A8 (2.5)

JUL 2 6 1979

POOR ORIGINAL

Distribution
Subj
Circ
Chron
Branch RF
SF RF
LST CY
bcc w/o encls: S. Hanauer
F. Schroeder
R. P. Denise
W. Butler
J. Kudrick
C. Anderson
bcc w/encls: R. Cudlin

Dr. E. W. McCauley
Nuclear Test Engineering Division
Lawrence Livermore Laboratory
P.O. Box 808
Livermore, California 94550

Dear Ed:

Please find enclosed:

1) A copy of the program letter that is now being officially processed and which explains the nature of your liaison work with JAERI on their MARK II containment research. Notice that $69,000 was added by this program letter, making a total of $119,000 for the combined GKSS and JAERI work.

2) Two JAERI reports and a copy of viewgraphs presented at a recent meeting attended by Dr. Tong. All this material pertains to JAERI's MARK II containment steam venting tests and all is marked proprietary.

   Please arrange for translation of the two JAERI reports, making sure that their proprietary status is not jeopardized. Proprietary material must be clearly identified as such and could only be disseminated to NRC.

3) A copy of NRR's memo requesting establishment of liaison with JAERI and monitoring of MARK II containment research.

Sincerely,

Original Signed By
S. Fabic
S. Fabic, Chief
Analysis Development Branch
Division of Reactor Safety Research

Enclosures: as stated

1733 286

8001080 073

OFFICE ▶	WRSR/ADB	WRSR/RST	RSR			
SURNAME ▶	S. Fabic/bts	Johnson/Tong	T. Murley			
DATE ▶	7/9/79	7/9/79	7/25/79			

NRC FORM 318 (9-76) NRCM 0240 ★ U.S. GOVERNMENT PRINTING OFFICE: 1978 - 260 - 769

(A8) (2.5)

7/24/79

Mark II Owners Mtg
Obj: Project close-out of program
Pete Hedgecock Chm Owners Group (WPPSS)
11 Units 11-12 GW US - some foreign participants
Reactor Vessel high-loads (seismic!)

Lead LaSalle1 Non-Lead all others
Shoreham
Zimmer

letters address formally the tech concerns
$32M so far Mark II program!
+ mods in plants
Events in past year (slide)
TMI - resources esp NRC
Generic vs plant-unique (slide)

Past Seismic C,E Slideshow
Plants designed, mostly built
Eq purchased some installed
Today Hydro loads like seismic
Combinations of loads
Stress criteria
Functional Capability
added to MII program
related to hydro loads?
Impact on MIII plants
* SRT - complications

Risk (to owners) of later Δ req

(2)

al Smith GE Slideshow

Program overview – CHANGED lots of slides
Also A-E for each plant large effort
Areas they are working on
Better (more precise) load definitions
Owners hope less conservative
Add'l
1. (NRC) More conf (lateral dominant loads
* Anderson – some things not yet included
Get foreign data
Argument on use of these data in MPI proj
So – better get data esp WOPSS/Tokai
Block diag of tech programs
(1) Modeling – "backups for WOPSS" ?
Trend – Coarse tests

Plant – unique – identify
Build on GE principles (built?)
Some plants > GE envelope?
Role of model in guenchers?
More work if true

NRC Q sets – ans nearly done

World w. de testing cognizance
GE monitoring

Mark I? Owner group access? III too
Yes –

Bar chart
Steps steps steps

"Generic" – GE tasks
Resources

Huge lists of tasks - generic

Need plant-by-plant list (Taber)

Soban Responses to N 0487
Long long list

Some counterproposals already in
Some coming in
Some quarrels - not yet
clear whether something coming in
(Color code & don't reproduce)

Big thing about SRSS
All dynamic loads
Seismic/SRV/LOCA
Whole industry position is
dependent on applicability
of SRSS to all dynamic loads
All Mark II & III

Plant-unique features
A-E's have had to develop methods
couldn't wait for every generic fix
to do plant designs
RESOURCES ~~FOR~~ THIS
Built on Pool T but no work underway
"No limit w/ quenchers"

In-plant tests - Lead plants

Wants to prepare future actions

Smith GE
7/24/79

AGENDA FOR MARK II
NRC MEETING
JULY 24, 1979 BETHESDA, MD.

9:00 AM - 12:00 NOON

- INTRODUCTION — P. HEDGECOCK
- LICENSING BACKGROUND — L. SOBON
- PROGRAM DEFINITION — A. SMITH
- REMAINING PROGRAM TASK ACTIVITIES — A. SMITH
- POSITION STATEMENTS REGARDING NRC CRITERIA
  - GENERIC — L. SOBON
  - PLANT UNIQUE APPROACHES — MK II REPRESENTATIVES

1:00 PM - 5:00 PM

- CLOSURE PROGRAM — W. DAVIS
  - ACTIVITIES
  - DOCUMENTATION
  - SCHEDULES

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7/79

AGENDA FOR MARK II

NRC MEETING

JULY 25, 1979 BETHESDA, MD.

9:00 AM - 12:00 NOON

- INDIVIDUAL PROGRAM TASK STATUS
  - TASK A.17 CONDENSATION OSCILLATION TESTING — GE
  - REVIEW OF MK II SUBMITTALS — MK II REPRESENTATIVES
  - TASK C.9 WORLD TEST MONITORING — GE

1:00 PM - 4:00 PM

- NRC REVIEW STATUS & POSITIONS — NRC PERSONNEL
  - SRSS
  - FUNCTIONAL CAPABILITY
  - IMPROVED CHUG LOAD DEFINITION (TASK A.16)
  - MULTIVENT TEST PROGRAM PHASES I & II (TASK A.11)
  - SUGGESTED ALTERNATIVES FOR:
    - WALL & FLOOR VENT CLEARING LOADS
    - ASYMMETRIC LOCA LOADS
    - LOAD CASE NO. 10

1733 291

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7/79

MARK II CONTAINMENT PROGRAM

TASK STRUCTURE SUMMARY

TOTAL NUMBER OF TASKS ——— ≈ 101

MARK II PLANT APPLICATION	% OF TOTAL TASKS
LEAD PLANT SER	8
NON-LEAD PLANT	32
COMBINATION OF PLANT CATEGORIES	34
CONFIRMATORY	12
INFORMATIONAL	14
TOTAL	100%

JULY 1979 COMPLETION STATUS:
(BASED ON COST WEIGHTING)

- OVERALL PROGRAM 70%

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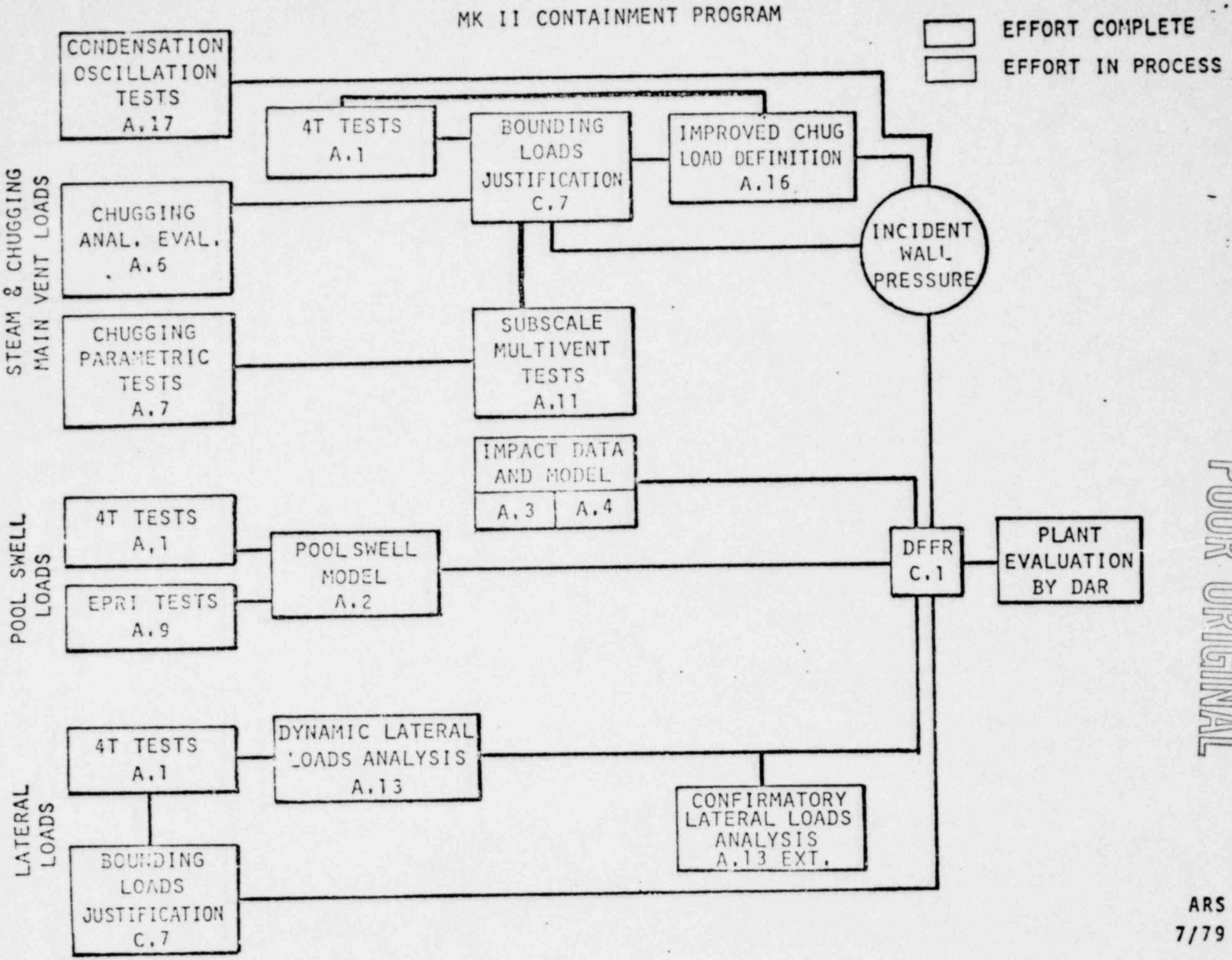
7/79



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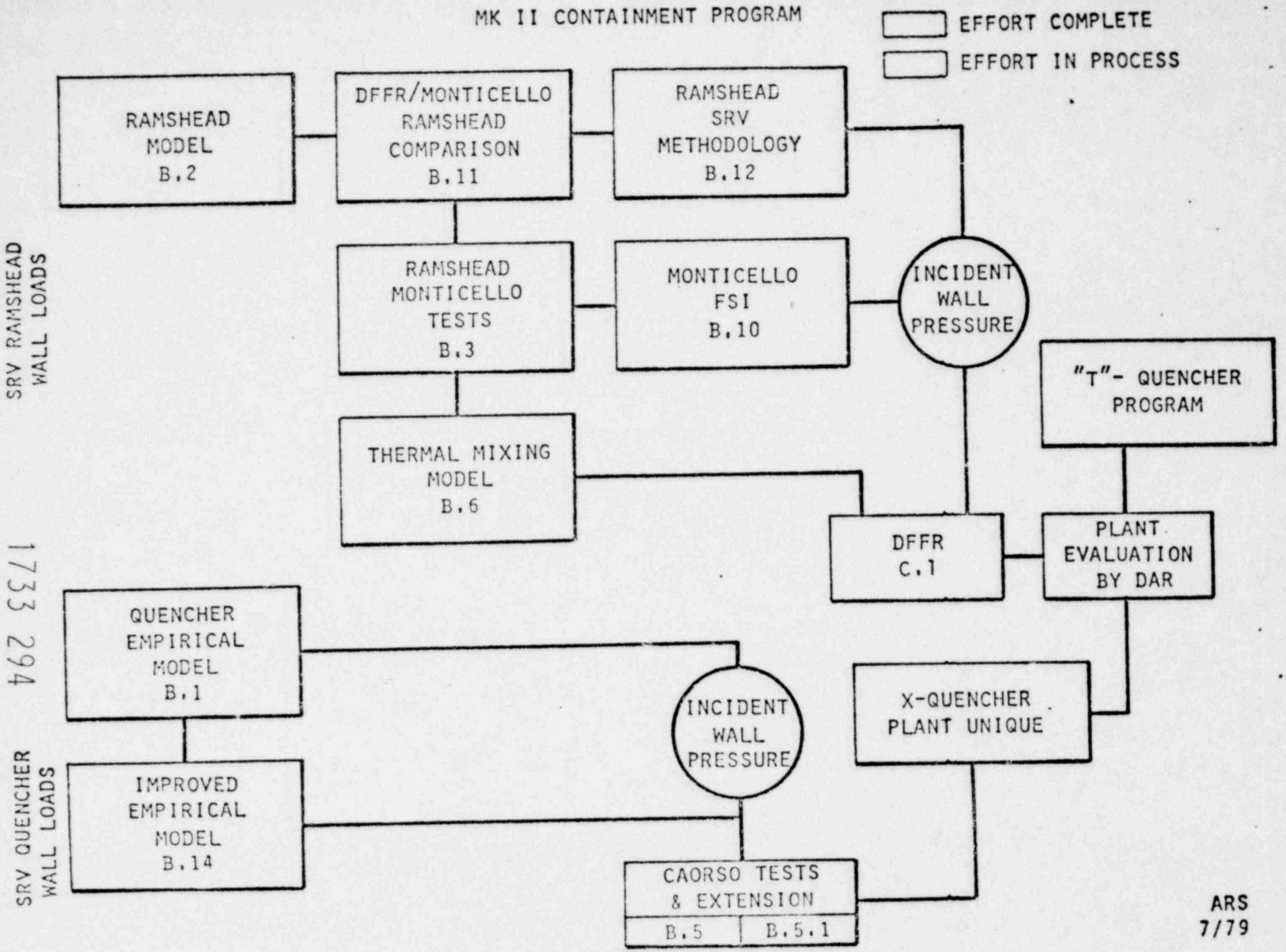
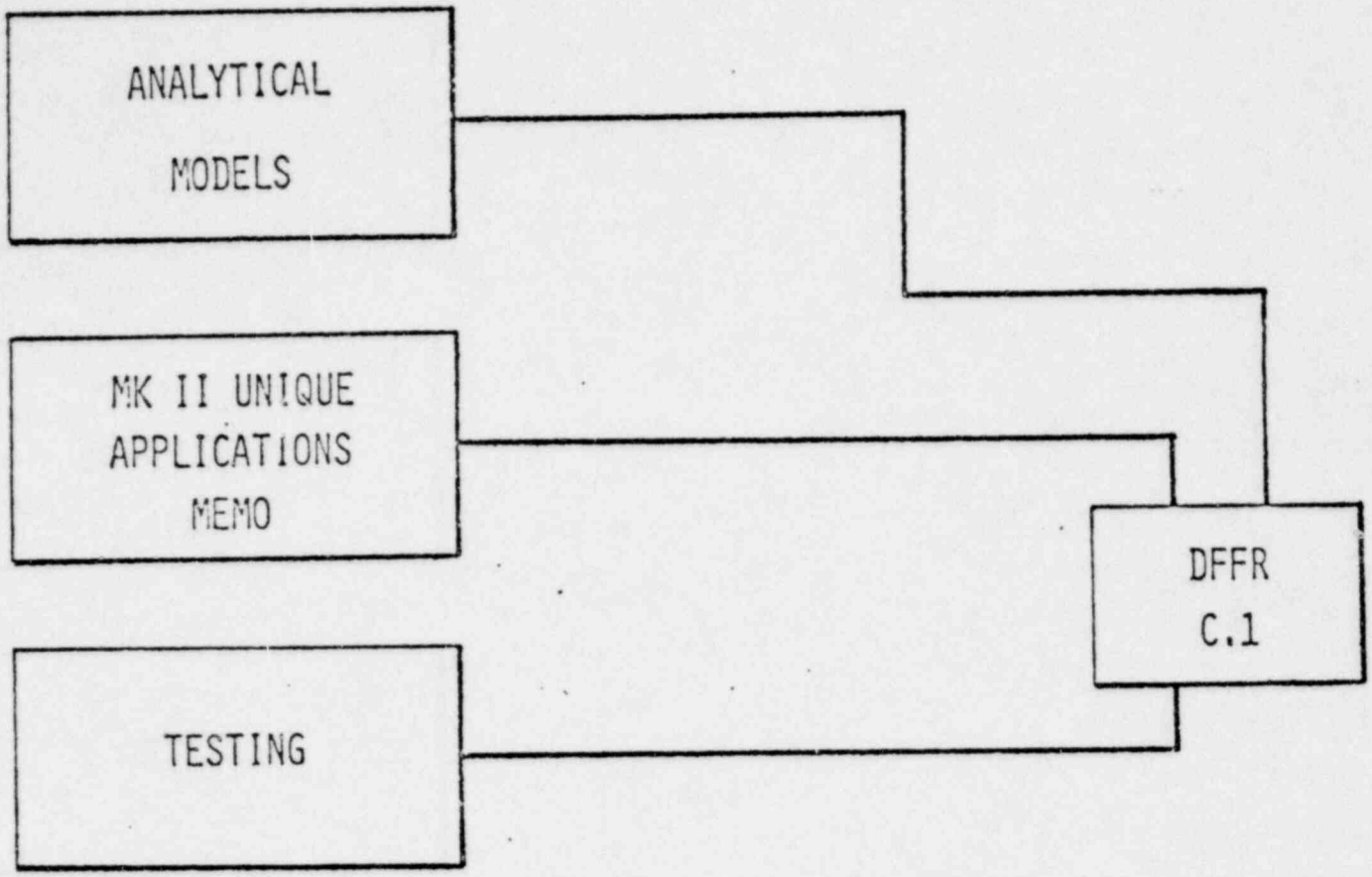
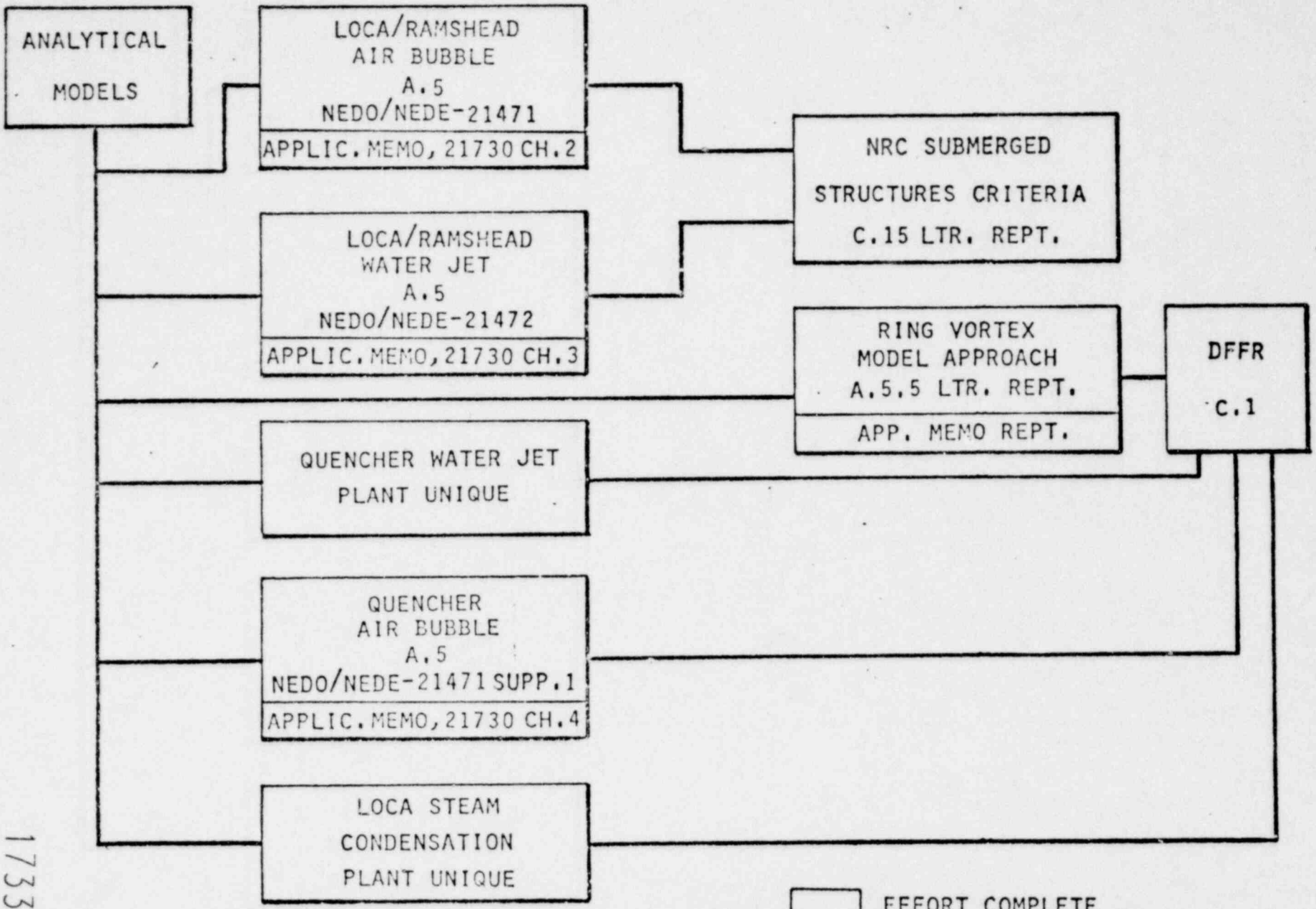

MK II CONTAINMENT PROGRAM
EFFORT COMPLETE
EFFORT IN PROCESS
RAMSHEAD MODEL B.2
DFFR/MONTICELLO RAMSHEAD COMPARISON B.11
RAMSHEAD SRV METHODOLOGY B.12
SRV RAMSHEAD WALL LOADS
RAMSHEAD MONTICELLO TESTS B.3
MONTICELLO FSI B.10
INCIDENT WALL PRESSURE
"T"- QUENCHER PROGRAM
THERMAL MIXING MODEL B.6
DFFR C.1
PLANT EVALUATION BY DAR
QUENCHER EMPIRICAL MODEL B.1
INCIDENT WALL PRESSURE
X-QUENCHER PLANT UNIQUE
SRV QUENCHER WALL LOADS
IMPROVED EMPIRICAL MODEL B.14
CAORSO TESTS & EXTENSION
B.5
B.5.1
ARS 7/79

MK II CONTAINMENT
SUBMERGED STRUCTURES PROGRAM



SUBMERGED STRUCTURES PROGRAM



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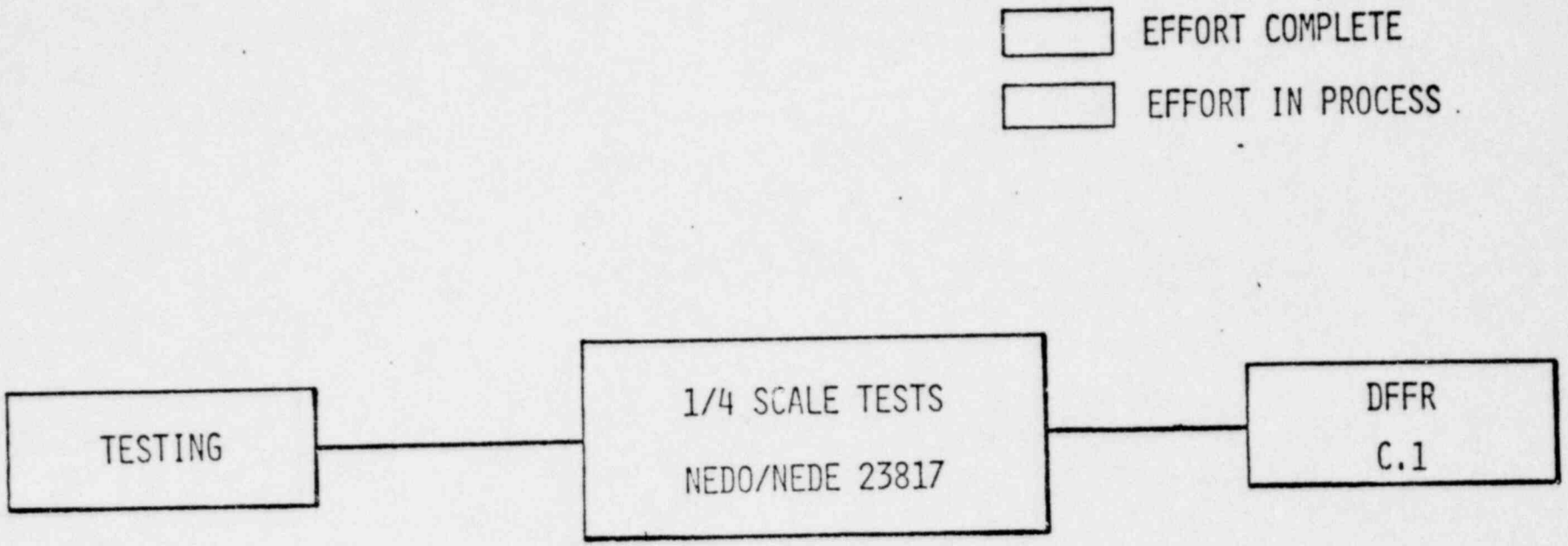
SUBMERGED STRUCTURES PROGRAM



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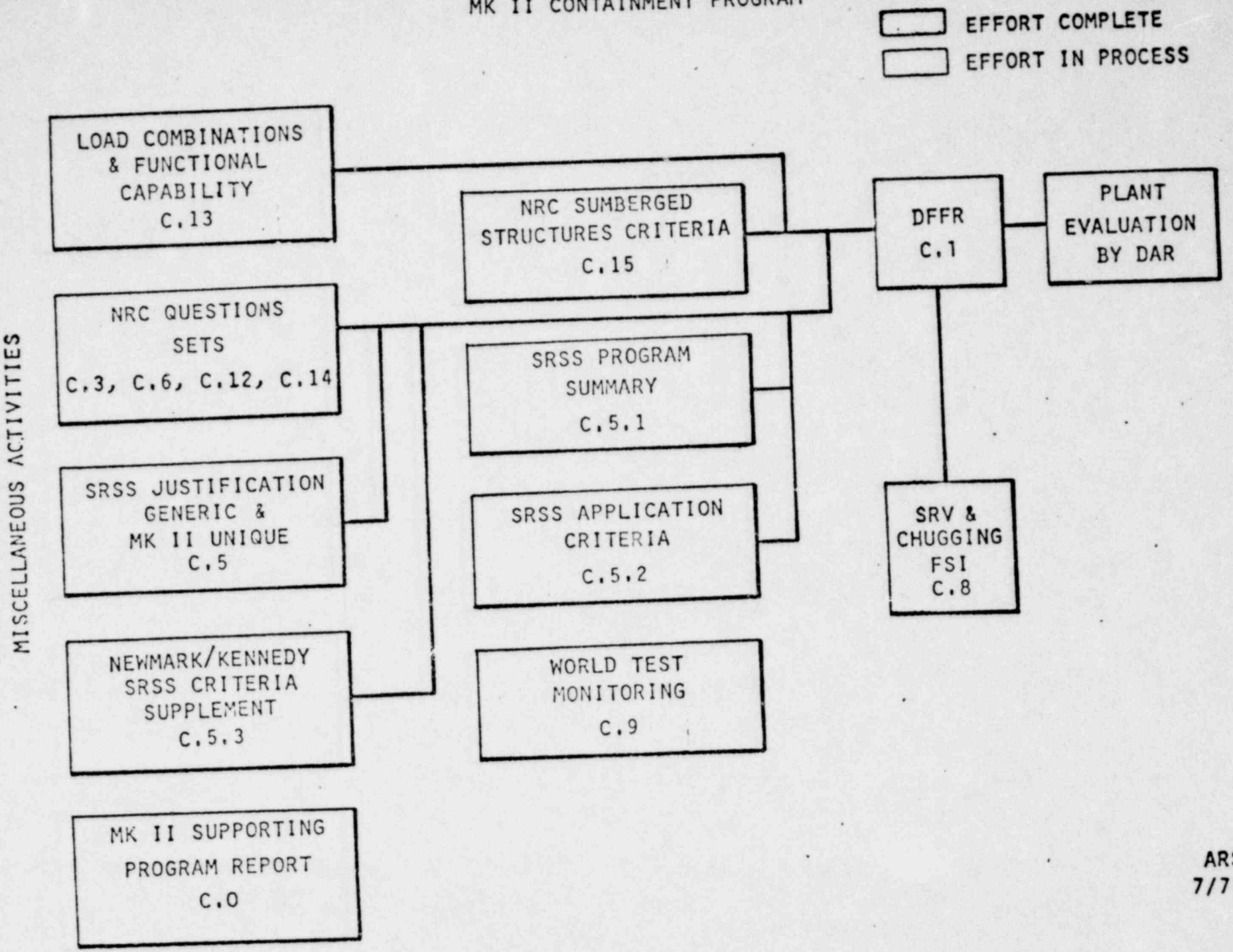
MK II CONTAINMENT PROGRAM



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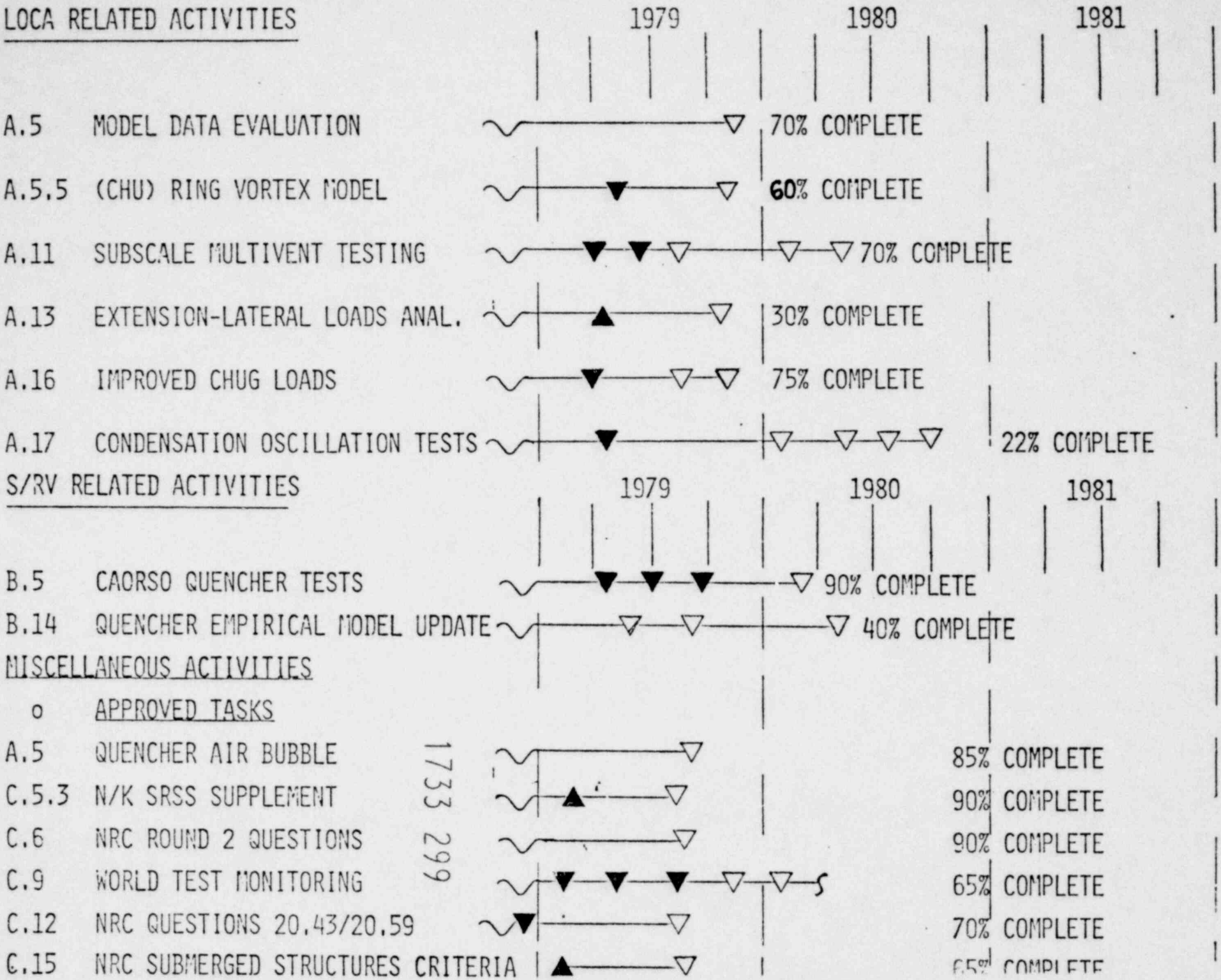
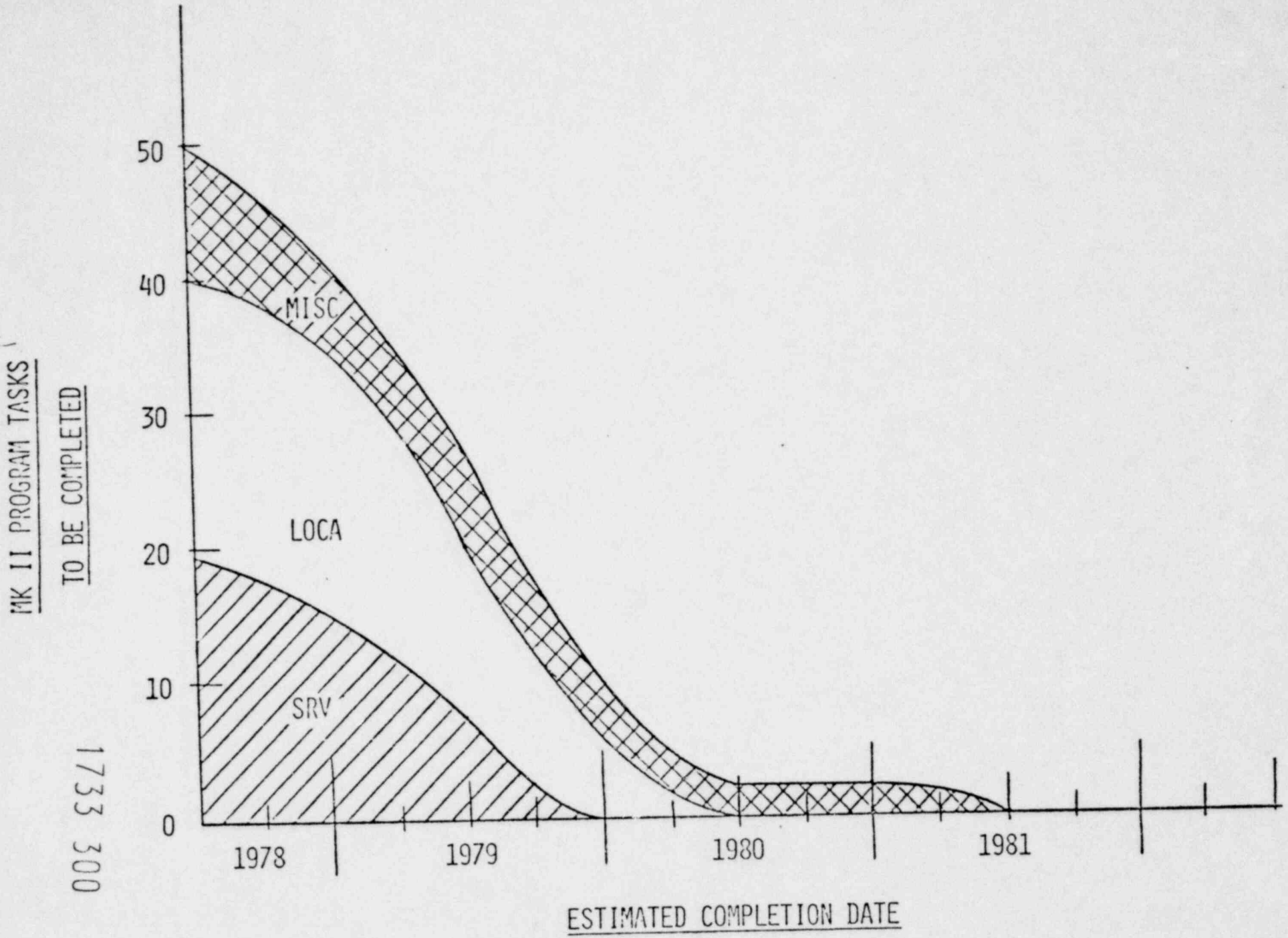
MARK II GENERIC PROGRAM SCHEDULE





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7/79

MARK II CONTAINMENT - SUPPORTING PROGRAM
LOCA-RELATED TASKS

TASK NUMBER	ACTIVITY	ACTIVITY TYPE	TARGET COMPLETION	DOCUMENTATION	DATE DOC/SUBM	LEAD PLANT SER/ INTERMED PLANT
A.1	"4T" TEST PROGRAM	Phase I Test Report	Completed	NEDO/NEDE 13442-P-01	5/76 - 5/76	LP SER/IP
		Phase I Appl Memo	Completed	Application Memo	6/76 - 6/76	LP SER/IP
		Phase II & III Test Rpt	Completed	NEDO/NEDE 13468-P	12/76 - 1/77	LP SER/IP
		Application Memorandum	Completed	NEDO/NEDE 23678-P	1/77 - 2/77	LP SER/IP
A.2	POOL SWELL MODEL REPORT	Model Report	Completed	NEDO/NEDE 21544-P	12/76 - 2/77	LP SER/IP
A.3	IMPACT TESTS	PSTF 1/3 Scale Tests	Completed	NEDO/NEDE 13426-P	8/75 - 9/75	LP SER/IP
		Mark I 1/12 Scale Tests	Completed	NEDO/NEDC 20989-2P	9/75 - 11/75	LP SER/IP
A.4	IMPACT MODEL	PSTF 1/3 Scale Tests	Completed	NEDO/NEDE 13426P	8/75 - 9/75	LP SER/IP
		Mark I 1/12 Scale Tests	Completed	NEDO/NEDC 20989-2P	9/75 - 11/75	LP SER/IP
A.5	LOADS ON SUBMERGED STRUCTURES	LOCA/RH Air Bubble Model	Completed	NEDO/NEDE 21471-P	9/77 - 1/78	LP SER/IP
		LOCA/RH Water Jet Model	Completed	NEDO/NEDE 21472-P	9/77 - 1/78	LP SER/IP
		Ring Vortex Model	Completed	Letter Report	5/79 - 5/79	LP/IP
			4Q 79	Topical Report		IP
		Applications Methods	Completed	NEDO/NEDE 21730-P	12/77 - 1/78	LP SER/IP
		Quenc. Air Bubble Model	3Q 79	NEDO 21471 Supplement		IP
		Appl. Memo. Supplement Quencher Air Bubble	3Q 79	NEDE 21730 Supplement		IP
		1/4 Scaling Tests	Complete	NEDE 23817-P	9/78 - 12/78	Info
		Data Eval.	4Q 79	Report		Info
		Steam Condensation Methods	-	Plant DAR's		LP SER/IP
A.6	CHUGGING ANALYSIS AND TESTING	Single Cell Report	Completed	NEDO/NEDE 23703-P	9/77 - 11/77	LP SER
		Multivent Model	Completed	NEDO/NEDE 21669-P	2/78 - 3/78	IP
		4T FSI Report	Completed	NEDO/NEDE 23710-P	4/78 - 3/78	LP SER
A.7	CHUGGING SINGLE VENT	CREARE Report	Completed	NEDO/NEDE 21851-P	6/78 - 7/78	Info.
A.9	EPRI TEST EVALUATION	EPRI-4T Comparison	Completed	NEDO 21667	8/77 - 9/77	LP SER*
-	EPRI 1/13 SCALE TESTS	3D Tests	Completed	EPRI NP-441	4/77 - --	LP SER*
-	EPRI SINGLE CELL TESTS	Unit Cell Tests	3Q 79	EPRI Report		Info
A.11	MULTIVENT SUBSCALE TESTING AND ANALYSIS	Preliminary MV Prog Plan	Completed	NEDO 23697	12/77 - 1/78	LP SER/IP
		MV Test Program Plan & Proc. - Phase I	Completed	NEDO 23697 Rev 1	1/79 - 4/79	IP
		Phase I Test Report	3Q 79	Report		IP
		MV Test Prog Plan & Proc - Phase II	3Q 79	NEDO 23697, Rev. 1, Supp. 1		IP
		Phase II Test Report	2Q 80	Report		IP
		CONMAP Tests	3Q 79	Report		Info.
		MHM Verification 1/10 Scale	Completed	NEDE 25116-P	5/79 - 7/79	Info.
A.13	SINGLE VENT LATERAL LOADS	Dynamic Analysis	Completed	NEDO 24106-P	3/78 - 7/78	IP
		Summary Report	Completed	NEDE 23806-P	10/78 - 11/78	IP
		Summary Report (Extension)	3Q 79	Report		
A.16	IMPROVED CHUGGING LOAD DEFINITION	Impulse Evaluation	Completed	Letter Report	6/78 - 7/78	LP SER*
		Improved Chug Load Defn.	3Q 79	Report		IP
A.17	STEAM CONDENSATION OSCILL.	4T C.O. Test	2Q80	Report		IP

CK:at/30E2
CK070979

MARK II CONTAINMENT - SUPPORTING PROGRAM
SRV - RELATED TASKS

TASK NUMBER	ACTIVITY	ACTIVITY TYPE	TARGET COMPLETION	DOCUMENTATION	DATE DOC/SUBM	LEAD PLANT SER/ INTERMED PLANT
B.1	QUENCHER EMPIRICAL MODEL	DFFR Model	Completed	NEDO/NEDE 21061-P	9/76 - 9/76	IP
		Supporting Data	Completed	NEDO/NEDE 21078-P	5/75 - 7/75	IP
B.2	RAMSHEAD MODEL	DFFR Model	Completed	NEDO/NEDE 21061-P	9/76 - 9/76	LP SER
		Supporting Data	Completed	NEDO/NEDE 21062-P	7/75 - 10/75	LP SER
		Analysis	Completed	NEDO/NEDE 20942-P	5/75 - 7/75	LP SER
B.3	MONTICELLO IN-PLANT S/RV TESTS	Preliminary Test Rpt.	Completed	NEDO/NEDC 21465-P	12/76 - 1/77	LP SER
		Hydrodynamic Report	Completed	NEDO/NEDC 21581-P	8/77 - 8/77	LP SER
B.5	S/RV QUENCHER IN-PLANT CAORSO TESTS	Test Plan	Completed	NEDM 20988 Rev. 2	12/76 - 3/77	IP
		Test Plan Addendum 1	Completed	NEDM 20988 Rev. 2, Add 1	10/77 - 3/78	IP
		Test Plan Addendum 2	Completed	NEDM 20988 Rev. 2, Add 2	4/78 - 7/78	IP
		Test Summary	Completed	Letter Report	3/79 - 3/79	
	Phase I	Test Report	Completed	NEDE-25100-P	5/79 - 6/79	IP
	Phase II	Test Report	1Q 80	Report		IP
B.6	THERMAL MIXING MODEL	Analytical Model	Completed	NEDO/NEDC 23689-P	3/78 - 3/78	Info.
B.10	MONTICELLO FSI	Analysis of FSI	Completed	NEDO 23834	6/78 - 7/78	LP SER
B.11	DFFR RAMSHEAD MODEL TO MONTICELLO DATA	Data/Model Comparison	Completed	NSC-GEN 0394	9/77 - 10/77	LP SER
B.12	RAMSHEAD SRV METHODOLOGY SUMMARY	Analytical Methods	Completed	NEDO 24070	10/77 - 11/77	LP SER
B.14	QUENCHER EMPIRICAL MODEL UPDATE	Model Confirmation	1Q 80	Report		Info.

CK:csc/30F2
CK070979

MARK II CONTAINMENT - SUPPORTING PROGRAM
MISCELLANEOUS TASKS

TASK NUMBER	ACTIVITY	ACTIVITY TYPE	TARGET COMPLETION	DOCUMENTATION	DATE DOC/SUBM	LEAD PLANT SER/ INTERMED PLANT
C.0	SUPPORTING PROGRAM	Supp Prog Rpt	Completed	NEDO 21297	5/76 - 6/76	-
		Supp Prog Rpt Rev.	Completed	NEDO 21297 - Rev. 1	4/78 - 4/78	-
		Supp Prog Rpt Rev.	4Q 79	NEDO 21297 - Rev. 2		Info
C.1	DFFR REVISIONS	Revision 1	Completed	NEDO/NEDE 21061-P Rev. 1	9/75 - 4/76	-
		Revision 2	Completed	NEDO/NEDE 21061-P Rev. 2	9/76 - 9/76	-
		Revision 3	Completed	NEDO/NEDE 21061-P Rev. 3	6/78 - 6/78	-
C.3	NRC ROUND 1 QUESTIONS	DFFR Rev. 2	Completed	NEDO/NEDE 21061-P Rev. 2	9/76 - 9/76	LP SER*/IP
		DFFR Rev. 2 Amendment 1	Completed	NEDO/NEDE 21061-P Rev. 2 Amend. 1	12/76 - 2/77	LP SER*/IP
		DFFR Rev. 3, Appendix A	Completed	NEDO/NEDE 21061-P Rev. 3 Appendix A	6/78 - 5/79	LP SER*/IP
C.5	SRSS JUSTIFICATION	Interim Report	Completed	(NEDE 24010)	4/77 - 3/77	
		SRSS Report	Completed	NEDO/NEDE 24010-P	7/77 - 8/77	LP SER*/IP
		SRSS Exec. Report	Completed	Summary Report	4/78 - 5/78	LP SER*/IP
		SRSS Criteria Appl.	Completed	NEDO/NEDE 24010-P Suppl. 1	10/78 - 11/78	LP SER*/IP
		SRSS Bases	Completed	NEDO/NEDE 24010-P Suppl. 2	12/78 - 2/79	LP/IP
		SRSS Justification Suppl.	3Q 79	Report		LP/IP
C.6	NRC ROUND 2 QUESTIONS	DFFR Amendment 2	Completed	NEDO/NEDE 21061-P Rev. 2 Amend. 2	6/77 - 7/77	LP SER*/IP
		DFFR Amend 2, Suppl 1	Completed	NEDO/NEDE 21061-P Rev.2 Amend.2 Supp.1	8/77 - 9/77	LP SER*/IP
		DFFR Amend 2, Suppl 2	Completed	NEDO/NEDE 21061-P Rev.2 Amend.2 Supp.2	9/77 - 11/77	LP SER*/IP
		DFFR Rev. 3, Appendix A	Completed	NEDO/NEDE 21061-P, Rev. 3 Appendix A	6/78 - 7/79	LP SER*/IP
C.7	JUSTIFICATION OF "4T" BOUNDING LOADS	Chugging Loads Justification	Complete	NEDO/NEDE 23617-P	7/77 - 8/77	LP SER/IP
			Complete	NEDO/NEDE 24013-P	6/77 - 8/77	LP SER/IP
			Complete	NEDO/NEDE 24014-P	6/77 - 8/77	LP SER/IP
			Complete	NEDO/NEDE 24015-P	6/77 - 8/77	LP SER/IP
			Complete	NEDO/NEDE 24016-P	6/77 - 8/77	LP SER/IP
			Complete	NEDO/NEDE 24017-P	6/77 - 8/77	LP SER/IP
			Complete	NEDO/NEDE 23627-P	6/77 - 8/77	LP SER/IP
C.8	S/RV AND CHUGGING FSI	Prestressed Concrete Reinforced Concrete Steel	Completed	NEDO/NEDE 21936-P	7/78-7/78	LP SER/IP
C.9	MONITOR WORLD TESTS	Monitor Tests	End of Program	None		
C.13	LOAD COMBINATIONS & FUNCTIONAL CAPABILITY CRITERIA	Criteria Justification	Completed	NEDO 21985	9/78 - 12/78	IP
C.14	NRC ROUND 3 QUESTIONS	Letter Report	Completed	Letter Report	6/78 - 6/78	LP SER*/IP
		DFFR, Rev. 3, Appendix A		NECO/NEDE 21061-P Rev. 3 Appendix A	6/78 - 5/79	LP SER*/IP
C.15	SUBMERGED STRUCTURE CRITERIA	NRC Question Responses	3Q 79	Letter Report		LP SER/IP

* Submitted in response to NRC question.

LP SER: Zimmer, LaSalle, Shoreham
IP: All Other Plants

CK:at/30E1
CK070979

Mark II
7-24-79

MARK II PROGRAM

LICENSING BACKGROUND

ORIGINAL PRESSURE SUPPRESSION DESIGN BASIS

HUMBOLDT BAY LOCA TESTS	1958-1960
BODEGA BAY LOCA TESTS	1962-1963

NEW ERA OF TESTING STARTS

GE SMALL SCALE MARK III TESTS	1971
QUAD CITIES SRV TESTS (RAMSHEADS)	OCT 1972
KWU SRV TESTS (QUENCHERS)	1972-1974
MARVIKEN LOCA TESTS START	AUG 1973
GE MARK III PSTF TESTS START	NOV 1973

HYDRODYNAMIC LOADING CONDITIONS BEGIN TO BE DEFINED

FIRST RAMSHEAD SRV MODEL	APRIL 1973
PRELIM. MARK III POOL SWELL LOADS	APRIL 1974
PRELIM. MARK II SRV LOADS IDENTIFIED	DEC 1974
PRELIM. MARK II LOCA LOADS IDENTIFIED	JAN 1975
TWO MARK II's REPORT TO NRC	MARCH 7, 1975
NRC LETTERS REQUESTING LOCA INFORMATION	APRIL 17, 1975
NRC LETTERS REQUESTING SRV INFORMATION	APRIL 21, 1975
MARK I AND II OWNERS GROUPS FORM	MAY, 1975

LJS
7/24/79

MARK II PROGRAM

LICENSING BACKGROUND

PROGRAM APPROACH

PHASE I --- DYNAMIC FORCING FUNCTION REPORT (DFFR)

DEFINES HYDRODYNAMIC LOADS FOR LOCA AND SRV, PROVIDES ANALYTICAL TOOLS FOR PLANT UNIQUE LOAD DEFINITION, AND LISTS STRUCTURAL CRITERIA TO BE USED FOR PLANT UNIQUE DESIGN ANALYSIS.

PREPARED BY GE AND SARGENT AND LUNDY

SUBMITTED TO THE NRC OCTOBER 25, 1975

REVISIONS MADE AS REQUIRED TO REFLECT RESOLUTION OF NRC REVIEW OF DFFR AND SUPPORTING PROGRAM

LJS
7/24/79

MARK II PROGRAM

LICENSING BACKGROUND

PROGRAM APPROACH

PHASE II --- DESIGN ANALYSIS REPORT (DAR)

DOCUMENTS THE STURCTURAL ANALYSIS/DESIGN USING PLANT UNIQUE HYDRODYNAMIC LOADS AND LOAD CRITERIA THAT RESULT FROM APPLYING THE METHODOLOGY IN THE DFFR

PREPARED BY UTILITY AE

SUBMITTED TO NRC FEBRUARY THROUGH JUNE 1976

REVISIONS MADE AS REQUIRED TO REFLECT RESOLUTION OF NRC REVIEW OR TO REFLECT CHANGES TO DFFR

LJS
7/24/79

MARK II PROGRAM

LICENSING BACKGROUND

PROGRAM APPROACH

PHASE III --- SUPPORTING PROGRAM

PROVIDES TESTING AND ANALYSIS INFORMATION TO DEMONSTRATE THE ADEQUACY OF DFFR METHODOLOGY

MANAGED BY GE

SUBMITTED TO THE NRC AS EACH TASK IS COMPLETED

1733 307

LJS
7/24/79

MARK II PROGRAM
LICENSING BACKGROUND

PROGRAM INTEGRATION MUST CONSIDER STATUS OF DESIGN/CONSTRUCTION

- ALTHOUGH PLANTS ARE AT VARIOUS STAGES OF CONSTRUCTION, ESSENTIALLY ALL EQUIPMENT IS FABRICATED AND MUCH OF IT ALREADY INSTALLED.

- LIKE SEISMIC LOADS, HYDRODYNAMIC LOADS AFFECT THE CONTAINMENT STRUCTURE AND ALL EQUIPMENT CONTAINED WITHIN IT.

- THUS, IN ADDITION TO THE HYDRODYNAMIC LOAD DEFINITION ITSELF, DYNAMIC LOAD COMBINATIONS, THE METHOD OF COMBINING THEM (ABS vs SRSS), AND THE ACCEPTANCE CRITERIA, BECOME EXTREMELY IMPORTANT IN ORDER TO ATTAIN A BALANCED DESIGN.

- ALTHOUGH FUNCTIONAL CAPABILITY IS REALLY A GENERIC NRC CONCERN THAT NEED NOT BE RESOLVED AS PART OF THE MARK II PROGRAM, AN EFFORT IS BEING MADE TO ADDRESS THIS ISSUE.

- BECAUSE OF ADVANCED STAGE OF CONSTRUCTION AND LICENSING REVIEW, ZIMMER, LA SALLE AND SHOREHAM FORM LEAD PLANT SUBGROUP IN MID 1977.

- BECAUSE OF GENERIC NSSS EQUIPMENT ADEQUACY EVALUATION NEEDS FOR MARK II AND III PLANTS, GE INITIATES SEPARATE DISCUSSIONS WITH NRC (MATTSON) IN EARLY 1978.

- SQRT ACTIVITIES AND SCHEDULE HAVE A HIGH POTENTIAL FOR FURTHER COMPLICATING MARK II PROGRAM CLOSURE.

LJS
7/24/79

MARK II PROGRAM

LICENSING BACKGROUND

STRATEGY FOR LEAD MARK II PROJECTS

- ESTABLISH COMPREHENSIVE LEAD PLANT PROGRAM DEFINITION
- SEPARATE PROGRAM INTO BASIC AND CONFIRMATORY ACTIVITIES
- KEEP DFFR CURRENT WITH PROGRAM OUTPUT
- COMPLETE OR UPDATE DESIGN ANALYSIS REPORTS
- KEEP PRESSURE ON NRC REVIEW SCHEDULE

LEAD PLANT STATUS/OPEN ITEMS ARE TO BE DISCUSSED IN A SEPARATE MEETING

1733 309

LJS
7/24/79

MARK II PROGRAM
LICENSING BACKGROUND

KEY AREAS NEEDING NRC ATTENTION/RESOLUTION

SRSS - MARK II OWNER POSITIONS REGARDING NRC ACCEPTANCE CRITERIA ON LOAD DEFINITION ARE BASED ON APPROVAL OF SRSS FOR ALL DYNAMIC LOADS (LOCA, SEISMIC, & SRV). MARK II & III EQUIPMENT ADEQUACY ASSESSMENTS UTILIZE SRSS COMBINATION METHODOLOGY.

LOAD COMBINATIONS - LOAD CASE 10 IS A NEW NRC REQUIREMENT FOR EQUIPMENT ADEQUACY ASSESSMENTS WHICH TAKES AN ARBITRARY LOAD COMBINATION FOR DEMONSTRATING CONTAINMENT ASYMMETRIC LOCA LOAD CAPABILITIES & MAKES IT A MECHANISTIC COMBINATION NOT PREVIOUSLY CONSIDERED.

ACCEPTANCE CRITERIA - ARBITRARY NRC CLASSIFICATION OF THE OBE BY ITSELF & THE OBE WITH SRV'S AS EQUAL IS NOT APPROPRIATE CONSIDERING THAT LOADS ARE COMBINED AS THOUGH INDEPENDENT. OBE + SRV ALLOWABLE STRESS LIMITS, NUMBER OF SRV'S, & THE NEED FOR FATIGUE ANALYSIS (PREVIOUSLY RESOLVED) CREATING UNCERTAINTIES IN EQUIPMENT ADEQUACY ASSESSMENTS.

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

LOAD	LEAD PLANT	LONG TERM PROGRAM
LOCA		
I.A	SUBMERGED BOUNDARY VENT CLEARING LOAD	
	MARCH 20, 1979 LETTER. 24 PSI STATICALLY APPLIED TO SURFACES BELOW VENT EXIT (ATTENUATE TO 0 PSI AT POOL SURFACE) FOR PERIOD OF VENT CLEARING. ZIMMER AND LASALLE MEET NUREG-0487	MARCH 20, 1979 LETTER. 24 PSI STATICALLY APPLIED TO SURFACES BELOW VENT EXIT (ATTENUATE TO 0 PSI AT POOL SURFACE) FOR PERIOD OF VENT CLEARING.
I.B.1	POOL SWELL ANALYTICAL MODEL	
(a)	ACCEPT NUREG 0487	(a) ACCEPT NUREG 0487
(b)	ACCEPT NUREG 0487 (SHOREHAM FEBRUARY 16, 1979 LETTER RE-EMPHASIZE RESPONSE TO QUESTION 020.68).	(b) APPROACH IN RESPONSE TO QUESTION 020.63 TO BE USED.
(c)	ACCEPT NUREG 0487 WITH VELOCITY VS. ELEVATION OBTAINED FROM PSAM.	(c) ACCEPT NUREG 0487 WITH VELOCITY VS. ELEVATION OBTAINED FROM PSAM.
(d)	ACCEPT NUREG 0487	(d) ACCEPT NUREG 0487
(e)	ACCEPT NUREG 0487	(e) ACCEPT NUREG 0487
(f)	ACCEPT NUREG 0487	(f) ACCEPT NUREG 0487
I.B.2	SUBMERGED BOUNDARY POOL SWELL LOAD	
	ACCEPT NUREG 0487	ACCEPT NUREG 0487
I.B.3	POOL SWELL IMPACT LOAD	
(a)	ACCEPT NUREG 0487	(a) ACCEPT NUREG 0487
(b)	NOT APPLICABLE (NO LARGE STRUCTURES).	(b) NOT APPLICABLE (NO LARGE STRUCTURES).
(c)	ACCEPT NUREG 0487 WITH VELOCITY VS. ELEVATION OBTAINED FROM PSAM.	(c) ACCEPT NUREG 0487 WITH VELOCITY VS. ELEVATION OBTAINED FROM PSAM.

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

(Continued)

LOAD	LEAD PLANT	LONG TERM PROGRAM
I.B.4	WETWELL AIR COMPRESSION	
	(a) ACCEPT NUREG 0487 (b) ACCEPT NUREG 0487	(a) ACCEPT NUREG 0487 (b) ACCEPT NUREG 0487
I.B.5	ASYMMETRIC LOADING	
	MARCH 16, 1979 LETTER. 10% OF MAXIMUM BUBBLE PRESSURE STATICALLY APPLIED TO 1/2 OF THE SUBMERGED BOUNDARY WITH HYDROSTATIC PRESSURE.	MARCH 16, 1979 LETTER. 10% OF MAXIMUM BUBBLE PRESSURE STATICALLY APPLIED TO 1/2 OF THE SUBMERGED BOUNDARY WITH HYDROSTATIC PRESSURE.
I.C.1	DOWNCOMER LATERAL LOADS	
	(a) NUREG 0487 ACCEPTABLE FOR STATIC ANALYSIS.	(a) TASK A.13 SINGLE VENT DYNAMIC LATERAL LOAD TO BE USED.
	(b) ACCEPT NUREG 0487	(b) TASK A.13 MULTI-VENT DYNAMIC LATERAL LOAD TO BE USED.
I.C.2	SUBMERGED BOUNDARY STEAM CONDENSATION LOADS	
	(a) ACCEPT NUREG 0487	(a) ACCEPT NUREG 0487
	(b) ACCEPT NUREG 0487	(b) ACCEPT NUREG 0487 AS INTERIM. (ADDITIONAL FREQUENCY RANGES BEIN(EVALUATED) FINAL BASIS TO BE 4T C.O. TEST RESULTS.
	(c) ACCEPT NUREG 0487	(c) ACCEPT NUREG 0487 AS INTERIM. FINAL BASIS TO BE TASK A.16 LOAD IMPROVEMENT PLUS MULTI-VENT TEST RESULTS AS CONFIRMATION.
SRV II.A	POOL TEMPERATURE LIMITS	
	(a) ACCEPT NUREG 0487	(a) DOCUMENT WILL BE PREPARED USING ADDITIONAL PP&L TEST DATA TO SUPPORT NO (LOCAL) TEMPERATURE LIMIT FOR QUENCHERS.
		(b) NUREG-0487 NOT APPLICABLE BASED ON (a) ABOVE.
		(c) ACCEPT NUREG 0487.

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

(Continued)

LOAD	LEAD PLANT	LONG TERM PROGRAM
II.B AIR CLEARING LOADS		
	(a) ACCEPT NUREG 0487	(a) T-QUENCHERS LOAD PREDICTIVE METHODS PRESENTED IN SUSQUEHANNA DAR, SECTION 4.1.3 X-QUENCHER LOAD DEFINITION BEING DEVELOPED BY BURNS & ROE BASED LARGELY ON CAORSO TEST DATA
	(b) LOAD CASE 5 IS NOT REALISTIC AND SHOULD NOT BE INCLUDED FOR EVALUATION. MULTIPLE VALVE CASES WILL BE ADDRESSED IN PLANT DARs.	(b) LOAD CASE 4 IS NOT INCLUDED FOR EVALUATION. IT IS BOUNDED BY CASE 1.a AND 1.b.
	(c) PLANT UNIQUE CLOSURE REPORTS DEFINE METHOD USED TO DEFINE BUBBLE FREQUENCY.	(c) T-QUENCHER BUBBLE FREQUENCY PRESENTED IN SUSQUEHANNA DAR, SECTION 4.1.3. X-QUENCHER BUBBLE FREQUENCY BEING DEVELOPED BY BURNS & ROE BASED LARGELY ON CAORSO TEST DATA.
II.C.1 QUENCHER ARM LOADS		
	(a) NUREG 0487 NOT APPLICABLE	(a) ACCEPT NUREG 0487
	(b) ACCEPT NUREG 0487	(b) T-QUENCHER ARM LOADS PRESENTED IN SUSQUEHANNA DAR, SECTION 4.1.2.5
II.C.2 QUENCHER TIE-DOWN LOADS		
	(a) NUREG 0487 NOT APPLICABLE	(a) ACCEPT NUREG 0487
	(b) ACCEPT NUREG 0487	(b) T-QUENCHER TIE-DOWN LOADS PRESENTED IN SUSQUEHANNA DAR, SECTION 4.1.2.5.

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

(Continued)

LOAD	LEAD PLANT	LONG TERM PROGRAM
SUBMERGED STRUCTURES		
III.A WATER JET LOADS		
	1 WILL ADDRESS CRITERIA BY BY PROPOSING CORRECTED EQUATIONS IN 1.a AND 1.b, SUBMIT PRELIMINARY RING VORTEX MOD. AND SUPPORTING SUBSCALE BENCH MARK TEST.	1 RING VORTEX MODEL INCLUDING POTENTIAL FUNCTION FOR INDUCED FLOW BEING FINALIZED. MORE APPROPRIATE ACCELERATION DRAG CONSIDERATION TO BE IDENTIFIED.
	2 ZONE OF INFLUENCE DEVELOPED BASED ON T-QUENCHER PROGRAM AND/OR QUENCHER WATER JET MODEL. NO SIGNIFICANT LOADS BEYOND 5 FT.	2 DATA FROM T-QUENCHER TEST PROGRAM PRESSURE TRANSDUCER P5.5, SHOWS NO WATER JET EFFECT (SUSQUEHANNA DAR, SECTION 8). NO SIGNIFICANT LOADS BEYOND 5FT ZONE OF INFLUENCE.
		3 NUREG-0487 X-QUENCHER CRITERIA ACCEPTED.
III.B AIR BUBBLE DRAG LOADS		
	1(a) ACCEPT NUREG 0487 ADJUSTMENTS TO DRAG	1(a) ACCEPT NUREG 0487 ADJUSTMENTS TO DRAG
	(b) IDENTIFY MORE APPROPRIATE ACCELERATION DRAG COEFFICIENT TREATMENT THAN FACTOR OF 3.	(b) IDENTIFY MORE APPROPRIATE ACCELERATION DRAG COEFFICIENT TREATMENT THAN FACTOR OF 3.
	(c) DEMONSTRATE THAT ACCELERATION AT CENTER OF STRUCTURE IS TECHNICALLY CORRECT. DEMONSTRATE THAT ERROR RESULTING IN VELOCITY AT CENTER VS. MAXIMUM VELOCITY IS SMALL AND BOUNDED BY CONSERVATISM IN VELOCITY APPLIED. THUS SIMPLIFIED DFFR APPROACH IS ACCEPTABLE.	(c) DEMONSTRATE THAT ACCELERATION AT CENTER OF STRUCTURE IS TECHNICALLY CORRECT. DEMONSTRATE THAT ERROR RESULTING IN VELOCITY AT CENTER VS. MAXIMUM VELOCITY IS SMALL AND BOUNDED BY CONSERVATISM IN VELOCITY APPLIED. THUS SIMPLIFIED DFFR APPROACH IS ACCEPTABLE.

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

(Continued)

LOAD	LEAD PLANT	LONG TERM PROGRAM
	(d) DEMONSTRATE THAT FACTOR (&) OF 4 IS NOT TECHNICALLY CORRECT (e) FOR STANDARD DRAG. REFER TO QUESTION RESPONSE TO 020.70. INTERFERENCE EFFECT ON ACCELERATION DRAG WILL BE ANALYZED ON A PLANT UNIQUE BASIS.	(d) DEMONSTRATE THAT FACTOR (&) OF 4 IS NOT TECHNICALLY CORRECT (e) FOR STANDARD DRAG. REFER TO QUESTION RESPONSE TO 020.70. INTERFERENCE EFFECT ON ACCELERATION DRAG WILL BE ANALYZED ON A PLANT UNIQUE BASIS.
	(f) ACCEPT NUREG-0487	(f) ACCEPT NUREG-0487
	2(a) ACCEPT NUREG-0487	2(a) NOT APPLICABLE (NO RAMSHEADS)
	(b) FOR III.B.1(a) AND (c) THRU (f), SEE ABOVE. FOR III.B.1(b), IT WILL BE DEMONSTRATED THAT A FACTOR OF 3 FOR DRAG COEFFICIENTS IS NOT CORRECT FOR OSCILLATING BUBBLES AND THAT STANDARD DRAG LOADS ARE NEGLIGIBLE.	
	3 T-QUENCHER BUBBLE LOCATION AND SIZE ARE PLANT UNIQUE. AMPLITUDE AND FREQUENCY ARE BASED ON PP&L PROGRAM, METHODOLOGY FROM NEDE-21471-P IS USED TO APPLY LOAD TO STRUCTURES.	3 T-QUENCHER METHODOLOGY PRESENTED IN SUSQUEHANNA, DAR 4.1.3. X-QUENCHER METHODOLOGY TO BE PRESENTED IN HANFORD 2 DAR.
III.C STEAM CONDENSATION LOADS	ACCEPT NUREG-0487	PLANT UNIQUE METHODS BEING DEVELOPED.

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NRC ACCEPTANCE CRITERIA

MARK II LOAD COMBINATIONS FOR

NOTE: SRSS IS TECHNICALLY JUSTIFIED AND IS THE LICENSING BASIS.

LOAD COMBINATION		LEAD PLANT	LONG TERM PROGRAM
#1	$N+SRV_x$ TO B	ACCEPTABLE	ACCEPTABLE
#2	$N+SRV_x$+OBE TO B	$N+SRV_{all}$+OBE TO B USED. APPROVED GESSAR APPROACH USED FOR NSSS.	$N+SRV_2$+OBE TO B AND $N+SRV_{all}$+OBE TO C USED. SRV_2 IS ARBITRARY. APPROVED GESSAR APPROACH USED FOR NSSS. SEE RESPONSE TO QUESTION MEB-7b.
#3	$N+SRV_{all}$+SSE TO C^4	ACCEPTABLE. WE RESERVE THE RIGHT TO USE THE RODABAUGH CRITERIA	RODABAUGH PAPER TO BE USED AS BASIS FOR ACCEPTANCE CRITERIA (i.e., C OR D).
#4	$N+SRV_{ads}$+OBE+SBA TO C^4	ENVELOPED BY #5 AND #6	
#5	$N+SRV_{ads}$+OBE+IBA TO C^4	ENVELOPED BY #6	
#6	$N+SRV_{ads}$+SSE+IBA TO C^4	SAME AS POSITION FOR #3	SAME AS POSITION FOR #3.
#7	N+SSE+DBA TO C^4	SAME AS POSITION FOR #3	SAME AS POSITION FOR #3. SEE RESPONSE TO QUESTION MEB-7a.
#8	N TO A	ACCEPTABLE	ACCEPTABLE
#9	N+OBE TO B	ACCEPTABLE	ACCEPTABLE
#10	$N+SRV_1$+SSE+DBA TO C^4	APPLIED TO CONTAINMENT ONLY (SEE M 020.22 & DFFR 5.2.4)	

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NRC ACCEPTANCE CRITERIA

OTHER MISCELLANEOUS POSITIONS

NRC POSITION	LEAD PLANT	LONG TERM PROGRAM
FUNCTIONAL CAPABILITY	ACCEPTABLE. WE RESERVE THE RIGHT TO USE THE RODABAUGH CRITERIA	DEMONSTRATION OF FUNCTIONAL CAPABILITY WILL BE BASED ON RODABAUGH CRITERIA.
MASS-ENERGY RELEASE FOR ANNULUS PRESSURIZATION	ACCEPTABLE TO ZIMMER AND LASALLE. SHOREHAM ASSUMES VERIFICATION OF MASS-ENERGY RELEASE RATE HAS BEEN SHOWN BY ZIMMER, LASALLE AND HATCH-2.	VERIFICATION OF MASS-ENERGY RELEASE RATE HAS BEEN SHOWN BE ZIMMER, LASALLE AND HATCH-2.
QUESTIONS SEB-2, MEB-5	15% PEAK BROADENING TO BE USED.	
SEB-3, MEB-5	CLOSELY SPACED MODES ARE COMBINED PER 1.92 WHERE REANALYSIS IS PERFORMED. NSSS SCOPE USES MODIFIED SUMMATION PER APPROVED GESSAR.	
MEB-1	ACCEPTABLE	
MEB-2	ACCEPTABLE	
MEB-6	ACCEPTABLE	
MEB-7a AND b	SEE LOAD COMBINATION TABLE FOR CASE #2 AND #7	
MEB-8	SEE FUNCTIONAL CAPABILITY DISCUSSION ABOVE AND LOAD COMBINATION AND ACCEPTANCE CRITERIA TABLE.	

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NRC ACCEPTANCE CRITERIA
MARK II POOL DYNAMIC LOADS

	BAILLY	HANFORD	LIMERICK	NINE MILE PT.	SUSQUEHANNA
LOCA					
I. A - VENT CLEARING	X			X	
I. B - POOL SWELL		X			
I. C - C. O. & CHUGGING		X			X
SRV					
II.A - TEMPERATURE LIMIT		X			
II.B - AIR CLEARING				X	
II.C - TIE DOWN	X			X	
SUBMERGED STRUCTURES					
III.A - JET					
III.B - AIR BUBBLE	X	X	X		X
III.C - STEAM COND.		X	X	X	X

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NRC ACCEPTANCE CRITERIA
MARK II POOL DYNAMIC LOADS

BAILLY (SARGENT & LUNDY)

I.A - THE DESIGN MEETS NUREG 0487

II.C.1B - T-QUENCHER ARM LOADS ARE GENERATED USING SUBMERGED STRUCTURE METHODOLOGY SIMILAR TO LEAD PLANTS.

III.B.3 - T-QUENCHER AIR BUBBLE SUBMERGED STRUCTURE LOADS ARE GENERATED USING METHODOLOGY SIMILAR TO LEAD PLANTS.

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

HANFORD (BURNS & ROE)

I.B.3A - SMALL STRUCTURE POOL SWELL IMPACT LOADS ARE GENERATED PER DFFR, REV. 3

I.B.3c - GRATING POOL SWELL IMPACT LOADS ARE GENERATED WITH DRAG FOR MAXIMUM POOL SWELL VELOCITY (FROM IDEL'CHIK) APPLIED ON GROSS AREA WITH DYNAMIC LOAD FACTOR OF 2.

I.C.2c - THE SUBMERGED BOUNDARY CHUGGING LOAD IS GENERATED PER BURNS & ROE REPORT "CHUGGING LOADS - IMPROVED DEFINITION AND APPLICATION METHODOLOGY TO MARK II CONTAINMENTS TECHNICAL REPORT", JUNE 1979.

II.A - NO LOCAL POOL TEMPERATURE LIMIT FOR X-QUENCHER OPERATION

III.B.1 - THE LOCA AIR BUBBLE SUBMERGED STRUCTURE LOADS ARE GENERATED USING:

SOURCE - BASED ON PSAM (NEDE-21544-P) AND DFFR, REV. 3

FLOW - THREE DIMENSIONAL SOURCE FLOW IN EXACT CONTAINMENT GEOMETRY

DRAG - PER GENERIC POSITION

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NRC ACCEPTANCE CRITERIA
MARK II POOL DYNAMIC LOADS

HANFORD (BURNS & ROE) CONTINUED

III.B.3 - THE X-QUENCHER AIR BUBBLE SUBMERGED STRUCTURE LOADS ARE GENERATED USING POTENTIAL FLOW SOLUTION WITH SOURCES/SINKS DISTRIBUTED TO MAXIMIZE INDUCED FLUID TRANSIENTS IN CONJUNCTION WITH SRV AIR CLEARING LOAD AND CAORSO DATA.

III.C - THE STEAM CONDENSATION SUBMERGED STRUCTURE LOADS ARE GENERATED USING POTENTIAL FLOW SOLUTION WITH SOURCES/SINKS DISTRIBUTED TO MAXIMIZE INDUCED FLUID TRANSIENTS IN CONJUNCTION WITH APPROPRIATE SOURCE STRENGTHS, DRAG COEFFICIENTS AND INTERFERENCE EFFECTS.

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

LIMERICK (BECHTEL)

III.B.1 - LOCA AIR BUBBLE SUBMERGED STRUCTURE LOADS ARE GENERATED BY USING NEDE-21471-P TO DETERMINE THE IDEALIZED (RAYLEIGH) BUBBLE WITH THE EXCEPTION THAT THE TIME DEPENDENT DRYWELL PRESSURE HISTORY WILL BE USED IN DEFINING THE BUBBLE PRESSURE. THIS IDEALIZED BUBBLE WILL BE USED AS THE SOURCE TERM IN A MODIFIED IWEGS/MARS CODE (DEVELOPED FOR TASK A.16) TO ESTABLISH ACCELERATION AND VELOCITY FLOW FIELDS. APPLICATION OF FLOW FIELDS WILL BE THE SAME AS LEAD PLANTS FOR ITEMS A. THROUGH F.

III.C - STEAM CONDENSATION SUBMERGED STRUCTURE LOADS ARE GENERATED BY APPLYING THE C. O. AND CHUGGING SOURCE AT THE VENT EXIT IN A MODIFIED IWEGS/MARS CODE (DEVELOPED FOR TASK A.16) TO ESTABLISH ACCELERATION AND VELOCITY FLOW FIELDS. APPLICATION OF FLOW FIELDS WILL BE MADE WITH APPROPRIATE DRAG COEFFICIENTS.

QUESTIONS MEB-5 AND SEB-3

CLOSELY SPACED MODES ARE COMBINED PER REG. GUIDE 1.92 EXCEPT FOR SEISMIC LOADS. SEISMIC REANALYSIS IS DONE PER ORIGINAL DESIGN BASIS.

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NRC ACCEPTANCE CRITERIA
MARK II POOL DYNAMIC LOADS

NINE MILE POINT (STONE & WEBSTER)

I.A	GENERIC LOAD PROFILE IS APPLIED DYNAMICALLY.
II.B	REFINEMENT OF METHODOLOGY CONSIDERING KARLSTEIN TEST DATA BEING CONSIDERED
II.C	REFINEMENT OF METHODOLOGY CONSIDERING KARLSTEIN TEST DATA BEING CONSIDERED
III.C	VARIOUS ALTERNATIVE METHODS FOR DEVELOPING THE FLOW FIELDS ARE BEING EVALUATED

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NRC ACCEPTANCE CRITERIA

MARK II POOL DYNAMIC LOADS

SUSQUEHANNA (BECHTEL)

I.C.2 - STEAM CONDENSATION BOUNDARY LOADS WILL BE SUPPORTED BY PP&L TEST AT GKM-2

III.B - LOCA BUBBLE SUBMERGED STRUCTURE LOADS ARE GENERATED USING GREENS' FUNCTION TO DETERMINE FLOW FIELDS.

III.C - STEAM CONDENSATION SUBMERGED STRUCTURE LOADS ARE GENERATED USING GREENS' FUNCTION TO DETERMINE FLOW FIELDS.

QUESTIONS MEB-5 AND SEB-3

CLOSELY SPACED MODES ARE COMBINED PER REG GUIDE 1.92 EXCEPT FOR SEISMIC LOADS. SEISMIC REANALYSIS IS DONE PER ORIGINAL DESIGN BASIS

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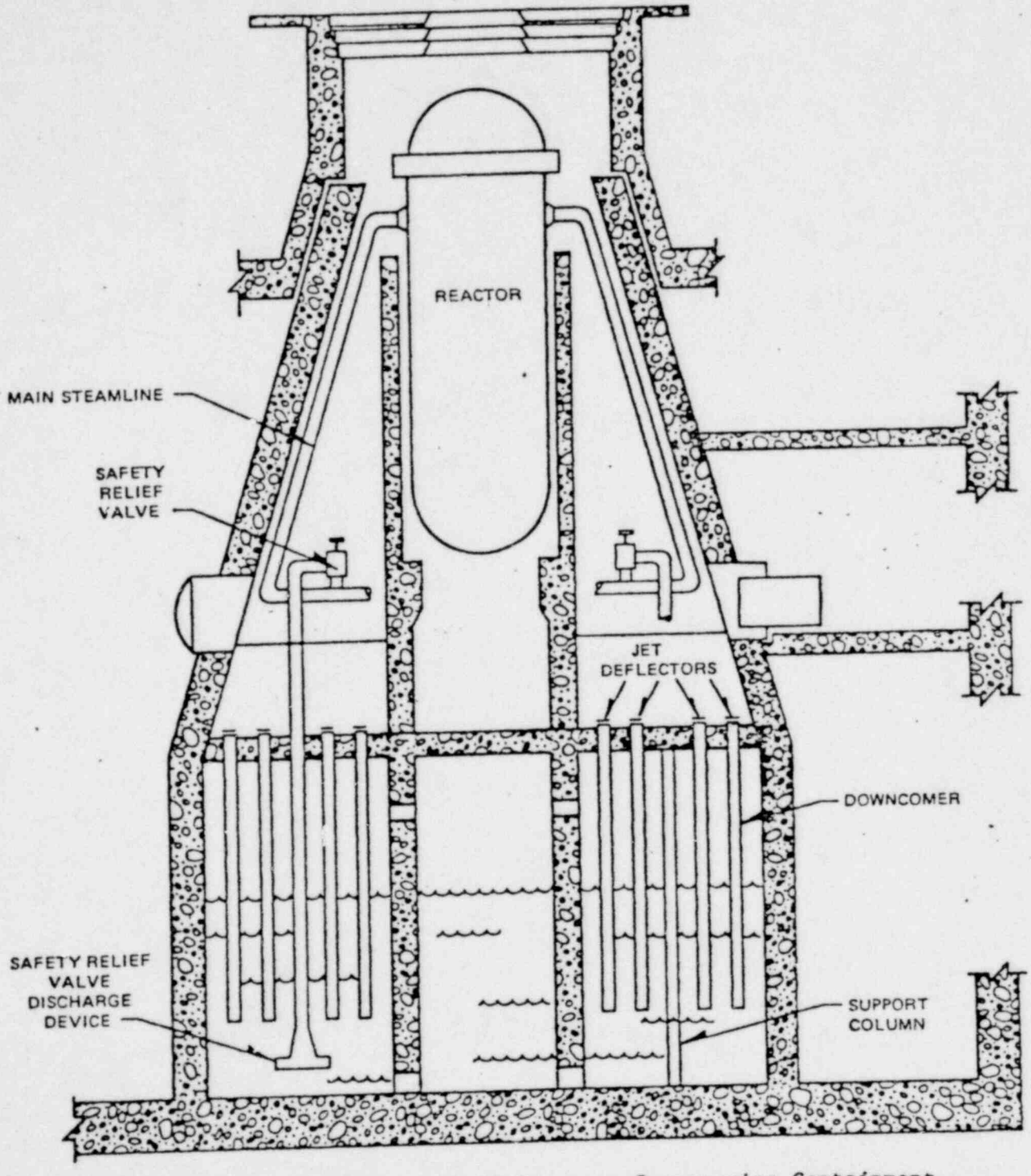


Typical Mark II Pressure Suppression Containment

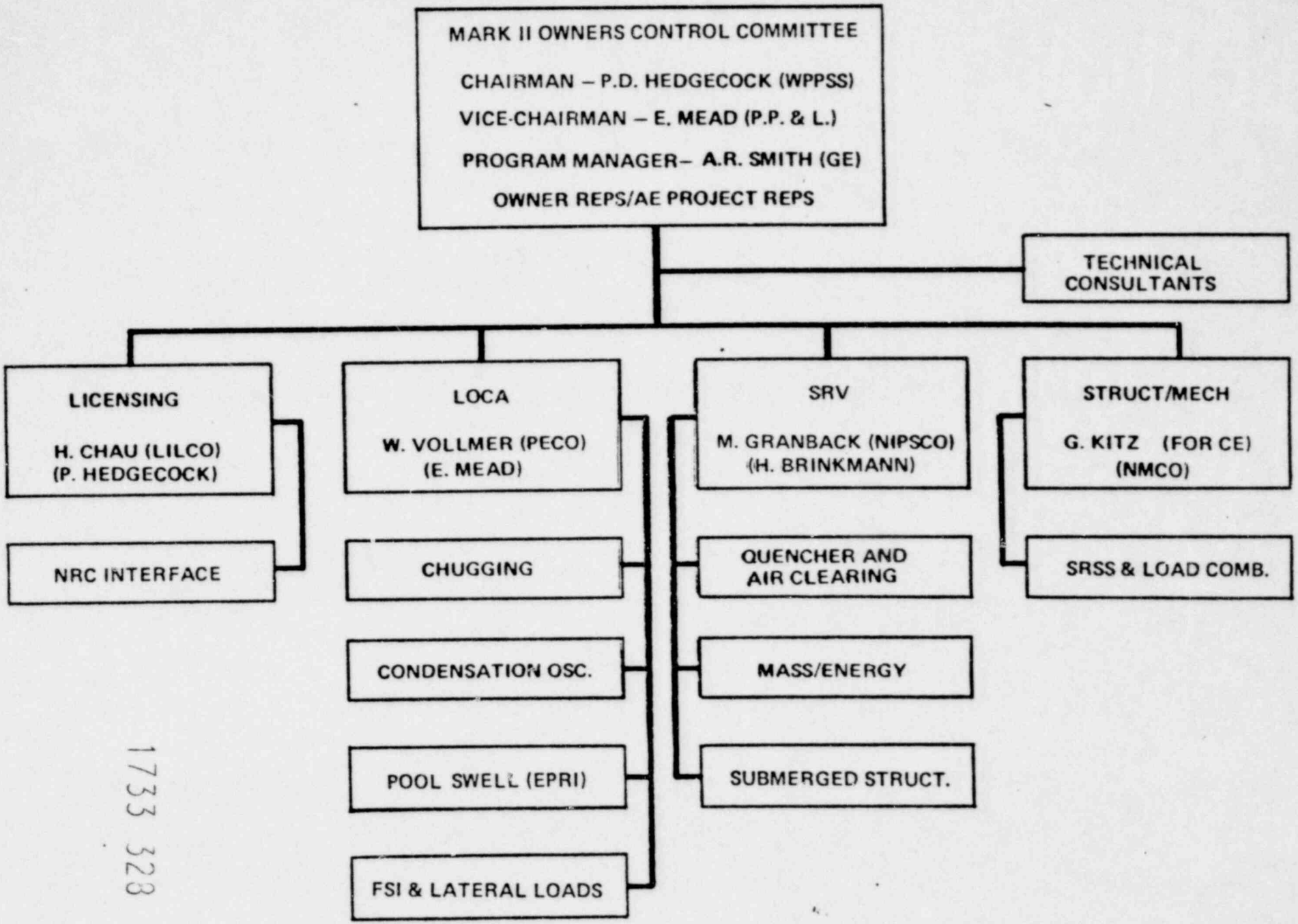
DOMESTIC MARK II UTILITIES AND PLANTS

UTILITY NAME	PLANT NAME
NORTHERN INDIANA PUBLIC SERVICE CO. CHESTERTON, INDIANA	BAILLY 1
WASHINGTON PUBLIC POWER SUPPLY SYSTEM RICHLAND, WASHINGTON	HANFORD 2
COMMONWEALTH EDISON COMPANY CHICAGO, ILLINOIS	LASALLE 1 AND 2
PHILADELPHIA ELECTRIC COMPANY PHILADELPHIA, PENNSYLVANIA	LIMERICK 1 AND 2
NIAGARA MOWHAWK POWER COMPANY SYRACUSE, NEW YORK	NINE MILE POINT 2
LONG ISLAND LIGHTING COMPANY HICKSVILLE, NEW YORK	SHOREHAM
PENNSYLVANIA POWER AND LIGHT COMPANY ALLENTOWN, PENNSYLVANIA	SUSQUEHANNA 1 AND 2
CINCINNATI GAS AND ELECTRIC COMPANY CONCINNATI, OHIO	ZIMMER

MARK II OWNERS' GROUP
OBJECTIVES

- TO SATISFACTORILY RESPOND TO THE EXPRESSED NRC CONCERNS RELATING TO DYNAMIC LOADS OCCASIONED BY LOCA AND SRV BLOWDOWN EVENTS
- TO POOL THE TALENTS OF THE OWNERS' ORGANIZATIONS, THEIR ARCHITECT-ENGINEERS, THE GENERAL ELECTRIC COMPANY AND SELECTED CONSULTANTS AND PRODUCE A RESPONSIVE, TECHNICALLY SOUND PROGRAM WHICH RESOLVES THE EXPRESSED CONCERNS

MARK II OWNERS' ORGANIZATION



MEETING BETWEEN NRC AND MARK II REPRESENTATIVES JULY 24 AND 25, 1979

OBJECTIVES

- To present a closure program for the technical concerns related to the non-Lead Mark II plants
- To indicate positions taken with respect to NUREG-0487 criteria
- To briefly describe non-generic approaches taken for non-Lead plants
- To elicit a response from the NRC concerning the program described by Mark II representatives

WHAT HAS CHANGED SINCE THE LAST MARK II MEETING WITH THE NRC (SPRING 1978) ON A CLOSURE PLAN FOR THE NON-LEAD PLANTS?

- NRC has issued NUREG-0487
- Owners have decided upon which quencher to use in all cases (7, T-quenchers and 1, X-quencher)
- Karlstein T-quenchers test completed
- Two in-plant SRV tests have been completed —CAORSO and TOKAI (both X-quenchers)
- Two full-scale condensation oscillation programs have been agreed to (GKM/PP&L and Mark II 4T)
- The scaled multivent chugging test program (A.11) is approaching completion
- Three-Mile Island (TMI-2) happened

WHY IS THERE NOT A TOTALLY GENERIC APPROACH?

- The choice of quenchers is not unanimous — hence, both T and X-quencher programs exist
- Schedule pressures have caused many AEs to develop their own analytical procedures
- Plant-unique features tend to preclude the use of sweeping conservatisms which might facilitate a generic approach