATOR RESPONSE TIMES
- SIMULATOR MUST PROVIDE AN ACCURATE REPRESENTATION OF A SGTR
- SGTR RECOVERY PROCEDURES SHOULD BE REPRESENTATIVE OF THOSE TO BE USED FOR NTOL PLANTS
- BREAK SIZE
- PLANT DESIGN
- LESSONS LEARNED FROM PREVIOUS PLANT EXPERIENCES

2. CONCLUSIONS

- DATA FROM VERIFICATION AND VALIDATION OF ERGs IS MOST APPROPRIATE INFORMATION
- DATA FROM PLANT EXPERIENCES HAVE BEEN FACTORED INTO ERGs AND OPERATOR TRAINING

MODEL DEVELOPMENT

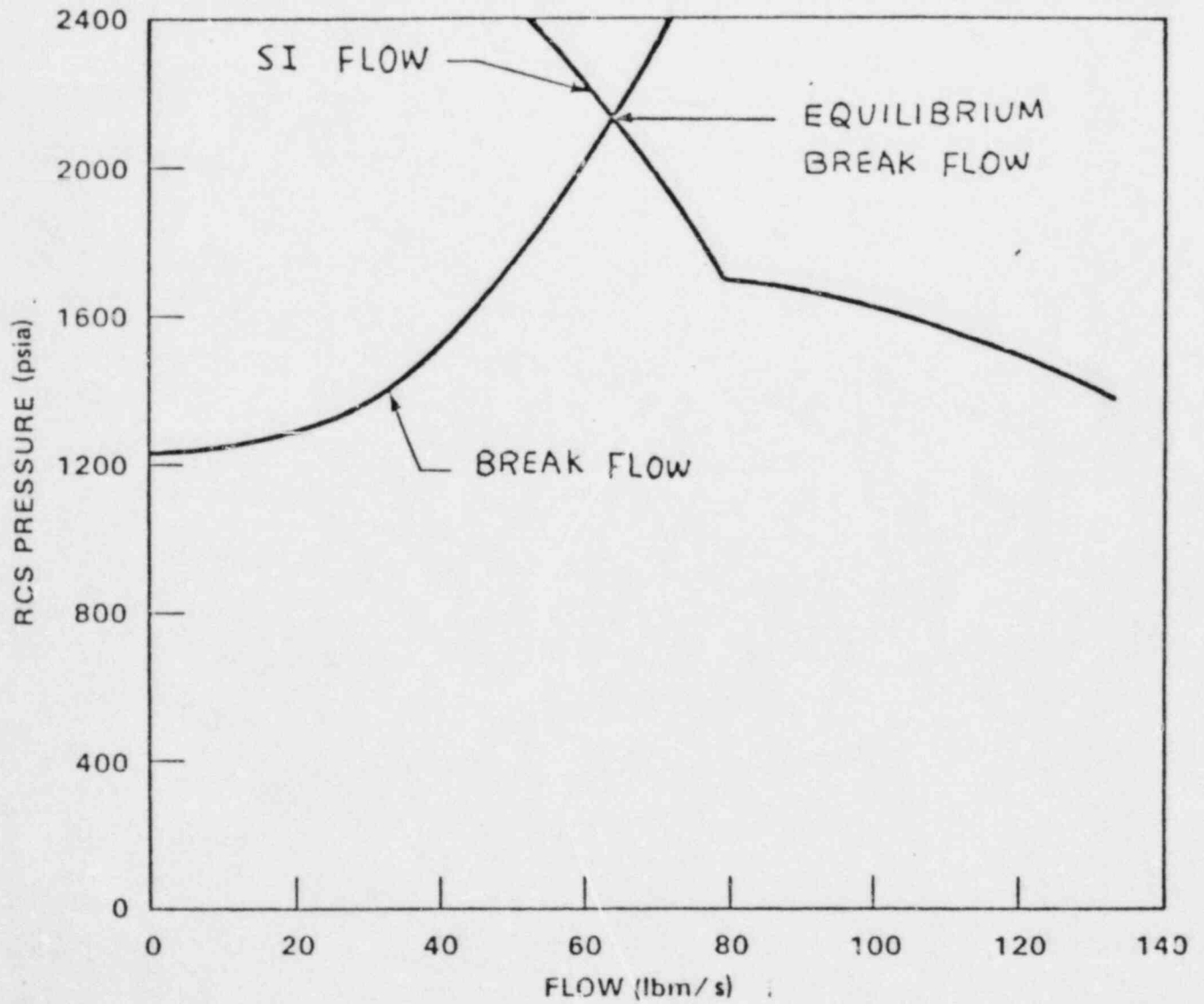
- MODIFICATIONS TO LOFTRAN FOR SGTR (WCAP 7907 AND WCAP 10319)
- BREAK FLOW MODEL
- STRATIFIED SECONDARY SIDE MODEL
- OPERATOR ACTION SIMULATION CAPABILITY



ANALYSIS METHODOLOGY

- o SELECTION OF THE REFERENCE PLANT
- o APPLICATION OF OPERATOR ACTION TIMES
- o BASE CASE ANALYSIS RESULTS
- o SENSITIVITY STUDIES

EQUILIBRIUM BREAK FLOW RATE



LOFTRAN BASE CASE ANALYSIS ASSUMPTIONS

- o DOUBLE-ENDED TUBE RUPTURE
- o NOMINAL PLANT PARAMETERS
- o LOSS OF OFFSITE POWER
- o OPERATOR ACTIONS EXPLICITLY MODELED USING V&V COMPOSITE TIMES
- o WORST ROD STUCK AT REACTOR TRIP

LOFTRAN CASES PERFORMED FOR SENSITIVITY STUDY

- OFFSITE POWER AVAILABILITY
- AUX FEEDWATER FLOW
- INITIAL RCS PRESSURE
- DECAY HEAT LEVEL
- REDUCED POWER
- TURBINE RUNBACK
- OPERATOR RESPONSE TIMES

EQUIPMENT FAILURE EVALUATION

- o IDENTIFIED EQUIPMENT USED DURING RECOVERY FROM REVISION 1 OF THE WESTINGHOUSE OWNERS GROUP EMERGENCY RESPONSE GUIDELINES
 - PRINCIPAL EQUIPMENT
 - BACKUP EQUIPMENT
 - CONTINGENCY ACTIONS

- o EVALUATE CONSEQUENCES OF EQUIPMENT FAILURE
 - NO CONSEQUENCE
 - NON-ESSENTIAL ACTION
 - BOUNDED BY ANALYSIS ASSUMPTIONS

 - DELAY IN OPERATOR RESPONSE
 - IMPLEMENT CONTINGENCY ACTION
 - OPERATE BACKUP EQUIPMENT

 - EFFECTIVE DELAY IN SYSTEM RESPONSE
 - REDUCED EQUIPMENT CAPACITY
 - INCREASED INVENTORY IN AFFECTED SG

SGTR DESIGN BASIS ACCIDENT

- DOUBLE-ENDED FAILURE OF ONE TUBE
- COMPOSITE V&V OPERATOR RESPONSE TIMES
- FULL POWER INITIAL CONDITION WITH TURBINE-RUNBACK
- LOSS OF OFF-SITE POWER AT REACTOR TRIP
- FAILURE OF ONE PORV ON AN INTACT S.G.*
- WORST ROD STUCK AT REACTOR TRIP

* Contingent upon evaluation of additional delay times for local operation of S.G. PORV isolation valves.

DESIGN BASIS MARGIN TO OVERFILL

	S.G. WATER VOLUME (FT ³)	MARGIN TO OVERFILL (FT ³)	(MIN)
BASE CASE	3900	1800	23
CONSERVATIVE PLANT PARAMETERS	4600	1100	14
TURBINE RUNBACK	4920	780	10
WORST SINGLE FAILURE	5420	280	4

CONSEQUENCES OF SG OVERFILL

- o OVERFILL TRANSIENT
- o RADIATION DOSE ANALYSIS
- o EVALUATION OF STEAMLINER INTEGRITY
- o SCHEDULED TO BE COMPLETED IN MARCH 1985

OVERFILL TRANSIENT

- o DOUBLE-ENDED FAILURE OF ONE TUBE

- o BOUNDING OPERATOR RESPONSE TIMES
 - GREATER THAN TIME LIMIT FOR EXCLUSION ZONE
DCSE EVALUATION (2 HOURS)
 - CONTINGENCY ACTIONS BASED ON REVISION 1 OF THE
WOG EMERGENCY RESPONSE GUIDELINES

- o CONSEQUENTIAL SECONDARY SIDE FAILURE DUE TO OVERFILL

- o GENERIC, REFERENCE PLANT ANALYSIS

RADIATION DOSE ANALYSIS

- o INITIAL COOLANT ACTIVITY RANGING FROM STANDARD TECHNICAL SPECIFICATION LIMITS TO AHS N237 CONCENTRATIONS

- o REALISTIC TREATMENT OF:
 - LIQUID DISCHARGE FROM AFFECTED SG, INCLUDING GROUND DEPOSITION AND FLASHING
 - SPIKING *In line*
 - PARTITIONING
 - PLATE-OUT
 - SCRUBBING

- o GENERIC X/Q REPRESENTATIVE OF NTOL PLANTS

EVALUATION OF STEAMLINE INTEGRITY

- o GENERIC EVALUATION OF THE POTENTIAL FOR WATER HAMMER
BASED ON LOFTRAN ANALYSIS RESULTS
- o PLANT SPECIFIC EVALUATION OF STATIC LOADS DUE TO WATER
IN MAIN STEAMLINES