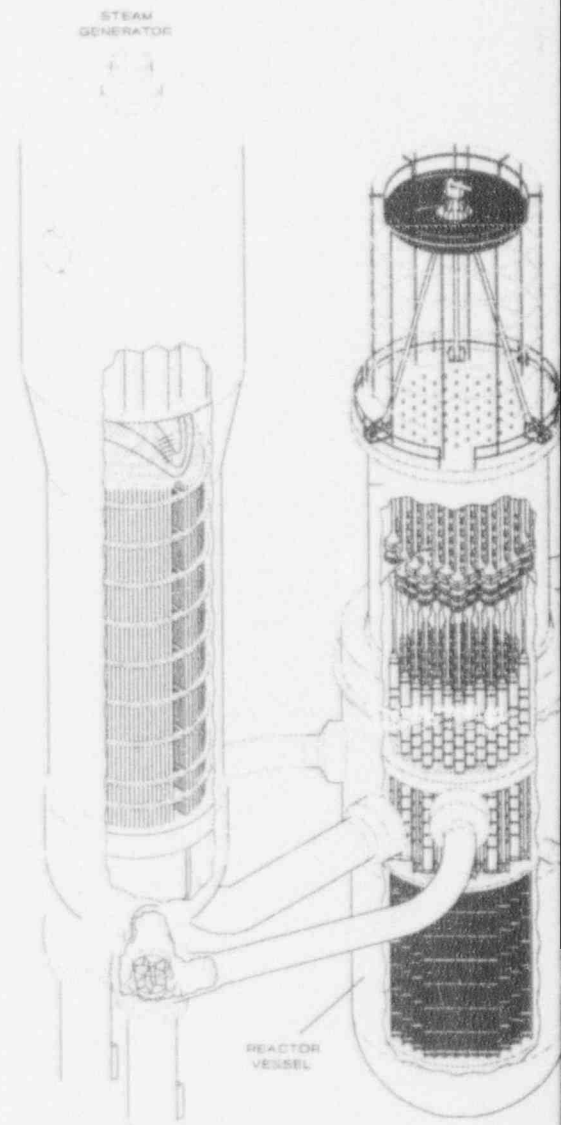




AP600 DESIGN AND DESIGN CERTIFICATION TEST PROGRAM OVERVIEW

Revision 3
August 13, 1993

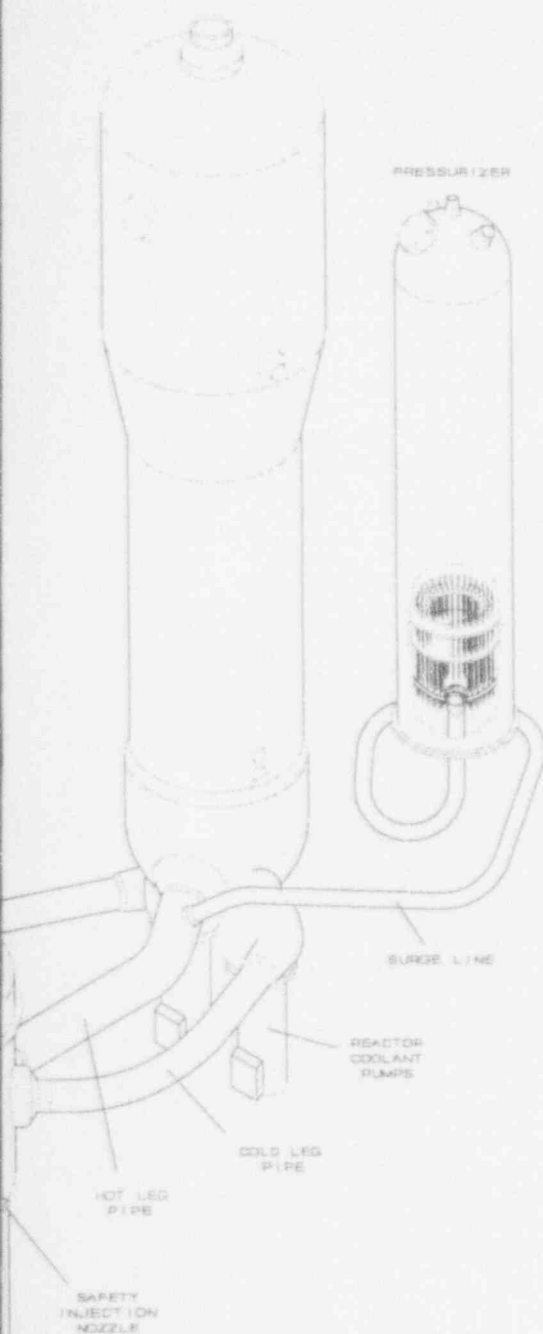


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Westinghouse Electric Corporation
Revision 3, August 13, 1993

AP600 DESIGN AND DESIGN CERT

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AP600 TEST PROGRAMS: TABLE 1 - TEST PROGRAM OVERVIEW (PART 1)

Item No.	TEST DESCRIPTION	FACILITY LOCATION	SCALE	CATEGORY	TESTING STATUS
PASSIVE CONTAINMENT COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN					
1	Air Flow Path Delta P Test	W Science & Technology Center - Churchill, PA	1:6 linear	Basic Research	Completed
2	Water Film Formation Test	W Science & Technology Center - Churchill, PA	N/A	Basic Research	Completed
3	Heated Plate Test	W Science & Technology Center - Churchill, PA	N/A	Basic Research	Completed
4	Bench Wind Tunnel Experiment	W Science & Technology Center - Churchill, PA	1:120 linear	Basic Research	Completed
5	Condensation Tests - Bare surface upward	University of Wisconsin - Madison, WI	N/A	Basic Research	Completed
6	Condensation Tests - Bare surface downward	University of Wisconsin - Madison, WI	N/A	Basic Research	Completed
7	Condensation Tests - Painted surface down	University of Wisconsin - Madison, WI	N/A	Basic Research	Completed
8	Condensation Tests - Light noncondensibles	University of Wisconsin - Madison, WI	N/A	Basic Research	Completed
9	Condensation Tests - Stagnation Flow Conditions	University of Wisconsin - Madison, WI	N/A	Basic Research	Completed
10	Condensation Tests - Stagnation/light noncondensibles	University of Wisconsin - Madison, WI	N/A	Basic Research	Completed
11	Condensation Tests - 2D condensation	University of Wisconsin - Madison, WI	N/A	Basic Research	Planned
PASSIVE CONTAINMENT COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN CERTIFICATION					
12	Integral (small scale) Tests - Phase 1 (Feasibility)	W Science & Technology Center - Churchill, PA	1:3 height 1:40 diameter	Safety Related	Completed
13	Integral (small scale) Tests - Phase 2A (Extension Tests)	W Science & Technology Center - Churchill, PA	1:3 height 1:40 diameter	Safety Related	Completed
14	Integral (small scale) Tests - Phase 2B (Continuation Tests)	W Science & Technology Center - Churchill, PA	1:3 height 1:40 diameter	Safety Related	Completed
15	1/8th Scale Heat Transfer Test - Phase 1 (Baseline)	W Science & Technology Center - Churchill, PA	~1:8 linear	Safety Related	Completed
16	1/8th Scale Heat Transfer Test - Phase 2 (Confirmatory)	W Science & Technology Center - Churchill, PA	~1:8 linear	Safety Related	In Progress
17	Water Distribution System Test - Phase 1 (20ft Diameter)	W Waltz Mill Site - Madison, PA	1:1	Safety Related	Completed
18	Water Distribution System Test - Phase 2 (1/8th Sector)	W Waltz Mill Site - Madison, PA	1:1	Safety Related	Completed
19	Water Distribution System Test - Phase 3 (1/8th sector with selected distribution system)	W Waltz Mill Site - Madison, PA	1:1	Safety Related	Planned
20	Wind Tunnel Test - Phase 1	Univ. of Western Ontario - London, Ontario	~1:100 linear	Safety Related	Completed
21	Wind Tunnel Test - Phase 2	Univ. of Western Ontario - London, Ontario	~1:100 linear	Safety Related	Completed
22	Wind Tunnel Test - Phase 3 *	Univ. of Western Ontario - London, Ontario	~1:100 linear	Safety Related	Future
23	Wind Tunnel Test - Phase 4A	CNRC Wind Tunnel - Ottawa, Canada	1:30 linear	Safety Related	In Progress
24	Wind Tunnel Test Phase 4B	Univ. of Western Ontario - London, Ontario	1:500 linear	Safety Related	Planned

IFICATION TEST PROGRAM OVERVIEW

TEST PURPOSE		ADDITIONAL INFORMATION OBTAINED (Optional)	Item No.
Obtain pressure drop data through the downcomer and annulus			1
Confirm wettability of coated steel surface			2
Confirm Passive Containment Cooling System heat transfer capability			3
Assess effects of wind on shield building design (inlet/outlet location)			4
Comparison with past separate effects tests			5
Obtain heat transfer coefficients with downward facing surfaces			6
Obtain the effect of AP600 paint on heat transfer performance			7
Obtain the effect of light noncondensibles on heat transfer performance			8
Obtain the heat transfer performance under stagnant flow conditions			9
Obtain the heat transfer performance under stagnant flow conditions in the presence of light noncondensibles			10
Measure condensation heat transfer coefficient using 2D test model	Investigate effect of non-condensibles on heat transfer coefficient and visualize flow field		11
Determine feasibility of water enhanced containment cooling system	Investigate external cooling impact from air velocity, air humidity, temperature and water film flow rates		12
Demonstrate operation of Passive Containment Cooling System (PCS) over increased range of operating conditions. Confirm PCS internal and external heat transfer capabilities (with 1:1 scale cooling air annulus at controlled air temperature & humidity)	Investigate effect of various annulus widths and uniform steam distributions. Obtain data on water film behavior on external surface over long vertical heat transfer surface.		13
Demonstrate operation of Passive Containment Cooling System with prototypic steam injection			14
Obtain heat transfer data for WGOthic computer code validation with minimal intervals			15
Obtain heat transfer data for WGOthic computer code validation	Investigate effect of non-condensibles on PCS heat removal capability and internal temperature distributions		16
Investigate performance of passive containment cooling system center water delivery/distribution device	Assess containment water coverage at top of dome		17
Measure containment water coverage using distribution system	Obtain film thickness measurements		18
Measure containment water coverage using selected design distribution system	Obtain film thickness measurements		19
Investigate wind sensitivity of shield building design	Assess effects of site structures on wind loading		20
Assess wind loads on containment baffle	Compare wind effects w & w/o internal flow path		21
Assess recirculation of effluent from shield building			22
Verify Phase 1 & 2 test results at higher Reynolds numbers	Confirm baffle tornado loads		23
Investigate site topography effects on air flow through PCS annulus	Investigate effects of large structures on air flow through PCS annulus		24

9308240013-02

AP600 TEST PROGRAMS: TABLE 1 - TEST PROGRAM OVERVIEW (PART 1)

Item No.	TEST DESCRIPTION	FACILITY LOCATION	SCALE	CATEGORY	TESTING STATUS
PASSIVE CORE COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN CERTIFICATION					
25	PRHR Heat Exchanger Test - Phase 1	W Science & Technology Center - Churchill, PA	1:1 height	Safety Related	Completed
26	PRHR Heat Exchanger Test - Phase 2	W Science & Technology Center - Churchill, PA	1:1 height	Safety Related	Completed
27	Automatic Depressurization System Test - Phase A (sparger)	ENEA (VAPORE facility) - Casaccia, Italy	1:1	Safety Related	Completed
28	Automatic Depressurization Systems Test - Phase B	ENEA (VAPORE facility) - Casaccia, Italy	1:1	Safety Related	Planned
29	Core Makeup Tank Test	W Waltz Mill Site - Madison, PA	-1:8 diameter -1:2 height	Safety Related	In Progress
30	DNBR Tests	Columbia University - New York, NY	1:1	Safety Related	In Progress (on hold)
31	Low Pressure 1/4 Height Integral Systems Tests	Oregon State University - Corvallis, OR	1:4 height 1:192 volume	Safety Related	Planned
32	Full Pressure Full Height Integral Systems Tests	SIET (SPES-2 Facility) - Piacenza, Italy	1:1 height 1:395 volume	Safety Related	In Progress
COMPONENT DESIGN VERIFICATION TESTS IN SUPPORT OF AP600 DESIGN					
33	NRHR Suction Nozzle Tests	W Waltz Mill Site - Madison, PA	1:4.4 linear	Basic Research	Completed
34	RCP/SG Channel Head Air Flow	W Electro-Mechanical Div. - Cheswick, PA	-1:2 linear	Basic Research	Completed
35	Reactor Vessel Flow Visualization Test	University of Tennessee - Knoxville, TN	-1:9 linear	Basic Research	Completed
36	RCP Journal Bearing Test - Phase 1	W Science & Technology Center - Churchill, PA	1:1	Basic Research	Completed
37	RCP Journal Bearing Test - Phase 2	W Science & Technology Center - Churchill, PA	1:1	Basic Research	Completed
38	RCP High Inertia Rotor Test	W Science & Technology Center - Churchill, PA	1:1	Basic Research	Completed
39	Incore Instrumentation System Electro-magnetic Interference Test	W Electro-Mechanical Div. - Cheswick, PA	1:1	Basic Research	Completed
40	Check Valve Test - Mechanical	W Waltz Mill Site - Madison, PA	1:1	Safety Related	Completed
41	Check Valve Test - In-Situ	Farley Nuclear Plant - Dothan, AL	1:1	Non-safety Related	Planned
42	Check Valve Test - Qualification	TBD	1:1	Non-safety Related	Future
43	ADS Stage 4 Valve Test	TBD	1:1	Safety Related	Future

IFICATION TEST PROGRAM OVERVIEW

TEST PURPOSE	ADDITIONAL INFORMATION OBTAINED (Optional)	Item No.
Determine thermal performance of the PRHR heat exchanger tubes.	Assess water mixing in the IRWST and the effects of mixing on heat transfer rates and steaming.	25
Expand the range of test conditions to more fully define a PRHR heat transfer correlation.	Determine the impact of lower initial tank water level on steaming.	26
Obtain sparger performance data, measure loads imposed on quench tank for use in confirming IRWST design	Obtain thermal hydraulic data for computer code validation	27
Obtain valve performance data; Piping, structure loads/responses with both 1¢ and 2¢ flow	Obtain thermal-hydraulic data for computer code validation	28
Obtain thermal-hydraulic data for computer code validation	Confirm adequacy of CMT level instrumentation	29
Obtain DNB data at low flow conditions	Obtain data on fuel assembly flow mixing grids at design flow conditions	30
Obtain thermal-hydraulic data for computer code validation	Investigate long term cooling behavior	31
Obtain thermal-hydraulic data for computer code validation	investigate systems interactions during high pressure transients	32
Provide design data for RHR suction performance. Investigate mid-loop operation phenomena and proposed solution to mitigate vortexing in NRHR pump	Obtain vortex mitigation sizing information and critical water level in hot leg vs. NRHR flow rate	33
Provide design data for channel head hydraulic performance	Demonstrate pump characteristics	34
Provide design data for lower plenum flow		35
Provide design data for radial bearing performance		36
Evaluate sources of drag loss on radial bearings		37
Provide design data for rotor in water		38
Provide design data for Incore Instrumentation System		39
Demonstrate low pressure performance	Investigate operation of valves in series	40
Measure opening pressure of check valve following exposure at operating conditions		41
Provide verification information that check valve meets design specification		42
Provide verification information that ADS valve meets design specification	Valve performance data (e.g., flows); Operator performance data	43

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AP600 TEST PROGRAMS: TABLE 2 - TEST PROGRAM OVERVIEW (PART 2)

Item No.	TEST NAME	TEST SCHEDULE			M
		Start	End	SCHEDULE	
PASSIVE CONTAINMENT COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN					
1	Air Flow Path Delta P Test	January 1988	February 1988	Completed	N/A
2	Water Film Formation Test	February 1988	March 1988	Completed	N/A
3	Heated Plate Test	April 1988	June 1988	Completed	N/A
4	Bench Wind Tunnel Experiment	August 1988	September 1988	Completed	N/A
5	Condensation Tests - Bare surface upward	September 1988	December 1988	Completed	N/A
6	Condensation Tests - Bare surface downward	September 1989	December 1989	Completed	N/A
7	Condensation Tests - Painted surface downward	September 1990	December 1990	Completed	N/A
8	Condensation Tests - Light noncondensibles	September 1991	December 1991	Completed	N/A
9	Condensation Tests - Stagnation flow conditions	September 1992	March 1993	Completed	N/A
10	Condensation Tests - Stagnation/Light noncondensibles	March 1993	July 1993	Completed	N/A
11	Condensation Tests - 2D Condensation	September 1993	April 1994	Chart 1	N/A
PASSIVE CONTAINMENT COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN CERTIFICATION					
12	Integral (small scale) Tests - Phase 1 (Feasibility)	May 1989	October 1989	Completed	N/A
13	Integral (small scale) Tests - Phase 2A (Extension Tests)	January 1990	June 1990	Completed	N/A
14	Integral (small scale) Tests - Phase 2B (Continuation Tests)	June 1992	August 1992	Completed	N/A
15	1/8th Scale Heat Transfer Test - Phase 1 (Baseline)	February 1992	June 1992	Completed	N/A
16	1/8th Scale Heat Transfer Test - Phase 2 (Confirmatory)	June 1993	September 1993	Charts 1 & 4	Table 4
17	Water Distribution System Test - Phase 1 (20ft Diameter)	June 1991	August 1991	Completed	N/A
18	Water Distribution System Test - Phase 2 (1/8th Sector)	September 1991	February 1992	Completed	N/A
19	Water Distribution System Test - Phase 3	September 1993	September 1993	Charts 1 & 5	Table 5
20	Wind Tunnel Test - Phase 1	June 1991	August 1991	Completed	N/A
21	Wind Tunnel Test - Phase 2	February 1992	March 1992	Completed	N/A
22	Wind Tunnel Test - Phase 3	TBD	TBD	TBD	TBD
23	Wind Tunnel Test - Phase 4A	June 1993	August 1993	Charts 1 & 6	Table 6
24	Wind Tunnel Test Phase 4B	September 1993	September 1993	Charts 1 & 6	Table 6

IFICATION TEST PROGRAM OVERVIEW

NRC WITNESS OF KEY TESTS				Item No.
MATRIX	TEST NAME/NO.	DESCRIPTION	WEEK OF	
	N/A	N/A	N/A	1
	N/A	N/A	N/A	2
	N/A	N/A	N/A	3
	N/A	N/A	N/A	4
	N/A	N/A	N/A	5
	N/A	N/A	N/A	6
	N/A	N/A	N/A	7
	N/A	N/A	N/A	8
	N/A	N/A	N/A	9
	N/A	N/A	N/A	10
	N/A	N/A	N/A	11
	N/A	N/A	N/A	12
	N/A	N/A	N/A	13
	N/A	N/A	N/A	14
	N/A	N/A	N/A	15
	221.1	Transient Blowdown with Helium addition	8/30/93	16
	N/A	N/A	N/A	17
	N/A	N/A	N/A	18
	1	High water flow rate	9/6/93	19
	N/A	N/A	N/A	20
	N/A	N/A	N/A	21
	TBD	TBD	TBD	22
	1:30 Scale Model Tests	High wind speed with shield building only	8/2/93 site visit by NRC staff	23
	Site Topography #1	Simulation of sea shore site (High Wind Speed Site)	9/6/93	24

9308240013-04

AP600 TEST PROGRAMS: TABLE 2 - TEST PROGRAM OVERVIEW (PART 2)

Item No.	TEST NAME	TEST SCHEDULE			Notes
		Start	End	SCHEDULE	
PASSIVE CORE COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN CERTIFICATION					
25	PRHR Heat Exchanger Test - Phase 1	November 1989	January 1990	Completed	N/A
26	PRHR Heat Exchanger Test - Phase 2	July 1990	November 1990	Completed	N/A
27	Automatic Depressurization System Test - Phase A (sparger)	June 1992	November 1992	Completed	N/A
28	Automatic Depressurization Systems Test - Phase B	February 1994 *	April 1994	Charts 2 & 7	Table 7
29	Core Makeup Tank Test	August 1993	January 1994	Charts 2 & 8	Table 8
30	DNBR Tests	June 1993	November 1993	Charts 2 & 9	Table 9
31	Low Pressure 1/4 Height Integral Systems Tests	November 1993	May 1994	Charts 2 & 10	Table 10
32	Full Pressure Full Height Integral Systems Tests	September 1993	April 1994	Charts 2 & 11	Table 11
COMPONENT DESIGN VERIFICATION TESTS IN SUPPORT OF AP600 DESIGN					
33	NRHR Suction Nozzle Tests	March 1988	November 1988	Completed	N/A
34	RCP/SG Channel Head Air Flow	October 1990	March 1991	Completed	N/A
35	Reactor Vessel Flow Visualization Test	April 1991	April 1992	Completed	N/A
36	RCP Journal Bearing Test - Phase 1	July 1989	October 1989	Completed	N/A
37	RCP Journal Bearing Test - Phase 2	November 1991	February 1992	Completed	N/A
38	RCP High Inertia Rotor Test	June 1992	July 1992	Completed	N/A
39	Incore Instrumentation System Electro-magnetic Interference Test	June 1990	August 1990	Completed	N/A
40	Check Valve - Mechanical	June 1991	August 1991	Completed	N/A
41	Check Valve Test In-Situ	October 1993	December 1993	Charts 3 & 12	(Contingent schedule)
42	Check Valve Test Qualification	TBD	TBD	Future	TBD
43	ADS Stage 4 Valve Test	TBD	TBD	Future	TBD

* - Start date of ADS Phase B may be delayed. Schedule is under review.

IFICATION TEST PROGRAM OVERVIEW

NRC WITNESS OF KEY TESTS				
MATRIX	TEST NAME/NO.	DESCRIPTION	WEEK OF	Rem No.
	N/A	N/A	N/A	25
	N/A	N/A	N/A	26
	N/A	N/A	N/A	27
	B14	2nd stage ADS blowdown at full pressure	TBD	28
	35	Hot CMT draindown during depressurization	11/29/93	29
	Test Bundle #1	Low flow DNB test	6/21/93 (Completed)	30
	SB11	SBLOCA - DEG DVI line break (with long term cooling)	3/7/94	31
	1 11	SBLOCA - ~1in. Cold Leg Break Steam Generator Tube Rupture	9/27/93 2/14/94	32
	N/A	N/A	N/A	33
	N/A	N/A	N/A	34
	N/A	N/A	N/A	35
	N/A	N/A	N/A	36
	N/A	N/A	N/A	37
	N/A	N/A	N/A	38
	N/A	N/A	N/A	39
	N/A	N/A	N/A	40
at on outage	TBD	TBD	TBD	41
	TBD	TBD	TBD	42
	TBD	TBD	TBD	43

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AP600 TEST PROGRAMS: TABLE 3 - TEST PROGRAM OVERVIEW (PART 3)

Item No.	TEST DESCRIPTION	DETAILED REVIEW MEETINGS				
			Test Matrix	Scaling Report	Test Specification	Operating Proc
PASSIVE CONTAINMENT COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN						
1	Air Flow Path Delta P Test	-	N/A	N/A	N/A	N/A
2	Water Film Formation Test	-	N/A	N/A	N/A	N/A
3	Heated Plate Test	-	N/A	N/A	N/A	N/A
4	Bench Wind Tunnel Experiment	-	N/A	N/A	N/A	N/A
5	Condensation Tests - Bare surface upward	-	10/93	N/A	N/A	N/A
6	Condensation Tests - Bare surface downward	-	10/93	N/A	N/A	N/A
7	Condensation Tests - Painted surface downward	-	WCAP-13307	N/A	N/A	N/A
8	Condensation Tests - Light noncondensibles	-	11/93	N/A	N/A	N/A
9	Condensation Tests - Stagnation flow conditions	-	11/93	N/A	N/A	N/A
10	Condensation Tests - Stagnation/light noncondensibles	-	11/93	N/A	N/A	N/A
11	Condensation Tests - 2D condensation	-	10/94	N/A	N/A	N/A
PASSIVE CONTAINMENT COOLING SYSTEM TESTS IN SUPPORT OF AP600 DESIGN CERTIFICATION						
12	Integral (small scale) Tests - Phase 1 (Feasibility)	-	WCAP-12667, Rev 1	N/A	N/A	Completed
13	Integral (small scale) Tests - Phase 2A (Extension Tests)	-	Presentation Mat'l from 3/17/92 meeting w/ NRC	N/A	WCAP-13315	Completed
14	Integral (small scale) Tests - Phase 2B (Continuation Tests)	-	Presentation Mat'l from 3/17/92 meeting w/ NRC	N/A	WCAP-13315	Completed
15	1/8th Scale Heat Transfer Test - Phase 1 (Baseline)	-	WCAP-13566	WCAP-13246	WCAP-13267	Completed
16	1/8th Scale Heat Transfer Test - Phase 2 (Confirmatory)	March 23-24, 1993	W Letter ET-NRC-23-3845	WCAP-13246	WCAP-13267	7/93-9/93
17	Water Distribution System Test - Phase 1 (20ft Diameter)	-	WCAP-13290	N/A	WCAP-13290	Completed
18	Water Distribution System Test - Phase 2 (1/8th Sector)	-	WCAP-13290	N/A	WCAP-13290	Completed
19	Water Distribution System Test - Phase 3	-	WCAP-13816	N/A	WCAP-13816	8/93-9/93
20	Wind Tunnel Test - Phase 1	-	WCAP-13294	WCAP-13294	WCAP-13318	Completed
21	Wind Tunnel Test - Phase 2	-	WCAP-13323	WCAP-13323 WCAP-13294	WCAP-13318	Completed
22	Wind Tunnel Test - Phase 3	-	TBD	TBD	WCAP-13318	TBD
23	Wind Tunnel Test - Phase 4A	-	8/93	12/93	WCAP-13318	Completed
24	Wind Tunnel Test Phase 4B	-	9/93	1/94	WCAP-13318	9/93

IFICATION TEST PROGRAM OVERVIEW

TEST DOCUMENTS						Item No.
Procedures *	Facility Description Report	Interim Data Report	Final Test Report	Test Analysis Report	Other Relevant Information	
* - FACILITY OPERATING PROCEDURES ARE MAINTAINED IN WESTINGHOUSE FILES AND ARE AVAILABLE FOR REVIEW.						
	WCAP-13328	N/A	WCAP-13328	N/A	WCAP-13330	1
	9/93	N/A	9/93	N/A	WCAP-13330	2
	WCAP-12665	N/A	WCAP-12665	WCAP-13246	WCAP-13330	3
	9/93	N/A	9/93	N/A	WCAP-13330	4
	10/93	N/A	10/93	WCAP-13246		5
	10/93	N/A	10/93	WCAP-13246		6
	WCAP-13307	N/A	WCAP-13307	WCAP-13246		7
	11/93	N/A	11/93	TBD	Pernsteiner, et. al., "Condensation in the Presence of Noncondensable Gases: Effect of Helium," Proc of NURETH-5 Mtg, Salt Lake City, UT (September, 1992)	8
	11/93	N/A	11/93	TBD		9
	11/93	None	11/93	TBD		10
	10/94	None	10/94	TBD		11
	WCAP-12667, Rev. 1	N/A	WCAP-12667, Rev 1	WCAP-13246	WCAP-13330	12
	12/93	None	12/93	WCAP-13246		13
	12/93	None	12/93	WCAP-13246		14
	1/94	None	WCAP-13566	WCAP-13246	WCAP-13725	15
	1/94	Yes	1/94	6/94	WCAP-13566	16
	WCAP-13292	None	WCAP-13353	WCAP-13246		17
	WCAP-13292	None	WCAP-13296	WCAP-13246		18
	WCAP-13292	None	1/94	6/94	WCAP-13353, WCAP-13296	19
	WCAP-13294	None	WCAP-13294	WCAP-13246		20
	WCAP-13323	None	WCAP-13323	WCAP-13246	WCAP-13294	21
	TBD	TBD	TBD	TBD	WCAP-13294, WCAP-13323	22
	12/93	None	12/93	6/94	WCAP-13294, WCAP-13323	23
	1/94	None	1/94	6/94	WCAP-13294, WCAP-13323	24

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AP600 TEST PROGRAMS: TABLE 3 - TEST PROGRAM OVERVIEW (PART 3)

Item No.	TEST DESCRIPTION	DETAILED REVIEW MEETINGS				
			Test Matrix	Scaling Report	Test Specification	Operating Procedure
PASSIVE SAFETY SYSTEMS TESTS IN SUPPORT OF AP600 DESIGN CERTIFICATION			* -FACILITY OPERATIONS			
25	PRHR Heat Exchanger Test - Phase 1	-	WCAP-12666	N/A	N/A	Completed
26	PRHR Heat Exchanger Test - Phase 2	-	WCAP-12980	N/A	WCAP-13368	Completed
27	Automatic Depressurization System Test - Phase A (Sparger)	May 26-27, 1993	WCAP-13342	N/A	WCAP-13342	Completed
28	Automatic Depressurization Systems Test - Phase B	May 26-27, 1993	W Letter ET-NRC-93-3881	N/A	WCAP-13342 To be revised 9/93	TBD
29	Core Makeup Tank Test	February 25, 1993	W Letter ET-NRC-93-3829	9/93	WCAP-13345 To be revised 9/93	6/93-12/93
30	DNBR Tests	-	N/A	N/A	WCAP-12488	Completed
31	Low Pressure 1/4 Height Integral Systems Tests	December 9, 1992	W Letter ET-NRC-92-3785	9/93	WCAP-13234	9/93-3/94
32	Full Pressure Full Height Integral Systems Tests	December 10, 1992	W Letter ET-NRC-92-3785	WCAP-13277	W letter ET-NRC-92-3776, WCAP to be issued 9/93	9/93-3/94
COMPONENT DESIGN VERIFICATION TESTS IN SUPPORT OF AP600 DESIGN						
33	NRHR Suction Nozzle Tests	-	N/A	N/A	N/A	N/A
34	RCP/SG Channel Head Air Flow	-	N/A	N/A	WCAP-13298	N/A
35	Reactor Vessel Flow Visualization Test	-	N/A	N/A	N/A	N/A
36	RCP Journal Bearing Test - Phase 1	-	N/A	N/A	WCAP-13309	N/A
37	RCP Journal Bearing Test - Phase 2	-	N/A	N/A	WCAP-13312	N/A
38	RCP High Inertia Rotor Test	-	N/A	N/A	N/A	N/A
39	Incore Instrumentation System Electro-magnetic Interference Test	-	N/A	N/A	N/A	N/A
40	Check Valve Test - Mechanical	-	WCAP-13288	N/A	WCAP-13288	Completed
41	Check Valve Test In-Situ	-	TBD	N/A	TBD	TBD
42	Check Valve Test Qualification	-	TBD	N/A	TBD	TBD
43	ADS Stage 4 Valve Test	-	TBD	N/A	TBD	TBD

IFICATION TEST PROGRAM OVERVIEW

TEST DOCUMENTS						Item No.
cedures *	Facility Description Report	Interim Data Report	Final Test Report	Test Analysis Report	Other Relevant Information	
G PROCEDURES ARE MAINTAINED IN WESTINGHOUSE FILES AND ARE AVAILABLE FOR REVIEW						
	WCAP-12666	N/A	W AP-12666			25
	WCAP-12980	N/A	WCAP-12980			26
	10/94	N/A	10/94	2/94		27
	TBD	None	TBD	TBD		28
	3/94	TBD	4/94	7/94		29
	3/94	None	3/94	N/A		30
	10/93	TBD	9/94	TBD		31
	8/93	TBD	8/94	TBD		32
	9/93	N/A	9/93	N/A		33
	N/A	N/A	WCAP-13298	N/A		34
	N/A	N/A	WCAP-13351	N/A	WCAP-13305	35
	N/A	N/A	WCAP-12668	N/A		36
	N/A	N/A	WCAP-13319	N/A	WCAP-13313	37
	N/A	N/A	WCAP-13758	N/A	WCAP-13487	38
	N/A	N/A	WCAP-12648	N/A		39
	WCAP-13284	N/A	WCAP-13286	N/A		40
	TBD	TBD	TBD	TBD	WCAP-13288, WCAP-13560	41
	TBD	TBD	TBD	TBD	WCAP-13288, WCAP-13560	42
	TBD	TBD	TBD	TBD		43

9308240013-07

TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATED TO THE AP600 DESIGN

	DESCRIPTION
1.	WCAP-12665, "Test of Heat Transfer and Water Film Evaporation on a Heated Plate Simulating Cooling of the AP600 Core"
2.	WCAP-12667, "Test of Heat Transfer and Water Film Evaporation From a Simulated Containment To Demonstrate the Containment Cooling System"
3.	WCAP-12666, "AP600 Passive Residual Heat Removal Heat Exchanger Test, Test Report"
4.	WCAP-12668, "AP600 High Inertia Rotor Testing - Phase I, Test Report"
5.	Scaling Report on Glass Model of the AP600
6.	Response to November 14, 1991 Request for Information Regarding AP600 Test Program
7.	Response to January 15, 1992 Request for Information Regarding the AP600 Passive Containment Cooling System Test
8.	Responses to "AP600 Design Issues to be Resolved by High-Pressure, Full-Height Integral Testing"
9.	Response to November 14, 1991 Request for Additional Information Regarding AP600 Test Program
10.	Presentation Material from February 25, 1992 Westinghouse NRC Meeting on AP600 Testing
11.	Presentation Material from March 3, 1992 ACRS Meeting on AP600 Testing
12.	WCAP-13277, "Scaling Design and Verification of SPES-2, the Italian Experimental Facility Simulator of the AP600 PWR"
13.	WCAP-13278, "Scaling Design and Verification of SPES-2, the Italian Experimental Facility Simulator of the AP600 PWR"
14.	WCAP-12648, "AP600 Incore Instrumentation System Electromagnetic Interference Test Report, Rev. 1"
15.	WCAP-13322, "AP600 Incore Instrumentation System Electromagnetic Interference Test Report, Rev. 0"
16.	WCAP-13234, "AP600 Long Term Cooling Test Specification, Rev. 0"
17.	WCAP-13283, "AP600 Long Term Cooling Test Specification, Rev. 0"
18.	WCAP-13267, "Test Specification: Large Scale Passive Containment Cooling Test, Rev. 1"
19.	WCAP-13268, "Test Specification" Large Scale Passive Containment Cooling Test, Rev. 1"
20.	WCAP-13284, "Test Plan For the Passive Core Cooling System Check Valve Test, Rev. 0"

FICATION TEST PROGRAM OVERVIEW

D MATERIALS TRANSMITTED TO NRC

Also Available On
Aperture Card

	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
Reactor Containment"	Yes	NS-NRC-90-3525 NPAP-APSL-90-0048	7/16/90	Donatell
AP600 Passive	Yes	NS-NRC-90-3525 NPAP-APSL-90-0048	7/16/90	Donatell
	Yes	NS-NRC-90-3525 NPAP-APSL-90-0048	7/16/90	Donatell
	Yes	NS-NRC-90-3525 NPAP-APSL-90-0048	7/16/90	Donatell
	No	NPAP-APSL-91-0095	3/5/91	Sheron
	Yes	ET-NRC-91-3650 NPP-APSL-91-0286	12/16/91	Murley
	Yes	ET-NRC-91-3656 NPP-APSL-92-0013	1/22/92	Murley
	Yes	ET-NRC-92-3663 NSRA-APSL-92-0037	2/14/92	Crutchfield
	No	ET-NRC-92-3666 NSRA-APSL-92-0046	2/24/92	Hasselberg
	Yes	ET-NRC-92-3664 NSRA-APSL-92-0047	2/24/92	Murley
	Yes	ET-NRC-92-3671 NSRA-APSL-92-0053	3/4/92	Murley
ant"	Yes	ET-NRC-92-3685 NSRA-APSL-92-0082	4/3/92	Murley
ant"	No	ET-NRC-92-3685 NSRA-APSL-92-0082	4/3/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley

9308240013-08

TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATE

	DESCRIPTION
21.	WCAP-13285, "Test Plan For the Passive Core Cooling System Check Valve Test, Rev. 0"
22.	WCAP-13286, "AP600 Passive Core Cooling System Check Valve Test Final Report, Rev. 0"
23.	WCAP-13287, "AP600 Passive Core Cooling System Check Valve Test Final Report, Rev. 0"
24.	WCAP-13288, "Passive Core Cooling System Check Valve Test Specification, Rev. 0"
25.	WCAP-13289, "Passive Core Cooling System Check Valve Test Specification, Rev. 0"
26.	WCAP-13290, "Passive Containment Cooling System Water Distribution Test, Rev. 0"
27.	WCAP-13291, "Passive Containment Cooling System Water Distribution Test, Rev. 0"
28.	WCAP-13292, "Construction/Test Plan For the Passive Containment Cooling System Test Articles, Rev. 0"
29.	WCAP-13293, "Construction/Test Plan For the Passive Containment Cooling System Test Articles, Rev. 0"
30.	WCAP-13294, "Phase I Wind Tunnel Testing For the Westinghouse AP600 Reactor"
31.	WCAP-13295, "Phase I Wind Tunnel Testing For the Westinghouse AP600 Reactor"
32.	WCAP-13296, "PCS Water Distribution Test Phase II Test Data Report"
33.	WCAP-13297, "PCS Water Distribution Test Phase II Test Data Report"
34.	WCAP-13298, "RCP Air Model Test Report, Rev. 0"
35.	WCAP-13299, "RCP Air Model Test Report, Rev. 0"
36.	WCAP-13305, "Studies of Hydraulic Phenomena In Reactor Lower Plenum Region - Test Plan"
37.	WCAP-13306, "Studies of Hydraulic Phenomena In Reactor Vessel Lower Plenum Region - Test Plan"
38.	WCAP-13307, "Condensation In the Presence Of A Noncondensable Gas - Experimental Investigation"
39.	WCAP-13308, "Condensation In the Presence Of A Noncondensable Gas - Experimental Investigation"

IFICATION TEST PROGRAM OVERVIEW

SI
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CARD

D MATERIALS TRANSMITTED TO NRC

Also Available On
Aperture Card

	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley

9308240013-09

TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATE

	DESCRIPTION
40.	WCAP-13309, "Journal Bearing Test - Task 1 Test Specification"
41.	WCAP-13310, "Journal Bearing Test - Task 1 Test Specification"
42.	WCAP-13312, "Journal Bearing Test - Task 2 Test Specification"
43.	WCAP-13313, "Journal Bearing Test - Task Plan For the DOE Phase II High Inertia Rotor Test Program"
44.	WCAP-13314, "Journal Bearing Test - Task Plan For the DOE Phase II High Inertia Rotor Test Program"
45.	WCAP-13315, "Integral Containment Cooling Test Extension - Test Specification, Rev. 0"
46.	WCAP-13316, "Integral Containment Cooling Test Extension - Test Specification, Rev. 0"
47.	WCAP-13318, "Passive Containment Cooling System Wind Tunnel Test Specification, Rev. 0"
48.	WCAP-13319, "AP600 High Inertia Rotor Testing Phase 2 Report, Rev. 0"
49.	WCAP-13320, "AP600 High Inertia Rotor Testing Phase 2 Report, Rev. 0"
50.	WCAP-12668, "AP600 High Inertia Rotor Testing Phase 1 Test Report, Rev. 1"
51.	WCAP-13321, "AP600 High Inertia Rotor Testing Phase 1 Report, Rev. 0"
52.	WCAP-13328, "Tests of Air Flow for Cooling the AP600 Reactor Containment, Rev. 0"
53.	WCAP-13329, "Tests of Air Flow for Cooling the AP600 Reactor Containment, Rev. 0"
54.	WCAP-13330, "Natural Convection Cooling of AP600 Containment, Rev. 0"
55.	WCAP-13331, "Natural Convection Cooling of AP600 Containment, Rev. 0"
56.	WCAP-12667, "Tests of Heat Transfer and Water Film Evaporation from a Simulated Containment to Demonstrate the Containment Cooling System, Rev. 1"
57.	WCAP-13340, "Tests of Heat Transfer and Water Film Evaporation from a Simulated Containment to Demonstrate the Containment Cooling System, Rev. 0"
58.	WCAP-12665, "Tests of Heat Transfer and Water Film Evaporation on a Heated Plate Simulating Cooling of the AP600 Rev. 1"

IFICATION TEST PROGRAM OVERVIEW

Also Available On
Aperture Card

0 MATERIALS TRANSMITTED TO NRC

	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
AP600 Passive	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
AP600 Passive	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
Reactor Containment,	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley

9308240013-10

TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATE

	DESCRIPTION
59.	WCAP-13341, "Tests of Heat Transfer and Water Film Evaporation on a Heated Plate Simulating Cooling of the AP600 Rev. 0"
60.	WCAP-13342, "AP600 Automatic Depressurization System Test, Rev. 0"
61.	WCAP-13343, "AP600 Automatic Depressurization System Test, Rev. 0"
62.	WCAP-13345, "AP600 Core Make-Up Tank Test Specification, Rev. 0"
63.	WCAP-13353, "Passive Containment Cooling System Water Distribution Phase 1 Test Data Report, Rev. 0"
64.	WCAP-13354, "Passive Containment Cooling System Water Distribution Phase 1 Test Data Report, Rev. 0"
65.	WCAP-13351, "Studies of Hydraulic Phenomena in the Reactor Vessel Lower Plenum Region - Test Report, Rev. 0"
66.	WCAP-13352, "Studies of Hydraulic Phenomena in the Reactor Vessel Lower Plenum Region - Test Report, Rev. 0"
67.	Presentation Material from June 1, 1992, AP600 Meeting on Integral Systems Testing
68.	Draft Scaling Analysis for the OSU AP600 Integral Systems Test
69.	Presentation Material from June 23, 1992 AP600 ACRS Testing Presentation
70.	WCAP-13246, "Westinghouse-GOTHIC: A Computer Code For Analyses of Thermal Hydraulic Transients for Nuclear Auxiliary Buildings"
71.	WCAP-13412, "Westinghouse-GOTHIC: A Computer Code For Analyses of Thermal Hydraulic Transients for Nuclear Auxiliary Buildings"
72.	WCAP-13368, "Passive RHR Heat Exchanger Test Extension, Rev. 0"
73.	WCAP-13369, "Passive RHR Heat Exchanger Test Extension, Rev. 0"
74.	NRC Request for Additional Information Related to SPES-2 Test Facility
75.	NRC Request for Additional Information Regarding the AP600 Testing Program
76.	WCAP-13487, Rev. 0, "High Inertia Rotor Phase 3, Task 1 Test Report"
77.	WCAP-13488, "High Inertia Rotor Phase 3, Task 1 Test Report"

IFICATION TEST PROGRAM OVERVIEW

D MATERIALS TRANSMITTED TO NRC

Also Available On
Aperture Card

	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
0 Reactor Containment,	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	No	ET-NRC-92-3688 NSRA-APSL-92-0094	4/30/92	Murley
	Yes	ET-NRC-92-3713 NSRA-APSL-92-0130	6/25/92	Murley
	Yes	ET-NRC-92-3715 NSRA-APSL-92-0132	7/7/92	Murley
	Yes	ET-NRC-92-3716 NSRA-APSL-92-0133	6/30/92	Murley
Plant Containments &	Yes	ET-NRC-92-3726	7/31/92	Murley
Plant Containments &	No	ET-NRC-92-3726	7/31/92	Murley
	Yes	ET-NRC-92-3730 NSRA-APSL-92-0161	8/7/92	Murley
	No	ET-NRC-92-3730 NSRA-APSL-92-0161	8/7/92	Murley
	Yes	ET-NRC-92-3749 NSRA-APSL-92-0188	9/14/92	Murley
	Yes	ET-NRC-92-3750 NSRA-APSL-92-0189	9/14/92	Murley
	Yes	ET-NRC-92-3753 NSRA-APSL-92-0198	10/2/92	Murley
	No	ET-NRC-92-3753 NSRA-APSL-92-0198	10/2/92	Murley

9308240013-//

TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATE

	DESCRIPTION
78.	WCAP-13323, Rev. 0, "Phase II Wind Tunnel Testing for the Westinghouse AP600 Reactor"
79.	WCAP-13324, Rev. 0, "Phase II Wind Tunnel Testing for the Westinghouse AP600 Reactor"
80.	AP600 Testing to Support Design Certification
81.	AP600 Testing Schedule
82.	Material in Support of Westinghouse/NRC Meeting on OSU Test Program for AP600 (Test Schedule, Draft Scaling Report, Updated Instrumentation List, Test Matrix and Facility Design Drawings)
83.	Material in Support of Westinghouse/NRC Meeting on SPES Test Program for AP600 (Test Schedule, Draft Scaling Specification)
84.	Presentation Material from December 14, 1992 Westinghouse NRC Meeting on AP600 Testing
85.	WCAP-12980, Rev. 1, "AP600 Passive Residual Heat Exchanger Test Final Report"
86.	WCAP-13573, "AP600 Passive Residual Heat Exchanger Test Final Report"
87.	Presentation Material from December 9-10, 1992 Westinghouse/NRC Meetings on AP600 Test Program
88.	Westinghouse Response to NRC Request for Additional Information on the AP600 Testing Program dated September
89.	Westinghouse Response to NRC Request for Additional Information on the AP600 Testing Program dated July 21, 199
90.	Updated Testing Schedules for the AP600 Testing Program
91.	WCAP-13566, "AP600 1/8th Large Scale Passive Containment Cooling System Heat Transfer Test Baseline Data Rep
92.	WCAP-13567, "AP600 1/8th Large Scale Passive Containment Cooling System Heat Transfer Test Baseline Data Rep
93.	WCAP-13560, "Advanced Plant Check Valve Study", Rev. 0
94.	Test Schedule for AP600 Automatic Depressurization System Test - Phase B
95.	Material in Support of February 25, 1993 Westinghouse/NRC Meeting on CMT Tests for AP600 (Test Matrix, Instrum
96.	Component and Piping Drawings for the SPES-2 Facility

IFICATION TEST PROGRAM OVERVIEW

Also Available On
Aperture Card

ED MATERIALS TRANSMITTED TO NRC

	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
	Yes	ET-NRC-92-3753 NSRA-APSL-92-0198	10/2/92	Murley
	No	ET-NRC-92-3753 NSRA-APSL-92-0198	10/2/92	Murley
	No	ET-NRC-92-3754 NSRA-APSL-92-0200	10/5/92	Ward
	No	ET-NRC-92-3768 NSRA-APSL-92-0239	11/5/92	Murley
Report, Test Specification	Yes	ET-NRC-92-3775 NSRA-APSL-92-0250	11/24/92	Murley
Report, Draft Test	Yes	ET-NRC-92-3776 NSRA-APSL-92-0251	11/24/92	Murley
	Yes	ET-NRC-92-3783 NSRA-APSL-92-0264	12/14/92	Murley
	Yes	ET-NRC-92-3779 NSRA-APSL-92-0259	12/15/92	Murley
	No	ET-NRC-92-3779 NSRA-APSL-92-0259	12/15/92	Murley
	Yes	ET-NRC-92-3785 NSRA-APSL-92-0268	12/17/92	Murley
, 1992	No	ET-NRC-93-3798 NSRA-APSL-93-0009	1/19/93	Murley
92	No	ET-NRC-93-3799 NSRA-APSL-93-0010	1/19/93	Murley
	No	ET-NRC-93-3800 NSRA-APSL-93-0011	1/19/93	Murley
ort," Rev. 0,	Yes	ET-NRC-93-3801 NSRA-APSL-93-0012	1/25/93	Murley
ort," Rev. 0	No	ET-NRC-93-3801 NSRA-APSL-93-0012	1/25/93	Murley
	No	ET-NRC-93-3801 NSRA-APSL-93-0012	1/25/93	Murley
	No	ET-NRC-93-3811 NSRA-APSL-93-0026	2/2/93	Borchardt
ent List, Drawings)	Yes	ET-NRC-93-3823 NSRA-APSL-93-0042	2/18/93	Borchardt
	Yes	ET-NRC-93-3825 NSRA-APSL-93-0046	2/23/93	Borchardt

9308240013-12

TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATE

	DESCRIPTION
97.	Presentation Material from the February 25, 1993 Westinghouse/NRC meeting on the AP600 CMT Tests
98.	Component and Piping Drawing for the AP600 Long Term Cooling Tests
99.	Presentation Material from the March 9-10, 1993 Meeting on the AP600 Testing Program
100.	Material in Support of March 23-24, 1993 Westinghouse/NRC Meeting on Containment Tests for AP600 (Test Spec and Schedule)
101.	Presentation Material from the March 23-24, 1993 Meeting on the AP600 Containment Test Program
102.	Draft AP600 Test/Witness Matrix
103.	Updated Testing Schedules for the AP600 Testing Program
104.	Presentation Material from the April 20, 1993 Meeting on the AP600 ADS Tests at the VAPORE Facility
105.	Presentation Material from the April 22, 1993 Meeting on the AP600 Integral Systems Tests at SPES-2 Facility
106.	Presentation Material from the May 4, 1993 Meeting to discuss the AP600 ADS Phase A Test Results
107.	WCAP-13234 Revision 1, "Long Term Cooling Test,"
108.	WCAP-13283 Revision 1, "Long Term Cooling Test,"
109.	WCAP-13277 Revision 1, "Scaling, Design, and Verification of SPES-2, The Italian Experimental of the AP600; Scaling
110.	WCAP-13278 Revision 1, "Scaling, Design, and Verification of SPES-2, The Italian Experimental of the AP600; Scaling
111.	AP600 Automatic Depressurization System Phase B Test Matrix, Revision 1
112.	Preliminary Facility Design Drawings for the AP600 ADS Phase B Tests
113.	Presentation Materials from the May 26-27, 1993 Meeting on the AP600 ADS Tests
114.	AP600 Automatic Depressurization System Phase B Test Matrix, Revision 1A
115.	Response to INEL Requests for Information regarding OSU Long Term Cooling Test Facility (Requests dated April 14, 1993)

FICATION TEST PROGRAM OVERVIEW

D MATERIALS TRANSMITTED TO NRC

Also Available On
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	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
	Yes	ET-NRC-93-3829 NSRA-APSL-93-0053	2/25/93	Borchardt
	Yes	ET-NRC-93-3830 NSRA-APSL-93-0062	3/3/93	Borchardt
	No	ET-NRC-93-3834 NSRA-APSL-93-0065	3/9/93	Borchardt
ditions, Test Matrix,	Yes	ET-NRC-93-3841 NSRA-APSL-93-0076	3/16/93	Borchardt
	Yes	ET-NRC-93-3845 NSRA-APSL-93-0090	3/24/93	Borchardt
	No	ET-NRC-93-3848 NSRA-APSL-93-0093	3/23/93	Borchardt
	No	ET-NRC-93-3855 NSRA-APSL-93-0109	4/13/93	Borchardt
	Yes	ET-NRC-93-3877 NSRA-APSL-93-0159	5/3/93	Borchardt
	Yes	ET-NRC-93-3877 NSRA-APSL-93-0159	5/3/93	Borchardt
	Yes	ET-NRC-93-3879 NSRA-APSL-93-0166	5/5/93	Borchardt
	Yes	ET-NRC-93-3883 NSRA-APSL-93-0169	5/11/93	Borchardt
	No	ET-NRC-93-3883 NSRA-APSL-93-0169	5/11/93	Borchardt
ng Update"	Yes	ET-NRC-93-3883 NSRA-APSL-93-0169	5/11/93	Borchardt
ng Update"	No	ET-NRC-93-3883 NSRA-APSL-93-0169	5/11/93	Borchardt
	Yes	ET-NRC-93-3885 NSRA-APSL-93-0171	5/11/93	Borchardt
	Yes	ET-NRC-93-3893 NSRA-APSL-93-0189	5/24/93	Borchardt
	Yes	ET-NRC-93-3881 NSRA-APSL-93-0197	6/1/93	Borchardt
	Yes	ET-NRC-93-3881 NSRA-APSL-93-0197	6/1/93	Borchardt
, 1993 and May 12,	Yes	ET-NRC-93-3901 NSRA-APSL-93-206	6/10/93	Borchardt

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TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATE

	DESCRIPTION
116.	WCAP-13725, "Heavy Water Reactor Facility (HWRf) Large Scale Passive Containment Cooling System Baseline Test RPT-92-004," Revision 1
117.	WCAP-13726, "Heavy Water Reactor Facility (HWRf) Large Scale Passive Containment Cooling System Baseline Test RPT-92-004," Revision 1
118.	WCAP-13727, "Heavy Water Reactor Facility (HWRf) Small Scale Containment Cooling System Test Final Report HWRf-92-001," Revision 1
119.	WCAP-13728, "Heavy Water Reactor Facility (HWRf) Small Scale Containment Cooling System Test Final Report HWRf-92-001," Revision 1
120.	WCAP-13732, "Heavy Water Reactor Facility (HWRf) Small Scale Containment Cooling Test Preliminary Series 2 Test Plan, RPT-92-001
121.	WCAP-13733, "Heavy Water Reactor Facility (HWRf) Small Scale Containment Cooling Test Preliminary Series 2 Test Plan, RPT-92-001
122.	WCAP-13742, "Heavy Water Reactor Facility Project Phase 1 AP600 Small Scale Passive Containment Cooling System Test Plan, RPT-91-0021" Applicable to the HWRf Project NPR-RPT-91-0021"
123.	WCAP-13743, "Heavy Water Reactor Facility Project Phase 1 AP600 Small Scale Passive Containment Cooling System Test Plan, RPT-91-0021" Applicable to the HWRf Project NPR-RPT-91-0021"
124.	Presentation Materials from the June 18, 1993 Meeting on the AP600 Testing Program
125.	Background Materials In Preparation for the July 22-23 Meeting of ACRS Subcommittee on T/H Phenomena
126.	AP600 Design and Design Certification Test Program Overview, Revision 2
127.	WCAP-13758, "High Inertia Rotor Test Phase 3 Report," June, 1993
128.	WCAP-13759, "High Inertia Rotor Test Phase 3 Report," June, 1993
129.	WCAP-13413, "RCP Hydraulic Flow Test Prospectus,"
130.	WCAP-13414, "RCP Hydraulic Flow Test Prospectus,"
131.	WCAP-13415, "High Inertia Rotor Test 3 Task 1, Test Specification,"
132.	WCAP-13419, "High Inertia Rotor Test Phase 3 Test Plan,"
133.	WCAP-13420, "High Inertia Rotor Test Phase 3 Test Plan,"
134.	WCAP-13756, "Wind Tunnel Phase 4A Test Plan, Investigation of the High Reynolds Number Behavior of the Westinghouse AP600 Reactor Core

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D MATERIALS TRANSMITTED TO NRC

	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
st Data Report HWRF-	Yes	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
st Data Report HWRF-92-	No	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
WRF-RPT-92-003,	Yes	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
WRF-RPT-92-003,	No	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
st Results HWRF-RPT-	Yes	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
st Results HWRF-RPT-	No	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
n Test 'Dry' Test Results	Yes	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
n Test 'Dry' Test Results	No	ET-NRC-93-3903 NSRA-APSL-93-0208	6/14/93	Borchardt
	No	ET-NRC-93-3910 NSRA-APSL-93-0223	6/28/93	Borchardt
	No	ET-NRC-93-3911 NSRA-APSL-93-0224	6/28/93	Boehnert
	No	ET-NRC-93-3919 NSRA-APSL-93-0233	7/7/93	Borchardt
	Yes	ET-NRC-93-3918 NSRA-APSL-93-0238	7/7/93	Borchardt
	No	ET-NRC-93-3918 NSRA-APSL-93-0238	7/7/93	Borchardt
	Yes	ET-NRC-93-3926 NSRA-APSL-93-0250	7/15/93	Borchardt
	No	ET-NRC-93-3926 NSRA-APSL-93-0250	7/15/93	Borchardt
	No	ET-NRC-93-3926 NSRA-APSL-93-0250	7/15/93	Borchardt
	Yes	ET-NRC-93-3926 NSRA-APSL-93-0250	7/15/93	Borchardt
	No	ET-NRC-93-3926 NSRA-APSL-93-0250	7/15/93	Borchardt
ghouse AP600 System,"	Yes	ET-NRC-93-3926 NSRA-APSL-93-0250	7/15/93	Borchardt

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TABLE 12 - SUMMARY OF WESTINGHOUSE AP600 TEST PROGRAM RELATE

	DESCRIPTION
135.	WCAP-13757, "Wind Tunnel Phase 4A Test Plan, Investigation of the High Reynolds Number Behavior of the Westin
136.	RELAP5/MOD3 Input File Notebook for OSU/AP600 Components
137.	Draft Scaling Analysis for the OSU AP600 Integral System and Long Term Cooling Test Facility
138.	WCAP-12980, Revision 1, "AP600 Passive Residual Heat Exchanger Test Final Report"
139.	Response to INEL Request for SPES-2 Information/Clarification MGO-29-93
140.	SPES-1 Pump Characterization, SIET NT/54
141.	SPES-1 System Description, SIET NT/32
142.	Transmittal of Drawing of Steam Distributer for AP600 Core Makeup Tank Test
143.	References for Basic Research Tests on Condensation Performed in Support of the AP600 Design
144.	M. H. Kim, "Modelling of Condensation Heat Transfer in a Reactor Containment," PhD Thesis (1985)
145.	J.J. Barry, "Effects of Interfacial Structure on Film Condensation," PhD Thesis (1987)
146.	I. K. Huhtiniemi, "Condensation in the Presence of Noncondensable Gas: The Effect of Surface Orietation," Prelim The
147.	I. K. Huhtiniemi, "Condensation in the Presence of Noncondensable Gas: The Effect of Surface Orientation," Prelim Th
148.	General Outline for Quick Look Data Reports on AP600 Tests

ICATION TEST PROGRAM OVERVIEW

MATERIALS TRANSMITTED TO NRC

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	PROPRIETARY	TRANSMITTAL LETTER	DATE	ADDRESSEE
ouse AP600 System,"	No	ET-NRC-93-3926 NSRA-APSL-93-0250	7/15/93	Borchardt
	Yes	ET-NRC-93-3932 NSRA-APSL-93-0273	7/27/93	Wilson
	Yes	ET-NRC-93-3933 NSRA-APSL-93-0274	7/28/93	Wilson
	Yes	ET-NRC-93-3935 NSRA-APSL-93-0279	8/2/93	Hasselberg
	No	ET-NRC-93-3943 NSRA-APSL-93-0300	8/12/93	Borchardt
	No	ET-NRC-93-3943 NSRA-APSL-93-0300	8/12/93	Borchardt
	No	ET-NRC-93-3943 NSRA-APSL-93-0300	8/12/93	Borchardt
	Yes	ET-NRC-93-3944 NSRA-APSL-93-0303	8/16/93	Borchardt
	No	ET-NRC-93-3945 NSRA-APSL-93-0304	8/16/93	Borchardt
	No	ET-NRC-93-3945 NSRA-APSL-93-0304	8/16/93	Borchardt
	No	ET-NRC-93-3945 NSRA-APSL-93-0304	8/16/93	Borchardt
(1990)	Yes	ET-NRC-93-3945 NSRA-APSL-93-0304	8/16/93	Borchardt
s (1990)	No	ET-NRC-93-3945 NSRA-APSL-93-0304	8/16/93	Borchardt
	No	ET-NRC-93-3946 NSRA-APSL-93-0305	8/16/93	Borchardt

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AP600 DESIGN AND DESIGN CERTIFICATION TEST PROGRAM OVERVIEW

TABLE 4 - MATRIX TESTS, 1/8TH HEAT TRANSFER TEST, PHASE 2

TEST	TEST NUMBER	DESCRIPTION
Pre-Operational Test	Video recording	Videos of water distribution on top of vessel
	Cold annulus velocity	Low temperature annulus startup velocity
	water distribution	Calibrate water distribution for 3 different levels of coverage on the vessel
	condensate system	Check operation of condensate system
	velocity sensors	Check operation and determine location of velocity meters for future tests
	cold helium injection	Inject helium into cold vessel and sample to determine helium distribution at selected time intervals following injection
	delayed water injection	Provide delayed water distribution flow to the surface of hot vessel and video tape performance
Matrix tests	202.3	Constant vessel pressure
	203.3	Constant high vessel pressure
	213.1	Three steam flow levels with reduced water flow and coverage area
	214.1	Constant steam flow, reduced water flow and coverage area, and variable air cooling flow
	216.1	Constant steam flow with reduced water flow over sections of the vessel
	215.1	Constant steam flow, reduced water flow and coverage area, and variable air cooling flow
	212.1	Three steam flow levels with reduced water flow and coverage area; non-condensable gas samples taken
	217.1	Constant steam flow with helium injection; reduced water flow and coverage area
	220.1	Transient blowdown steam flow, reduced water flow and coverage area, non-condensable gas samples taken
	218.1	Constant steam flow with helium injection; reduced water flow and coverage area; each steam flow is maintained for about 1 hour and non-condensable measurements are taken
	219.1	Constant steam flow with helium injection; reduced water flow and coverage area; each steam flow is maintained for about 1 hour and non-condensable measurements are taken
	221.1	Transient blowdown steam flow with helium addition and sampling; reduced water flow and coverage area.

TABLE 5 - MATRIX TESTS, WATER DISTRIBUTION TEST, PHASE 3

TEST	TEST NUMBER	DESCRIPTION
------	-------------	-------------

Weir Performance Tests	1	Test of weir performance with initial water flow rate
	2	Test of weir performance with 24 hour water flow rate
	3	Test of weir performance with excessive water flow rate
	4	Test of weir performance with 3 day water flow rate
	5	Test of tilted weir performance with initial water flow rate
	6	Test of tilted weir performance with 3 day water flow rate
	7	Test of weir performance with initial water flow rate and plugged drainage holes
	8	Test of weir performance with initial water flow rate and plugged drainage holes
	15	Test of weir performance with initial water flow rate and baffle support plates
	16	Test of weir performance with 3 day water flow rate and baffle support plates
Film Thickness Tests	9	Test to measure film thickness and flow rate at initial water flow rate
	10	Test to measure film thickness and flow rate at 3 day water flow rate
	11	Test to measure film thickness and flow rate at excessive water flow rate
	12	Test to measure film thickness and flow rate at 24 hour water flow rate
	13	Test to measure film thickness with tilted weir and initial water flow rate
	14	Test to measure film thickness with tilted weir and 3 day water flow rate

TABLE 6 - MATRIX TESTS, WIND TUNNEL TEST, PHASES 4A & 4B

TEST	TEST NAME	DESCRIPTION
Phase 4A Pre-Op Tests	Assess model size	Pilot tunnel test to determine proper model size for high Reynold's number tests
	Calibrate model	Calibrate 1:100 scale model flow annulus following installation of additional pressure taps
	Obtain 1:100 scale baseline data	Rerun 1:100 scale model at University of Western Ontario to obtain baseline data for high Reynold's number tests
Phase 4A Uniform Wind Field Tests	Uniform wind field tests	Test 1:100 scale model in a uniform wind field to determine tornado loads
Phase 4A High Reynold's Number tests	1:30 scale model tests	Test 1:30 scale model at several wind speeds and directions both with and without site structures
	1:100 scale cooling tower tests	Develop wake profile for 1:100 scale cooling tower
	1:100 scale model tests	Test 1:100 scale model at several wind speeds and directions both with and without site structures
Phase 4B Tests	Site topography #1	Test of site topography #1 (high wind speed site)
	Site topography #2	Test of site topography #2 (site with possible down draft)

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AP600 DESIGN AND DESIGN CERTIFICATION TEST PROGRAM OVERVIEW

TABLE 7 - MATRIX TESTS, AUTOMATIC DEPRESSURIZATION SYSTEM TEST, PHASE B

TEST	TEST NAME	DESCRIPTION
Pre-Operational Tests	PO1-5	Valves opened/closed at 0 dP and no flow
	PO6-20	Valves opened/closed at initial dP and low flow
	PO21-24	Valves heated and then closed. Valves re-opened after cooldown
	PO25	Facility commissioning tests
Matrix Tests	B1	Stage 1 valve partially opened, stopped, and reclosed; blowdown fluid is loop seal water followed by saturated steam
	B2	Stage 1 valve opened, held, and reclosed; blowdown fluid is loop seal water followed by saturated steam
	B3,4	Stage 3 valves opened; blowdown fluid is saturated steam
	B5,6	Stage 2 valves opened; blowdown fluid is saturated steam
	B7	Stages 1,2,3 valves opened sequentially; blowdown fluid is loop seal water followed by saturated steam
	B8,9	Stage 2 valves opened/closed; blowdown fluid is loop seal water followed by saturated steam
	B10,11	Stage 2 valves opened slowly; blowdown fluid is saturated steam
	B12,13	Stage 2 valves opened slowly; blowdown fluid is saturated water/steam mixture
	B14	Stage 1 valve opened/closed; blowdown fluid is loop seal water followed by saturated water/steam mixture
	B15,16	Stage 3 valves opened; blowdown fluid is saturated water/steam mixture
	B17,18	Stage 2 valves opened; blowdown fluid is saturated water/steam mixture
	B19,20	Stage 2 valves opened/closed; blowdown fluid is loop seal water followed by saturated water/steam mixture
	B21-24	Stage 3 valves at fixed positions; blowdown fluid is saturated water/steam mixture
	B25-28	Blowdowns through stage 2 valves initiated by control valve; blowdown fluid is saturated water/steam mixture

TABLE 8 - MATRIX TESTS, CORE MAKEUP TANK TEST

TEST	TEST NAME	DESCRIPTION
Cold Pre-Operational Tests	A01-03	Component fill and drain, volume measurement, instrument channel verification
	A04	Core makeup tank draindown test to steam/water reservoir at full range of flow rates
	A05	Core makeup tank drain to atmosphere via condensate drain path
	A06	Core makeup tank line maintenance measurement with

		Core makeup tank and resistance measurement with single phase fluid
	A07	Core makeup tank discharge isolation valve stroke time adjustment and operability test
Hot Pre-Operational Tests	B01a-e	Characterize and record all thermocouples at full range of steady state temperatures
	B02a-e	Steam injection into an evacuated, empty core makeup tank
	B02f-j	Steam injection into empty core makeup tank with non-condensable gases
	B03a-n	Core makeup tank draindowns with steam with full range of flowrates and steam supply pressures
	B04a-f	Core makeup tank condensate drain control valve operability tests
	B-05	Core makeup tank line resistance measurement at elevated temperature with single phase fluid
Matrix Tests	1-8	Core makeup tank wall and water surface steam condensation rate measurement tests
	9-24	Core makeup tank draindowns at constant steam supply pressures through pressurizer to core makeup tank balance line
	25-28	Core makeup tank draindowns at constant steam supply pressures using both pressure balance lines
	29-31	Core makeup tank draindowns with both pressure balance lines, with depressurization
	32-35	Intermittent core makeup tank draindowns
	36-41	Single phase natural circulation core makeup tank heatup followed by draindown and depressurization

TABLE 9 - MATRIX TESTS, DEPARTURE FROM NUCLEATE BOILING TEST

TEST	TEST NAME	DESCRIPTION
Matrix tests	Test Bundle #1	Non-uniform radial and axial heating distributions on rod bundle #1
	Test Bundle #2	Non-uniform radial and axial heating distributions on rod bundle #2, guide tube included
	Test Bundle #3	Non-uniform radial and axial heating distributions on rod bundle #3, different grid spacer

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AP600 DESIGN AND DESIGN CERTIFICATION TEST PROGRAM OVERVIEW

TABLE 10 - MATRIX TESTS, LOW PRESSURE 1/4 HEIGHT INTEGRAL SYSTEMS TEST (OSU)

TEST	TEST NAME	DESCRIPTION
Cold Pre-Operational Tests	C01	Core makeup tank gravity drain
	C02	Accumulator tank drain
	C03	In-containment refueling water storage tank drain
	C04	Chemical and Volume Control System pump flow vs. pressure
	C05	Normal residual heat removal system pump flow vs. pressure
	C06	Steam generator feed flow versus pressure
	C07	Loop pressure drop for a given flow
	C08	Loop drain for volume check
	C09	Sump drain to RCS
Hot Pre-Operational Tests	H01	Primary flow vs. dP and Steady state heat losses
	H02	Primary system heat capacity test
	H03	Core power calibration versus time
	H04	Secondary side heat transfer versus power level
	H05	Passive residual heat removal system natural circulation tests
	H06	Primary side natural circulation flow, core makeup tank recirculation
	H07,8	Core makeup tank draindowns via balance lines
	H09	Low pressure depressurization checkout
Matrix Tests	SB1	2-inch cold leg break, bottom of pipe, loop A with continuation into long-term cooling mode
	SB2	2-inch cold leg break, bottom of pipe, loop B
	SB3	2-inch cold leg break, top of pipe, loop A
	SB4	2-inch cold leg break, bottom of pipe, loop A
	SB5	1-inch cold leg break, bottom of pipe, loop A, with continuation into long term cooling
	SB6	4-inch cold leg break, bottom of pipe, loop A
	SB7,8	2-inch cold leg small break, bottom of pipe, loop A
	SB9	2-inch break on cold leg balance line, vertical loop, loop A

	SB10	Double-ended guillotine break of cold leg balance line, vertical loop, loop A with continuation into long term cooling
	SB11	Double-ended guillotine break of direct vessel injection line with continuation into long term cooling
	SB12	Double-ended guillotine break of direct vessel injection line
	SB13	2-inch break of direct vessel injection line
	SB14	Inadvertent ADS, stage 1 open, with continuation into long term cooling
	SB15	2-inch hot leg break, bottom of pipe, loop A
	SB16	Double-ended guillotine break of pressurizer/core makeup tank balance line, between check valve/core makeup tank, loop A, with continuation into long term cooling
	SB17	Double-ended guillotine break of pressurizer/core makeup tank balance line, between pressurizer and check valve
	SB18	2-inch cold leg break, bottom of pipe, loop A, with continuation into long term cooling
	LTC19	Simulate long term cooling effects following a large break loss of coolant accident

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AP600 DESIGN AND DESIGN CERTIFICATION TEST PROGRAM OVERVIEW

TABLE 11 - MATRIX TESTS, FULL PRESSURE FULL HEIGHT INTEGRAL SYSTEMS TEST (SPES-2)

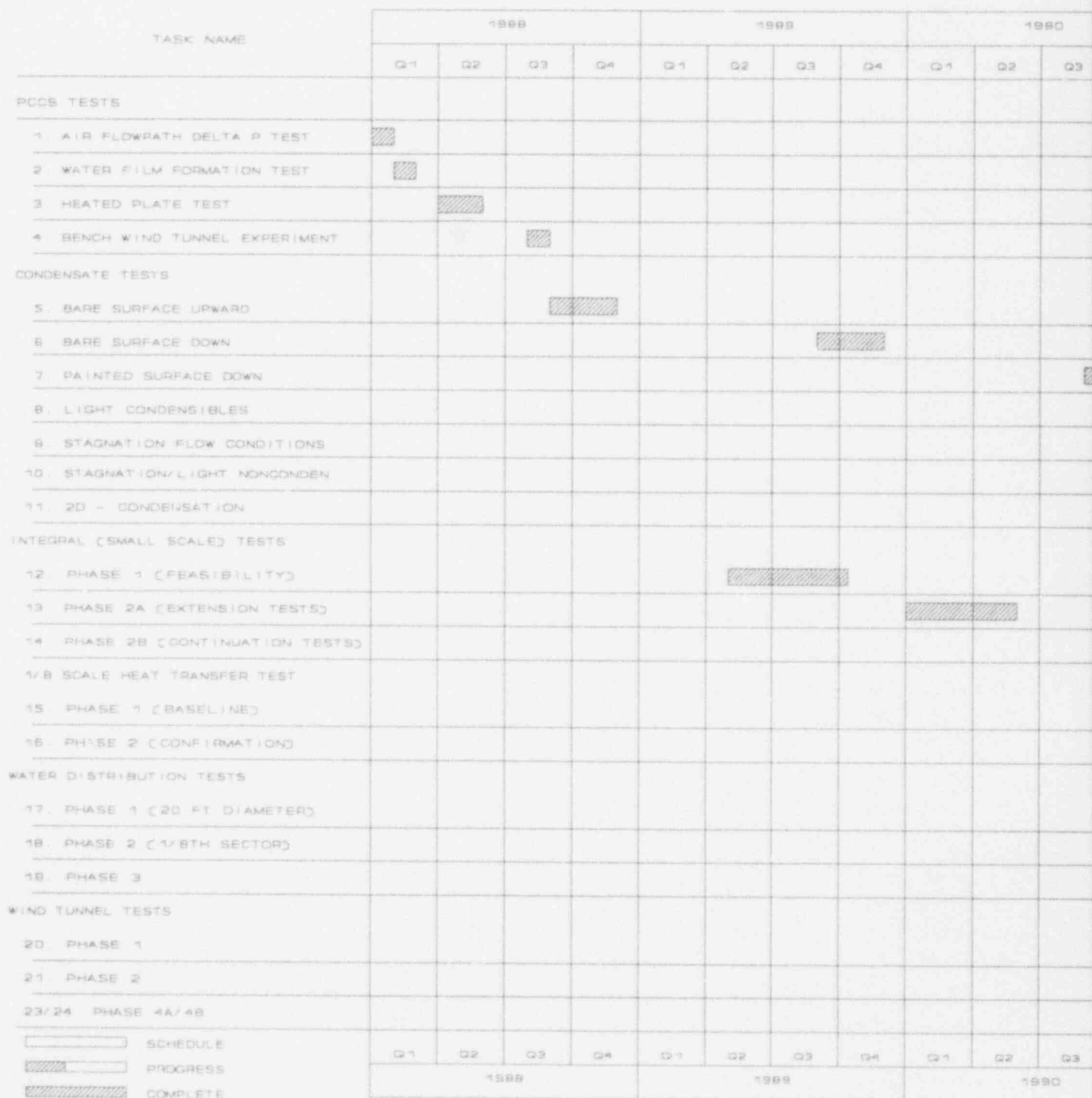
TEST	TEST NUMBER	DESCRIPTION
Cold Shakedown Tests	C-01	Single phase flow through the pressurizer surge line, 4 flow rates
	C-02A,B	Single phase flow through the pressurizer to core makeup tank balance lines, 4 flow rates per balance line
	C-03A,B	Single phase flow through the cold leg to core makeup tank balance lines, 4 flow rates per balance line
	C-04A,B	Core makeup tank draindown using cold leg to core makeup tank balance line
	C-05A,B	Core makeup tank gravity draindown using pressurizer to core makeup tank balance line
	C-06A,B	Safety Injection Accumulator blowdown
	C-07A,B	In-containment refueling water storage tank gravity draindown, three water levels
	C-08	Chemical and Volume Control System, Normal Residual Heat Removal System and Startup Feedwater System pump flow rate verification
	C-09	Operation of primary system with 2 reactor coolant pumps running
	C-10A,B	Operation of primary system with 1 reactor coolant pump running
	C-11	Facility volume measurement
Hot shakedown tests	H-01	Facility heated and held at five constant temperatures
	H-02	Starting from nominal conditions, power will be shut off and steam generators isolated
	H-03	Facility operated at normal full pressure, temperature and power
	H-04	Facility transitioned from full power operating conditions to hot shutdown/natural circulation mode of operation
	H-05	Core makeup tank draindown using pressurizer to core makeup tank balance line
	H-06	Low pressure, safety system actuation using the automatic depressurization system with core makeup tank draindown and accumulator delivery
	H-07	Full power, full pressure, safety system actuation initiated by the opening of the first stage of the automatic depressurization system
Matrix Tests	1	1-inch cold leg break with non-safety systems off
	2	1-inch cold leg break with non-safety systems on
	3	2-inch cold leg break with non-safety systems off
	4	2-inch cold leg break with non-safety systems on
	5	2-inch direct vessel injection line break with non-safety systems off
	6	Double-ended guillotine break of the direct vessel injection line with non-safety systems off
	7	2-inch break of cold leg to core makeup tank balance line with non-safety systems off

	8	Double-ended guillotine break of cold leg to core makeup tank balance line with non-safety systems off
	9	Design basis steam generator tube rupture with non-safety systems on and operator action to isolate steam generator
	10	Design basis steam generator tube rupture with non-safety systems on and no operator action
	11	Beyond design basis steam generator tube rupture with non-safety systems on and no operator action
	12	Large steamline break

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CHART 1 - PASSIVE CONTAINMENT

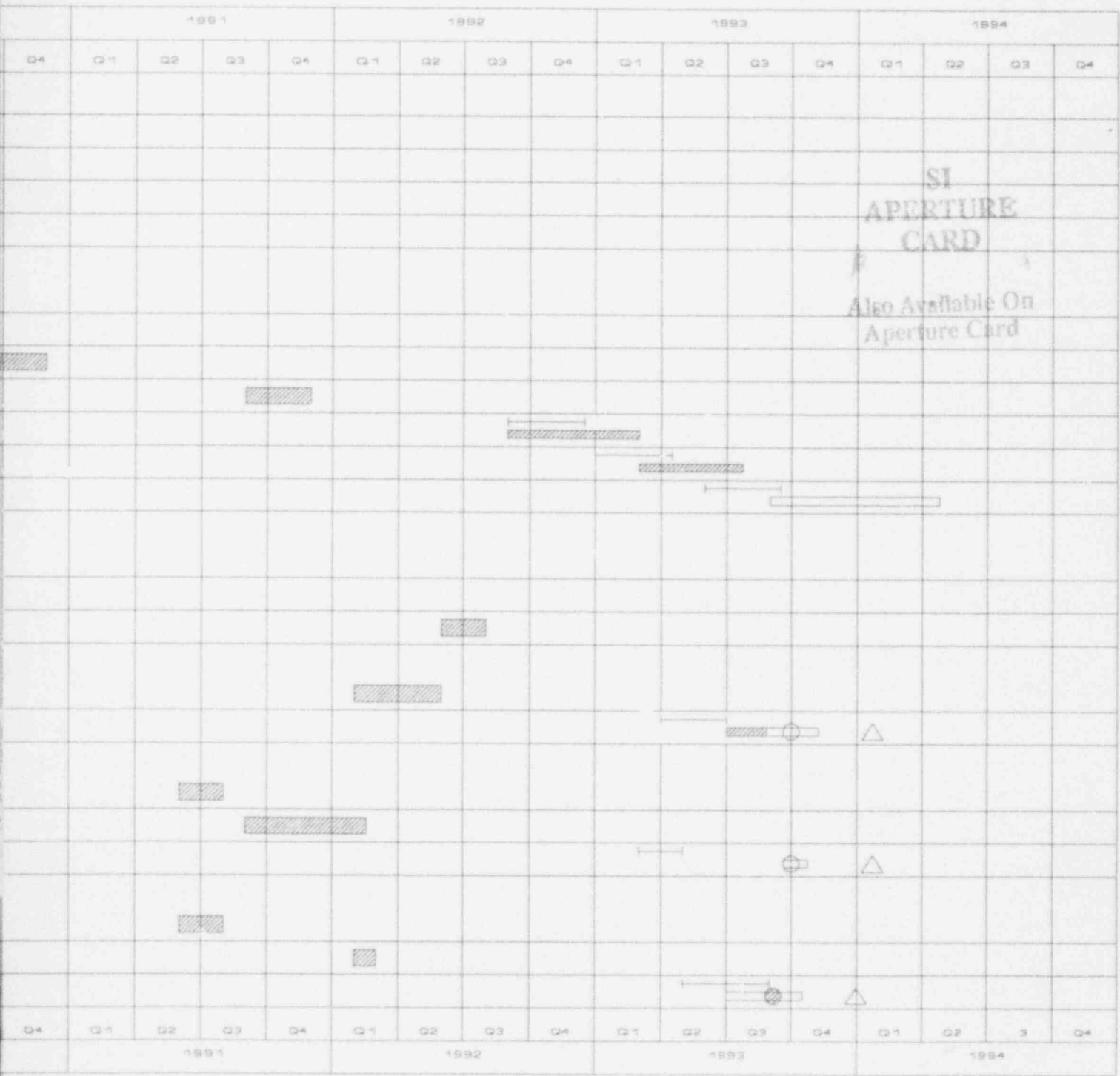
AP600 TEST PROGRAMS



COOLING SYSTEM TESTS

● WITNESS POINT
▲ FINAL REPORT

———— SCHEDULE AS OF 10/21/92
———— SCHEDULE AS OF 08/13/93



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CHART 3 - COMPONENT DE

AP600 TEST PROGRAMS

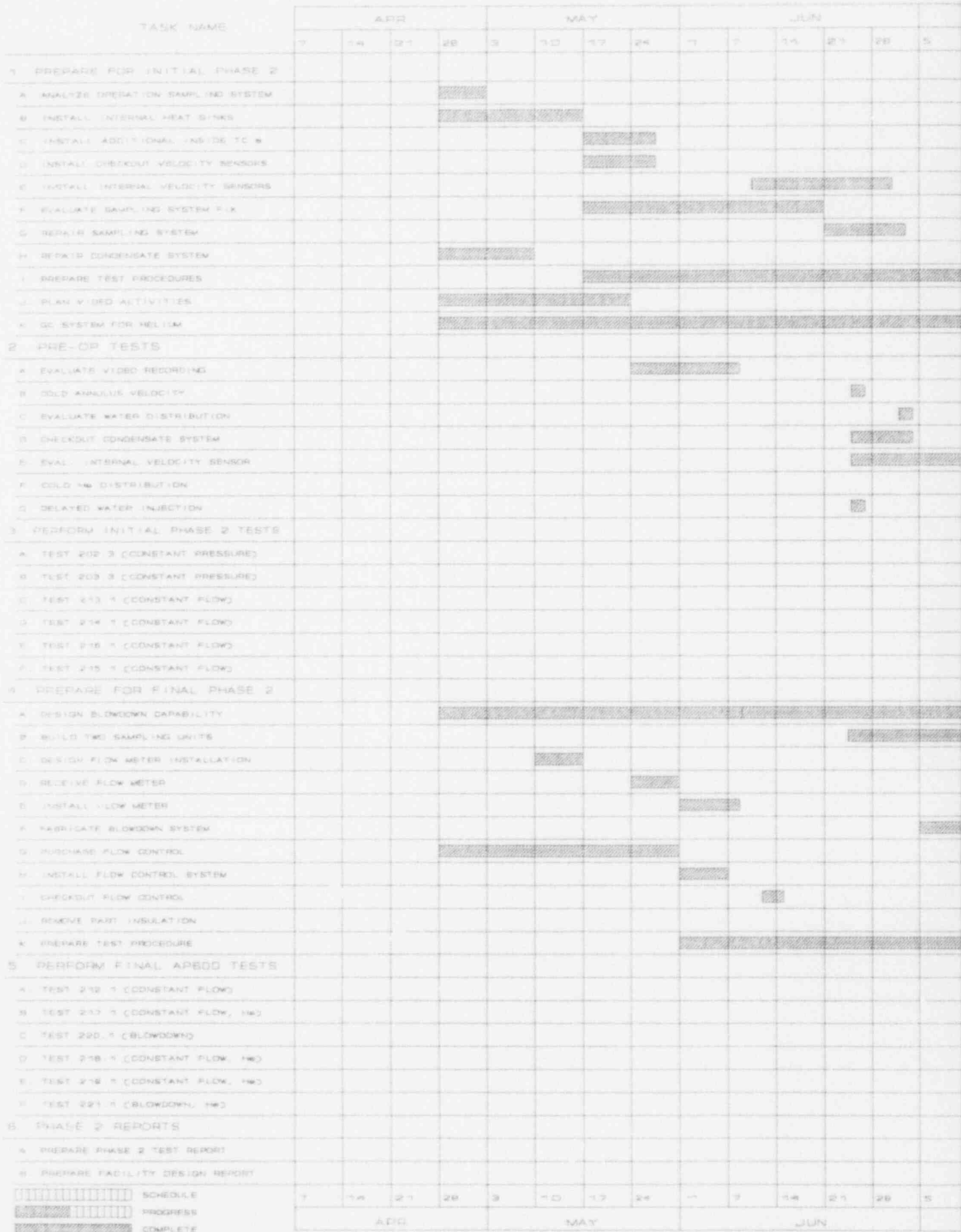
TASK NAME	1988				1989				1990		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
COMPONENT TESTS											
33. NRHR SUCTION NOZZLE TEST											
34. RCP/SQ CHANNEL HEAD AIR FLOW											
35. RV FLOW VISUALIZATION TEST											
RCP JOURNAL BEARING TESTS											
36. PHASE 1											
37. PHASE 2											
38. RCP HIGH INERTIA ROTOR TEST											
39. INCORE PMI TEST SYSTEM											
CHECK VALVE TEST											
40. MECHANICAL											
41. IN-SITU TEST											
42. QUALIFICATION											
43. ADS STAGE 4 VALVE TEST											
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
	1988				1989				1990		

 SCHEDULE
 PROGRESS
 COMPLETE

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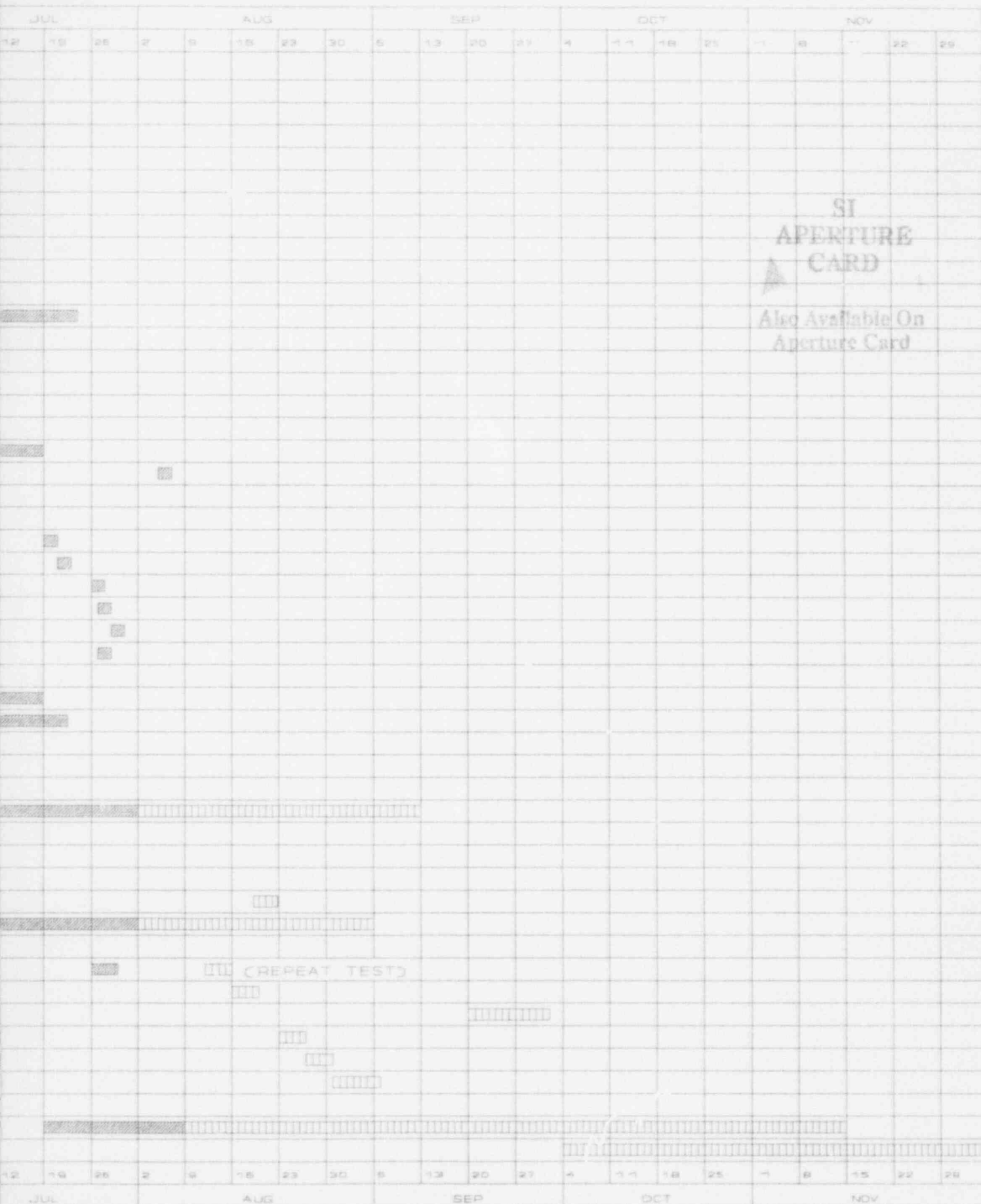
CHART 4 - 1/8th HEAT TR



TRANSFER TEST - PHASE 2

1993

SCHEDULE AS OF 08/13/93

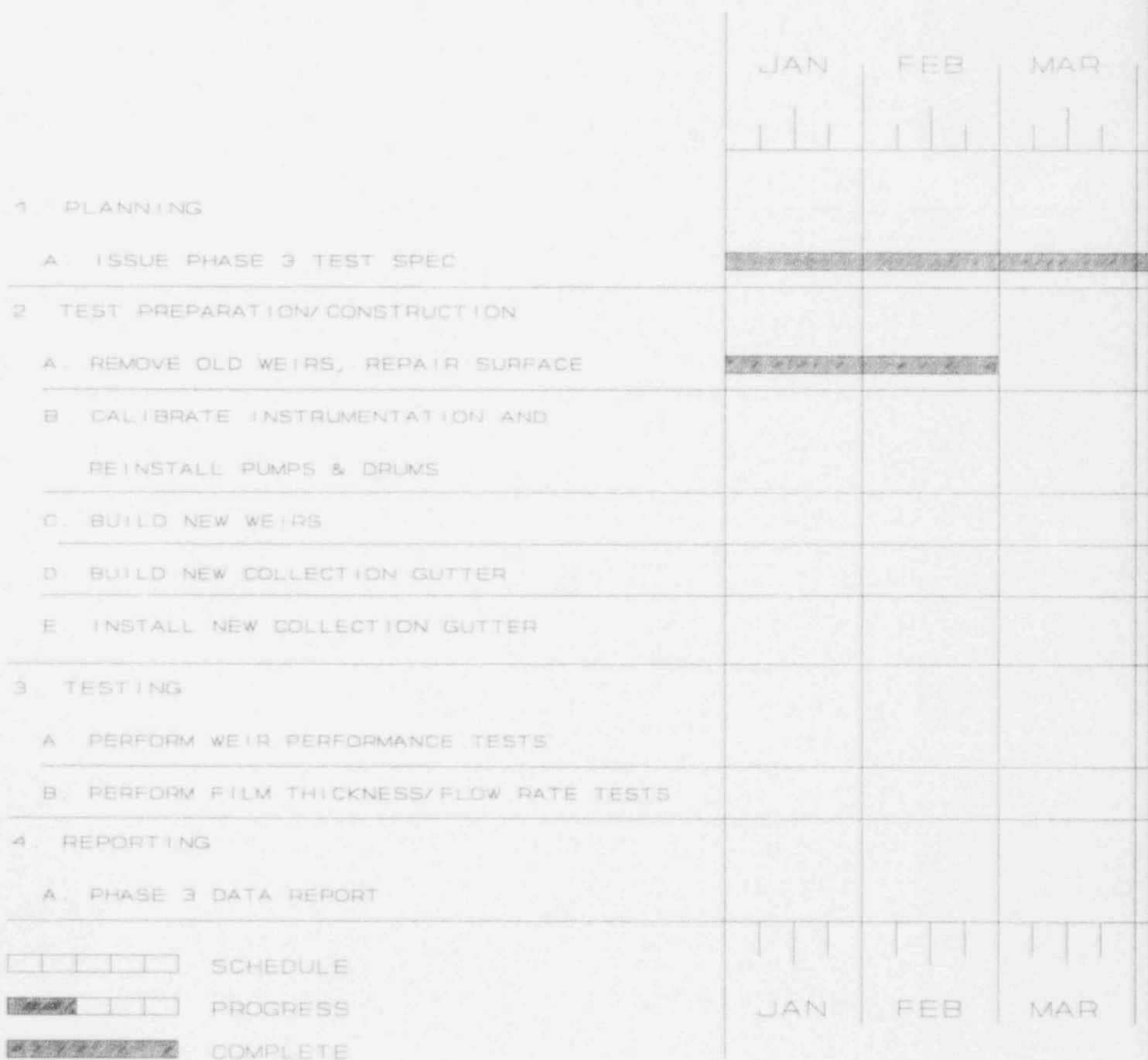


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9308240013-23

CHART 5 - WATER DI



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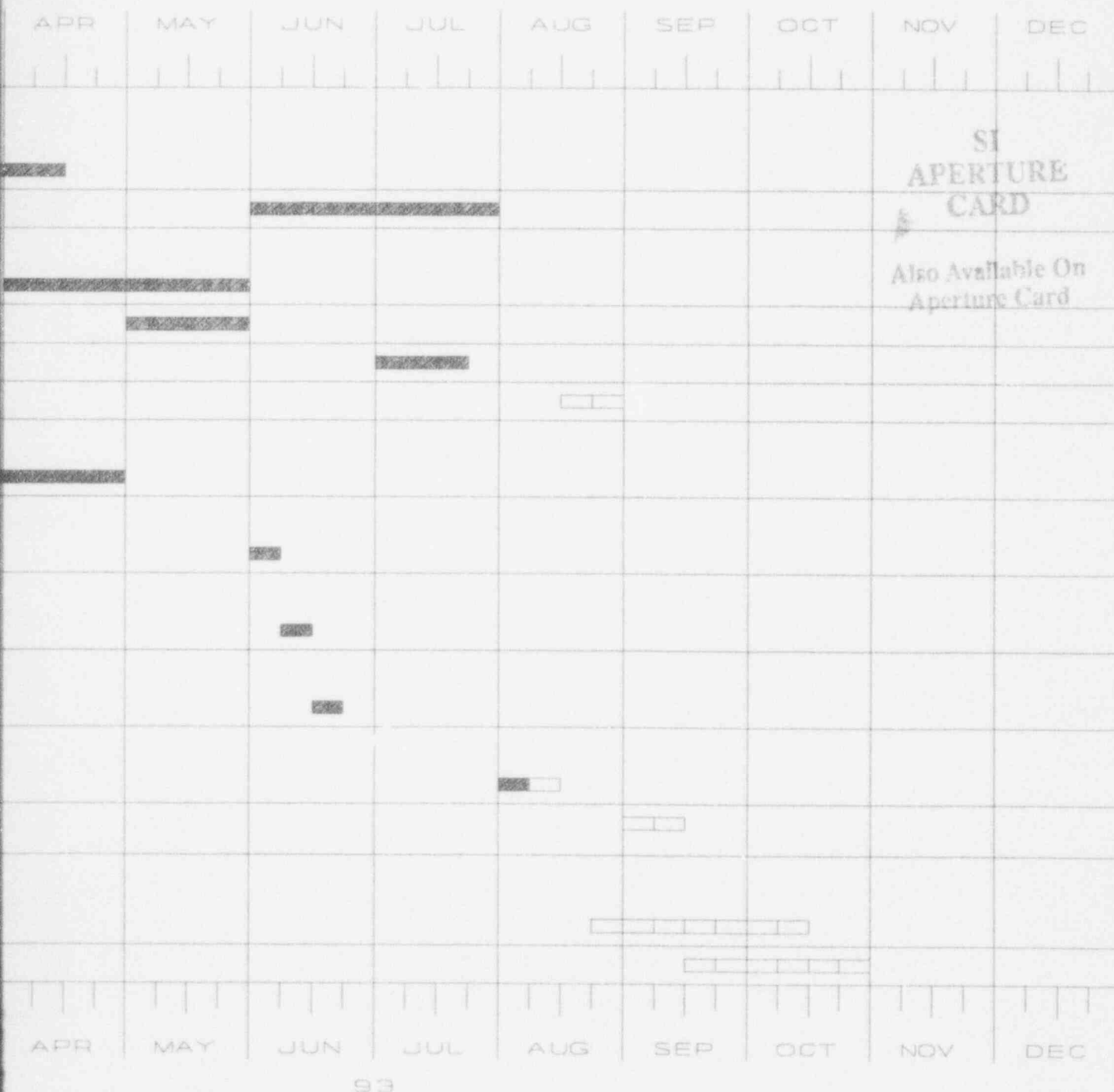
CHART 6 - WIND TUNNEL TEST



ST - PHASES 4A & 4B

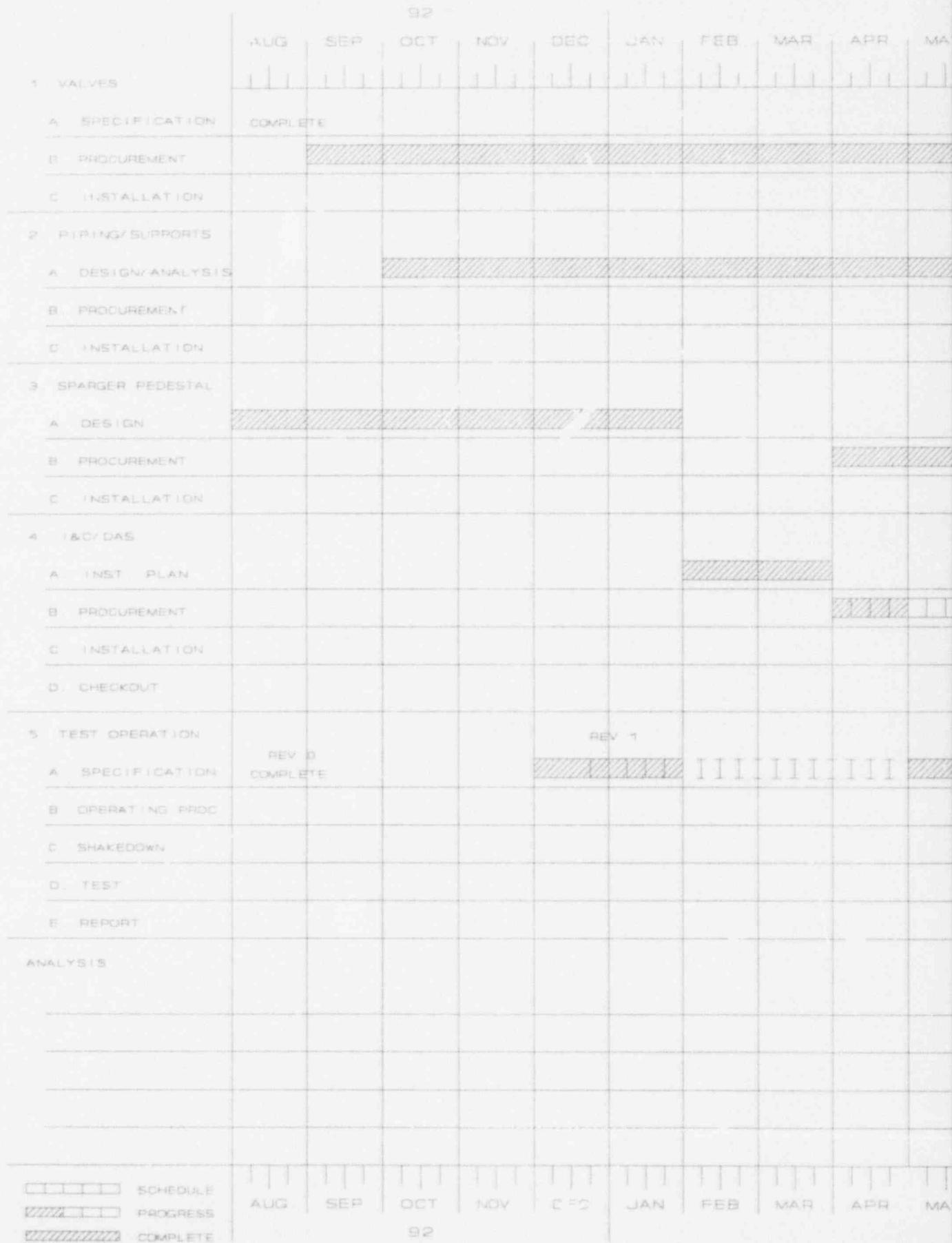
93

SCHEDULE AS OF 08/13/93



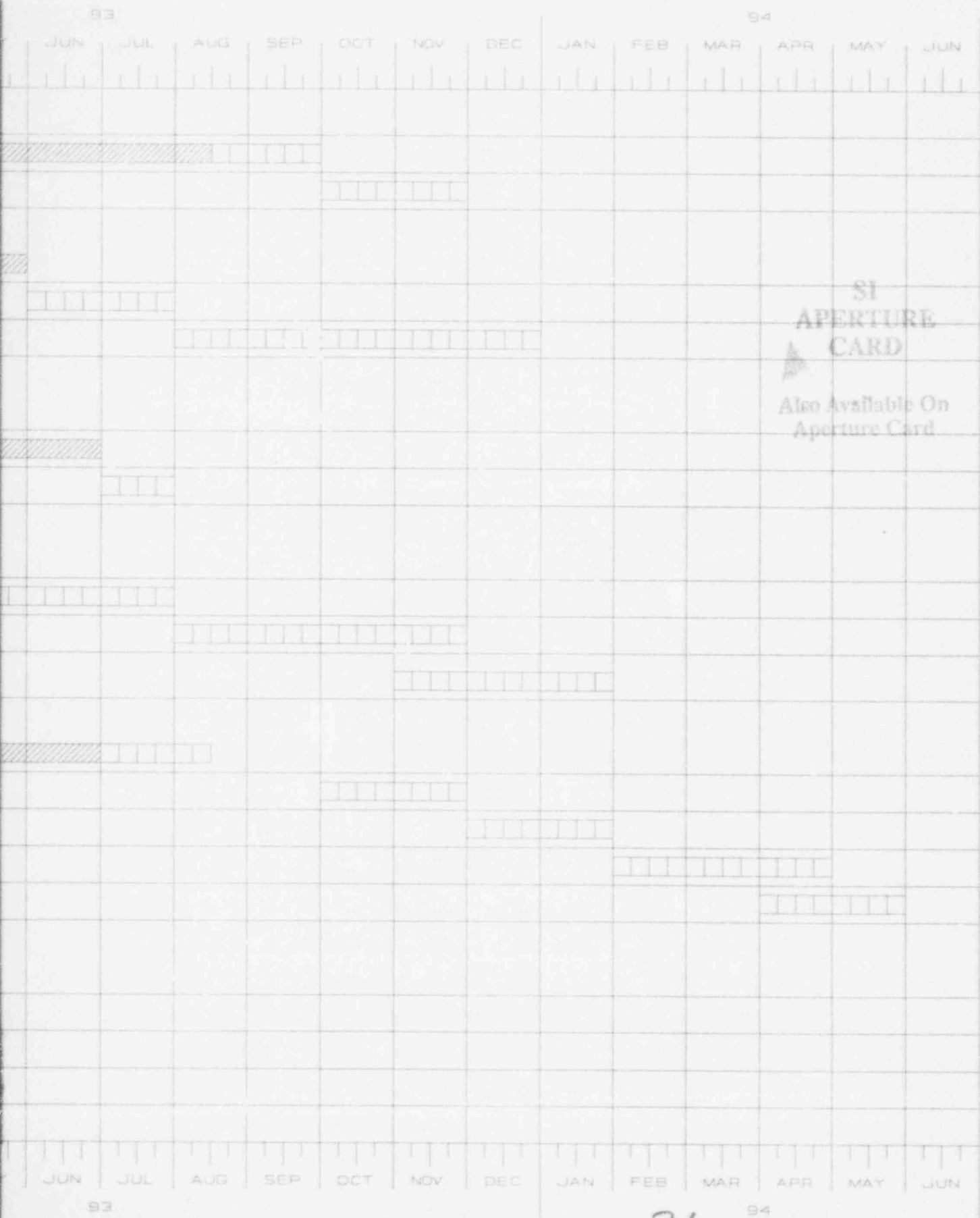
9308240013-25

CHART 7 - ADS PHASE



B TEST SCHEDULE (TO BE REVISED)

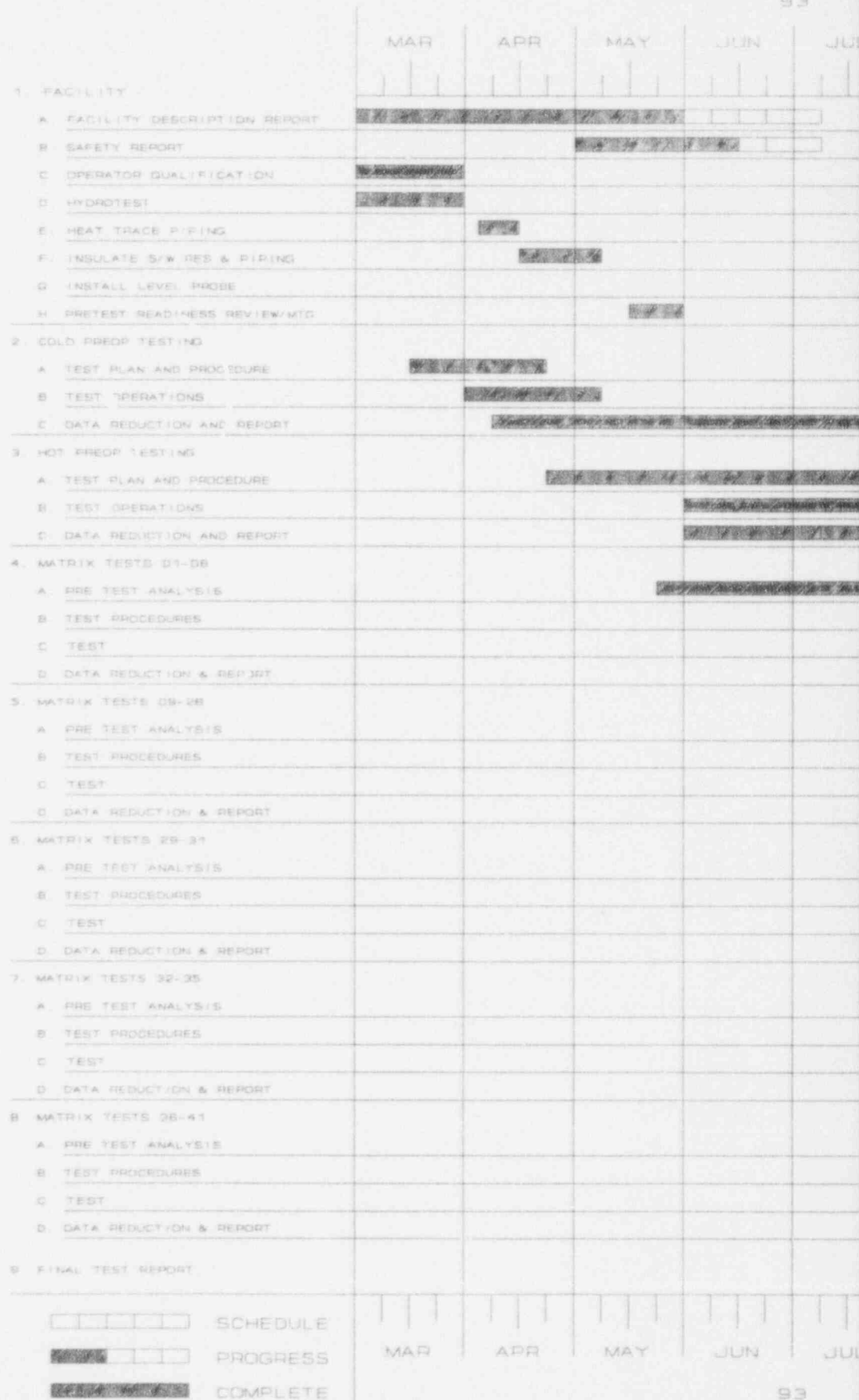
SCHEDULE AS OF DB/13/93



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CHART B - CORE MAKEUP TANK T

93



93

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CHART

1. PROCUREMENT ACTIVITIES

A. PURCHASE CERAMICS

B. PURCHASE THERMOCOUPLES

2. FACILITY ASSEMBLY

A. ASSEMBLE & LOAD BUNDLE #1

B. REASSEMBLE & LOAD BUNDLE #1

C. ASSEMBLE & LOAD BUNDLE #2

D. ASSEMBLE & LOAD BUNDLE #3 (IF REQ'D)

3. TEST MATRIX

A. ISSUE TEST MATRIX FOR INTERNAL REVIEW

B. ISSUE TEST MATRIX TO COLUMBIA UNIV.

4. TESTING

A. TEST BUNDLE #1

B. TEST BUNDLE #2

C. TEST BUNDLE #3

5. REPORTING

A. PREPARE PRELIMINARY DATA EVALUATION

B. ISSUE TEST REPORT



SCHEDULE



PROGRESS



COMPLETE

JAN

FEB

MAR

APR

MA

JAN

FEB

MAR

APR

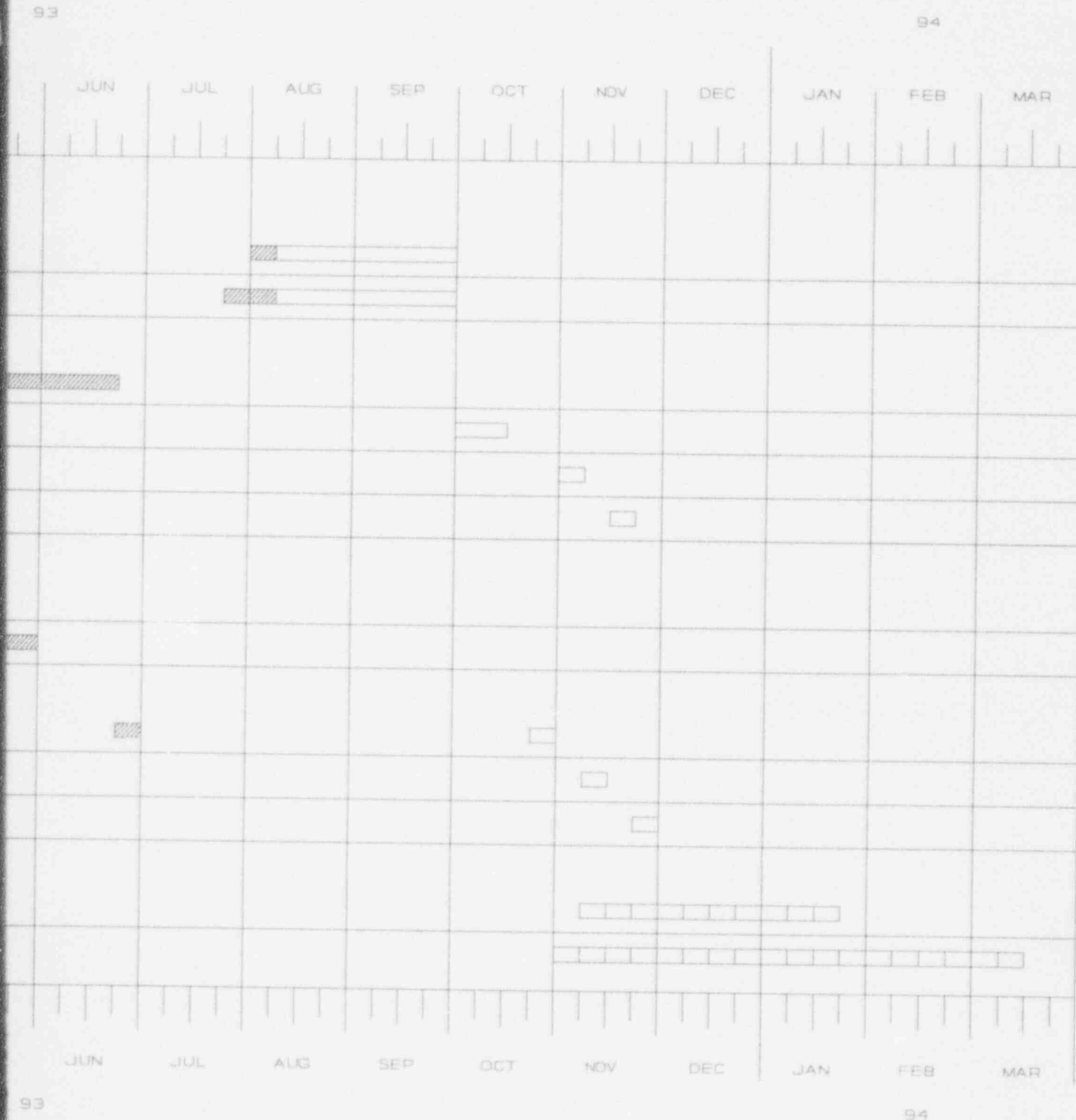
MA

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SCHEDULE AS OF 08/13/93

DNB TEST SCHEDULE

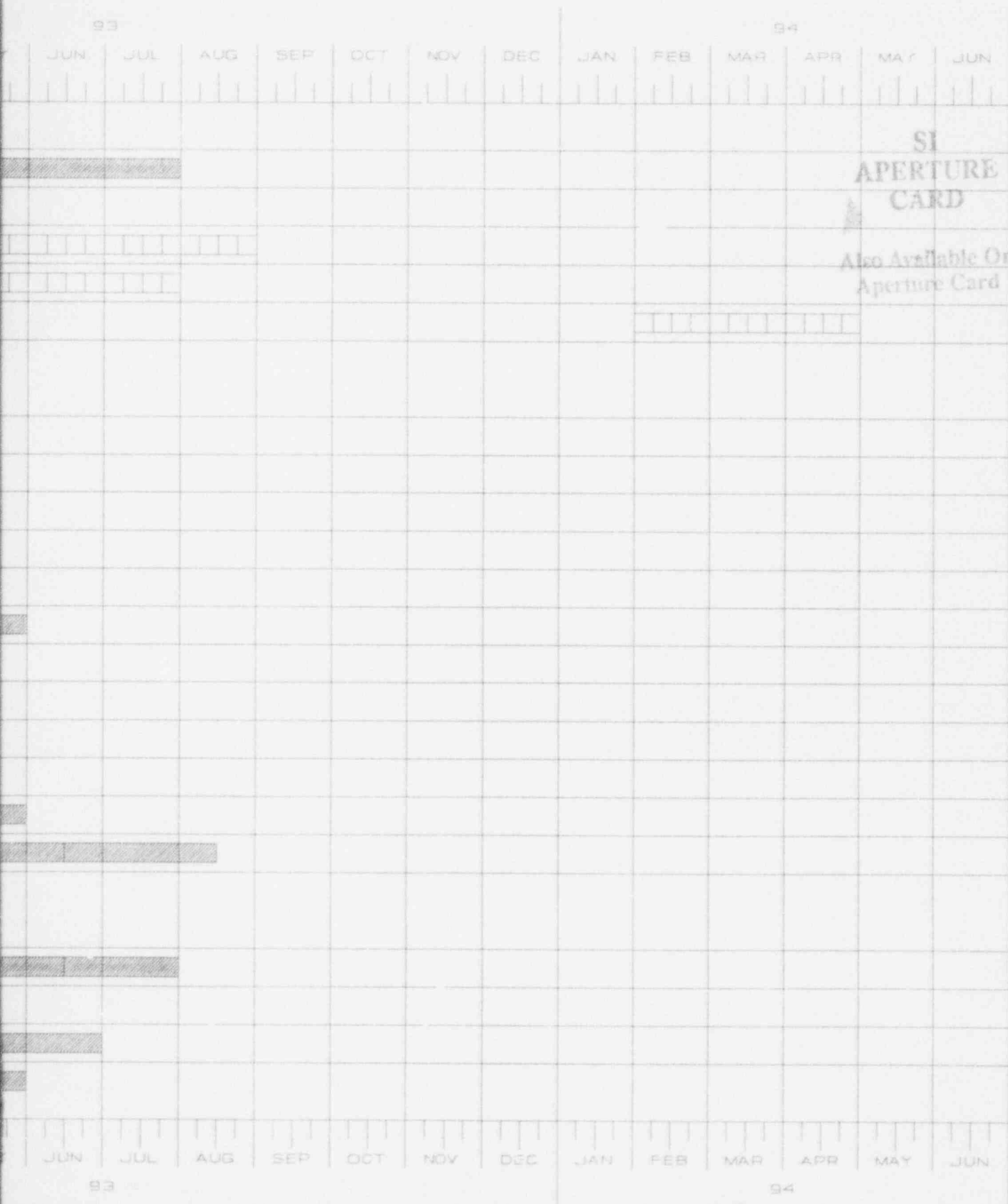


9308240013-28



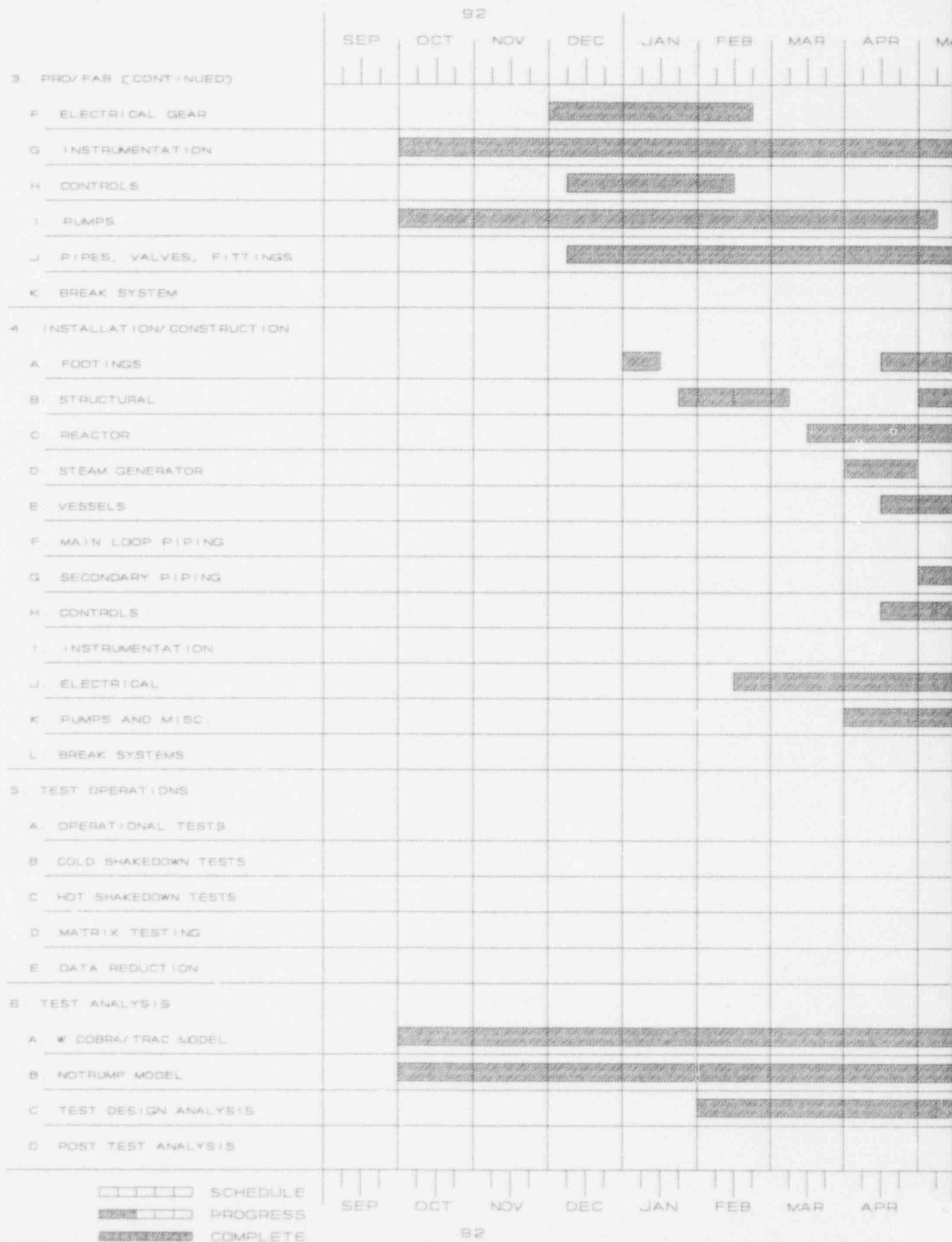
E 1/4th HEIGHT INTEGRAL SYSTEMS

SCHEDULE AS OF 08/13/93



9308240013-29

(Sheet 2 of 2)



1/4th HEIGHT INTEGRAL SYSTEMS

SCHEDULE AS OF 08/13/93



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(SHEET 1 OF 2)



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TEST SCHEDULE

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SCHEDULE AS OF 03/13/93

94

UG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN



UG SEP OCT NOV DEC JAN FEB MAR APR MAY JUN

94

9308240013-31

CHART 11 - SPE

(SHEET 2 OF 2)

93



93

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S-2 TEST SCHEDULE

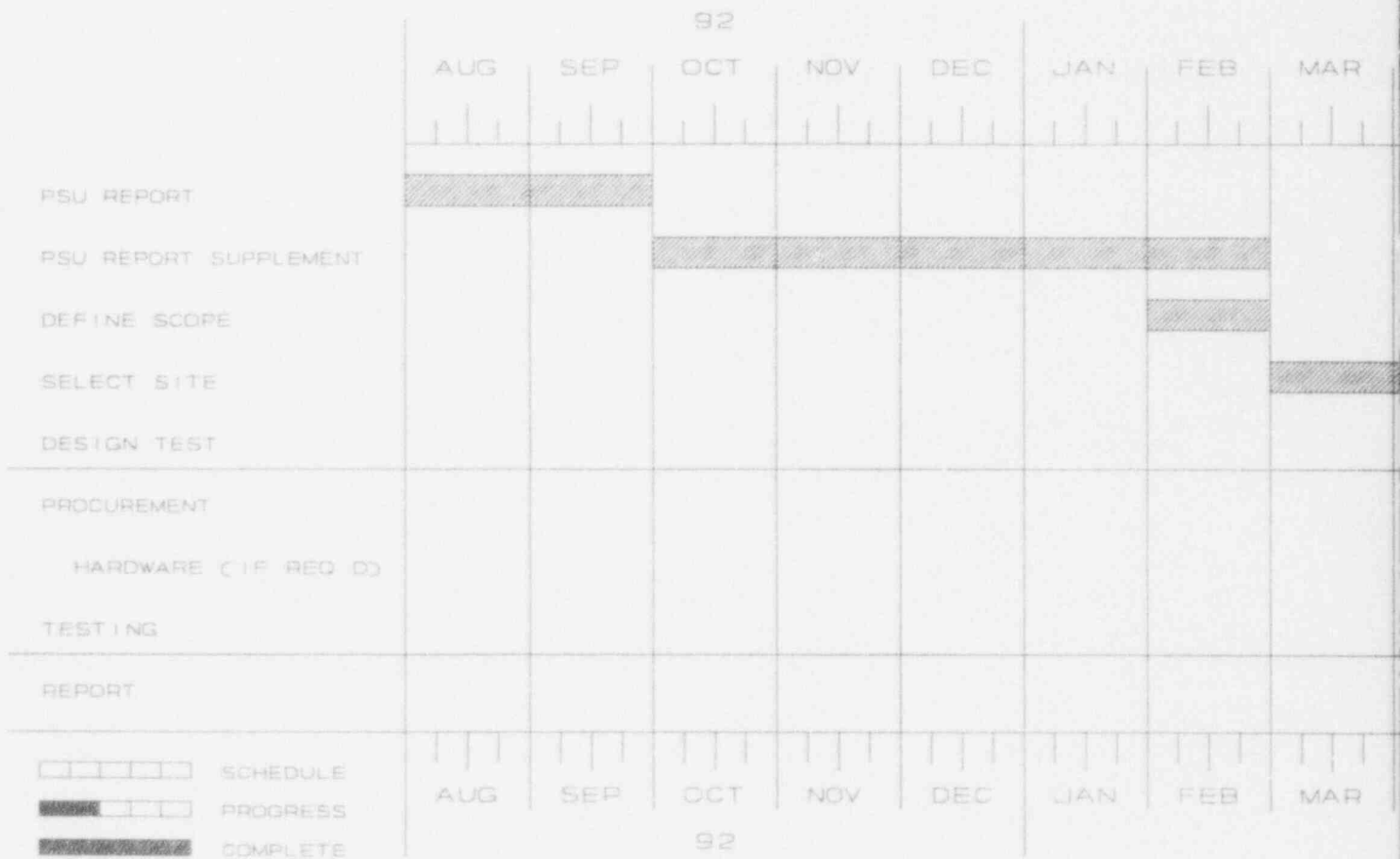
Also Available On
Aperture Card

SCHEDULE AS OF 08/13/93



9308240013-32

CHART 12 - CHECK VA

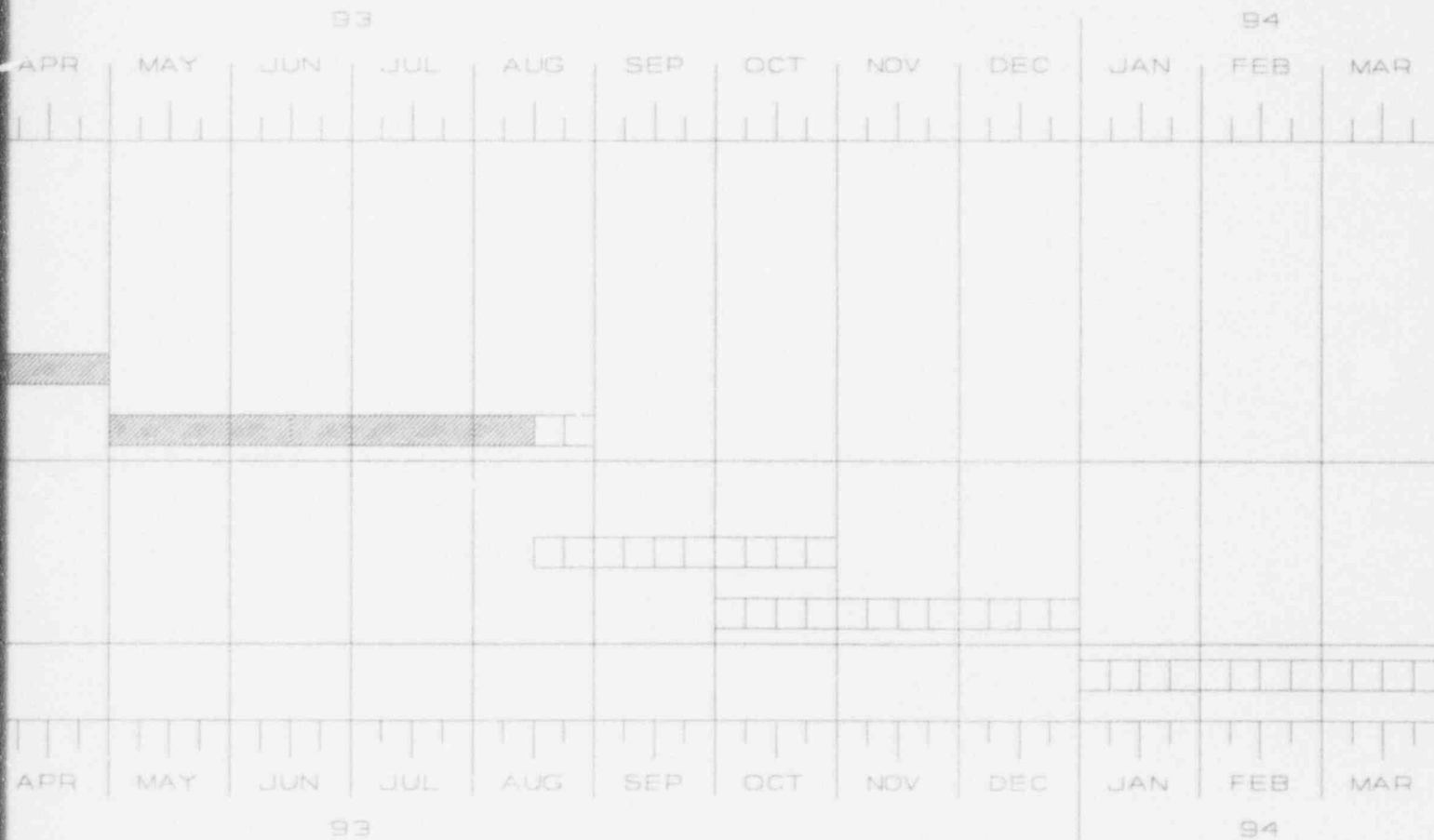


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LIVE IN-SITU TEST SCHEDULE

AS OF 08/13/93



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