Westinghouse Electric Corporation
Energy Systems

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NSD-NRC-96-4911
DCP/NRC0681
Docket No.: STN-52-003

December 13, 1996

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: T. R. QUAY

SUBJECT: INFORMAL CORRESPONDENCE

Dear Mr. Quay:

Please find attached correspondence that we are sending you formally. We have previously sent you this correspondence informally.

Please contact me on (412) 374-4334 if you have any questions concerning this transmittal.

Brian A. McIntyre, Manager
Advanced Plant Safety and Licensing

/jml

Attachment

cc: N. J. Liparulo, Westinghouse (w/o Attachment)

E004 1/1

190061

3021a

Attachment 1 to Westinghouse Letter NSD-NRC-96-4911

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	DECEMBER 11, 1996	NAME:	JAMES WINTERS
TO:	DIANE JACKSON/TOM KENYON	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
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Cover + Pages 1 + 2

The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

DIANE

THIS MARKUP CLOSES OUR ACTION ON OITS #3097 PER OUR MEETING IN YOUR OFFICES ON 11/20/96. THIS WILL BE INCLUDED IN REVISION 10 OF THE SSAR UNLESS WE HEAR FROM YOU. THIS ITEM WILL THE STATUSED CFRM-N.

Jim Winters

cc: LINDGREN
BUTLER
MCINTYRE
RON VIJUK
CUMMINS
WINTERS
JEANNE EVANS
HUTCHINGS

9.2.7.2 System Description

9.2.7.2.1 General Description

The system consists of two closed loop subsystems: a high cooling capacity subsystem and a low cooling capacity subsystem. The high capacity subsystem is the primary system used to provide chilled water to the majority of plant HVAC systems and other plant equipment requiring chilled water cooling. The low capacity subsystem is dedicated to the nuclear island nonradioactive ventilation system and the makeup pump and normal residual heat removal pump compartment unit coolers. The low capacity subsystem is illustrated in Figure 9.2.7-1

The high capacity subsystem consists of two 100-percent capacity chilled water pumps, two 100-percent capacity water-cooled chillers, a chemical feed tank, an expansion tank, and associated valves, piping, and instrumentation. The subsystem is arranged in two parallel mechanical trains with common supply and return headers. Each train includes one pump and one chiller. A cross-connection at the discharge of each pump allows for either pump to feed a given chiller. A bypass line maintains a constant chiller flow rate as the load demand changes. The chiller condensers are supplied with cooling water from the component cooling water system. The high capacity subsystem components are located in the turbine building.

The low capacity subsystem consists of two 100-percent capacity chilled water loops. Each loop consists of a chilled water pump, an air-cooled chiller, an expansion tank, and associated valves, piping, and instrumentation. The subsystem is arranged in two independent trains with separate supply and return headers. The subsystem is provided with a common chemical feed tank. The subsystem provides a reliable source of chilled water to the main control room (MCR) and technical support center (TSC) HVAC subsystem, and the Class 1E electrical equipment room HVAC subsystem. This system configuration provides 100-percent redundancy during normal plant operation and following the loss of offsite power. The air-cooled chillers of the low capacity subsystem are located on the auxiliary building roof. The chilled water pumps and expansion tanks are located in the auxiliary building below the chillers.

9.2.7.2.2 Component Description

The piping inside containment has a design pressure of 200 psig and a design temperature of 320°F to accomodate both cooling and heating service.

The general descriptions and summaries of the design requirements for the central chilled water system components are provided below. The key equipment parameters for the central chilled water system components are contained in Table 9.2.7-1.

Pumps

Four central chilled water system pumps are provided. These pumps are single-stage, horizontal, centrifugal pumps. These pumps have an integral pump motor shaft driven by an ac-powered induction motor. The central chilled water system pumps are constructed of cast iron and have flanged suction and discharge nozzles. Each pump is sized to provide the maximum water flow required by its respective chiller unit for removal of its associated design heat load.

Table 9.2.10-1

HOT WATER HEATING SYSTEM DESIGN DATA

(Nominal Values)

Available Steam Supply

High pressure turbine extraction	
Pressure (psia)	170
Enthalpy (Btu/lbm)	1087
Temperature (°F)	368
Auxiliary steam	
Pressure (psia)	210
Enthalpy (Btu/lbm)	1199
Temperature (°F)	386

Heat Exchanger

Quantity	2
Type	Shell and Tube - subcooled
Capacity (Btu/hr)	12,000,000

12/4

To: Tom Kenyon x1120

Tom, I've updated the OITS and am providing a sort for all NRR/HICB items. Pls confirm, with Holbert, that I've adequately captured the outstanding actions for Ch 7 and Ch 20. Also, in Jan we should address Ch 16 items. Also, about the interlocks, I understand that since they are not safety related, they're locked open, and for non IE valve, they don't belong in the SSAR (only safety related interlocks are included in Ch 7.6). Pls let me know if NRC believes otherwise and I'll set up a call w/me, Ken Deutsh, Terry Schulz, you, and Holbert.

Thanks,
Robin Nydes
(412) 374-4125

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AP600 Open Item Tracking System Database: Executive Summary

Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1036	NRR/HICB	7.1.3.2-1	DSER-OI		Tupper	Closed	Closed		
				Westinghouse should provide a table comparing the design of the instrumentation and controls of the AP600 design and the guidance of the EPRI ALWR URD. The staff concludes that Westinghouse should update the response to Q100.1 so that the staff can evaluate the extent to which the AP600 design complies with the EPRI requirements.					
				Closed - Westinghouse is a principle participant in the development of the EPRI sponsored URD and continue to be involved with EPRI on changes to that document. Therefore, the AP600 design remains consistent with the EPRI URD. The SSAR will be revised to reflect consistency with the EPRI URD. The URD conformance database is available for NRC review at the Westinghouse Rockville Licensing office. See related item (DSER OI 1.1-2) Closed per W/NRC telecon on 11/21. rkn 12/2					
1037	NRR/HICB	7.1.3.3-1	DSER-OI		Deutsch, K.	Active	Active	NTD-NRC-95-4464	5/31/95
				Westinghouse should commit to digital I&C industry system standards. The staff concludes that an explicit commitment to industry hardware- and software-related standards is important to achieving high quality in the digital I&C system product. Therefore, Westinghouse should commit to and reference digital microprocessor-related industry standards.					
				Closed - List of standards reviewed by NRC during meeting on May 15-16. Standards incorporated into Revision 3 of the SSAR, Subsection 7.1.4.1.8. This was reopened based on 11/21 W/NRC telecon. Although the list of stds to include in the SSAR was agreed to at the May 15/16 1995 meeting and the SSAR revised, the NRC has asked that Westinghouse add IEEE-1042 to SSAR Section 7.1.2.15. Also, NRC has the action to review the PMS ITAAC to determine completeness of the Standards list. rkn 12/2					
1038	NRR/HICB	7.1.4-1	DSER-OI		ITAAC/Deutsch, K.	Active	Active	NSD-NRC-96-4737	
				Westinghouse should describe in the SSAR, CDM, and ITAAC the digital system design process. Westinghouse should provide a detailed descritpiton of the digital system design process in the SSAR and CDM with a corresponding ITAAC.					
				Action W - WCAP-13383, which describes the digital system design process is being updated. The certified design material and ITAACs will be modified. The SSAR has been modified to reference the design process and to indicate the software design standards the design process conforms to. This information is provided in Revision 3 of the SSAR, Subsection 7.1.2.15. The WCAP and ITAAC revisions must be completed before this item can be closed out. NRC has requested a presentation when all elements are completed. WCAP-13383 rev due 5/30/96 rkn 5/7/96 WCAP-13383 in repro 6/14 for 6/17 release. rkn 6/14/96 Closed - Response provided by NSD-NRC-96-4737. Per an 11/21 W/NRC telecon, the NRC thinks the I&C ITAAC is deficient and requested that we "fix" the ITAAC or justify/explain deviations from the SRP 14.3.5 to NRC satisfaction. NRC to provide specific comments on the ITAAC. rkn 12/2					

AP600 Open Item Tracking System Database: Executive Summary

Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1039	NRR/HICB	7.1.7-1	DSER-OI		ITAAC/Deutsch	Active	Active	NSD-NRC-96-4737	

Westinghouse should describe a commercial grade item dedication program for digital systems.
Westinghouse has not addressed the commercial grade item dedication program that is necessary to ensure sufficient quality in the design of safety-related and nonsafety-related I&C systems using commercial of-the-shelf equipment. The design, verification, and validation process for COTS software and hardware should be clearly documented for design certification.

Action W - WCAP-13383 is being updated to include a commercial grade item dedication process. The SSAR has been modified to reference this process. This information is provided in Revision 3 of the SSAR, Subsection 7.1.2.15. The WCAP revision must be completed before this item can be closed out.

WCAP in repro 6/14 for 6/17 issuance. rkn 6/14
Closed - Response provided by NSD-NRC-96-4737.

Same as item 1038. rkn 12/2

1040	NRR/HICB	7.2.5-1	DSER-OI		ITAAC/Deutsch	Active	Active	NTD-NRC-95-4464	

Westinghouse should provide additional description of the bypass logic ... the engineered safety feature actuation systems.
...during the time the plant is operating with two channels bypassed, any subsequent single failure could lead to an inadvertent reactor trip, and, thus, from an operational standpoint, operation with two channels bypassed should be limited. In addition, Westinghouse should verify that this bypass logic applies only to RTS and does not apply to the ESFAS. The topical report (Addendum 2 to WCAP 8897) should provide additional descriptions of the bypass logic for the engineered safety feature actuation system.

Closed - Technical proposal accepted by NRC during meeting on May 15-16. Approved additional technical description is incorporated into Revision 3 of the SSAR, Subsection 7.1.2.10.

Based on an 11/21 W/NRC telecon, the SSAR is ok (NRC agrees we meet single failure criteria). However, NRC wants more details in the PMS ITAAC for verifying bypass logic. rkn 12/2

1041	NRR/HICB	7.2.6-1	DSER-OI		ITAAC/Deutsch, K.	Closed	Action N		

The staff has not yet completed its evaluation of the software architecture design.
...because WCAP 14080 was submitted in July 1994, the staff has not completed its review of the document and is continuing its evaluation of the software architecture based on both the proposed design and the associated design process. The results from this evaluation will be presented in the final SER for AP600.

Closed - Westinghouse has completed necessary submittals to support staff review.

Per 11/21 W/NRC telecon, when the NRC agrees with the design process through their review of the ITAACs, this item will be closed. rkn 12/2

1042	NRR/HICB	7.2.7-1	DSER-OI		Nydes	Active	Action W		

Westinghouse should provide the instrument setpoint methodology document that applies to the AP600 design.
...Westinghouse stated that the details of the AP600 setpoint study will be provided during the equipment procurement phase. This is not acceptable. The staff concludes that the setpoint methodology must be submitted to support the design certification review. Therefore, Westinghouse must provide the setpoint methodology document for the staff to review before the final SER is written.

Action W - A document which describes the AP600 setpoint methodology is being prepared and will be provided to NRC staff by April 30, 1996.
Closed - Setpoint Methodology Documents were issued on May 9. rkn 5/16/96

Per 11/21 W/NRC telecon, NRC wants us to list (somewhere) completion of the setpoint study as a COL applicant item. rkn 12/2

AP600 Open Item Tracking System Database: Executive Summary

Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1043	NRR/HICB	7.2.8-1	DSER-OI		ITAAC/Deutsch	Active	Active	NTD-NRC-95-4464	

Westinghouse should provide a discussion concerning the qualification of digital equipment to the electromagnetic environment.
Westinghouse has not addressed the issue of electromagnetic environmental qualification and has not committed to the appropriate standards.

Closed - List of standards reviewed by NRC during meeting on May 15-16. Standards incorporated into Revision 3 of the SSAR, Subsection 7.1.4.1.6.

Per an 11/21 W/NRC telecon, the technical issues are resolved. When NRC agrees with design process thru ITAAC review, this item will be closed.

1044	NRR/HICB	7.2.8-2	DSER-OI		De .tsch, K.	Active	Active	NTD-NRC-95-4464	

Westinghouse should provide information concerning environmental qualification of PMS components addressing local temperature rises above the room ambient experienced by the components during operation.
It is desirable to have additional margin built into the design. The components should, therefore, be qualified by testing to higher temperatures than specified in the SSAR for a given room environment. Westinghouse should address this concern in the SSAR. Westinghouse should also provide mild environmen. equipment qualification in the CDM wit' 'he corresponding ITAAC.

Closed - Technical information agreeded to by NRC during meeting on May 15-16. Additional technical information regarding the equipment design margin to loss of HVAC has been incorporated into Revision 3 of the SSAR, Subsection 7.1.4.1.8. rkn 12/2

NRC still has the action to evaluate the Westinghouse proposal on procedural fix of instrument overheating after 24 hour period. (6/21 meeting with W/SPLB/HICB). Based on 11/21 W/NRC telecon, this approach is reasonable; see qualification program in SSAR Section 3.11. NRC requested W provide proposed COL item for qualification margin and instrument setpoint data or document in the CDM and corresponding ITAAC (W is considering options; did not commit to either approach).

1045	NRR/HICB	7.3.3-1	DSER-OI		RTNSS/Nydes	Closed	Action N		

Westinghouse must satisfactorily address the issue concerning the regulatory treatment of non-safety-related systems for essential auxiliary supporting systems.
The staff has not completed its review of the RTNSS issue and, as discussed in Section 19 of this report, has not completed its review of the PRA for the AP600 design. Additional systems may be identified by the RTNSS process for further review after the staff completes its review of the AP600 PRA.

Closed - Westinghouse has completed necessary submittals to support staff review.

NRC to review RTNSS WCAP and Tech Specs and provide any related concerns for resolution. rkn 12/2

1046	NRR/HICB	7.3.4-1	DSER-OI		Birsa, J.	Closed	Resolved	NTD-NRC-95-4464	

Westinghouse should address the possible adverse interaction between the soft control design at the operator workstation and the hardware/software of the safety-related actuation system.
Additional information is required with respect to workstation operation, soft control of the safety- and nonsafety-related equipment, and data management between protection and control systems to enable the staff to evaluate the consequence of failures in the control system.

Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail has been incorporated into Revision 3 of the SSAR, Subsection 7.1.3.4.

Per 11/21 telecon, the Chapter 7 issue is resolved (NRC to provide any comments related to HFE ITAAC outside the scope of Chapter 7). This is resolved. rkn 12/2

AP600 Open Item Tracking System Database: Executive Summary

Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1047	NRR/HICB	7.4.3-1	DSER-OI		Birsa, J.	Closed	Resolved		
				Westinghouse should provide in the SSAR additional information to confirm that the safety-related monitoring for safe shutdown at the remote shutdown workstation is operational without the transfer switch in the local position, and whether operation of the transfer switch to local disables all indications in the main control room. To maintain continuity of operation between the MCR and the remote shutdown room, the indication of the status of the parameters required for safe shutdown should be available to the operators at both locations before, during, and following transfer between the control room and the remote shutdown room, and vice-versa.					
				Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail was incorporated into SSAR, Subsection 7.4.3.1.1. Per 11/21 telecon, this item is resolved. rkn 12/2					
1048	NRR/HICB	7.4.3-2	DSER-OI		Birsa, J.	Closed	Resolved		
				Westinghouse should provide in the SSAR a description of the design features of the transfer switch located outside the main control room. Details regarding the separation features of the transfer switch (between safety divisions, and between safety and non-safety divisions), its single failure vulnerability, and its access are needed in order for the staff to complete its safety determination.					
				Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail was incorporated into SSAR, Subsections 7.4.3.1.1 and 7.4.3.2. Per 11/21 telecon, this item is resolved. rkn 12/2					
1049	NRR/HICB	7.5.8-1	DSER-OI		Lindgren, D./Deutsch,	Closed	Resolved		
				Westinghouse should describe the design features of the incore instrumentation system. In its response to Q492.5 dated July 25, 1994, Westinghouse states that information on the employment of fixed incore detectors in conjunction with an online power distribution monitoring system will be provided to the NRC to support the final SER.					
				Closed - The technical information was accepted by the I&C Branch of NRC during the meeting on May 15-16. This technical information has been incorporated into Revision 3 of the SSAR, Subsection 4.4.6.1. For Chapter 7 this item is resolved. (NRC/RSB to communicate any concerns with qualification of thermocouples and instrument coolant capability outside the scope of Chapter 7). rkn 12/2					
1050	NRR/HICB	7.5.9-1	DSER-OI		Davis C./Kilim, S.	Closed	Resolved		
				Westinghouse should describe the design features of the loose parts monitoring system and address its conformance with RG 1.133.					
				Closed - The technical information was accepted by the I&C Branch of NRC during the meeting on May 15-16. This technical information has been incorporated into Revision 3 of the SSAR, Subsection 4.4.6.4. Per 11/21 telecon, this issue is resolved for Chapter 7 (unless raised as issue by RSB). rkn 12/2					
1051	NRR/HICB	7.6.1-1	DSER-OI		Israelson, G.	Closed	Resolved		
				Westinghouse should provide additional design details of the NRHR isolation valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.1.1. Figure 7.2-1 was also modified to include additional technical detail. Per 11/21 telecon, this item is resolved. rkn 12/2					

AP600 Open Item Tracking System Database: Executive Summary

Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1052	NRR/HICB	7.6.2-1	DSER-OI		Schulz, T.	Closed	Active		
				Westinghouse should provide additional design details of the accumulator isolation valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.2.1. Figure 7.2-1 was also modified to include additional technical detail. Action NRC - Per 11/21 telecon, NRC to review technical information already provided since this operator is nonsafety, not important to safety, has separate power, positive 3 position indications, and power removed at-power (consistent with Tech Specs) and limit switch alarms. rkn 12/2					
1053	NRR/HICB	7.6.3-1	DSER-OI		Schulz, T.	Closed	Active		
				Westinghouse should provide additional design details of the IRWST discharge valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.2.2. Figure 7.2-1 was also modified to include additional technical detail. Action NRC - See 1052. rkn 12/2					
1054	NRR/HICB	7.6.4-1	DSER-OI		Schulz, T.	Closed	Resolved		
				Westinghouse should provide additional design details of the PRHR inlet isolation valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.2.3. Figure 7.2-1 was also modified to include additional technical detail. Per 11/21 telecon, this item is resolved. rkn 12/2					
1055	NRR/HICB	7.7.2-1	DSER-OI		ITAAC/Delose,Frank	Closed	Active	NTD-NRC-95-4464	
				Westinghouse should provide additional information concerning the design of the DAS.					
				Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail has been incorporated into Revision 3 of the SSAR, Subsection 7.7.1.11. NRC action to review ITAAC. Per 11/21 telecon, this item is now subject to DAS ITAAC comment resolution/completion. rkn 12/2					
1498	NRR/HICB	20.2-9	DSER-OI		TECHSPEC	Closed	Resolved		
				For Issue A-47, Westinghouse should address the applicability of the plant TS to the design.					
				Action W - Pending the SSAR section 1.9.4 incorporating reference to surveillance requirements of TS 3.3.1 "Reactor Trip System Instrumentation" and T.S. 3.7.3 "Main Feedwater Isolation and Control Valves". Per 11/21 telecon with T. Kenyon, H. Lee, K. Deutsch, and R. Nydes, this item is resolved. rkn 12/4 Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
1505	NRR/HICB	20.3-5	DSER-OI		Lindgren	Closed	Resolved		
				For Issue 67.3.3, Westinghouse should include a reference to the post-accident monitoring system and its capability in addressing this issue for the AP600 design.					
				Closed - Issue 67.3.3 has been specifically addressed in the Rev. 7 of Section 1.9.4 of the SSAR. The item is closed. Resolved per NRC telecon on 11/21. rkn 12/4					

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
1507	NRR/HICB	20.3-7	DSER-OI		Fanto	Closed	Resolved	
				Westinghouse did not address Issue 75 in its May 28, 1993, letter. The staff believes Issue 75, related to recording and displaying all system parameters for subsequent use by plant personnel and on-line testing of the RTS, involves design issues and should be addressed by Westinghouse. In addition, Westinghouse should identify actions that are the responsibility of the COL applicant.				
				Closed - The response for Issue 75 has been revised in Rev. 9 to specifically address the NRC questions. Resolved per NRC telecon 11/21. rkn 12/4				
1516	NRR/HICB	20.3-16	DSER-OI		Lindgren/Birsa	Active	Action W	
				Westinghouse should address Issue 120 for the AP600 design.				
				Closed - Issue 20 has been specifically addressed in the Rev. 7 of Section 1.9.4 of the SSAR. The item can be considered closed. Per 11/21 telecon with T. Kenyon and H. Lee, this item is open with the comment, "The first sentence is wrong that it doesn't apply to AP600." Wording implies applicability rather than implementation.				
1521	NRR/HICB	20.3-21	DSER-OI		Lindgren/Deutsch	Closed	Action W	
				The staff introduced significant information concerning the resolution of Issue 142 which Westinghouse did not include in it response for the issue. In terms of the isolation devices and the design of the AP600 instrumentation and control architecture, Westinghouse did not address what happens if a communication error occurs, and did not identify the error messages generated and diagnostic tests applied to isolate the cause of the error. The question is would this include errors caused by leakage through an isolator. The staff requests that Westinghouse should also address these items in the resolution of Issue 120 for the AP600de.				
				Closed - Revised write-up for Issue 142 in Revision 9 includes additional information. Per 11/21 telecon with T. Kenyon and H. Lee, it is Westinghouse action to determine if this is a COL action item, and if so, to note it as such (or put in ITAAC).				
1528	NRR/HICB	20.4-5	DSER-OI		Lindgren	Closed	Resolved	
				The human factors details of Issue I.D.3 are beyond the scope of the AP600 design review and should be addressed by the COL applicant. Westinghouse should address the responsibility of the COL applicant in its response.				
				Closed - The AP600 HFE program discussed in Chapter 18 addresses the human factors issues associated with Issue I.D.3. The resolution of Chapter 18 open items and resulting COL action items in Chapter 18 will adequately address the HFE issues for Issue I.D.3. A separate COL action item in Chapter 20 is not required. Per 11/21 NRC telecon, this item is resolved. rkn 12/4				
1539	NRR/HICB	20.4-16	DSER-OI		Lindgren/O'connor	Closed	Resolved	
				To address Issue II.F.1, Westinghouse should address the insufficient information for the noble gas effluent instrumentation and the primary sampling system, as well as the role of the COL applicant.				
				Closed - SSAR Revision 7 refers to 11.5.5 for additional information on radioactive effluent instrumentation, 9.3.3 for additional information on the primary sampling system, and Chapter 18 for the role of the Combined License applicant in the human factors aspects. Resolved per 11/21 NRC telecon. rkn 12/4				
1540	NRR/HICB	20.4-17	DSER-OI		Fanto	Closed	Resolved	
				To address Issue II.F.3, Westinghouse should provide the ranges expected for plant variables during core damage events.				
				Closed - The list of process parameters and their ranges are provided in Table 7.5-1 of the SSAR. The instrumentation ranges are in compliance with Table 3 of Reg. Guide 1.97. Resolved per NRC telecon 11/21. rkn 12/4				

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No /	Date
1551	NRR/HICB	20.4-28	DSER-OI		Lindgren	Closed	Resolved		
				For Issue II.K.3(18), Westinghouse should provide the PRA section that confirms the reliability of the automatic depre- ssurization system (ADS) actuation.					
				Closed - Issue II.K.3 (18) has been specifically addressed in Rev. 7 of Section 1.9.4 of the SSAR. The Item is closed. Per 11/21 NRC telecon, this is resolved. rkn 12/4					
1571	NRR/HICB	20.7-13	DSER-OI		Lindgren	Closed	Resolved		
				For Bulletin 85-02, Westinghouse should provide more information on the operability and surveillance requirements for the reactor trip breakers.					
				Closed - Westinghouse states in the current revision of WCAP-13559 that this bulletin is addressed in Sections 3.3.1.6 and 7.1.2.2.4 of the SSAR, and Chapter 16. This bulletin (1) assured proper RTB testing in plants that had not yet installed the automatic shunt trip modification and (2) provided information about RTB reliability and TS operability. The AP600 design addresses this first part by providing automatic diverse trip actuation via the shunt trip attachment. Testing of the interface allows trip actuation of the breakers by either the undervoltage attachment or the shunt trip attachment. The DSER incorrectly states that Westinghouse has incorrectly referenced SSAR Chapter 16, Surveillance 3.3.1.6, which applies to RCPs. SR 3.3.1.6 is the correct SR for the Reactir Trip Break Undervoltage and Shunt Trip Mechanism (See Table 3.3.1-1 of AP600 TS). No revision necessary. Per 11/21 NRC telecon, this item is resolved. rkn 12/4					
1576	NRR/HICB	20.7-18	DSER-OI		13559	Closed	Action W	NSD-NRC-96-4818	
				For Bulletin 90-01, Westinghouse should commit to use Rosemount transmitters manufactured after July 11, 1989 and address the on-line monitoring capability of the AP600 design, because this is an effective method to address the loss of fill-oil in the Rosemount transmitter issue.					
				Action W - This item will be addressed in the August revision to the AP600 SSAR. Closed - WCAP-13559 Rev. 1 issued September 11, 1996 Per NRC comment received during 11/21 telecon, Westinghouse has the action to determine if this is a COL applicant action and appropriately document it as such. rkn 12/4					
1819	NRR/HICB	7.2.3-1	DSER-CN		Davis, C./Lunz, K.	Closed	Resolved	NTD-NRC-95-4464	
				7.2.3-1 Westinghouse should clarify in the SSAR that only one processor is to be used in any single IEEE-796 bus configuration.					
				Closed - Technical proposal accepted by NRC during meeting on May 15-16. Approved additional technical description is incorporated into Revision 3 of the SSAR, Subsection 7.1.2.4.1. Per 11/21 telecon, this item is resolved. rkn 12/2					
1820	NRR/HICB	7.2.3-2	DSER-CN		Davis C./Lunz, K.	Closed	Resolved	NTD-NRC-95-4464	
				7.2.3-2 Westinghouse should clarify in the SSAR that there is no bus priority arbiter required or used in the design.					
				Closed - Technical proposal accepted by NRC during meeting on May 15-16. Approved additional technical description is incorporated into Revision 3 of the SSAR, Subsection 7.1.2.4.1. Per 11/21 telecon, this item is resolved. rkn 12/2					
1977	NRR/HICB	20.3-1	DSER-COL		Winters	Closed	Action N		
				20.3-1 For Issue 142, the COL applicant should implement an annual program to inspect and test all electronic isolators between Class 1E and non-Class 1E systems, as well as identify the specific isolation devices used in the design.					
				Closed - Issue 142 has been removed from the Rev. 7 of Section 1.9.4 of the SSAR, and included in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues, according to what was agreed with the NRC. The Item can be considered closed. Per telecon with T. Kenyon, H. Lee, K. Deutsch, R. Nydes on 11/21, NRC has the action to review the ITAAC for 1E isolators. rkn 12/4					

AP600 Open Item Tracking System Database: Executive Summary

Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1983	NRR/HICB	20.4-6	DSER-COL		Lindgren	Closed	Resolved		
				20.4-6 The COL applicant should address the human factors details of Issue I.D.3.					
				Closed - The AP600 HFE program discussed in Chapter 18 addresses the human factor issues associated with Issue I.D.3. The resolution of Chapter 18 open items and resulting COL action items in Chapter 18 will adequately address the HFE issues for Issue I.D.3. A separate COL action item in Chapter 20 is not required. Per 11/21 NRC telecon, this item is resolved. rkn 12/4					
1985	NRR/HICB	20.4-8	DSER-COL		Lindgren	Closed	Resolved		
				20.4-8 The COL applicant should address the human factors aspects of accident monitoring instrumentation in Issue II.F.1.					
				Closed - Issue II.F.1been specifically addressed in the Rev. 7 of Section 1.9.4 of the SSAR, and included in Table 1.9-2, Listing of Unresolved Safety Issues and Generic Safety Issues, according to what was agreed with the NRC. The Item can be considered closed. Per 11/21 telecon, this item is resolved. rkn 12/4					
1990	NRR/HICB	20.7-1	DSER-COL		13559	Closed	Resolved	NSD-NRC-96-4818	
				20.7-1 For Bulletin 80-06, the COL applicant should address verification of the as-built instrumentation and control system.					
				Resolved - Verification of the operability of safety related as-built instrumentation and control systems is contained in SSAR Chapter 14. The AP600 response to Bulletin 80-06 is contained in WCAP-13559. Additional COL information items unique to verification of the as-built instrumentation and control systems are not appropriate for the SSAR. Closed - WCAP-13559 Rev. 1 issued September 11, 1996 Per 11/21 NRC telecon, this item is resolved. rkn 12/4					
2023	NRR/HICB	7.	DSER-OI50		ITAAC/Deutsch	Closed	Action N	NSD-NRC-4875	
				27. No Commitment to Industry Standards for Digital Systems While the SSAR references IEEE standards 279, 384, 603 and 796 for the design of AP600 I&C systems, the staff is concerned that there is no reference to digital microprocessor-related standards. Specifically they are concerned about the lack of standards related to multiplexer architecture, communications protocols, and hardware/software design. The staff wants Westinghouse to make an explicit commitment to industry hardware and software related standards. No detailed documentation of the process and no phased ITAAC for verification of the design.					
				Action W - Item 1037 closes all but final sentence of item. Remaining action to address "No detailed documentation of the process and no phased ITAAC for verification of the design". SSAR Ch 7.1 commits to a V&V program, meeting Standards, etc., such that NRC expectations are met. When the ITAAC for PMS is complete, this item will be closed. rkn 5/7/96 Closed - ITAAC submitted by NSD-NRC-96-4875 of 11/7/96. Per 11/21 telecon for DSER Ch 7, NRC wants to discuss ITAAC approach with Westinghouse.					
2024	NRR/HICB	16	DSER-OI50		Deutsch	Closed	Active		
				28. Design of the Diverse Actuation System The DAS has been identified by Westinghouse to be a RTNSS-important system for ATWS considerations. The staff needs additional information regarding the design and reliability (See DSER Open Item 7.7.2-1)					
				Closed - SSAR Chapter 7 revised to address. Per 11/21 telecon, NRC has action to discuss lack of DAS/Tech Spec relationship within the staff. rkn 12/2.					

AP600 Open Item Tracking System Database: Executive Summary

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Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
2025	NRR/HICB	7.	DSER-OI50		Miller	Active	Active		
				29. Environmental Qualification of DAS Equipment and Sensors The DSER indicates that the DAS equipment must be designed and qualified to the environment in which it needs to perform. The Westinghouse position is that the DAS equipment will be designed to function the environment in which it needs to perform. However, the DAS equipment will not be subjected to a full-blown 10 CFR 50.49 / IEEE 323 qualification program.					
				Closed - SSAR Chapter 7 section 7.7.1.11 revised to address. Per an 11/21 telecon, NRC thinks the DAS sensors and actuated devices (e.g., PRHR solenoid valve) should be qualified to a higher (PMS) standard but Westinghouse does not agree. Need to discuss further.					
2434	NRR/HICB	16.1	MTG-OI		TECHSPEC	Closed	Action W		
				Provide Westinghouse position on admin controls section requirements for a software failure root cause analysis program					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2436	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Evaluate the actions for one channel inoperable versus single channels of multiplt functions inoperable due to reactor trip group failure					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2437	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Ensure that I&C completion times consider utility input for likely failures and reasonable times to repair					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2438	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Consider providing (in Bases) rationale for automatic system actions versus operator actions (which may reverse the system automatic actions)(e.g., like when a channel trips in the auto function only to be bypass as inop by the operator based upon action steps).					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2439	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Definition of channel is from the sensor through the output ot the reactor trip subgroup. Need to include where applicable (1.0 definitions, 3.3 bases, etc.)					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2440	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Verify that the NUREG definitions are approprate and include in the AP600 specs.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2441	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				The term "automatic trip logic" is utilized within the TS without definition. Determine the appropriate term for use in the TS. If automatic trip logic is used, then define the term.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					

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Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
2442	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Active		
				Evaluate the potential for failures that could defeat the capability for placing functions into bypass. This needs to be considered in the development of the actions (operator could be required to take an action to put the channel in bypass, and be unable to perform the action). At very minimum, the bases should clearly explain what is meant by placing the channel in bypass. Is taking the action (switch operation) without the system succeeding ok? This action is there to go from 1/3 logic to 2/3 logic (which affords operating fault tolerances). Staying in the 1/3 condition is not unacceptable. This concern is valid for both the RPT and ESF.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2443	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Communication of failed bypassed conditions is a concern within the instrumentation section.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2444	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Discussing ESF actuation echelon. If an ESFAC (A1 or A2) fails, need to verify logic cabinet is operable					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2445	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Re-consider development of ESF actuation table and consideration of failures. Consideration needs to include failures that defeat multiple functions.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2446	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Ageement reached that ESF channel defin.tion is from sensor through the output ot ESF subgroups (ESF! and ESF2)					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2447	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Assignment of ESF functions to ESF subgrups and logic processors should be consistent with diversity amoung functions. SPecifically, diverse functions should be placed so that fluid system diversity is maintained through the PMS where appropriate. Fuild system designer efforts to develop C'i s should help identify these functions.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2448	NRR/HICB	16.1	MTG-COM		TECHSPEC/Birsa	Dropped	Dropped		
				Line for logic may be down the middle of the logic cabinet block (not including the output actuation signals).					
				No action required. (H. Li identified for deletion, Westinghouse concurred) Issue dropped to "Top 50" list. Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2449	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Manual actuations of ESF should address the dedicated controls (system level manual actuations)					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					

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Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
2450	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Consider card failures that affect multiple manual actuations (I/O card failure) versus failures that affect individual manual actuations (input device failure).					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2451	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				4th Stage ADS valves will need to be addressed carefully. Evaluate manual actuation precedents for BWRs relative to squib valves.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2452	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Identify and verify ESF signals that may not be covered by WCAP 13633 Figure 2.7 architecture (radiation signals for example).					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2453	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				VES actuation/control room isolation technical specification should be included with other ESF functions. Assumed logic for separation in the standard specs is that these fucntions were typically not included in the Westinghouse protection systems					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2454	NRR/HICB	16.1	MTG-OI		TECHSPEC	Closed	Action N		
				Clarify NRC position on technical specifications for DAS.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2455	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Evaluate failure of a display or a QDPS blcok that result in the unavailability of one display. Need to consider safety argument versus burden of completion time to correct. Spare parts considerations could be significant.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2456	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				With two failures of displays and no safety-related displays available, is the 7 day completion time appropriate.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2457	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Active		
				For PAMS, standard specs were determined using all type A, and category 1 variables. Consider use of action J (no LCO 3.0.3) producing a special report. Need to consider how this applies to AP600 PAMS and AP600 RG 1.97 categorization.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2458	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Determine completion times for functions from the remote shutsown workstations. Completion times should reflect less likelihood of use.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2459	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Determine a defendable position regarding regular surveillance tests and credit for self-diagnostics and provide to NRC					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					

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Date: 12/4/96

Selection: [NRC Branch] like 'NRR/HICB' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
2460	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				How do we test the tester relative to the diodes on the signal conditioner? is this a surveillance issue or a maintenance issue.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2461	NRR/HICB	16.1	MTG-OI		TECHSPEC	Closed	Action N		
				NRC to determine/consider the credit given to self-diagnostic feature of the software based system within the development of the DSER.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2462	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Determine appropriateness of continuing to include this statement (allowing for adjustment as necessary of the setpoints are within the required range and accuracy) in the definition for channel operational test.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2463	NRR/HICB	16.1	MTG-OI		TECHSPEC/Birsa	Closed	Action W		
				Consider NRC recommendation for including one value (allowable values or trip setpoints). Determine the feasability of using safety analysis vaues in brackets for design certification specs.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
2464	NRR/HICB	16.1	MTG-COM		TECHSPEC/McDermot	Closed	Inactive		
				The TS should include consideration of panel removal during power operation of the containment air baffle. It should be noted that the USNRC is concerned about actions for the purpose of planned maintenance and may impose restrictions in the future.					
				Closed - With issuance of the Tech Specs in SSAR Rev. 9.					
3061	NRR/HICB	7.1	RAI-OI		Deutsch	Closed	Resolved		
				420.125 WCAP-14080, "AP600 Instrumentation and Control Software Architecture and Operation Description," states that the Intel PL/M class of languages (e.g., PL/M-51, PL/M-86, and PL/M-96) was chosen for use in protection and control systems. In a recent technical discussion with computer software language consultants, the staff became aware that the PL/M language and compilers for PL/M-51, PL/M-86, and PL/M-96 are no longer supported by the Intel Corporation. Most PL/M programmers have moved onto working in other languages, and the currently available tools are being discontinued. The PL/M language has, therefore, lost its technological base for new development. Describe the strategy that Westinghouse will use to support the design implementation and control systems in the future, including software development, modification, configuration management, maintenance, and technical personnel training throughout the software life cycle given the apparent lack of support for PL/M.					
				Responded to RAI 420.125 on 5/24/96 in DCP/NRC-0520. Resolved per 11/21 telecon with NRC. rkn 12/4					
3965	NRR/HICB	7	TEL-OI		ERG	Action W	Action W		
				Respond to NRC Letter from Huffman to Liparulo of 8/19/96 which provided comments on PAM and the related ERGs.					
				Response drafted 10/29/96 for internal review. Comments have been incoporated such that this letter (identifying changes to PAMS table in SSAR 7.5 and to the ERGs) should be out by 12/6. rkn 12/3					

Faxed to Tom 12/9 a.m. RKN

p1 of 15

To: Tom Kenyon

Hi Tom. I have attached the DSER Chapter 7 OITS status report for Dec 6. This includes changes we discussed on Nov 21 and changes made to reflect some meetings we've had internally and actions we've taken to close/resolve the items discussed on Nov 21. For each of these items, the Westinghouse and NRC status are the same except for those we agreed are W-Closed and NRC-Resolved. Please let me know if you have any problems with or questions about these items.

Robin K. Nydes
(412) 374-4125

1037 Action N
I have attached the SSAR markup to add IEEE 1042 to the list in Section 7.1.2.15 and changed the responsible engineer to SSAREV10. Please review and advise the undersigned if this is acceptable and the NRC status should be changed to RESOLVED.

1038 Action N
I changed the responsible engineer to ITAAC (action is for NRC to review ITAAC).

1039 Action N
I changed the responsible engineer to ITAAC (action is for NRC to review ITAAC).

1040 Action N
I think the following paragraph should resolve this issue. *Westinghouse has considered the NRC request received via telecon on 11/21/96 to add details to the PMS ITAAC for verifying bypass logic. Westinghouse has reviewed the corresponding CE ITAAC and determined that, although the text discussion for Westinghouse is 3 lines short of the CE text discussion for bypass logic, the Westinghouse ITAAC table contains more detail than that for CE. Also, details were added to Section 7.1.2.10 as previously agreed. Given this, Westinghouse believes the NRC has adequate information in the ITAAC and the SSAR to consider this item closed/resolved.* Action is for NRC to consider this position and provide confirmation of resolution.

1042 Action N
I have attached the SSAR markup to include setpoint calculations as COL applicant action in Chapters 7 and 1, and changed the responsible engineer to SSAREV10. Please review and advise the undersigned if this is acceptable and the NRC status should be changed to RESOLVED.

1043 Action N
I changed the responsible engineer to ITAAC (action is for NRC to review ITAAC).

1044 Action W (see OITS discussion and note that NRC still has an action identified therein)

2025 Action N
Westinghouse does not intend to qualify the DAS sensors and actuated devices to a higher (PMS) standard. If the NRC believes it is necessary to relieve any confusion, Westinghouse could revise the SSAR 7.7.1.11 sentence from, "The diverse actuation system equipment is designed and qualifed in accordance with the industry standards listed in subsection 7.1.4.1.8." to something like, "The diverse actuation system equipment, including sensors and actuated devices, is designed and qualifed to at least the level of ~~in~~ accordance with the industry standards listed in subsection 7.1.4.1.8." Please review this approach and advise the undersigned if a SSAR change is necessary or if this item should be discussed in more technical detail via telecon.

Operation procedures prohibit testing two divisions at the same time. There are no built-in interlocks to prevent simultaneous testing of two integrated protection cabinets. However, the use of bypasses by the tester provides that the protection and safety monitoring system cannot be placed in an unsafe condition if the procedure prohibiting simultaneous testing is violated. For example, testing two divisions results in two bypasses, which causes the voting logic to revert to a one-out-of-two coincidence for the remaining two unbypassed divisions. Attempting to test three or four divisions at the same time causes a plant trip. The operational procedure restricting simultaneous testing of two or more divisions is for operability reasons to avoid unnecessary trips.

In addition to periodic tests, the system performs error detection and data link testing as part of its normal operation. Where practical, the on-line error detecting features are designed to automatically place the channel in which the error was detected into a trip or bypass state (either by direct bypass or reconfiguration). When a channel is automatically placed into a trip state, the operator has the option to subsequently place that channel in a bypass state. If the automatic configuration of the channel is not practical, the on-line error detecting feature causes alarm annunciation to the operator.

7.1.2.13 Safety-Related Display Instrumentation

Safety-related display instrumentation provides the operator with information to determine the effect of automatic and manual actions taken following reactor trip due to a Condition II, III, or IV event as defined in Chapter 15. This instrumentation also provides for operator display of the information necessary to meet Regulatory Guide 1.97. A description of the equipment used to provide this function is provided in subsection 7.1.2.6. A description of the data provided to the operator by this instrumentation is provided in Section 7.5.

7.1.2.14 Auxiliary Supporting Systems

The safety-related system equipment is supported by the supply of uninterruptable electrical energy. This electrical power is supplied by the Class 1E dc and UPS system discussed in Chapter 8.

7.1.2.15 Verification and Validation

Adequacy of the hardware and software is demonstrated for the protection and safety monitoring system through a verification and validation (V&V) program. Details on the verification and validation program are provided in WCAP-13383 (Reference 4). The software development process which is documented in this document is consistent with the following standards:

- ANSI/IEEE ANS-7-4.3.2 (1993); "Application Criteria for Programmable Digital Computer Systems in Safety Systems for Programmable Digital Computer Systems in Safety Systems of Nuclear Power Generating Stations"

- IEC 880-1986; "Software for Computers in the Safety Systems for Nuclear Power Generating Stations"
- IEEE 828-1983; "IEEE Standard for Software Configuration Management Plans"
- IEEE 829-1983; "IEEE Standard for Software Test Documentation"
- IEEE 830-1984; "IEEE Standard for Software Requirements Specifications"
- IEEE 1012-1986; "IEEE Standard for Software Verification and Validation Plans"
- IEEE 1042-1987; "IEEE Guide to Software Configuration Management (ANSI)"

WCAP-13383 also provides for the use of commercial off-the-shelf hardware and software through a commercial grade dedication process.

7.1.3 Plant Control System

The plant control system is a nonsafety-related system that provides control and coordination of the plant during startup, ascent to power, power operation, and shutdown conditions. The plant control system integrates the automatic and manual control of the reactor, reactor coolant, and various reactor support processes for required normal and off-normal conditions. The plant control system also provides control of the nonsafety-related decay heat removal systems during shutdown. The plant control system accomplishes these functions through use of the following:

- Rod control
- Pressurizer pressure and level control
- Steam generator water level control
- Steam dump (turbine bypass) control
- Rapid power reduction

The plant control system provides automatic regulation of reactor and other key system parameters in response to changes in operating limits (load changes). The plant control system acts to maximize margins to plant safety limits and maximize the plant transient performance. The plant control system also provides the capability for manual control of plant systems and equipment. Redundant control logic is used in some applications to increase single-failure tolerance.

The plant control system includes the equipment from the process sensor input circuitry through to the modulating and nonmodulating control outputs as well as the digital signals to other plant systems. Modulating control devices include valve positioners, pump speed controllers, and the control rod equipment. Nonmodulating devices include motor starters for motor-operated valves and pumps, breakers for heaters, and solenoids for actuation of air-operated valves. The control cabinets contain the process sensor inputs and the modulating and nonmodulating outputs. The plant control system also includes equipment to monitor and control the control rods.

7.1.4.2.22 Conformance to the Requirements for Identification of Redundant Safety System Equipment (Paragraph 4.22 of IEEE 279-1971)

Distinctive markings are applied to redundant divisions of the protection and safety monitoring system.

The color coded nameplates described below provide identification of equipment, associated with protective functions and their divisions associations.

Division	Color Coding
Division A	BROWN with WHITE lettering
Division B	GREEN with BLACK lettering
Division C	BLUE with WHITE lettering
Division D	YELLOW with BLACK lettering

Non-cabinet mounted protective equipment and components have an identification tag or nameplate. Small electrical components such as relays, have nameplates on the enclosure that houses them.

7.1.5 AP600 Protective Functions

Protective functions are those necessary to achieve the system responses assumed in the safety analyses, and those needed to shut down the plant safely. The protective functions are grouped into two classes, reactor trip and engineered safety features actuation.

Reactor trip is discussed in Section 7.2. Engineered safety features actuation is discussed in Section 7.3.

7.1.6 Combined License Information

setpoints for protective functions

For ~~This~~ the only section, ~~has no~~ requirement for information to be provided in support of the Combined License application, is for calculation of ~~setpoints~~ consistent with the methodology presented in Reference 8.

7.1.7 References

1. IEEE 603-1991, "IEEE Criteria for Safety Systems for Nuclear Power Generator Stations."

2. IEEE 796-1983, "IEEE Microcomputer System Bus."

3. WCAP-13382 (P), WCAP-13391 (NP), "AP600 Instrumentation and Control Hardware Description."

4. WCAP-13383 (P), WCAP-13392 (NP), "AP600 Instrumentation and Control Hardware and Software Design, Verification, and Validation Process Report."

5. IEEE 279-1971, "IEEE Criteria for Protection Systems for Nuclear Power Generating Stations."

6. IEEE 384-1981, "IEEE Criteria for Independence or Class 1E Equipment and Circuits."

7. WCAP-8897 (P), WCAP-8898 (NP), "Bypass Logic for the Westinghouse Integrated Protection System."

8. WCAP-14605(P), WCAP-14606(NP)," Westinghouse Setpoint Methodology for Protection Systems, AP600."

Table 1.6-1 (Sheet 11 of 15)

MATERIAL REFERENCED

SSAR Section Number	Westinghouse Topical Report Number	Title
6.2	WCAP-14382	WGOTHIC Code Description and Validation
	WCAP-8077 (P) WCAP-8078	Ice Condenser Containment Pressure Transient Analysis Methods
	WCAP-8264-P-A (P) WCAP-8312-A	Westinghouse Mass and Energy Release Data for Containment Design
	WCAP-10325 (P)	Westinghouse LOCA Mass and Energy Release Model for Containment Design - March 1979 Version
	WCAP-8822 (P) WCAP-8860	Mass and Energy Releases Following A Steam Line Rupture
	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description
	WCAP-12945-P (P)	Code Qualification Document for Best Estimate Analysis
	WCAP-14407 (P) WCAP-14408	WGOTHIC Application to AP600
6.3	WCAP-8966	Evaluation of Mispositioned ECCS Valves
7.1	WCAP-13382 (P) WCAP-13391	AP600 Instrumentation and Control Hardware Description
	WCAP-13383 (P) WCAP-13392	AP600 Instrumentation and Control Hardware and Software Design, Verification, and Validation Process Report
	WCAP-8897 (P) WCAP-8898	Bypass Logic for the Westinghouse Integrated Protection System
7.2	WCAP-13594 (P) WCAP-13662	FMEA of Advanced Passive Plant Protection System
8.3	WCAP-13856	AP600 Implementation of the Regulatory Treatment of Nonsafety-Related Systems Process
10.2	WCAP-11525	Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency
	WCAP-14605 (P) WCAP-14606 (NP)	Westinghouse Setpoint methodology for Protection Systems - AP600

(P) Denotes Document is Proprietary

Table 1.8-2 (Sheet 3 of 4)

SUMMARY OF AP600 STANDARD PLANT COMBINED LICENSE INFORMATION ITEMS

Item No.	Subject	Subsection
6.4-2	Local Toxic Gas Services and Monitoring	6.4.7
6.4-3	Procedures for Training for Control Room Habitability	6.4.7
6.6-1	Inspection Programs	6.6.9.1
6.6-2	Construction Activities	6.6.9.2
7.1-1	Setpoint Calculations for Protective Functions	7.1.6
8.2-1	Offsite Electrical Power	8.2.4
8.3-1	Onsite Electrical Power	8.3.3
9.1-1	Fuel Storage and Handling	9.1.6
9.5-1	Offsite Communications Interfaces	9.5.2.5.1
9.5-2	Emergency Response Facility Communications	9.5.2.5.2
9.5-3	Security Communications	9.5.2.5.3
9.5-4	Cathodic and Environmental Protection for Fuel Oil Tanks	9.5.4.7
10.1-1	Erosion-Corrosion Monitoring	10.1.3
10.2-1	Turbine Maintenance and Inspection	10.2.6
10.4-1	Circulating Water Supply	10.4.12.1
10.4-2	Condensate, Feedwater and Auxiliary Steam System Chemistry Control	10.4.12.2
10.4-3	Potable Water	10.4.12.3
11.2-1	Liquid Radwaste Processing by Mobile Equipment	11.2.4.1
11.2-2	Cost Benefit Analysis of Population Doses from Liquid Effluents	11.2.4.2
11.2-3	Identification of Ion Exchange and Adsorbent Media for Liquid Radwaste	11.2.4.3
11.2-4	Dilution and Control of Boric Acid Discharge	11.2.4.4
11.3-1	Cost Benefit Analysis of Population Doses from Gaseous Effluents	11.3.4.1
11.3-2	Identification of Adsorbent Media for Gaseous Radwaste	11.3.4.2
11.4-1	Solid Waste Management System Process Control Program	11.4.6
11.5-1	Plant Offsite Dose Calculation Manual (ODCM)	11.5.7
12.1-1	ALARA and Operational Policies	12.1.3
12.2-1	Additional Contained Radiation Sources	12.2.3
12.3-1	Administrative Controls, Criteria and Methods for Radiological Protection	12.3.5

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Selection: [DSER Section] like '7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1036	NRR/HICB	7.1.3.2-1	DSER-OI		Tupper	Closed	Closed		

Westinghouse should provide a table comparing the design of the instrumentation and controls of the AP600 design and the guidance of the EPRI ALWR URD.
The staff concludes that Westinghouse should update the response to Q100.1 so that the staff can evaluate the extent to which the AP600 design complies with the EPRI requirements.

Closed - Westinghouse is a principle participant in the development of the EPRI sponsored URD and continue to be involved with EPRI on changes to that document. Therefore, the AP600 design remains consistent with the EPRI URD. The SSAR will be revised to reflect consistency with the EPRI URD. The URD conformance database is available for NRC review at the Westinghouse Rockville Licensing office. See related item (DSER OI 1.1-2)

Closed per W/NRC telecon on 11/21. rkn 12/2

1037	NRR/HICB	7.1.3.3-1	DSER-OI		SSARREV/Deutsch, K.	Action N	Action N	NTD-NRC-95-4464	5/31/95

Westinghouse should commit to digital I&C industry system standards.
The staff concludes that an explicit commitment to industry hardware- and software-related standards is important to achieving high quality in the digital I&C system product. Therefore, Westinghouse should commit to and reference digital microprocessor-related industry standards.

Closed - List of standards reviewed by NRC during meeting on May 15-16. Standards incorporated into Revision 3 of the SSAR, Subsection 7.1.4.1.8.

This was reopened based on 11/21 W/NRC telecon. Although the list of stds to include in the SSAR was agreed to at the May 15/16 1995 meeting and the SSAR revised, the NRC has asked that Westinghouse add IEEE-1042 to SSAR Section 7.1.2.15. This was completed via markup on 12/6. rkn

Also, NRC has the action to review the PMS ITAAC to determine completeness of the Standards list. rkn 12/2

1038	NRR/HICB	7.1.4-1	DSER-OI		ITAAC/Deutsch, K.	Action N	Action N	NSD-NRC-96-4737	

Westinghouse should describe in the SSAR, CDM, and ITAAC the digital system design process.
Westinghouse should provide a detailed descritpiton of the digital system design process in the SSAR and CDM with a corresponding ITAAC.

Action W - WCAP-13383, which describes the digital system design process is being updated. The certified design material and ITAACs will be modified. The SSAR has been modified to reference the design process and to indicate the software design standards the design process conforms to. This information is provided in Revision 3 of the SSAR, Subsection 7.1.2.15. The WCAP and ITAAC revisions must be completed before this item can be closed out. NRC has requested a presentation when all elements are completed. WCAP-13383 rev due 5/30/96 rkn 5/7/96

WCAP-13383 in repro 6/14 for 6/17 release. rkn 6/14/96
Closed - Response provided by NSD-NRC-96-4737.

Per an 11/21 W/NRC telecon, the NRC thinks the I&C ITAAC is deficient and requested that we "fix" the ITAAC or justify/explain deviations from the SRP 14.3.5 to NRC satisfaction. NRC to provide specific comments on the ITAAC. rkn 12/2

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Selection: [DSER Section] like '7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1039	NRR/HICB	7.1.7-1	DSER-OI		ITAAC/Deutsch	Action N	Action N	NSD-NRC-96-4737	

Westinghouse should describe a commercial grade item dedication program for digital systems.
Westinghouse has not addressed the commercial grade item dedication program that is necessary to ensure sufficient quality in the design of safety-related and nonsafety-related I&C systems using commercial of-the-shelf equipment. The design, verification, and validation process for COTS software and hardware should be clearly documented for design certification.

Action W - WCAP-13383 is being updated to include a commercial grade item dedication process. The SSAR has been modified to reference this process. This information is provided in Revision 3 of the SSAR, Subsection 7.1.2.15. The WCAP revision must be completed before this item can be closed out.

WCAP in repro 6/14 for 6/17 issuance. rkn 6/14
Closed - Response provided by NSD-NRC-96-4737.

Same as item 1038. rkn 12/2

1040	NRR/HICB	7.2.5-1	DSER-OI		ITAAC/Deutsch	Action N	Action N	NTD-NRC-95-4464	

Westinghouse should provide additional description of the bypass logic for the engineered safety feature actuation systems.
...during the time the plant is operating with two channels bypassed, any subsequent single failure could lead to an inadvertent reactor trip, and, thus, from an operational standpoint, operation with two channels bypassed should be limited. In addition, Westinghouse should verify that this bypass logic applies only to RTS and does not apply to the ESFAS. The topical report (Addendum 2 to WCAP 8897) should provide additional descriptions of the bypass logic for the engineered safety feature actuation system.

Closed - Technical proposal accepted by NRC during meeting on May 15-16. Approved additional technical description is incorporated into Revision 3 of the SSAR, Subsection 7.1.2.10.

Based on an 11/21 W/NRC telecon, the SSAR is ok (NRC agrees we meet single failure criteria). However, NRC wants more details in the PMS ITAAC for verifying bypass logic. rkn 12/2

As communicated via fax to the NRC on 12/6, "Westinghouse has reviewed the corresponding CE ITAAC and determined that, although the text discussion is 3 lines short of the CE text discussion for bypass logic, the W ITAAC table contains more detail than that approved for CE. Also, details were already added to SSAR 7.1.2.10 as previously agreed between W and NRC. We believe the NRC has adequate information in the ITAAC and SSAR to consider this item closed/resolved."

1041	NRR/HICB	7.2.6-1	DSER-OI		ITAAC/Deutsch, K.	Action N	Action N		

The staff has not yet completed its evaluation of the software architecture design.
...because WCAP 14080 was submitted in July 1994, the staff has not completed its review of the document and is continuing its evaluation of the software architecture based on both the proposed design and the associated design process. The results from this evaluation will be presented in the final SER for AP600.

Closed - Westinghouse has completed necessary submittals to support staff review.

Per 11/21 W/NRC telecon, when the NRC agrees with the design process through their review of the ITAACs, this item will be closed. rkn 12/2

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Selection: [DSER Section] like '7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1042	NRR/HICB	7.2.7-1	DSER-OI		SSARREV/Nydes	Action N	Action N		

Westinghouse should provide the instrument setpoint methodology document that applies to the AP600 design.
...Westinghouse stated that the details of the AP600 setpoint study will be provided during the equipment procurement phase. This is not acceptable. The staff concludes that the setpoint methodology must be submitted to support the design certification review. Therefore, Westinghouse must provide the setpoint methodology document for the staff to review before the final SER is written.

Action W - A document which describes the AP600 setpoint methodology is being prepared and will be provided to NRC staff by April 30, 1996.
Closed - Setpoint Methodology Documents were issued on May 9. rkn 5/16/96

Per 11/21 W/NRC telecon, NRC wants us to list (somewhere) completion of the setpoint study as a COL applicant item. rkn 12/2
A SSAR markup was faxed on 12/6 for NRC concurrence. rkn

1043	NRR/HICB	7.2.8-1	DSER-OI		ITAAC/Deutsch	Action N	Action N	NTD-NRC-95-4464	

Westinghouse should provide a discussion concerning the qualification of digital equipment to the electromagnetic environment.
Westinghouse has not addressed the issue of electromagnetic environmental qualification and has not committed to the appropriate standards.

Closed - List of standards reviewed by NRC during meeting on May 15-16. Standards incorporated into Revision 3 of the SSAR, Subsection 7.1.4.1.6.

Per an 11/21 W/NRC telecon, the technical issues are resolved. When NRC agrees with design process thru ITAAC review, this item will be closed.

1044	NRR/HICB	7.2.8-2	DSER-OI		Deutsch, K.	Action W	Action W	NTD-NRC-95-4464	

Westinghouse should provide information concerning environmental qualification of PMS components addressing local temperature rises above the room ambient experienced by the components during operation.
It is desirable to have additional margin built into the design. The components should, therefore, be qualified by testing to higher temperatures than specified in the SSAR for a given room environment. Westinghouse should address this concern in the SSAR. Westinghouse should also provide mild environment equipment qualification in the CDM with the corresponding ITAAC.

Closed - Technical information agreeded to by NRC during meeting on May 15-16. Additional technical information regarding the equipment design margin to loss of HVAC has been incorporated into Revision 3 of the SSAR, Subsection 7.1.4.1.8. rkn 12/2
Westinghouse needs to decide approach to close this item. rkn 12/6

Action N - NRC still has the action to evaluate the Westinghouse proposal on procedural fix of instrument overheating after 24 hour period. (6/21 meeting with W/SPLB/HICB). Based on 11/21 W/NRC telecon, this approach is reasonable; see qualification program in SSAR Section 3.11.

Action W - NRC requested W provide proposed COL item for qualification margin and instrument setpoint data or document in the CDM and corresponding ITAAC (W is considering options; did not commit to either approach).

1045	NRR/HICB	7.3.3-1	DSER-OI		RTNSS/Nydes	Action N	Action N		

Westinghouse must satisfactorily address the issue concerning the regulatory treatment of non-safety-related systems for essential auxiliary supporting systems.
The staff has not completed its review of the RTNSS issue and, as discussed in Section 19 of this report, has not completed its review of the PRA for the AP600 design. Additional systems may be identified by the RTNSS process for further review after the staff completes its review of the AP600 PRA.

Closed - Westinghouse has completed necessary submittals to support staff review.

NRC to review RTNSS WCAP and Tech Specs and provide any related concerns for resolution. rkn 12/2

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Selection: [DSER Section] like '7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1046	NRR/HICB	7.3.4-1	DSER-OI		Birsa, J.	Closed	Resolved	NTD-NRC-95-4464	
				Westinghouse should address the possible adverse interaction between the soft control design at the operator workstation and the hardware/software of the safety-related actuation system. Additional information is required with respect to workstation operation, soft control of the safety- and nonsafety-related equipment, and data management between protection and control systems to enable the staff to evaluate the consequence of failures in the control system.					
				Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail has been incorporated into Revision 3 of the SSAR, Subsection 7.1.3.4. Per 11/21 telecon, the Chapter 7 issue is resolved (NRC to provide any comments related to HFE ITAAC outside the scope of Chapter 7). This is resolved. rkn 12/2					
1047	NRR/HICB	7.4.3-1	DSER-OI		Birsa, J.	Closed	Resolved		
				Westinghouse should provide in the SSAR additional information to confirm that the safety-related monitoring for safe shutdown at the remote shutdown workstation is operational without the transfer switch in the local position, and whether operation of the transfer switch to local disables all indications in the main control room. To maintain continuity of operation between the MCR and the remote shutdown room, the indication of the status of the parameters required for safe shutdown should be available to the operators at both locations before, during, and following transfer between the control room and the remote shutdown room, and vice-versa.					
				Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail was incorporated into SSAR, Subsection 7.4.3.1.1. Per 11/21 telecon, this item is resolved. rkn 12/2					
1048	NRR/HICB	7.4.3-2	DSER-OI		Birsa, J.	Closed	Resolved		
				Westinghouse should provide in the SSAR a description of the design features of the transfer switch located outside the main control room. Details regarding the separation features of the transfer switch (between safety divisions, and between safety and non-safety divisions), its single failure vulnerability, and its access are needed in order for the staff to complete its safety determination.					
				Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail was incorporated into SSAR, Subsections 7.4.3.1.1 and 7.4.3.2. Per 11/21 telecon, this item is resolved. rkn 12/2					
1049	NRR/HICB	7.5.8-1	DSER-OI		Lindgren, D./Deutsch,	Closed	Resolved		
				Westinghouse should describe the design features of the incore instrumentation system. In its response to Q492.5 dated July 25, 1994, Westinghouse states that information on the employment of fixed incore detectors in conjunction with an online power distribution monitoring system will be provided to the NRC to support the final SER.					
				Closed - The technical information was accepted by the I&C Branch of NRC during the meeting on May 15-16. This technical information has been incorporated into Revision 3 of the SSAR, Subsection 4.4.6.1. For Chapter 7 this item is resolved. (NRC/RSB to communicate any concerns with qualification of thermocouples and instrument coolant capability outside the scope of Chapter 7). rkn 12/2					

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Selection: [DSER Section] like '7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1050	NRR/HICB	7.5.9-1	DSER-OI		Davis C./Kilim, S.	Closed	Resolved		
				Westinghouse should describe the design features of the loose parts monitoring system and address its conformance with RG 1.133.					
				Closed - The technical information was accepted by the I&C Branch of NRC during the meeting on May 15-16. This technical information has been incorporated into Revision 3 of the SSAR, Subsection 4.4.6.4. Per 11/21 telecon, this issue is resolved for Chapter 7 (unless raised as issue by RSB). rkn 12/2					
1051	NRR/HICB	7.6.1-1	DSER-OI		Israelson, G.	Closed	Resolved		
				Westinghouse should provide additional design details of the NRHR isolation valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.1.1.1. Figure 7.2-1 was also modified to include additional technical detail. Per 11/21 telecon, this item is resolved. rkn 12/2					
1052	NRR/HICB	7.6.2-1	DSER-OI		Schulz, T.	Action N	Action N		
				Westinghouse should provide additional design details of the accumulator isolation valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.2.1. Figure 7.2-1 was also modified to include additional technical detail. Action NRC - Per 11/21 telecon, NRC to review technical information already provided since this operator is nonsafety, not important to safety, has separate power, positive 3 position indications, and power removed at-power (consistent with Tech Specs) and limit switch alarms. rkn 12/2					
1053	NRR/HICB	7.6.3-1	DSER-OI		Schulz, T.	Action N	Action N		
				Westinghouse should provide additional design details of the IRWST discharge valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.2.2. Figure 7.2-1 was also modified to include additional technical detail. Action NRC - See 1052. rkn 12/2					
1054	NRR/HICB	7.6.4-1	DSER-OI		Schulz, T.	Closed	Resolved		
				Westinghouse should provide additional design details of the PRHR inlet isolation valve interlocks important to safety to confirm that the design meets the relevant requirements of the SRP, including IEEE 279.					
				Closed - Additional technical information has been incorporated into Revision 3 of the SSAR, Subsection 7.6.2.3. Figure 7.2-1 was also modified to include additional technical detail. Per 11/21 telecon, this item is resolved. rkn 12/2					
1055	NRR/HICB	7.7.2-1	DSER-OI		ITAAC/Delose,Frank	Action N	Action N	NTD-NRC-95-4464	
				Westinghouse should provide additional information concerning the design of the DAS.					
				Closed - Technical information accepted by NRC during meeting on May 15-16. This additional technical detail has been incorporated into Revision 3 of the SSAR, Subsection 7.7.1.11. NRC action to review ITAAC. Per 11/21 telecon, this item is now subject to DAS ITAAC comment resolution/completion. rkn 12/2					

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Selection: [DSER Section] like '7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1819	NRR/HICB	7.2.3-1	DSER-CN		Davis, C./Lunz, K.	Closed	Resolved	NTD-NRC-95-4464	
				7.2.3-1 Westinghouse should clarify in the SSAR that only one processor is to be used in any single IEEE-796 bus configuration.					
				Closed - Technical proposal accepted by NRC during meeting on May 15-16. Approved additional technical description is incorporated into Revision 3 of the SSAR, Subsection 7.1.2.4.1 Per 11/21 telecon, this item is resolved. rkn 12/2					
1820	NRR/HICB	7.2.3-2	DSER-CN		Davis C./Lunz, K.	Closed	Resolved	NTD-NRC-95-4464	
				7.2.3-2 Westinghouse should clarify in the SSAR that there is no bus priority arbiter required or used in the design.					
				Closed - Technical proposal accepted by NRC during meeting on May 15-16. Approved additional technical description is incorporated into Revision 3 of the SSAR, Subsection 7.1.2.4.1. Per 11/21 telecon, this item is resolved. rkn 12/2					
2023	NRR/HICB	7.	DSER-OI50		ITAAC/Deutsch	Action N	Action N	NSD-NRC-4875	
				27. No Commitment to Industry Standards for Digital Systems While the SSAR references IEEE standards 279, 384, 603 and 796 for the design of AP600 I&C systems, the staff is concerned that there is no reference to digital microprocessor-related standards. Specifically they are concerned about the lack of standards related to multiplexer architecture, communications protocols, and hardware/software design. The staff wants Westinghouse to make an explicit commitment to industry hardware and software related standards. No detailed documentation of the process and no phased ITAAC for verification of the design.					
				Action W - Item 1037 closes all but final sentence of item. Remaining action to address "No detailed documentation of the process and no phased ITAAC for verification of the design". SSAR Ch 7.1 commits to a V&V program, meeting Standards, etc., such that NRC expectations are met. When the ITAAC for PMS is complete, this item will be closed. rkn 5/7/96 Closed - ITAAC submitted by NSD-NRC-96-4875 of 11/7/96. Per 11/21 telecon for DSER Ch 7, NRC wants to discuss ITAAC approach with Westinghouse.					
2025	NRR/HICB	7.	DSER-OI50		Miller	Action N	Action N		
				29. Environmental Qualification of DAS Equipment and Sensors The DSER indicates that the DAS equipment must be designed and qualified to the environment in which it needs to perform. The Westinghouse position is that the DAS equipment will be designed to function the environment in which it needs to perform. However, the DAS equipment will not be subjected to a full-blown 10 CFR 50.49 / IEEE 323 qualification program.					
				Closed - SSAR Chapter 7 section 7.7.1.11 revised to address. Per an 11/21 telecon, NRC thinks the DAS sensors and actuated devices (e.g., PRHR solenoid valve) should be qualified to a higher (PMS) standard but Westinghouse does not agree. By 12/6 fax, W proposed SSAR change to clarify qualification; NRC to review approach. rkn 12/6					

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
2272	NRR/SRXB	7.6.2	MTG-OI		Rowell	Action N	Action N	

APRIL 19, 1995 (HSII) DISCUSSION ITEMS
15. Availability of Safeguards - Interlocks (SSAR Section 7.6.2):
Section 7.6.2 of the SSAR discusses the interlock systems to verify the availability of safeguard functions, i.e., to ensure opening of the isolation valves of the accumulators, IRWST, and PRHRHXs. These valves are motor-operated, normally open valves, and are controlled from the main control room and remote shutdown work station.

a. SSAR Section 7.6.2 states that, as a result of the confirmatory safeguard open signal (which will automatically open the isolation valves, overriding bypass features to allow the isolation valves to be closed), isolation of an accumulator with the RCS at pressure (or isolation of the IRWST gravity injection line when the tank is required to be operable, or isolation of the PRHRHX inlet line when the PRHRHX is required to be operable) is acceptable. What are the design reliability of these interlocks to ensure these isolation valves will be open upon the confirmatory safeguard open signals? Is this practice acceptable for current operating reactor to allow accumulator isolated at pressure?

Closed - At he Reactor System Branch Meeting on 4/25/95, Westinghouse referred to the use of identical interlocks on the accumulators and IRWST as those currently used on the accumulators at current plants (power locked-out). CMTs and PRHR interlocks are not power locked out but instead redundant controllers are provided for each valve along with three-way redundant valve positions. Westinghouse also referred to the Revision 2 SSAR 6.3 for the design details. Revision 3 of the SSAR, Section 7.6 includes the interlock information.
Based on 11/21 telecon, NRC doesn't think the SSAR Section 7.6 is sufficient and has been asked to provide specific comments. rkn 12/6

2273	NRR/SRXB	7.6.2	MTG-OI		TECHSPEC/Schulz	Action N	Action N	

APRIL 19, 1995 (HSII) DISCUSSION ITEMS
15. Availability of Safeguards - Interlocks (SSAR Section 7.6.2):
b. SSAR Section 7.6.2 also states that the maximum permissible time that an accumulator valve (or IRWST discharge valve, or PRHRHX inlet valve, respectively) is closed when the reactor is at pressure as specified in the TS. Where are they specified?

Action W - Section 3.5.1 of the Tech Specs specifies the maximum permissble valve times. The revised Tech Specs will be submitted June 1996, at which time this item can be closed.

Closed - With issuance of the Tech Specs in SSAR Rev. 9.
Action NRC - Per 11/21 telecon, NRC to review Tech Specs to ensure this is resolved/closed. rkn 12/4

3061	NRR/HICB	7.1	RAI-OI		Deutsch	Closed	Resolved	

420.125 WCAP-14080, "AP600 Instrumentation and Control Software Architecture and Operation Description," states that the Intel PL/M class of languages (e.g., PL/M-51, PL/M-86, and PL/M-96) was chosen for use in protection and control systems. In a recent technical discussion with computer software language consultants, the staff became aware that the PL/M language and compilers for PL/M-51, PL/M-86, and PL/M-96 are no longer supported by the Intel Corporation. Most PL/M programmers have moved onto working in other languages, and the currently available tools are being discontinued. The PL/M language has, therefore, lost its technological base for new development. Describe the strategy that Westinghouse will use to support the design implementation and control systems in the future, including software development, modification, configuration management, maintenance, and technical personnel training throughout the software life cycle given the apparent lack of support for PL/M.

Responded to RAI 420.125 on 5/24/96 in DCP/NRC-0520.
Resolved per 11/21 telecon with NRC. rkn 12/4

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Selection: [DSER Section] like '7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
3965	NRR/HICB	7	TEL-OI		ERG	Action W	Action W		

Respond to NRC Letter from Huffman to Liparulo of 8/19/96 which provided comments on PAM and the related ERGs.

Comments have been incoporated such that this letter (identifying changes to PAMS table in SSAR 7.5 and to the ERGs) should be out by 12/6. rkn 12/3
Letter is pending DCP approval, possibly 12/9; status would then be resolved although W owes SSAR changes and ERGs by end-Dec. rkn 12/6

Winters, James

From: Winters, James
To: Butler, John C.
Cc: Mankowski, Mike; Winters, James; Lindgren, Donald A.; Mcintyre, Brian A.
Subject: NRC Status Changes in OITS
Date: Wednesday, December 11, 1996 1:13PM

Based upon our new definitions of Status categories in OITS and upon the action descriptions in the 11/13 NRC letter, I have made the following changes to the NRC Status in OITS. I believe that the real status has not changed, only the category.

OITS Item	New NRC Status
226	CFRM-W
229	CFRM-W
362	CFRM-N
363	ACTION W
368	ACTION W
370	ACTION W
1090	ACTION W
1133	CFRM-N
1134	ACTION W
1142	ACTION W
1143	ACTION N
1151	ACTION W
1152	ACTION W

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To DIANE JACKSON	From JIM WINTERS
Co. USNRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

I will FAX this to NRC (and later you will send it by letter) to let them know of these changes.

Jim
x5290

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	December 11, 1996	NAME:	Jim Winters
TO:	Diane Jackson / Tom Kenyon	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	US NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 1

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WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane

This markup closes our actions on Item 7.c.(4) of your 10/17/96 Letter and Item 7.c.4 of our 11/14/96 telecon (OTS items 275 and 276). It will be included in Revision 10 of the SSAR unless we hear from you. The NRC status for OTS 275 and 276 have been updated to "Action N" per our 11/14/96 telecon

Jim Winters

cc: Lindgren
Butler
McIntyre
Cummins
Ron Vijuk
Winters
Hutchings
Jeanne Evans

9.4.3.2.2 Component Description

The radiologically controlled area ventilation system is comprised of the following major components. These components are located in buildings on the Seismic Category I Nuclear Island and the Seismic Category II portion of the annex building. The seismic design classification, safety classification and principal construction code for Class A, B, C, or D components are listed in Section 3.2. Table 9.4.3-1 provides design parameters for major defense in depth components in the system.

Supply Air Handling Units

Each supply air handling unit consists of a low efficiency filter bank, a high efficiency filter bank, a hot water heating coil bank, a chilled water cooling coil bank, and a supply fan. The radiation chemistry laboratory supply air handling units only consist of a high efficiency filter bank, a hot water heating coil bank and a supply fan.

Supply and Exhaust Air Fans

The supply and exhaust air fans are centrifugal type, single width single inlet (SWSI) or double width double inlet (DWDI), with high efficiency wheels and backward inclined blades to produce non-overloading horsepower characteristics. The fans are designed and rated in accordance with ANSI/AMCA 210 (Reference 4), ANSI/AMCA 211 (Reference 5), and AMCA 300 (Reference 6).

Unit Coolers

Each unit cooler consist of a low efficiency filter bank, a chilled water cooling coil bank and a supply fan. The normal residual heat removal system pump room unit coolers have redundant cooling coil banks.

Low and High Efficiency Filters

The low efficiency filters and high efficiency filters have a rated dust spot efficiency based on ASHRAE 52 (Reference 7). The filters minimum average dust spot efficiencies for the defense in depth filters are shown in Table 9.4.3-1. The filters meet UL 900 (Reference 8) Class I construction criteria.

Electric Unit Heaters

The electric unit heaters are single-stage or two-stage fin tubular type. The electric unit heater are UL-listed and meet the requirements of UL-1025 (Reference 26) and National Electric Code.

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	DECEMBER 10, 1996	NAME:	JAMES WINTERS
TO:	DIANE JACKSON/TOM KENYON	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
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WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

DIANE,

THIS MARKUP SHOULD CLOSE ITEM 7.C.(1) OF YOUR 10/17/96 LETTER AND ~~OR~~ ITEM 7.C.1 of our 11/14/96 TELECON (OITS 284). IT WILL BE INCLUDED IN REVISION 10 OF THE SSAR UNLESS WE HEAR FROM YOU.

cc: BUTLER
LINDGREN
MCINTYRE
RON VIJUIC
CUMMINS
WINTERS
HUTCHINGS
ISRAELSON
JEANNE EVANS

9.4.3.2.3 System Operation

9.4.3.2.3.1 Auxiliary/Annex Building Ventilation Subsystem

Normal Plant Operation

During normal plant operation, both supply air handling units and both exhaust fans operate continuously to ventilate the areas served on a once-through basis. The supply airflow rate is modulated to maintain the areas served at a slightly negative pressure differential with respect to the outside environment. The exhaust air is unfiltered and directed to the plant vent for discharge and monitoring of offsite gaseous releases.

The temperature of the supply air is controlled by temperature sensors located in the supply air ducts. When the supply air temperature is low, the face and bypass dampers across the supply air hot water heating coil are modulated to heat the supply air. Local thermostats operate supply duct heating coils and unit heaters to provide supplemental heating for building areas that have conductive heat loss to the outside environment during periods of cold outside temperature conditions. When the supply air temperature is high, the flow of chilled water is modulated to cool the supply air. The ventilation air is continuously monitored by smoke monitors located in the common ductwork downstream of the supply air handling units and upstream of the exhaust fans.

A supply air handling unit is automatically shut down if one of the following conditions is detected:

- Airflow rate of the fan is below a predetermined setpoint
- Supply air temperature is below a predetermined setpoint

Each chemical and volume control system makeup pump and normal residual heat removal system pump unit cooler automatically starts whenever the associated pump receives a start signal or a high room temperature signal.

The gaseous radwaste equipment areas have sufficient ventilation to remove hydrogen gas that may leak from the radwaste equipment into the equipment rooms to maintain the concentration of hydrogen below a safe level of about 1%. Instrumentation available to monitor hydrogen concentration is listed in Table 11.3-2.

Abnormal Plant Operation

If high airborne radioactivity is detected in the exhaust air from the auxiliary or annex buildings, the supply and exhaust duct isolation dampers automatically close to isolate the affected area from the outside environment. The containment air filtration system mitigates the exfiltration of unfiltered airborne radioactivity by maintaining the isolated zone at a slightly negative pressure with respect to the outside environment and adjacent unaffected plant areas. The auxiliary/annex building ventilation subsystem remains in operation at a reduced capacity if either the auxiliary or annex building is not isolated. A disruption in the

The maintenance, test, inspection, and surveillance tasks that are identified to be "risk-important" will be analyzed using operational sequence task analyses. OSA-1 analyses will be conducted on the set of maintenance, test, inspection, and surveillance tasks identified to be "risk-important."

18.5.3 Job Design Factors

Section 18.6 addresses the control room staffing that applies to the AP600. Assumptions regarding skill requirements are consistent with NRC regulations on control room crew training. The staffing level of the main control room, job design considerations, and crew skills are the responsibility of the Combined License applicant.

18.5.4 Combined License Information Item

Combined License applicants referencing the AP600 certified design document the scope and responsibilities of each control room position, considering the assumptions and results of the task analysis..

To: Joe Sebrosky

** TX CONFIRMATION REPORT ** AS OF DEC 9 '96 15:56 PAGE.01

AP600 DESIGN CERT

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	STATUS
01	12/ 9	15:55	#23:NRC	G3--S	00'31	01	OK

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	December 9, 1996	NAME:	Jim Winters
TO:	Diane Jackson / Tom Kenyon	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
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COMMENTS:

Diane

This markup closes item 7.6(6) of your 10/17/96 letter and 7.6.6 of our 11/14/96 telecon (OITS 273). It will be in Revision 10 of the SSAR unless we hear from you.

Jim Winters

cc: Lindgren
Butler
McIntyre
Ron Ujluk
Ed Cummins
Winters
Hutchings
Jeanne Burns

requiring close temperature control such as the security area offices and the central alarm station. Hot water unit heaters are provided in the north air handling equipment room to maintain the area above 50°F.

A humidifier is provided in the branch duct to the security areas to provide a minimum space relative humidity of 35 percent.

Each non-Class 1E battery room is provided with an individual exhaust system to prevent the buildup of hydrogen gas in the room. Each exhaust system consists of an exhaust fan, an exhaust air duct and gravity back draft damper located in the fan discharge. Air supplied to the battery rooms by the air handling units is exhausted to atmosphere. Air from the rest rooms is exhausted to atmosphere by a separate exhaust fan.

9.4.2.2.1.4 MSIV Compartment HVAC Subsystem

The main steam isolation valve compartment HVAC subsystem serves the two main steam isolation valve compartments in the auxiliary building that contain the main steam and feedwater lines routed between the containment and the turbine building. Each compartment is provided with separate heating and cooling equipment.

The main steam isolation valve compartment HVAC subsystem consists of two 100 percent capacity supply air handling units with ducted supply air distribution, automatic controls, and accessories for each main steam isolation valve compartment.

The air handling units are located directly within the space served. One unit in each compartment normally operates to maintain the temperature of the compartment. The air handling units can be connected to the standby power system, for investment protection, in the event of loss of the plant ac electrical system.

9.4.2.2.1.5 Mechanical Equipment Areas HVAC Subsystem

The mechanical equipment areas HVAC subsystem serves the demineralized water deoxygenating room, boric acid batching/transfer rooms, and air handling equipment rooms in the south end of the annex building.

The mechanical equipment areas HVAC subsystem consists of two 50 percent capacity air handling units, a ducted supply and return air system, automatic controls, and accessories.

The air handling units are located in the lower south air handling unit equipment room on elevation 135'-3" of the annex building.

9.4.2.2.1.6 Valve/Piping Penetration Room HVAC System

The valve/piping penetration room HVAC subsystem serves the valve/piping penetration room on elevation 100'-0" of the auxiliary building. The valve/piping penetration room HVAC

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TO:	DIANE JACKSON	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	US NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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COMMENTS:

DIANE,

THIS MARKUP SHOULD CLOSE ITEM 7.a.(6) OF YOUR 10/17/96 LETTER AND 7.a.6 of our 11/7/96 TELLCON. WE WILL INCLUDE THIS CHANGE IN SSAR REVISION 10 UNLESS WE HEAR FROM YOU.

cc: LINDGREN
BUTLER
MCINTYRE
RON VIJUK
CUMMINS
WINTERS
HUTCHINGS
JEANNE EVANS

Jim Winters

at a slightly positive pressure with respect to the surrounding areas and the outside environment.

The main control room/technical support center supply air handling units are sized to provide cooling air for personnel comfort, equipment cooling, and to maintain the main control room emergency habitability passive heat sink below its initial ambient air design temperature. The temperature of the air supplied by each air handling unit is controlled by temperature sensors located in the main control room return air duct to maintain the ambient air design temperature within its normal design temperature range by modulating the electric heat or chilled water cooling.

The outside air is continuously monitored by smoke monitors located at the outside air intake plenum and the return air is monitored for smoke upstream of the supply air handling units. The supply air to the main control room is continuously monitored for airborne radioactivity while the supplemental air filtration units remain in a standby operating mode.

The standby supply air handling unit and corresponding return/exhaust fans are started automatically if one of the following conditions shuts down the operating unit:

- Airflow rate of the operating fan is above or below predetermined setpoints.
- Return air temperature is above or below predetermined setpoints.
- Differential pressure between the main control room and the surrounding areas and outside environment is above or below predetermined setpoints.

Abnormal Plant Operation

If high gaseous radioactivity is detected in the main control room supply air duct and the main control room/technical support center HVAC subsystem is operable, both supplemental air filtration units automatically start to pressurize the main control room and technical support center areas to at least 1/8 inch wg using filtered makeup air. After the room is pressurized, one of the supplemental air filtration units is manually shut down. The normal outside air makeup duct and the main control room and technical support center toilet exhaust duct isolation dampers close. The main control room/technical support center supply air handling unit provides cooling with recirculation air to maintain the main control room passive heat sink below its initial ambient air design temperature and maintains the main control room and technical support center areas within their design temperatures. The supplemental air filtration subsystem pressurizes the combined volume of the main control room and technical support center concurrently with filtered outside air. A portion of the recirculation air from the main control room and technical support center is also filtered for cleanup of airborne radioactivity. The main control room/technical support center HVAC equipment and ductwork that form an extension of the main control room/technical support center pressure boundary limit the overall infiltration (negative operating pressure) and exfiltration (positive operating pressure) rates to those values shown in Table 9.4.1-1 to maintain operator doses within allowable limits.

Based on these values, the system is designed to General Design Criteria (GDC) 19

which would lead to exceeding GDC 19 operator dose limits

If ac power is unavailable for more than a short period or if high particulate or iodine radioactivity is detected in the main control room supply air duct, the plant safety and monitoring system automatically isolates the main control room from the normal ventilation subsystem by closing the supply, return, and toilet exhaust duct isolation dampers. Main control room habitability is maintained by the main control room emergency habitability system which is discussed in Section 6.4.

main control room/technical support center HVAC

If a high concentration of smoke is detected in the outside air intake, an alarm is initiated in the main control room and the main control room/technical support center HVAC subsystem is manually realigned to the recirculation mode by closing the outside air and toilet exhaust duct isolation dampers. The main control room and technical support center toilet exhaust fans are tripped upon closure of the isolation dampers. The main control room/technical support center areas are not pressurized when operating in the recirculation mode. The main control room/technical support center HVAC supply air subsystem continues to provide cooling, ventilation, and temperature control to maintain the emergency habitability passive heat sink below its initial ambient air design temperature and maintains the main control room and technical support center areas within their design temperatures.

In the event of a fire in the main control room or technical support center, in response to heat from the fire or upon receipt of a smoke signal from an area smoke detector, the combination fire/smoke dampers close automatically to isolate the fire area. The subsystem continues to provide ventilation/cooling to the unaffected area and maintains the unaffected areas at a slightly positive pressure. The main control room/technical support center HVAC subsystem can be manually realigned to the once-through ventilation mode to supply 100 percent outside air to the unaffected area. Realignment to the once-through ventilation mode minimizes the potential for migration of smoke or hot gas from the fire area to the unaffected area. Smoke and hot gases can be removed from the affected area by reopening the closed combination fire/smoke damper(s) during the once-through ventilation mode. In the once-through ventilation mode, the outside air intake damper to the air handling unit mixing plenum opens and the return air damper to the air handling unit closes to provide 100 percent outside air to the supply air handling unit. In this mode, the subsystem exhaust air isolation damper opens to exhaust the return air directly to the turbine building vent.

Power is supplied to the main control room/technical support center HVAC subsystem by the plant ac electrical system. In the event of a loss of the plant ac electrical system, the main control room/technical support center ventilation subsystem is automatically transferred to the onsite standby diesel generators.

9.4.1.2.3.2 Class 1E Electrical Room HVAC Subsystem

The Class 1E electrical room HVAC equipment that serves electrical division A and C equipment is described in this section. The operation of the Class 1E electrical room HVAC equipment that serves electrical division B and D is similar.

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	DECEMBER 9, 1996	NAME:	JIM WINTERS
TO:	DIANE JACKSON	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
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COMMENTS:

DIANE

HERE IS MARKUP WHICH SHOULD CLOSE ITEM 7.a.(2) OF YOUR 10/17/96 LETTER AND OUR 11/7/96 TELECON (ALSO ITEM 261). IT WILL GO INTO REVISION 10 OF THE SSAR UNLESS WE HERE FROM YOU.

cc: LINDGREN
BUTLER
MCINTYRE
RON VIJUK
CUMMINS
HUTCHINGS
JEANNE EVANS
WINTERS

The exhaust fan draws outside air through an intake louver damper and directly exhausts to the environment.

9.4.1.2.2 Component Description

The nuclear island nonradioactive ventilation system is comprised of the following major components. These components are located in buildings on the Seismic Category I Nuclear Island and the Seismic Category II portion of the annex building. The seismic design classification, safety classification and principal construction code for Class A, B, C, or D components are listed in Section 3.2. Tables 9.4.1-1, 9.4.1-2 and 9.4.1-3 provide design parameters for major components in each subsystem.

Supply Air Handling Units

Each air handling unit consists of a mixing box section, a low efficiency filter bank, high efficiency filter bank, an electric heating coil, a chilled water cooling coil bank, and supply and return/exhaust air fans.

Supply and Return/Exhaust Air Fans

The supply and return/exhaust air fans are centrifugal type, single width single inlet (SWSI) or double width double inlet (DWDI), with high efficiency wheels and backward inclined blades to produce non-overloading horsepower characteristics. The fans are designed and rated in accordance with ANSI/AMCA 210 (Reference 4), ANSI/AMCA 211 (Reference 5) and AMCA 300 (Reference 6).

Supplemental Air Filtration Units

Each supplemental air filtration unit includes a high efficiency filter bank, an electric heating coil, a charcoal adsorber with upstream HEPA filter bank, a downstream postfilter bank and a fan. The filtration unit configurations, including housing, internal components, ductwork, dampers, fans and controls, are designed and constructed to meet the performance requirements of ASME N509 to satisfy the guidelines of Regulatory Guide 1.140.

and location of fan on filtered side of units

Low Efficiency Filters, High Efficiency Filters, and Postfilters

The low efficiency filters and high efficiency filters have a rated dust spot efficiency based on ASHRAE 52 (Reference 7). Filter minimum average dust spot efficiency is shown in Table 9.4.1-1 and 9.4.1-2. High efficiency filter performance upstream of HEPA filter banks meet the design requirements of ASME N509, Section 5.3. Postfilters downstream of the charcoal filters have a minimum DOP efficiency of 95 percent. The filters meet UL 900 (Reference 8) Class I construction criteria.

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DATE:	December 9, 1996	NAME:	Jim Winters
TO:	Diane Jackson	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane,

Here is an update of the Status Detail for Open Item 2897. This should close our item 7.a.(1) from your 10/17/96 letter and our ~~11/7/96~~ 11/7/96 telecon.

Jim Winters

cc Butler
Hutchings
Winters

AP600 Open Item Tracking System Database: Executive Summary

Date: 12/9/96

Selection: [item no] between 2897 And 2897 Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
2897	NRR/SPLB	9.4.1	TEL-OI		Winters/BPC	Closed	Action W		

Address defence in depth criteria for the VBS. These criteria include redundancy, power supply, environmental qualification for severe accidents, hazard protection (fire, flood, natural phenomena, etc.), quality assurance, availability, and administrative controls.

Closed - SSAR section 9.4.1, Revesion 7, includes information addressing the defence in depth criteria and design of the applicable portions of the nuclear island nonradioactive ventilation system (VBS). Redundancy is addressed in each subsystem description of subsection 9.4.1.2. Full redundancy is provided for defense in depth portions of VBS. The VBS can be powered from the non-safety diesels as addressed in the last paragraph of "Abnormal Plant Operations" of subsection 9.4.1.2.3.1. The VBS equipment is located in the auxiliary building and will be procured with the appropriate environmental qualifications. The equipment is located in separate fire areas consistent with their service. They are placed high in the buildong to protect them from flooding. As with other equipment on the Nuclear Island, they are protected from defined natural phenomena. As stated in subsection 9.4.1.1.1, portions of the system are designed, constructed and tested in accordance with ASME N509 and ASME N510. Other considerations are addressed in subsystem descriptions. General criteria and our graded approach to defence in depth functions throughout the design are contained in the appropriate section of the SSAR. For example, quality assurance requirements are contained in Chapter 17, administrative controls in Chapter 13 and availability in Chapter 16. jww-12/9/96

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	December 9, 1996	NAME:	Jim Winters
TO:	Diane Jackson	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	US NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane,

Here are corrections to Chapter 11 of the SSAR which we discovered during preparation for ACRS. We will make these corrections in Revision 10 unless we hear from you.

cc: Lindgren
McIntyre
Ron Visnic
Cummins
Winters
Israelson
Joanne Evans

Degasifier Separator Pump

Two full capacity centrifugal pumps are provided to discharge recovered compressor water from the degasifier separator back to the degasifier vacuum pumps. The pump also serves to discharge any excess compressor water accumulation in the separator to an effluent holdup tank. The pumps start and stop to share the duty. The pump is constructed of stainless steel and has a mechanical seal.

Other Pumps

The following air-operated double-diaphragm pumps are mounted near the associated tanks with internal suction piping. Construction is of stainless steel, with elastomeric diaphragms.

- Degasifier discharge pumps (2)
- Effluent holdup tank pumps (2)
- Waste holdup tank pumps (2)
- Monitor tank pumps (3)
- Chemical waste tank pump (1)

11.2.2.3.2 Liquid Radwaste System Heat Exchangers

Reactor Coolant Drain Tank Heat Exchanger

One horizontal U-tube heat exchanger is provided. The heat exchanger has a flanged tubesheet that permits removal of the tube bundle for inspection and cleaning.

The heat exchanger is designed to prevent the reactor coolant drain tank contents from boiling with hot leakage influent as shown in Table 11.2-4.
The reactor coolant drain tank contents flow through the tubes which are stainless steel component cooling water flows through the carbon steel shell.

Vapor Condenser

degasifier

One horizontal U-tube heat exchanger assists in drying the gases drawn out of the liquid waste by the vacuum pump, before they are sent to the gaseous radwaste system. As the gas bearing water cascades down through the packing in the degasifier vessel, it boils in the low pressure. To minimize the size of the vacuum pumps, a vapor condenser is provided between the degasifer vessel and the vacuum pumps. In the vapor condenser, most of the water vapor is condensed out of the gas stream before it enters the vacuum pump. The vapor condenser is cooled by chilled water. Chilled water flows through the tubes, which are stainless steel. Water vapor condenses on the tubes and drains through a subcooling section in the stainless steel shell. The non-condensible gases and condensate are recombined in a common pipe leading to the suction of the liquid ring type vacuum pumps.

Table 11.2-2 (Sheet 4 of 7)

COMPONENT DATA - LIQUID RADWASTE SYSTEM

Heat Exchangers

Reactor Coolant drain tank heat exchanger	
Number	1
Type	Horizontal U-tube
Design pressure (psig)	150
Design temperature (°F)	250 tubeside, 200 shellside
Design flow (lb/hr)	48,700 tubeside, 62,200 shellside
Heat Transfer Design Case	
Temperature inlet (°F)	175 tubeside, 95 shellside
Temperature outlet (°F)	143 tubeside, 120 shellside
Material	SS tubeside, CS shellside
Vapor condenser	
Number	1
Type	Horizontal U-tube
Design pressure (psig)	150
Design temperature (°F)	150
Design flow (gpm) lb/hr	100,000 tubeside, 1700 shellside
Heat Transfer Design Case	
Temperature inlet (°F)	45 tubeside, 84 shellside
Temperature outlet (°F)	63 tubeside, 60 shellside
Material	SS

The flow through the activated carbon bed is downward. A retention screen on the outlet of the guard bed prevents the loss of activated carbon from the unit. Activated carbon can be added to or vacuumed from the unit via a blind flange port.

Delay Beds

Two activated carbon delay beds in series are provided. Each delay bed is designed to provide 100 percent of the required system capacity under design basis conditions. During normal operation a single bed provides adequate performance. This provides operational flexibility to permit continued operation of the gaseous radwaste system in the event of operational upsets in the system that require isolation of one bed.

The waste gas flows vertically through columns of activated carbon. The activated carbon volume is twice the theoretical amount required to achieve the holdup times given in Table 11.3-1.

No retention screens are required on the delay beds since the flow enters and leaves each delay bed at its top.

The guard bed and the delay beds, including supports, in the gaseous radwaste system are designed for seismic loads in conformance with Regulatory Guide 1.143. These are the only AP600 components used to store or delay the release of gaseous radioactive waste. The beds are located in the seismic Category I auxiliary building at elevation 66′6″.

11.3.2.3.4 Remotely Operated Valves

Moisture Separator Level Control Valve

This normally closed, fail-closed globe valve is located in the liquid drain line from the moisture separator outlet line. It maintains the level in the moisture separator by regulating the flow from the moisture separator to the liquid radwaste system. The valve receives a signal to automatically open on a high level in the moisture separator and to close on low level. The valve can also be manually controlled from the gaseous waste panel.

A float-operated drain trap serves as a backup to this valve. This drain trap automatically closes on a low water level in the moisture separator to stop drain flow to the liquid radwaste system in the event of a valve or instrument failure. This prevents waste gas bypass around the gas cooler due to level control valve failure.

Gaseous Radwaste System Discharge Isolation Valve

This normally ~~open~~ closed fail-closed globe valve is at the outlet of the system. The valve is interlocked to close on a high-high radiation signal in the gaseous radwaste system discharge line to prevent the release of radioactivity in the event of a gaseous radwaste system failure. The valve also receives a signal to automatically close in the event of a low ventilation system

Table 11.3-3 (Sheet 3 of 3)

EXPECTED ANNUAL AVERAGE RELEASE OF AIRBORNE RADIONUCLIDES AS DETERMINED BY THE PWR-GALE CODE, REVISION 1 (RELEASE RATES IN Ci/yr)

		Building/Area Ventilation			
Radionuclide[1]	Waste Gas System	Cont.	Auxiliary Building	Fuel Handling Area[2]	Total
Cr-51	1.4E-05	9.2E-05	3.2E-04	1.8E-04	6.1E-04
Mn-54	2.1E-06	5.3E-05	7.8E-05	3.0E-04	4.3E-04
Co-57	0.	8.2E-06	0.	0.	8.2E-06
Co-58	8.7E-06	2.5E-04	1.9E-03	2.1E-02	2.3E-02
C0-60	1.4E-05	2.6E-05	5.1E-04	8.2E-03	8.7E-03
Fe-59	1.8E-06	2.7E-05	5.0E-05	0.	7.9E-05
Sr-89	4.4E-05	1.3E-04	7.5E-04	2.1E-03	3.0E-03
Sr-90	1.7E-05	5.2E-05	2.9E-04	8.0E-04	1.2E-03
Zr-95	4.8E-06	0.	1.0E-03	3.6E-06	1.0E-03
Nb-95	3.7E-06	1.8E-05	1.0E-05	2.4E-03	2.5E-03
Ru-103	3.2E-06	1.6E-05	2.3E-05	3.8E-05	8.0E-05
Ru-106	2.7E-06	0.	6.0E-06	6.9E-05	7.8E-05
Sb-125	0.	0.	3.9E-06	5.7E-05	6.1E-05
Cs-134	3.3E-05	2.5E-05	5.4E-04	1.7E-03	2.3E-03
Cs-136	5.3E-06	3.2E-05	4.8E-05	0.	8.5E-05
Cs-137	7.7E-05	5.5E-05	7.2E-04	2.7E-03	3.6E-03
Ba-140	2.3E-05	0.	4.0E-04	0.	4.2E-04
Ce-141	2.2E-06	1.3E-05	2.6E-05	4.4E-07	4.2E-05

Notes:

1. The appearance of 0. in the table indicates less than 1.0 Ci/yr for noble gas or less than 0.0001 Ci/yr for iodine.
2. The fuel handling area is within the auxiliary building but is considered separately.

For particulates, release is not observed and assumed less than 1% of the total particulate releases.

Winters, James

From: Winters, James
To: Ahmed, Hassan X.; Bachrach, Uriel X.; Bajorek, Steve M.; Besspiata, John J.; Bhowmick, Dulal C.; Bruschi, Howard X.; Bueter, Tim W.; Butler, John C.; Canton, Mike H.; Carlin, Edward L.; Carlson, W R.; Fakhri, Ali I.; Fittante, Randy L.; Forgie, Alex X.; Funkhouser, Bob E.; Gagnon, Andre F.; Garner, Dan C.; Gresham, Jim A.; Grover, James L.; Haag, Cynthia L.; Halac, Kent E.; Hayes, Thomas F.; Hill, Gregory J.; Hochreiter, Larry E.; Holderbaum, Doug F.; Johnson, Ed R.; Keaney, Susan L.; Kemper, Robert M.; Kennevan, Pat A.; Kerch, Steve P.; Kester, Douglas A.; Lapay, Bill S.; Lindgren, Donald A.; Lutz, Bob J.; Mahlab, Mosh e X.; Mcintyre, Brian A.; Mcnamee, Kevin F.; Meyer, Philip E.; Morgan, Dale G.; Nissley, Mitch E.; Novendstern, Earl H.; Ofstun, Richard P.; Ohkawa, Debra K.; Osterrieder, Robert A.; Peters, Fred E.; Romanko, Kim J.; Rosenthal, Philip W.; Rowell, Tim D.; Sancaktar, Selim X.; Scherf, Dave E.; Scobel, James H.; Sejvar, James X.; Sickles, Dave L.; Slabaugh, Scott K.; Sloane, Barry D.; Spencer, Daniel R.; Thompson, Craig M.; Tupper, Robert B.; Vijuk, Robert M.; White, Don W.; Woodcock, Joel ; Young, Mike Y.; Agona,Norma; Alfieri, Beth; Aliberti, Antoinette; Brown, William; Corletti, Mike; Cummins, Ed; Cummins, Ed; Deutsch, Ken; Hutchings, Donald; Israelson, Gordon; Jambusaria, Harshad; Loftus, Mike; Mandava, Rao; Mankowski, Mike; Mazon, Mary; McDermott, Dan; Nydes, Robin; Orr, Richard; Piplica, Gene; Prasad, Narendra; Rarig, Bruce; Rittenberger, RV; Schreiber, Roger; Schulz, Terry; Sherbine, Cathy; Vijuk, Ron; Willis, Jeff; Wills, Mark; Winters, James; Flanders, Ruth; Hellested, Rhonda; Kovach, Linda; Marshall, Anita; Miele, Kellie; Olesky, Cindy; Rulis, Kathy; Cummins, Ed
Subject: RE: Open Item Tracking
Date: Friday, December 06, 1996 3:03PM

From: Winters, James
To: Agona,Norma; Alfieri, Beth; Aliberti, Antoinette; Brown, William; Corletti, Mike; Cummins, Ed; Deutsch, Ken; Hutchings, Donald; Israelson, Gordon; Jambusaria, Harshad; Loftus, Mike; Mandava, Rao; Mankowski, Mike; Mazon, Mary; McDermott, Dan; Nydes, Robin; Orr, Richard; Piplica, Gene; Prasad, Narendra; Rarig, Bruce; Rittenberger, RV; Schreiber, Roger; Schulz, Terry; Sherbine, Cathy; Vijuk, Ron; Willis, Jeff; Wills, Mark; Winters, James; Flanders, Ruth; Hellested, Rhonda; Kovach, Linda; Marshall, Anita; Miele, Kellie; Olesky, Cindy; Rulis, Kathy; Ahmed, Hassan X.; Bachrach, Uriel X.; Bajorek, Steve M.; Besspiata, John J.; Bhowmick, Dulal C.; Bruschi, Howard X.; Bueter, Tim W.; Butler, John C.; Canton, Mike H.; Carlin, Edward L.; Carlson, W R.; Fakhri, Ali I.; Fittante, Randy L.; Forgie, Alex X.; Funkhouser, Bob E.; Gagnon, Andre F.; Garner, Dan C.; Gresham, Jim A.; Grover, James L.; Haag, Cynthia L.; Halac, Kent E.; Hayes, Thomas F.; Hill, Gregory J.; Hochreiter, Larry E.; Holderbaum, Doug F.; Johnson, Ed R.; Keaney, Susan L.; Kemper, Robert M.; Kennevan, Pat A.; Kerch, Steve P.; Kester, Douglas A.; Lapay, Bill S.; Lindgren, Donald A.; Lutz, Bob J.; Mahlab, Moshe X.; Mcintyre, Brian A.; Mcnamee, Kevin F.; Meyer, Philip E.; Morgan, Dale G.; Nissley, Mitch E.; Novendstern, Earl H.; Ofstun, Richard P.; Ohkawa, Debra K.; Osterrieder, Robert A.; Peters, Fred E.; Romanko, Kim J.; Rosenthal, Philip W.; Rowell, Tim D.; Sancaktar, Selim X.; Scherf, Dave E.; Scobel, James H.; Sejvar, James X.; Sickles, Dave L.; Slabaugh, Scott K.; Sloane, Barry D.; Spencer, Daniel R.; Thompson, Craig M.; Tupper, Robert B.; Vijuk, Robert M.; White, Don W.; Woodcock, Joel ; Cummins, Ed; Young, Mike Y.
Subject: RE: Open Item Tracking
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To	From
DIANE JACKSON	JIM K WINTERS
Co.	Co.
US NRC	WESTINGHOUSE
Dept.	Phone #
	412-374-5290
Fax #	Fax #

Winters, James

From: Winters, James
To: Ahmed, Hassan X.; Bachrach, Uriel X.; Bajorek, Steve M.; Besspiata, John J.; Bhowmick, Dulal C.; Bruschi, Howard X.; Bueter, Tim W.; Butler, John C.; Canton, Mike H.; Carlin, Edward L.; Carlson, W R.; Fakhri, Ali I.; Fittante, Randy L.; Forgie, Alex X.; Funkhouser, Bob E.; Gagnon, Andre F.; Garner, Dan C.; Gresham, Jim A.; Grover, James L.; Haag, Cynthia L.; Halac, Kent E.; Hayes, Thomas F.; Hill, Gregory J.; Hochreiter, Larry E.; Holderbaum, Doug F.; Johnson, Ed R.; Keaney, Susan L.; Kemper, Robert M.; Kennevan, Pat A.; Kerch, Steve P.; Kester, Douglas A.; Lapay, Bill S.; Lindgren, Donald A.; Lutz, Bob J.; Mahlab, Moshe X.; Mcintyre, Brian A.; Mcnamee, Kevin F.; Meyer, Philip E.; Morgan, Dale G.; Nissley, Mitch E.; Novendstern, Earl H.; Ofstun, Richard P.; Ohkawa, Debra K.; Osterrieder, Robert A.; Peters, Fred E.; Romanko, Kim J.; Rosenthal, Philip W.; Rowell, Tim D.; Sancaktar, Selim X.; Scherf, Dave E.; Scobel, James H.; Sejvar, James X.; Sickles, Dave L.; Slabaugh, Scott K.; Sloane, Barry D.; Spencer, Daniel R.; Thompson, Craig M.; Tupper, Robert B.; Vijuk, Robert M.; White, Don W.; Woodcock, Joel ; Young, Mike Y.; Agona,Norma; Alfieri, Beth; Aliberti, Antoinette; Brown, William; Corletti, Mike; Cummins, Ed; Cummins, Ed; Deutsch, Ken; Hutchings, Donald; Israelson, Gordon; Jambusaria, Harshad; Loftus, Mike; Mandava, Rao; Mankowski, Mike; Mazon, Mary; McDermott, Dan; Nydes, Robin; Orr, Richard; Piplica, Gene; Prasad, Narendra; Rarig, Bruce; Rittenberger, RV; Schreiber, Roger; Schulz, Terry; Sherbine, Cathy; Vijuk, Ron; Willis, Jeff; Wills, Mark; Winters, James; Flanders, Ruth; Hellested, Rhonda; Kovach, Linda; Marshall, Anita; Miele, Kellie; Olesky, Cindy; Rulis, Kathy; Cummins, Ed
Subject: RE: Open Item Tracking
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From: Winters, James
To: Agona,Norma; Alfieri, Beth; Aliberti, Antoinette; Brown, William; Corletti, Mike; Cummins, Ed; Deutsch, Ken; Hutchings, Donald; Israelson, Gordon; Jambusaria, Harshad; Loftus, Mike; Mandava, Rao; Mankowski, Mike; Mazon, Mary; McDermott, Dan; Nydes, Robin; Orr, Richard; Piplica, Gene; Prasad, Narendra; Rarig, Bruce; Rittenberger, RV; Schreiber, Roger; Schulz,
Terry; Sherbine, Cathy; Vijuk, Ron; Willis, Jeff; Wills, Mark; Winters, James; Flanders, Ruth; Hellested, Rhonda; Kovach, Linda; Marshall, Anita; Miele, Kellie; Olesky, Cindy; Rulis, Kathy; Ahmed, Hassan X.; Bachrach, Uriel X.; Bajorek, Steve M.; Besspiata, John J.; Bhowmick, Dulal C.; Bruschi, Howard X.; Bueter, Tim W.; Butler, John C.; Canton, Mike H.; Carlin, Edward L.; Carlson, W R.; Fakhri, Ali I.; Fittante, Randy L.; Forgie, Alex X.; Funkhouser, Bob E.; Gagnon, Andre F.; Garner, Dan C.; Gresham, Jim A.; Grover, James L.; Haag, Cynthia L.; Halac, Kent E.; Hayes,
Thomas F.; Hill, Gregory J.; Hochreiter, Larry E.; Holderbaum, Doug F.; Johnson, Ed R.; Keaney, Susan L.; Kemper, Robert M.; Kennevan, Pat A.; Kerch, Steve P.; Kester, Douglas A.; Lapay, Bill S.; Lindgren, Donald A.; Lutz, Bob J.; Mahlab, Moshe X.; Mcintyre, Brian A.; Mcnamee, Kevin F.; Meyer, Philip E.; Morgan, Dale G.; Nissley, Mitch E.; Novendstern, Earl H.;
Ofstun, Richard P.; Ohkawa, Debra K.; Osterrieder, Robert A.; Peters, Fred E.; Romanko, Kim J.; Rosenthal, Philip W.; Rowell, Tim D.; Sancaktar, Selim
X.; Scherf, Dave E.; Scobel, James H.; Sejvar, James X.; Sickles, Dave L.; Slabaugh, Scott K.; Sloane, Barry D.; Spencer, Daniel R.; Thompson, Craig M.; Tupper, Robert B.; Vijuk, Robert M.; White, Don W.; Woodcock, Joel ; Cummins, Ed; Young, Mike Y.
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Consistent with our implementation of a combined NRC/W schedule for FDA, we are going to streamline the way we track Open Items to closure. This approach was suggested by DOE and agreed to by NRC. Starting January 1, with first Thursday report on January 2, we will report on the status shown in the NRC Status field of our OITS data base. Westinghouse will retain write access, but NRC can redefine status by phone or fax or letter as they see fit.

A new set of status categories and rules will be in effect. The new, and only, status entries will be:

Action W - Westinghouse had the action to provide new, specific information in a deliverable (RAI response, WCAP, major WCAP revision or other document) that is uniquely identifiable from information in its OITS item.

Action N - NRC has the action for review of a Westinghouse submittal (RAI response, WCAP, major WCAP revision or other document) or provide a policy decision.

Audit N - Westinghouse has completed the requested work, but the work is contained in documents such as calculation notes, which are not to be submitted but must be audited in person by the NRC.

Cfrm-N - Westinghouse has submitted a draft or markup of a WCAP or SSAR section to resolve an NRC question or minor comment. This draft or markup can be in an RAI response, letter, or fax later confirmed by a letter. A formal revision to the WCAP or SSAR section must be promised. NRC is reviewing draft or markup to ensure compliance with request.

Cfrm-W - NRC has reviewed the draft or markup of the WCAP or SSAR section and has agreed that its issue formally as a revision will satisfy the concern. The remaining Westinghouse action is to issue the change in a formal revision to the WCAP or SSAR section.

Resolved - No further Westinghouse action is required. Remaining NRC action is to issue FSER section, if required.

Closed - No further NRC action is required.

We will have a training session on this stuff in January if enough of you think it is necessary.

We will start out by going backwards. That is, NRC hasn't recognized a move from Action W to Action N for many of the items we consider closed.This means that licensing and project engineers will be required to explain the benefits of timely statusing to their counterparts at NRC. This will focus all of us to identify and close the items that really do stand between us and FDA.

Mike Mankowski will be helping to reset the data base and generate reports in the "new way." I am always available to answer questions.

Thanks

Jim
x5290

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	~~11/14/96~~ RETRANSMITTAL 12/6/96	NAME:	JOHN BUTLER
TO:	JOE SEBROSKY ~~BILL HUFFMAN~~	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE: 2002	PHONE:	Office:
COMPANY:	NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 22

The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

CC: PAUL BOEHNERT FAX 301-415-5589
CC: DR. GUNOL KOJASOY 414-229-6958

BILL, Following are "typos" in Section 3 equations for the PIRT/Scaling Closure Report.

Contains No Proprietary Information.

3.2.1 Generalized System Equations Used for Scaling

The system equations are developed for the general one-dimensional conservation equations for mass, momentum, and energy, which are written for each component in the loop. These equations are then summed around the loop to obtain the system response. The one-dimensional momentum equation can be obtained from Shames (Reference 3-6) and was simplified by Wulff as

$$P_1 - P_2 = \int_1^2 \frac{\partial(\rho \vec{W})}{\partial t} \frac{dV}{A} + \int_1^2 d(\rho \vec{W}^2) - \vec{g} \cdot \vec{k} \int_1^2 \rho \frac{dV}{A} + \frac{f}{2d_h} \int_1^2 \rho \vec{W} |\vec{W}| dz \qquad (3\text{-}1)$$

where w is the fluid velocity (ft/sec)

The nomenclature is given at the end of this section. Equation 3-1 is the transient momentum equation for a specific component in the loop.

The energy equation can be written for a component of the loop without a pump as

$$V_c \frac{d}{dt}(\rho e) = Q_{net} + \sum h_i W_i \qquad (3\text{-}2)$$

where the heat sources and sinks are represented as well as the energy fluxes into and out of a specific component. The conservation of mass can also be written for a fixed volume component in the loop as

$$V_c \frac{d\rho}{dt} = \sum_i W_i \qquad (3\text{-}3)$$

In addition to the three basic conservation equations, Wulff also derived a pressure rate equation from the energy equation to determine the rate of change of pressure due to heat and mass addition into the components or control volume. If one performs the differentiation for the term on the left-hand side of Equation 3-2, and assuming that

$$e = f(P, \rho, t) \qquad (3\text{-}4)$$

the total derivative of the internal energy becomes

$$\frac{de}{dt} = \left(\frac{\partial e}{\partial p}\right)_\rho \frac{dp}{dt} + \left(\frac{\partial e}{\partial \rho}\right)_p \frac{d\rho}{dt} \qquad (3\text{-}5)$$

which can be substituted into Equation 3-2 as

$$V_c \left[\rho \frac{\partial e}{\partial p}\bigg)_\rho \frac{dp}{dt} + \rho \frac{\partial e}{\partial \rho}\bigg)_p \frac{d\rho}{dt} + e\frac{d\rho}{dt} \right] = Q_{net} + \sum_i (Wh)_i \qquad (3\text{-}6)$$

Further algebra and transposing terms to the right-hand side of the equation and noting that

$$V_c \frac{\partial \rho}{\partial t} = W \qquad (3\text{-}7)$$

and

$$e = h - \frac{P}{\rho} \qquad (3\text{-}8)$$

which yields

$$\frac{\partial e}{\partial \rho}\bigg)_p = \frac{\partial h}{\partial \rho}\bigg)_p + \frac{P}{\rho^2} \qquad (3\text{-}9)$$

This equation can be arranged as

$$V_c \rho \frac{\partial e}{\partial \rho}\bigg)_p \frac{dp}{dt} = Q_{net} + \sum_i (h_i - h)W_i - \rho \frac{\partial h}{\partial \rho}\bigg)_p W_i \qquad (3\text{-}10)$$

where the energy flux terms are expressed in terms of the excess enthalpy, above the control volume average value. Wulff defines the numerator of the left-hand side as the compliance of the control volume or the response of the pressure to the addition of energy. The last term on the right-hand side of the equation is defined by Wulff as the mechanical response function, which indicates the pressure response of the control volume to the addition of mass. Wulff develops these expressions for both single-phase and two-phase flow in terms of the fluid properties for use in different control volumes. The pressure rate equation has been primarily used for significant pressure transients for different components in the SBWR scaling analysis for the containment response. The pressure rate equation was used for the ADS blowdown phase of the AP600 LOCA.

For each phase of the AP600 transient, the mass, momentum, and energy equations were written for the active control volumes and flow paths. For the ADS blowdown phase, the additional pressure rate equation was also used. Judgement will be used on which portions of the AP600 loop and passive safety systems are most significant for the time periods of interest. Those components will then be used to develop a loop momentum equation and the system energy equation. The resulting equations will be normalized and the pi groups will then be determined.

Component that are inactive for this analysis include the following:

- Pressurizer, which is assumed to have drained
- ADS Stages 1 through 3 (ADS1–3), which are not active
- ADS Stage 4 (ADS4), which is not active
- PRHR, which is assumed to be less effective than the steam generators

Additional assumptions are as follows:

- Constant pressure
- Single-phase flow everywhere in the primary system

For the single-phase natural circulation phase, mass leaves the system due to the break and mass is added to the system from the CMT injection. Also, the upper portion of the primary system is draining into the main loops such as the pressurizer, purge line, and reactor vessel upper head. Therefore, the mass addition and draining effects help offset the mass lost out the break, and the main loop flow is nearly constant around the loop. A constant loop flow was assumed for the analysis.

Figure 3.3-1 shows a sketch of the primary system with the elevations and flow junctions noted. The momentum equation is applied to give the pressure drop for each component. The individual pressure drops are then added around the main loop to give a loop momentum equation. The pressure drop for component i is given from Equation 3-1 as

$$\Delta p_i = \frac{1}{g_c}\frac{dW_i}{dt}\left(\frac{L}{A}\right)_i + \frac{g}{g_c}\int_i \rho_i dz + \frac{1}{g_c}\left\{\frac{fL}{d_h} + K\right\}_i \frac{W_i^2}{2A^2\rho} \qquad (3\text{-}11)$$

(note: must be consistent with signs on gravity term. if gravity vector and velocity are in the same direction sign is $-$, if opposite sign is $+$)

If these components are summed around the loop, the pressure drop term disappears and the remaining terms are the inertia term, gravitational head term, and the sum of the friction and form losses around the loop. The two active loops are combined as one and the CMTs form a parallel loop with a portion of the cold leg. The final loop momentum balance result is given as

$$0 = \frac{1}{g_c}\frac{dW_{ML}}{dt}\left(\frac{L}{A}\right)_{ML} - \frac{1}{g_c}\frac{dW_{Break}}{dt}\left\{\left(\frac{L}{A}\right)_{5-6} + \left(\frac{L}{A}\right)_{5-7}\right\}$$

$$+ \frac{g}{g_c}(\rho_1 - \rho_4)\left\{Z_2 - \frac{(Z_1 + Z_{10})}{2}\right\} + \frac{1}{g_c}\frac{W_{ML}^2}{2\overline{\rho}_{ML}}\left(\frac{R}{A^2}\right)_{ML} +$$

$$+ \frac{1}{g_c}\frac{[W_{Break}^2 - 2W_{ML}W_{Break}]}{2\overline{\rho}_{ML}}\left\{\left(\frac{R}{A^2}\right)_{5-6} + \left(\frac{R}{A^2}\right)_{5-7}\right\} \qquad (3\text{-}12)$$

Equation 3-12 can be normalized using the following dimensionless parameters given in Table 3.3-1, where the subscript o indicates the core inlet conditions. The time term can be normalized using the active portion of the reactor system volume, the core inlet density, and the core inlet flow as

$$t^* = \frac{t}{\tau} \quad \text{where } \tau = \frac{\overline{\rho}_o V_o}{W_o} \qquad (3\text{-}13)$$

Where τ represents the time constant of the primary system. After normalization of Equation 3-2, the driver term is the buoyancy term $\frac{g}{g_c}\Delta\rho_o\Delta Z_o$. Wulff recommends dividing all terms by the normalization value used for the driver term causing the coefficient in front of the driver term to be unity. In this fashion, one could perform an order of magnitude analysis to determine the relative importance of the other terms in the equation relative to the driver term. Following that procedure, Equation 3-12 can be rewritten as

$$0 = \left(\frac{\frac{W_o^2}{\overline{\rho}_o V_o}\left(\frac{L}{A}\right)_o}{g\Delta\rho_o\Delta Z_o}\right)\left(\frac{L}{A}\right)^*_{ML}\frac{dW^*_{ML}}{dt^*} - \left(\frac{\frac{W_o^2}{\overline{\rho}_o V_o}\left(\frac{L}{A}\right)_o}{g\Delta\rho_o\Delta Z_o}\right)\frac{dW^*_{Break}}{dt^*}\left\{\left(\frac{L}{A}\right)^*_{5-6} + \left(\frac{L}{A}\right)^*_{5-7}\right\}$$

$$+ (1)(\rho_1 - \rho_4)^*\left\{Z_2 - \frac{(Z_1+Z_{10})}{2}\right\}^* + \left(\frac{\frac{W_o^2}{2\rho_o}\left(\frac{R}{A^2}\right)_o}{g\Delta\rho_o\Delta Z_o}\right)\frac{W^{*2}_{ML}}{\overline{\rho}^*_{ML}}\left(\frac{R}{A^2}\right)^*_{ML}$$

$$+ \left(\frac{\frac{W_o^2}{2\overline{\rho}_o}\left(\frac{R}{A^2}\right)_o}{g\Delta\rho_o\Delta Z_o}\right)\frac{[W^{*2}_{Break} - 2W^*_{ML}W^*_{Break}]}{2\overline{\rho}^*_{ML}}\left\{\left(\frac{R}{A^2}\right)^*_{5-6} + \left(\frac{R}{A^2}\right)^*_{5-7}\right\} \qquad (3\text{-}14)$$

The resulting equation for the two-phase natural circulation phase for the AP600 is given in Equation 3-30 as where the buoyancy term has been developed using the approach from Todreas (Reference 3-8).

$$0 = \frac{1}{g_c}\frac{dW_{ML}}{dt}\left(\frac{L}{A}\right)_{ML} + \frac{W_{ML}^2}{2g_c\overline{\rho}_{ML}}\left(\frac{R}{A^2}\right)_{ML}$$

$$+ \frac{g\rho_5}{g_c}\left[\left\{\frac{(Z_4 + Z_5)}{2} - Z_8\right\} - \left\{(Z_{core-sat} - Z_8) + \frac{\ell n\,(1+\gamma)}{\gamma}(Z_1 - Z_{core-sat}) + \frac{1}{(1+\gamma)}\left\{\frac{(Z_4 + Z_5)}{2} - Z_1\right\}\right\}\right]$$

$$+ \frac{1}{g_c}\frac{W_{ML}^2}{A_{core}^2\,\rho_{\ell\,core}}\left[-2N_{PCH} + \left(\frac{N_p + 1}{N_p}\right)N_{PCH}^2\right] + \frac{1}{g_c}\frac{W_{ML}^2}{A_{PRHR}^2\,\rho_{\ell\,PRHR}}\left[1 + 2N_p\,(N_{PRHR}) - N_p - (1+N_p)\,N_{PRHR}^2\right] \quad (3\text{-}30)$$

where

$$\gamma = X_{core_{exit}}\left(\frac{\rho_\ell}{\rho_g}\right)$$

In writing this momentum equation, it is assumed that boiling is occurring in the core at some elevation Z_{sat}, and that there is single phase in the DVI line, cold leg, reactor vessel downcomer and lower plenum, PRHR outlet line, and a portion of the core. The remaining portion of the core, upper plenum, hot leg, and PRHR inlet line is two phase. There is also condensation occurring in the PRHR with liquid flowing out. After a significant amount of algebra and using the normalizing parameters given in Table 3.3-2, the normalized momentum equation becomes

$$0 = \frac{W_o^2\left(\frac{L}{A}\right)_o}{\rho_o V_o}\frac{dW_{ML}^*}{dt^*}\left(\frac{L}{A}\right)_{ML}^* + \frac{W_o^2\left(\frac{R}{A^2}\right)_o}{2\overline{\rho}_o}\frac{W_{ML}^{*2}}{\overline{\rho}_{ML}^*}\left(\frac{R}{A^2}\right)_{ML}^*$$

$$+ g\Delta\rho_o\Delta Z_o\,\rho_5^*\left[\left\{\frac{(Z_4 + Z_5)}{2} - Z_8\right\} - \left\{(Z_{core-sat} - Z_8) + \frac{\ell n\,(1+\gamma)}{\gamma}(Z_1 - Z_{core-sat})\right.\right.$$

$$\left.\left. + \frac{1}{(1+\gamma)}\left\{\frac{(Z_4 + Z_5)}{2} - Z_1\right\}\right\}\right] + \frac{W_o^2}{A_o^2\,\rho_o}\left[-2N_{PCH} + \left(\frac{N_p + 1}{N_p}\right)N_{PCH}^2\right]\frac{W_{ML}^{*2}}{A_{core}^{*2}\,\rho_{\ell\,core}^*}$$

$$+ \frac{W_o^2}{A_o^2\,\rho_o}\left[1 + 2N_p\,(N_{PRHR}) - N_p - (1+N_p)\,N_{PRHR}^2\right]\frac{W_{ML}^{*2}}{A_{PRHR}^{*2}\,\rho_{\ell\,PRHR}^*} \quad (3\text{-}31)$$

$$\Pi_{6a} = \frac{\frac{W_o^2}{A_o^2 \rho_o}\left[- 2 N_{PCH} + \left(\frac{N_p + 1}{N_p}\right) N_{PCH}^2\right]}{g \Delta\rho_o \Delta Z_o} \tag{3-36}$$

$$\Pi_{6b} = \frac{\frac{W_o^2}{A_o^2 \rho_o}\left[1 + 2 N_p N_{PRHR} - N_p - \left(1 + N_p \right) N_{PRHR}^2\right]}{g \Delta\rho_o \Delta Z_o} \tag{3-37}$$

There are additional momentum flux terms in Equation 3-32 due to the boiling or evaporation in the core and due to the condensation in the PRHR as the hot-leg steam flow is condensed. This is represented in Pi group 6b. The system energy equation for the two-phase natural circulation can be written as

$$V\frac{d}{dt}(\rho e)\Big]_{system} = \sum W_i h_i - \sum W_o h_o + Q_c - Q_{PRHR} - Q_{CMT} \tag{3-38}$$

The system consists of portions that are single phase and two phase, such that the energy storage term can be written as

$$V_{1\phi}\ \frac{d}{dt}(\rho e) + V_{2\phi}\ \frac{d}{dt}(\rho_m e_m) = V\frac{d}{dt}(\rho e)\Big]_{system} \tag{3-39}$$

The two-phase mixture density is defined as

$$\rho_m = \alpha\rho_g + (1 - \alpha)\rho_\ell \tag{3-40}$$

and the mixture internal energy is given as

$$e_m = [\alpha e_g \rho_g + (1 - \alpha) e_\ell \rho_\ell]/[(\alpha\rho_g + (1 - \alpha)\rho_\ell)] \tag{3-41}$$

The inflows into the system are from the CMT in the DVI line which is liquid, and the outflow is from the break which can be single phase or two phase. There is heat lost from the system due to the heat transfer in the PRHR, Q_{PRHR}, and due to heating the CMT metal, Q_{CMT}. Therefore, rewriting Equation 3-38 and using temperature for the single-phase portion gives

$$V_{1\phi}\ \frac{d}{dt}(\rho C_v \Delta T) + V_{2\phi}\ \frac{d}{dt}(\rho_m e_m) = W_{DVI}\ h_{DVI} - W_B h_B + Q_c - Q_{PRHR} - Q_{CMT} \tag{3-42}$$

where

$$\Delta T = T - T_{ref} \tag{3-43}$$

pressurizer surge line, which now fill due to the activation of ADS1–3. The active components for this period are as follows:

- DVI injection line
- CMTs, which drain into the vessel
- Accumulators, which inject into the DVI line
- Downcomer, lower plenum, upper plenum of the vessel
- Core, which is boiling
- Hot leg with pressurizer
- Pressurizer surge line
- Pressurizer
- ADS1–3
- Break in the cold leg

Components that are inactive and not part of the active loop are as follows:

- Steam generators, which are drained
- PRHR, which loses its driving temperature difference
- ADS4, which is not opened

In addition to the conservation of mass, momentum, and energy, Wulff derived a system pressure response equation from the energy equation to describe the pressure response of the system. The pressure response equation was also scaled in addition to the momentum and energy equations. The pressure response equation was derived in Equations 3-2 to 3-10, with the resulting equation given in Equation 3-10 as

$$V_c \rho \frac{de}{dt}\bigg)_\rho \frac{dp}{dt} = Q_{net} + \sum_i (h_i - h)W_i - \rho \frac{\partial h}{\partial \rho}\bigg)_p W_i \qquad (3\text{-}10)$$

Wulff defines the coefficient of the pressure term as the compliance of the system. For single-phase flow this becomes

$$X_{1\phi} = V_c \frac{\partial e}{\partial P}\bigg)_\rho = \rho \frac{C_v \kappa}{\beta} V_C \qquad (3\text{-}48)$$

where the terms are defined in the nomenclature. Wulff also gives the compliance for two-phase flow as

$$X_{2\phi} = V_m \left(\frac{\partial e}{\partial P}\right)_{\rho_m} \qquad (3\text{-}49)$$

The two-phase compliance is a complex function of the void fraction which can vary component to component. A simple way of approximating the term

$$\left(\frac{\partial e}{\partial P}\right)_{\rho_m}$$

is to use the mixture density, ρ_m, for different void fractions and the mixture internal energy as given by

$$e_m = [(\alpha\ \rho_g\ e_g + (1-\alpha)\ \rho_f\ e_f)]/\rho_m \qquad (3\text{-}50)$$

If desired, the internal energy expression can be differentiated with respect to the system pressure for a constant mixture density.

Wulff also defines the single-phase flow mechanical response function for the system as

$$\Lambda_{1\phi} = -\rho \left(\frac{\partial h}{\partial \rho}\right)_P = \frac{C_P}{\beta} \qquad (3\text{-}51)$$

and the two-phase mechanical response is defined as

$$\Lambda_{2\phi} = \frac{1}{\rho_m} \frac{h_{fg}}{v_{fg}} \qquad (3\text{-}52)$$

The objective is to use the pressure equation to describe the system response to the ADS1-3 valve opening, the core heat addition, and the net energy flows into the system from the CMTs and the accumulators; the energy flows out of the system from the break and the ADS1-3 valves. Since one

pressure equation is desired for the total system, the compliance expressions are volume weighted by the fraction of the system which is single phase and the fraction which is two phase. The compliance term for the system then becomes

$$\chi_{sys} = V_{RCS}\,\rho\left(\frac{\partial e}{\partial P}\right)_P = V_{RCS}\left[\frac{V_{1\phi}}{V_{RCS}}\left\{\frac{\rho\, C_v\, \kappa}{\beta}\right\} + \frac{V_{2\phi}}{V_{RCS}}\left(\rho_m \frac{\partial e_m}{\partial P}\right)_{\rho m}\right] \qquad (3\text{-}53)$$

where Equation 3-50 is used for the internal energy, and the mixture density is given in terms of the void fraction.

A similar single-phase and two-phase volume weighing is used for the mechanical response term as

$$\lambda_{sys} = \frac{V_{1\phi}}{V_{RCS}}\left\{\frac{C_P}{\beta}\right\} + \frac{V_{2\phi}}{V_{RCS}}\left[\frac{1}{\rho_m}\frac{h_{fg}}{v_{fg}}\right] \qquad (3\text{-}54)$$

The resulting pressure equation becomes

$$V_{RCS}\left[\left(\frac{\rho C_v \kappa}{\beta}\right)\frac{V_{1\phi}}{V_{RCS}} + \left(\rho_m \left.\frac{\partial \rho_m}{\partial P}\right|_{\rho m}\right)\frac{V_{2\phi}}{V_{RCS}}\right]\frac{dP}{dt} = \sum W_i\,(h_i - h) + Q + \sum W_i\left\{\frac{V_{1\phi}}{V_{RCS}}\left(\frac{C_P}{\beta}\right) + \frac{V_{2\phi}}{V_{RCS}}\left[\frac{1}{\rho_m}\frac{h_{fg}}{v_{fg}}\right]\right\} \qquad (3\text{-}55)$$

Equation 3-55 can be made dimensionless using the dimensionless parameters given in Table 3.3-3. While most of these parameters are the same as those given in Tables 3.3-1 and 3.3-2, the pressure range and the temperature range variables are new because the system is experiencing a depressurization transient. Wulff recommends using the full range for depressurization for normalizing the pressure as well as the temperature and other parameters as shown in Table 3.3-3.

In Equation 3-55, there are energy flows into and out of the system. Wulff's nomenclature uses inflows as positive and outflows as negative. The enthalpy used for the energy flows is referenced to the system enthalpy, h, which would have to be calculated on a volume-weighted basis. Equation 3-55 can be rewritten using the different flows into and out of the system as

$$\left[\frac{\rho C_v \kappa}{\beta} V_{1\phi} + \left(\rho_m \frac{\partial \rho_m}{\partial P}\right)_{\rho_m} V_{2\phi}\right] \frac{dP}{dt} = Q + W_{ACC}(h_{ACC} - h) + W_{CMT}(h_{CMT} - h) - W_B(h_B - h)$$

$$- W_{ADS}(h_{ADS} - h) - W_L \left\{\frac{V_{1\phi}}{V_{RCS}}\left(\frac{C_p}{\beta}\right) + \frac{V_{2\phi}}{V_{RCS}}\left(\frac{1}{\rho_m}\frac{h_{fg}}{v_{fg}}\right)\right\} \quad (3\text{-}56)$$

where h is the volume-weighted system average enthalpy.

Equation 3-56 can be normalized using the parameters from Table 3.3-3 as

$$\left[\Pi_9 \frac{\rho^* C_v^* \kappa^*}{\beta^*} V_{1\phi}^* + \Pi_{10} V_{2\phi}^* \rho_m^* \frac{\partial \rho_m^*}{\partial p^*}\right] \frac{dp^*}{dt^*} = Q^* + \Pi_5 W_{ACC}^* (h_{ACC}^* - h^*)$$

$$+ \Pi_4 W_{CMT}^* (h_{CMT}^* - h^*) - \Pi_5 W_B^* (h_B^* - h^*) - \Pi_6 W_{ADS}^* (h_{ADS}^* - h^*)$$

$$- \Pi_{11} \frac{W^* V_{1\phi}^* C_p^*}{\beta^*} - \frac{\Pi_{12} V_{2\phi}^*}{\rho_m^*} \frac{h_{fg}^*}{v_{fg}^*} W^* \quad (3\text{-}57)$$

The driver term selected is the core power or heat generation. The reference flow selected is the ADS flow since it is the largest flow in the system. All reference groups are normalized on the reference core power such that the coefficient for the dimensionless power becomes unity. The pi groups from the normalized pressure response equation are given as

$$\Pi_9 = \frac{Cv_o \kappa_o W_{ADS} \Delta P_o}{\beta_o Q_o} \quad (3\text{-}58)$$

$$\Pi_{10} = \frac{Cv_o \Delta T_o W_{ADS}}{Q_o} \quad (3\text{-}59)$$

$$\Pi_3 = \Pi_4 = \Pi_5 = \Pi_6 = \frac{W_{ADS} Cp_o \Delta T_o}{Q_o} = \Pi_{14} \quad (3\text{-}60)$$

$$\Pi_{11} = \frac{W_{ADS} Cp_o}{\beta_o Q_o} \quad (3\text{-}61)$$

$$\Pi_{12} = \frac{W_{ADS}}{Q_o \rho_{m_o}} \frac{h_{fg_o}}{v_{fg_o}} \quad (3\text{-}62)$$

Components that are not active include the following:

- CMTs, which are empty
- Accumulators, which are empty
- Steam generators, pressurizer, surge line, and PRHR, which are empty
- CMT balance lines, which are empty
- ADS1–3, which is not active

The momentum equation is more complex in this period because portions of the system are single phase while other portions are two phase. The single-phase to two-phase interface is occurring in the core. This interface can vary depending on the decay power level in the core and the injection flow rate and subcooling from the IRWST. For this example, a general situation will be assumed in which there is an interface within the core such that the flow into the upper plenum and hot legs and exiting the ADS4 valves is two phase.

The main loop is the flow path from the IRWST to the downcomer, through the core, and out through the ADS4 on the hot legs. A parallel flow path is from the downcomer to the cold leg and out the break. If the main loop for the flow is down the downcomer, through the core, and out the ADS4 valves, then the momentum equation for IRWST injection becomes

$$0 = \frac{1}{g_c}\frac{dW}{dt}\left[\left(\frac{\bar{L}}{A}\right)_{tank} + \left(\frac{\bar{L}}{A}\right)_{DVI}\right] + \frac{1}{g_c}\frac{dW_2}{dt}\left[\left(\frac{\bar{L}}{A}\right)_{DC} + \left(\frac{\bar{L}}{A}\right)_{LP} + \left(\frac{L}{A}\right)_{core} + \left(\frac{\bar{L}}{A}\right)_{UP} + \left(\frac{\bar{L}}{A}\right)_{HL}\right.$$

$$\left. + \left(\frac{L}{A}\right)_{ADS4}\right] + \frac{g\rho_f}{g_c}\left[\ell_{1-4} - \ell_{core_{sat}}\right] - \frac{g}{g_c}\int_{z_{sat}}^{z_c}\rho_m dz - \frac{g}{g_c}\int_{z_c}^{ADS4}\rho_m dz + \frac{\left(\frac{fL}{D} + K\right)_{DVI}}{2A_{DVI}^2\rho_f g_c}W^2$$

$$+ \sum\frac{\left(\frac{fL}{D} + K\right)_i}{2A_i^2\rho_f g_c}W_2^2 + \sum\frac{\left(\frac{fL}{D} + K\right)\phi_{o_i}^2}{2A_i^2\rho_f g_c}W_{2m}^2 - \frac{W_2^2}{\rho_m A_{ADS4}^2} + \Delta MF\left[z_{sat} - z_{sat}\right] \qquad (3\text{-}72)$$

Where the momentum flux terms are given for both area changes and boiling, Equation (3-70) retains the time-dependent inertia terms as part of the general maintenance treatment. However, the transient is quasi-steady-state during this time period, such that the inertia effects should be small.

Equation 3-72, the system momentum equation, can be normalized using the normalizing parameters given in Table 3.3-5. Note that the volume used for the time scale is the active portion of the primary system volume and does not include the IRWST volume. Inclusion of the IRWST volume would result in a distortion of the system response since it is so large relative to the active portion of the RCS volume. The dimensionless time is intended to represent the time period to sweep out the RCS volume with the injection

or core flow. The driver term for the IRWST injection period is the gravity term, since it is this force that is causing the flow in the system. Dividing the coefficients for each term in the normalized momentum equation by the gravity term, coefficient results in a dimensionless momentum equation where the momentum equation becomes

$$0 = \Pi_1 \left[\left(\frac{\ell}{a} \right)_i \frac{dW^*}{dt^*} + \left(\frac{\ell}{a} \right)_j \frac{dW_2^*}{dt^*} + \left(\frac{\ell}{a} \right)_R \frac{dW_m^*}{dt^*} \right]$$

$$+ \Pi_3 \left[1 - \frac{Z_{sat}}{L_{gr}} \left\{ \int_{Frac\ 1}^{Frac\ 2} \rho_m^* d\xi + \int_{Frac\ 2}^{Frac\ 3} \rho_m^* d\xi \right\} \right]$$

$$+ \Pi_2 \left[r_{AB_{1\phi}} W^{2*} + r_{AB_{1\phi}} W_2^{*2} + r_{AB_{2\phi}} W_{m2}^{2*} \right]$$

$$- \Pi_5 \cdot \frac{W_m^2}{\rho_m^2 a_i^2} + \Pi_6 \cdot \Delta MF^* \qquad (3\text{-}73)$$

with

Frac 1 = Z_{sat}/L_{gr}
Frac 2 = Z_{core}/L_{gr}
Frac 3 = Z_{ADS4}/L_{gr}

and where Frac 1, Frac 2, and Frac 3 are the fractional elevations from the saturation point in the core to ADS4. The individual pi groups are defined as

$$\Pi_1 = \frac{W_o^2}{\rho_o^2 V_{RCS}} \left(\frac{L}{A} \right)_{ML} \frac{1}{g L_{gr}} \qquad (3\text{-}74)$$

$$\Pi_2 = \frac{W_o^2 \sum R_{ML}}{2 \rho_o^2 A_o^2 g L_{gr}} \qquad (3\text{-}75)$$

$$\Pi_3 = 1 \qquad (3\text{-}76)$$

$$\Pi_5 = \frac{W_o^2}{\rho_o^2 A_o^2 g L_{gf}} \tag{3-77}$$

$$\Pi_{6_a} = \frac{W_o^2 N_{PCH}}{A_o^2 \rho_o^2 L_{gf} g} \left[-2 + \left(\frac{N_p + 1}{N_p} \right) N_{PCH} \right] \tag{3-78}$$

The different pi groups will be calculated and compared for the AP600 plant, the SPES-2 facility, and the OSU test facility to examine the possible scaling distortions.

In order to perform a hand calculation to estimate the steady-state core flow, the integrals in the buoyancy term must be evaluated. Using the approach gives by Todreas (Reference 3-8), and the two-phase portion of the flow to be homogeneous at low pressure, and the core axial power distribution to be uniform, then

$$\rho_m = \alpha\rho_g + (1-\alpha)\rho_\ell \tag{3-79}$$

and

$$\rho_m \cong \frac{\rho_\ell}{1 + x \frac{\rho_\ell}{\rho_g}} \tag{3-80}$$

Equation 3-79 for the mixture density can be used in Equation 3-70 for the buoyancy term with Equation 3-80 for the void fraction. Performing the integration from the saturation location in the core to the core exit gives for the buoyancy term

$$\text{buoyancy} = \frac{g}{g_c} \rho_\ell \ell_{1-4} - \frac{g}{g_c} \rho_\ell \left[L_{core_{sa}} + L_{core_{sa}} \frac{\ell n(1+\gamma)}{\gamma} + \frac{1}{1+\gamma} (Z_{ADS4} - Z_{core}) \right] \tag{3-81}$$

where

$$\gamma = X_{core_{exit}} \left(\frac{\rho_\ell}{\rho_g} \right) \tag{3-82}$$

where x_o is the core exit quality. Equation 3-81 is the same equation as derived by Todreas on pages 83-87 of Reference 3-8.

$$0 = \frac{1}{g_c}\frac{W_o^2}{\rho_o V_{RCS}}\frac{\partial W^*}{\partial t^*}\left(\frac{\ell}{a}\right)_{TANK\ DVI}\left(\frac{\bar{L}}{A}\right)_{ML1\phi} + \frac{1}{g_c}\frac{W_o^2}{\rho_o V_{RCS}}\frac{\partial W_2^*}{\partial t^*}\left(\frac{\ell}{a}\right)_{DC.LP.CORE}\left(\frac{\bar{L}}{A}\right)_{ML1\phi}$$

$$+ \frac{1}{g_c}\frac{W_o^2}{V_{RCS}\rho_o}\frac{\partial W_{m_1}^*}{\partial t^*}\left(\frac{\ell}{a}\right)_{CORE.UP.HL.ADS42\phi}\left(\frac{\bar{L}}{A}\right)_{ML2\phi} + \frac{g}{g_c}\rho L_g\left[1 - \left\{\int_{0}^{Frac\ 1}\rho^* d\xi + \int_{Frac\ 1}^{Frac\ 2}\rho_m^* d\xi + \int_{Frac\ 2}^{Frac\ 3}\rho_m^* d\xi\right\}\right]$$

$$+ \frac{\sum_{loop} R_{AB}\, W_o^2}{\rho_o A_{core}^2}\cdot\frac{r_{AB_{to\,DVI}}\, W^{*2}}{2a_{DVI}^2\, g_c} + \frac{\sum_{loop} R_{AB}\, W_o^2}{\rho_o A_{core}^2}\cdot\frac{r_{AB_{to\_\_}}\, W_2^{*2}}{2a_{\_\_}^2\, g_c}$$

$$+ \frac{\sum_{loop} R_{AB}\, W_o^2}{\rho_o A_{core}^2}\cdot\frac{r_{AB_{2\phi}}\, W_{2m}^{*2}}{2\, a_{2\phi}^2\, g_c} + \frac{1}{g_c}\frac{W_o^2}{\rho_o A_{core}^2}\left[\frac{1}{a_3^2}\frac{\left(W^{*2} - W_2^{*2}\right)}{\rho^*}\right.$$

$$\left. - \frac{1}{a_b^2}\frac{W_1^{*2}}{\rho^*}\right] + \frac{W_o^2}{A_{core}^2\,\rho_o}\frac{N_{PCH}}{g_c}\left\{-2 + \left(\frac{N_P+1}{N_P}\right)N_{PCH}\right\}\Delta\dot{M}F^* \qquad (3\text{-}91)$$

where the different pi groups are defined as

$$\Pi_1 = \frac{W_o^2}{\rho_o^2 V_{RCS}}\left(\frac{\bar{L}}{A}\right)_{ML}\frac{1}{g\, L_g} \qquad (3\text{-}92)$$

$$\Pi_2 = \frac{W_o^2}{2\rho_o^2 A_o^2}\frac{\Sigma R_{AB}}{g\, L_g} \qquad (3\text{-}93)$$

$$\Pi_3 = 1.0 \qquad (3\text{-}94)$$

$$\Pi_5 = \frac{W_o^2}{\rho_o^2 A_o^2\, g\, L_g} \qquad (3\text{-}95)$$

The energy equation can be normalized using the normalization parameters given in Table 3.3-6 as

$$\frac{Cv_o \Delta T_o W_o \rho_o V_T}{Q_o \rho_o V_T} V^*_{1\phi_{RCS}} \frac{d}{dt^*}(\rho^* c_v^* \Delta T^*) + \frac{V_T W_o (\rho_f - \rho_g)(e_g - e_f)}{\rho_o V_T Q_o} V_{2\phi_{RCS}} \frac{d}{dt}(\rho_m^* e_m^*)$$

$$+ \frac{C_{vo} \Delta T_o W_o \rho_o V_T}{Q_o \rho_o V_T} V_s^* \frac{d}{dt^*}(\rho^* C_v^* \Delta T^*) = Q_c^* - \frac{X_{CE} W_o h_o}{Q_o}\left[W^*_{ADS4}\left(h_g^* - h_c^*\right)\right] \quad (3\text{-}103)$$

The pi groups then become

$$\Pi_4 = \frac{C_{p_o} \Delta T_o W_o}{Q_o} \quad (3\text{-}104)$$

$$\Pi_7 = \frac{W_o(\rho_f - \rho_g)(e_g - e_f)}{\rho_o Q_o} \quad (3\text{-}105)$$

$$\Pi_8 = \frac{X_{CE} W_o h_o}{Q_o} \quad (3\text{-}106)$$

The parameter X_{CE} is the quality at the core exit, which is basically the same as the quality at the ADS4 valves.

As mentioned above, the system (RCS and sump) is coupled to the containment, which is the ultimate heat sink in the AP600 design. This coupling will provide a continuous mass flow into the sump at a subcooled enthalpy. The sump energy equation, Equation 3-101, is different than the IRWST equation given in Equation 3-85 since the condensate return from the containment is included for the sump injection phase. If it is assumed that there is perfect mixing in the sump (which is unlikely), the subcooled flow addition will maintain the bulk sump temperature subcooled over the extended transient, which causes the injection flow into the vessel to remain subcooled.

TABLE 3.3-3
NORMALIZATION PARAMETERS FOR ADS1–3 BLOWDOWN

Note: The ADS1–3 ~~velocities~~ through the valves are used to normalize all ~~velocities~~ since they are the highest flow values. Thus: mass flows mass flows

$$\tau = \rho \frac{V_{RCS}}{W_{ADS}}$$

$$W_i^* = \frac{W_i}{W_{ADS}} \; , \; Q^* = \frac{Q}{Q_o}$$

$$P_i^* = \frac{P_i - P_\infty}{P_o - P_\infty} = \frac{P_i - P_\infty}{\Delta P_o}$$

$$e_i^* = \frac{e_i - e_\infty}{\rho_v (T_o - T_\infty)} = \frac{e_i - e_\infty}{\rho_v \, \Delta T_o}$$

$$h^* = \frac{h - h_\infty}{h_o - h_\infty} = \frac{h_i - h_\infty}{C_p \Delta T_o} = T^*$$

$$R^* = R/R_o \; , \; V_{1\phi}^* = \frac{V_{1\phi}}{V_{RCS}} \; , V_{2\phi}^* = \frac{V_{2\phi}}{V_{RCS}}$$

for the energy equation

$$h^* = \frac{h_i}{h_{ADS}}$$

TABLE 3.3-5
NORMALIZATION PARAMETERS FOR IRWST INJECTION

Note: Normalizing velocity is based on the flow through the core.

$$W_i^* = \frac{W_i}{W_{co}} \qquad a_i^* = \frac{A_i}{A_{core}}$$

$$\rho_i^* = \frac{\rho_i}{\rho_o} \, , \; \xi = \frac{z}{L_{ge}}$$

$$\tau = \rho o \frac{V_{RCS}}{W_{co}} \, , \; t^* = \frac{t}{\tau}$$

$$\left(\frac{L}{A}\right)_{ML_{1\phi}} = \left(\frac{L}{A}\right)_{DC} + \left(\frac{L}{A}\right)_{LP} + \left(\frac{L}{A}\right)_{core} + \left(\frac{L}{A}\right)_{DVI}$$

$$\left(\frac{L}{A}\right)_{ML_{2\phi}} = \left(\frac{L}{A}\right)_{core_{2\phi}} + \left(\frac{L}{A}\right)_{UP} + \left(\frac{L}{A}\right)_{HL} + \left(\frac{L}{A}\right)_{ADS4}$$

$$\left(\frac{\ell}{A}\right)_i = \left(\frac{L}{A}\right)_i / \left(\frac{L}{A}\right)_{ML_{1\phi,2\phi}}$$

$$\sum R_{AB} = \sum R_{1\phi} + \sum R_{2\phi}$$

$$r_{AB_{1\phi}} = \left\{ \sum \frac{\left(\frac{f_i \ell_i}{dk_i} + K_i\right)}{A_i^2} \right\} / \sum R_{AB}$$

$$r_{AB_{2\phi}} = \left\{ \sum \frac{\left(\frac{f_i \ell_i}{d_{h_i}} + K_i\right) \phi_{o_i}^2}{A_i^2} \right\} / \sum R_{AB}$$

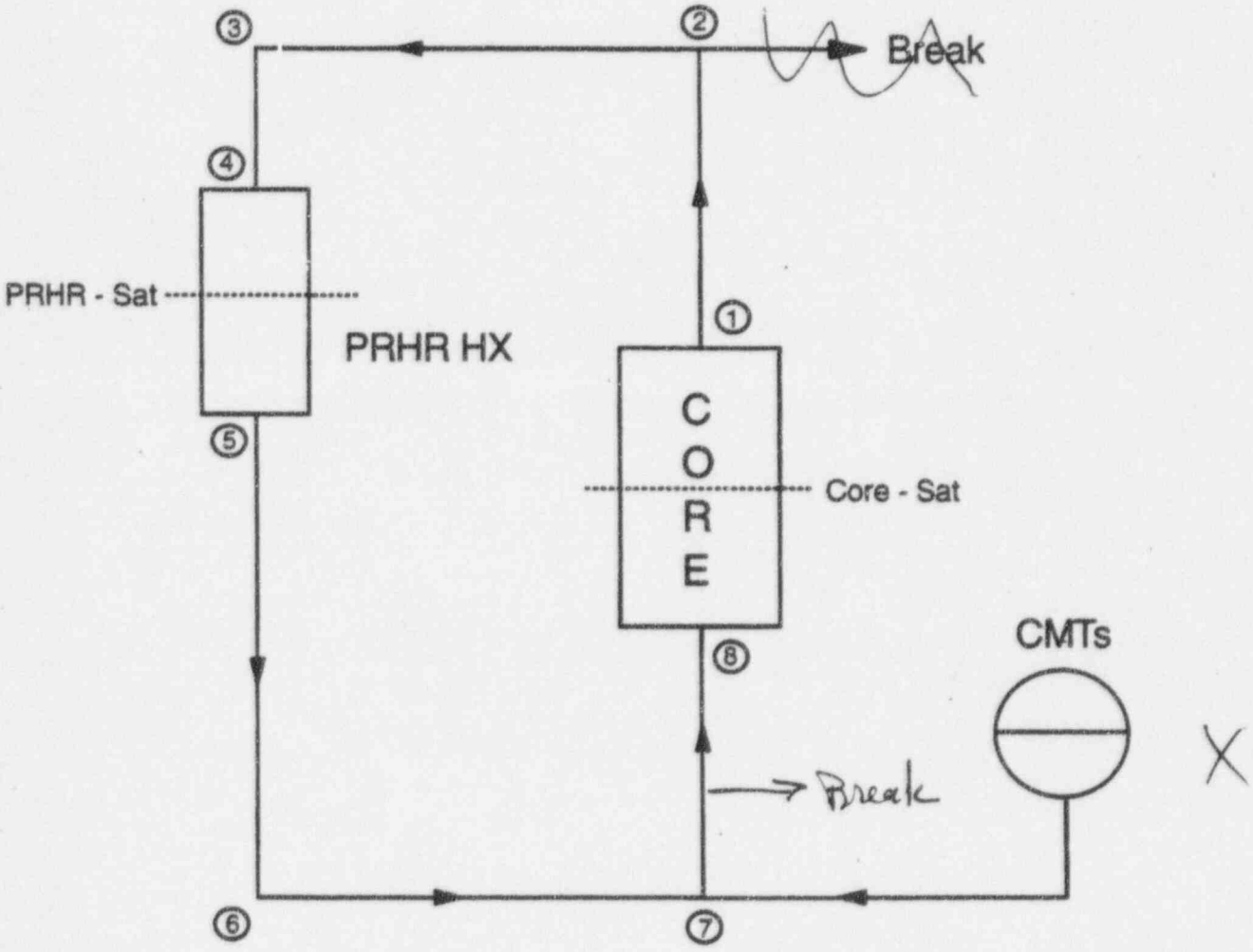

Figure 3.3-3 Natural Circulation – Two Phase

TABLE 3.4-1 PI GROUP SUMMARY FOR SINGLE-PHASE NATURAL CIRCULATION WITH ACTIVE STEAM GENERATOR		
From Momentum Equation		
Π_1	$\dfrac{\left(\dfrac{L_o}{A_o}\right)\dfrac{W_o^2}{\rho_o V_o}}{\beta g \rho_o \Delta Z_o}$	Inertia/Buoyancy
Π_2	$\dfrac{\left(\dfrac{R_o}{A_o^2}\right)\dfrac{W_o^2}{2\rho_o}}{\beta g \rho_o \Delta Z_o}$	Resistance/Buoyancy
Π_3	1.0	Buoyancy/Buoyancy
From Energy Equation		
Π_4	$\dfrac{W_o C_{p_o} \Delta T_o}{Q_o}$	Sensible Heat/Core Power

TABLE 3.4-2
PI GROUP SUMMARY FOR SINGLE-PHASE NATURAL CIRCULATION WITH ACTIVE PRHR

From Momentum Equation		
Π_1	$\dfrac{\left(\dfrac{L_o}{A_o}\right)\dfrac{\rho_o W_o^2}{\rho_o V_o}}{\beta g \rho_o^2 Q_o \Delta Z_o}$	Inertia/Buoyancy
Π_2	$\dfrac{\left(\dfrac{R_o}{A_o^2}\right)\dfrac{\rho_o W_o^2}{2\rho_o}}{\beta g \rho_o Q_o \Delta Z_o}$	Resistance/Buoyancy
Π_3	1	Buoyancy/Buoyancy
From Energy Equation		
Π_4	$\dfrac{W_o C_{p_o} \Delta T_o}{Q_o}$	Sensible Heat/Core Power

TABLE 3.4-3
PI GROUP SUMMARY FOR TWO-PHASE
NATURAL CIRCULATION WITH PRHR ACTIVE

From Momentum Equation		
Π_1	$\dfrac{\left(\dfrac{W_o \left(\dfrac{L}{A}\right)_o}{\tau}\right)}{g \Delta\rho_o \Delta z_o}$	Inertia/Buoyancy
Π_2	$\dfrac{\left(W_o^2 \dfrac{\left(\dfrac{R^2}{A}\right)_o}{2\bar{\rho}_o}\right)}{g \Delta\rho_o \Delta z_o}$	Resistance/Buoyancy
Π_3	1.0	Buoyancy/Buoyancy
Π_{6a}	$\dfrac{\dfrac{W_o^2}{A_o^2 \rho_o}\left[\left(\dfrac{N_p + 1}{N_p}\right) N_{PCH}^2 - 2 N_{PCH}\right]}{g \Delta\rho_o \Delta z_o}$	Momentum Flux Due to Boiling Phase Change/Buoyancy
Π_{6b}	$\dfrac{W_o^2}{A_o^2 P_o} \dfrac{\left[1 + 2 N_p N_{PRHR} - N_p - \left(1 + N_p\right) N_{PRHR}^2\right]}{g \Delta\rho_o \Delta z_o}$	Momentum Flux Due to Condensing Phase Change/Buoyancy
From Energy Equation		
Π_4	$\dfrac{W_o C_{vo} \Delta T_o}{Q_o}$	Sensible Heat/Core Power
Π_7	$\dfrac{W_o \rho_{fg} e_{fg}}{\rho_o Q_o}$	Boiling Heat/Core Power
Π_8	$\dfrac{W_o h_o}{Q_o}$	Convective Heat/Core Power

TABLE 3.4-6
PI GROUP SUMMARY FOR SUMP INJECTION

From Momentum Equation		
Π_1	$\frac{W_o^2}{\rho_o^2 V_{RCS}} \left(\frac{\bar{L}}{A}\right)_{ML} \frac{1}{g L_{gt}}$	Inertia/Buoyancy
Π_2	$\frac{W_o^2}{2\rho_o^2 A_o^2} \frac{\Sigma R_{AB}}{g L_{gt}}$	Resistance/Buoyancy
Π_3	1.0	Buoyancy/Buoyancy
Π_5	$\frac{W_o^2}{\rho_o^2 A_o^2 g L_{gt}}$	Momentum Flux Due to Area Change/Buoyancy
Π_{6a}	$\frac{W_o^2}{A_o^2 \rho_o^2} \frac{N_{PCH}}{g L_{gt}} \left[-2 + \left\{\frac{N_p + 1}{N_p}\right\} N_{PCH}\right]$	Momentum Flux Due to Boiling/Buoyancy
From Energy Equation		
Π_4	$\frac{W_o C_{p_o} \Delta T_o}{Q_o}$	Sensible Heat/Core Power
Π_7	$\frac{W_o \rho_{fg} e_{gf}}{\rho_o Q_o}$	Boiling Heat/Core Power
Π_8	$\frac{W_o h_{\ell_o}}{Q_o}$	Convective Heat/Core Power

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To DIANE JACKSON	From JIM WINTERS
Co. USNRC	Co. WESTINGHOUSE
Dept.	Phone # 412 374 5290
Fax #	Fax #

Winters, James

From: Winters, James
To: Agona,Norma; Alfieri, Beth; Aliberti, Antoinette; Brown, William; Corletti, Mike; Cummins, Ed; Deutsch, Ken; Hutchings, Donald; Israelson, Gordon; Jambusaria, Harshad; Loftus, Mike; Mandava, Rao; Mankowski, Mike; Mazon, Mary; McDermott, Dan; Nydes, Robin; Orr, Richard; Piplica, Gene; Prasad, Narendra; Rarig, Bruce; Rittenberger, RV; Schreiber, Roger; Schulz, Terry; Sherbine, Cathy; Vijuk, Ron; Willis, Jeff; Wills, Mark; Winters, James; Flanders, Ruth; Hellested, Rhonda; Kovach, Linda; Marshall, Anita; Miele, Kellie; Olesky, Cindy; Rulis, Kathy; Ahmed, Hassan X. 001; Bachrach, Uriel X.; Bajorek, Steve M.; Besspiata, John J.; Bhowmick, Dulal C.; Bruschi, Howard X.; Bueter, Tim W. 001; Butler, John C.; Canton, Mike H.; Carlin, Edward L.; Carlson, W R.; Fakhri, Ali I.; Fittante, Randy L.; Forgie, Alex X.; Funkhouser, Bob E.; Gagnon, Andre F.; Garner, Dan C.; Gresham, Jim A.; Grover, James L.; Haag, Cynthia L.; Halac, Kent E.; Hayes, Thomas F.; Hill, Gregory J.; Hochreiter, Larry E.; Holderbaum, Doug F. 001; Johnson, Ed R.; Keaney, Susan L.; Kemper, Robert M.; Kennevan, Pat A.; Kerch, Steve P.; Kester, Douglas A.; Lapay, Bill S.; Lindgren, Donald A.; Lutz, Bob J.; Mahlab, Moshe X.; Mcintyre, Brian A.; Mcnamee, Kevin F.; Meyer, Philip E.; Morgan, Dale G.; Nissley, Mitch E.; Novendstern, Earl H.; Ofstun, Richard P.; Ohkawa, Debra K.; Osterrieder, Robert A.; Peters, Fred E.; Romanko, Kim J. 001; Rosenthal, Philip W.; Rowell, Tim D.; Sancaktar, Selim X. 001; Scherf, Dave E.; Scobel, James H.; Sejvar, James X.; Sickles, Dave L.; Slabaugh, Scott K.; Sloane, Barry D.; Spencer, Daniel R.; Thompson, Craig M.; Tupper, Robert B.; Vijuk, Robert M.; White, Don W.; Woodcock, Joel 001; 'Cummins'; Young, Mike Y.
Subject: RE: Open Item Tracking
Date: Friday, December 06, 1996 1:11PM

As a result of discussions with Richard Orr and Diane Jackson (of NRC) we will be adding one more status category. It is "Audit N" to be used for items where we have completed the work, but the work is contained in documents, such as calculation notes, which the NRC must come here to audit. We believe its use will be limited to the structural area.

Thanks
Jim

From: Winters, James
To: Agona,Norma; Alfieri, Beth; Brown, William; Corletti, Mike; Cummins, Ed; Deutsch, Ken; Hutchings, Donald; Israelson, Gordon; Jambusaria, Harshad; Loftus, Mike; Mandava, Rao; Mankowski, Mike; Mazon, Mary; McDermott, Dan; Nydes, Robin; Orr, Richard; Piplica, Gene; Prasad, Narendra; Rarig, Bruce; Rittenberger, RV; Schreiber, Roger; Schulz, Terry; Sherbine, Cathy; Vijuk, Ron; Willis, Jeff; Wills, Mark; Winters, James; Flanders, Ruth; Hellested, Rhonda; Kovach, Linda; Marshall, Anita; Miele, Kellie; Olesky, Cindy; Rulis, Kathy; Ahmed, Hassan X. 001; Bachrach, Uriel X.; Bajorek, Steve M.; Besspiata, John J.; Bhowmick, Dulal C.; Bruschi, Howard X.; Bueter, Tim W. 001; Butler, John C.; Canton, Mike H.; Carlin, Edward L.; Carlson, W R.; Fakhri, Ali I.; Fittante, Randy L.; Forgie, Alex X.; Funkhouser, Bob E.; Gagnon, Andre F.; Garner, Dan C.; Gresham, Jim A.; Grover, James L.; Haag, Cynthia L.; Halac, Kent E.; Hayes, Thomas F.; Hill, Gregory J.; Hochreiter, Larry E.; Holderbaum, Doug F. 001; Johnson, Ed R.; Keaney, Susan L.; Kemper, Robert M.; Kennevan, Pat A.; Kerch, Steve P.; Kester, Douglas A.; Lapay, Bill S.; Lindgren, Donald A.; Lutz, Bob J.; Mahlab, Moshe X.; Mcintyre, Brian A.; Mcnamee, Kevin F.; Meyer, Philip E.; Morgan, Dale G.; Nissley, Mitch E.; Novendstern, Earl H.; Ofstun, Richard P.; Ohkawa, Debra K.; Osterrieder, Robert A.; Peters, Fred E.; Romanko, Kim J. 001; Rosenthal, Philip W.; Rowell, Tim D.; Sancaktar, Selim X. 001; Scherf, Dave E.; Scobel, James H.; Sejvar, James X.; Sickles, Dave L.; Slabaugh, Scott K.; Sloane, Barry D.; Spencer, Daniel R.; Thompson, Craig M.; Tupper, Robert B.; Vijuk, Robert M.; White, Don W.; Woodcock, Joel 001; Young, Mike Y.
Subject: Open Item Tracking

Date: Tuesday, December 03, 1996 1:53PM

Consistent with our implementation of a combined NRC/W schedule for FDA, we are going to streamline the way we track Open Items to closure. This approach was suggested by DOE and agreed to by NRC. Starting January 1, with first Thursday report on January 2, we will report on the status shown in the NRC Status field of our OITS data base. Westinghouse will retain write access, but NRC can redefine status by phone or fax or letter as they see fit.

A new set of status categories and rules will be in effect. The new, and only, status entries will be:

Action W - There is a new, specific deliverable (RAI response, WCAP, major WCAP revision) owed by Westinghouse. This deliverable is easily identifiable from the information in its OITS item. This status can be used ONLY if a unique, new deliverable can be identified which will contain information to close the Open Item.

Action N - NRC has the action for first review or major rereview or policy decision or other action.

W-Cfrm-N - Westinghouse has submitted a draft or markup of a WCAP or SSAR section to resolve an NRC question or minor comment. This draft or markup can be in an RAI response or fax or letter. A formal revision to the WCAP or SSAR section must be promised. NRC is still reviewing draft or markup to ensure compliance with request.

W-Cfrm-W - NRC has reviewed the draft or markup of the WCAP or SSAR section and has agreed that its issue formally as a revision will satisfy the concern. The remaining Westinghouse action is to issue the change in a formal revision to the WCAP or SSAR section.

Resolved - No further Westinghouse action is required. Remaining NRC action is to issue FSER section, if required.

Closed - No further NRC action is required.

We will have a training session on this stuff in January if enough of you think it is necessary.

We will start out by going backwards. That is, NRC hasn't recognized a move from Action W to Action N for many of the items we consider closed. This means that licensing and project engineers will be required to explain the benefits of timely statusing to their counterparts at NRC. This will focus all of us to identify and close the items that really do stand between us and FDA.

Mike Mankowski will be helping to reset the data base and generate reports in the "new way." I am always available to answer questions.

Thanks

Jim
x5290

AP600 Open Item Tracking System

Project Status Report

DIANE - WE NEED TO FIX THESE. Jim

Selection: [DSER Section] like '9*'

Status as of : [12/6/96]

Open Item Type	Resolution Status (W / NRC)								
	Inactive	Progress	Active	Proposed	Action W	Action N	Resolved	Closed	Total
DSER - OI	0 / 0	0 / 0	0 / 7	0 / 0	0 / 20	0 / 10	1 / 4	49 / 8	50 / 49
DSER - Confirmatory	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
DSER - COL	0 / 0	0 / 0	0 / 0	0 / 0	0 / 2	0 / 2	0 / 1	6 / 1	6 / 6
DSER - OI50	0 / 0	0 / 0	0 / 1	0 / 0	1 / 1	0 / 1	0 / 0	2 / 0	3 / 3
RAI - OI	0 / 0	0 / 0	0 / 1	0 / 0	1 / 26	0 / 8	0 / 6	40 / 0	41 / 41
RAI -Confirmatory	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0	0 / 0
Meeting - OI	0 / 0	0 / 0	0 / 3	0 / 0	5 / 61	0 / 18	1 / 59	155 / 20	161 / 161
Teleconference - OI	0 / 0	0 / 0	0 / 0	0 / 0	0 / 5	0 / 1	0 / 5	11 / 0	11 / 11
Total:	0 / 0	0 / 0	0 / 12	0 / 0	7 / 115	0 / 40	2 / 75	263 / 29	272 / 271

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To DIANE JACKSON	From JIM WINTERS
Co. US NRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	December 6 1996	NAME:	J W Winters
TO:	Bill Huffman	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 11

The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

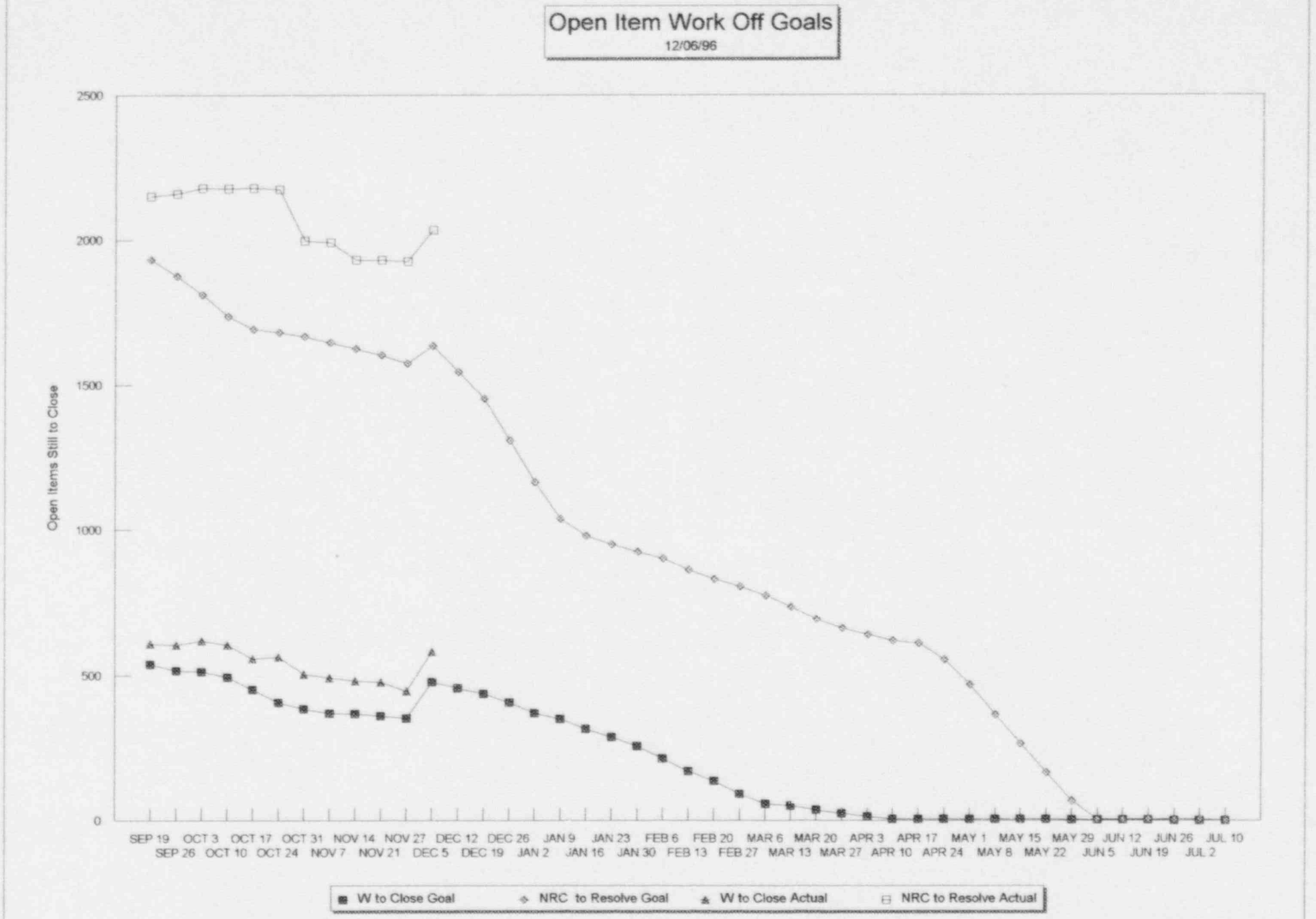
WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Bill,

Here is this weeks report. The blip is caused by 135 new containment items.

Jim


Open Item Work Off Goals
12/06/96
Open Items Still to Close
2500
2000
1500
1000
500
0
SEP 19
SEP 26
OCT 3
OCT 10
OCT 17
OCT 24
OCT 31
NOV 7
NOV 14
NOV 21
NOV 27
DEC 5
DEC 12
DEC 19
DEC 26
JAN 2
JAN 9
JAN 16
JAN 23
JAN 30
FEB 6
FEB 13
FEB 20
FEB 27
MAR 6
MAR 13
MAR 20
MAR 27
APR 3
APR 10
APR 17
APR 24
MAY 1
MAY 8
MAY 15
MAY 22
MAY 29
JUN 5
JUN 12
JUN 19
JUN 26
JUL 2
JUL 10
W to Close Goal
NRC to Resolve Goal
W to Close Actual
NRC to Resolve Actual

W GOAL 12/06/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.3	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.3	9	9	9	9	9	9	9	9	9	9	9	6	3	0	0	0	0	0
3.8.4	6	6	6	6	6	6	6	6	6	6	6	6	6	4	2	0	0	0
3.8.5	12	12	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH. 42	0	8	8	8	8	8	8	6	4	2	0	0	0	0	0	0	0	0
3.9	10	7	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.10	3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0
3.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
6.4	4	4	7	7	7	7	7	7	7	7	7	7	5	3	2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	23	23	23	23	23	23	23	23	36	36	36	36	36	36	36	36	36	36
16.1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
16.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	40	36	32	28	24	20	16	12	8	4	0	0	0	0	0	0	0
LEVEL 1	67	41	57	57	60	60	60	60	60	60	60	60	60	60	50	35	25	15
LEVEL 2/3	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	57	5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	8	8
CHAP 20	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	6	6	6	6	6	7	7	7	7	7	4	2	0	0	0	0	0	0
FCS PRA	19	19	19	19	19	0	0	0	0	1	1	1	0	0	0	0	0	0
ITAAC	18	18	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEST PRG	52	49	42	35	28	21	14	7	0	0	0	0	0	0	0	0	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	40
LOFTRAN		1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	4	0	0	0
H&MT						13	13	13	13	20	20	20	20	20	20	20	20	20
LST						4	3	2	1	0	0	0	0	0	0	0	0	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	0	0	0	0	0	0	0	0	0
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	105	90	80	70	60	11	2	0	0	0	0	135	125	115	105	95	85	75
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WG TOTAL	539	516	513	494	452	407	385	370	369	362	353	478	457	437	407	370	350	317

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	36	36	36	36	36	36	36	25	16	8	0	0	0	0	0	0	0	0
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7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	100	80	60	40	20	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	8	8	8	8	8	8	5	4	2	1	0	0	0	0	0	0	0
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3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	20	20	20	20	4	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
65	55	45	35	25	15	5	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
289	258	215	171	137	91	57	51	36	25	14	5	4	4	4	4	4	4	3

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0

N GOAL 12/06/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	4	4	4	4	4	4	4	4	4	4	3	2	1	0	0	0	0	0
3.6.3	10	10	7	21	21	21	21	18	15	12	9	6	3	0	0	0	0	0
3.7	14	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0	0	0
3.8.3	15	15	15	15	15	15	15	15	15	15	15	10	5	0	0	0	0	0
3.8.4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
3.8.5	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	6	4
3.9	42	42	43	43	43	43	43	36	29	22	15	8	0	0	0	0	0	0
3.10	7	7	7	7	7	7	7	7	7	7	6	5	4	3	2	0	0	0
3.11	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
6.3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6.4	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	19	19	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	167	111	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	35	35	30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	74	74	74	74	74	74	60	48	36	24	12	0	0	0	0	0	0	0
CHAP 15	213	213	213	213	213	213	213	213	228	228	228	228	228	228	228	228	228	228
16.1	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	21	14	7
16.2	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	41	42	42	42	42	42	42	42	42	42	42	42	42	35	21	14	7
LEVEL 1	134	41	57	57	60	60	60	60	60	60	60	60	60	60	60	60	60	60
LEVEL 2/3	137	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	147	266	266	266	266	266	266	269	269	269	269	269	269	269	269	269	269	269
CHAP 20	116	116	116	116	116	116	116	116	116	116	116	116	100	80	60	40	20	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	6	4
FCS PRA	37	37	37	37	0	0	0	0	0	1	1	1	1	1	1	1	1	1
ITAAC	11	11	11	11	11	11	11	11	11	10	8	6	4	2	0	0	0	0
TEST PRG	322	322	322	322	322	322	322	322	307	307	307	270	220	165	110	55	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
LOFTRAN	8	8	8	8	8	8	8	8	8	8	8	6	4	2	0	0	0	0
WCAT	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
H&MT						13	13	13	13	20	20	20	20	20	20	20	20	20
LST						4	4	4	4	4	4	4	4	4	3	2	1	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	0	0	0	0	0	0	0	0	0
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	132	132	132	132	132	93	93	93	93	93	93	228	228	228	177	142	110	95
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG TOTAL	1933	1876	1812	1737	1691	1682	1666	1647	1625	1603	1574	1636	1545	1453	1308	1165	1038	981

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	14	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	59	59	59	59	59	59	59	50	40	30	20	10	0	0	0	0	0	0
4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	228	228	228	228	228	228	228	228	228	228	228	228	182	143	107	70	35	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	60	60	45	35	25	15	7	0	0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	60	40	20
269	269	269	269	269	269	269	269	269	269	269	269	269	269	222	176	132	88	44
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	53	53	53	53	53	53	40	30	20	10	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	20	20	20	20	20	12	8	4	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	12	12	12	12	10	8	6	4	2	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0
85	75	65	55	45	35	25	15	5	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
950	925	903	863	831	806	774	736	694	663	641	621	611	555	469	367	266	167	68

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
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0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
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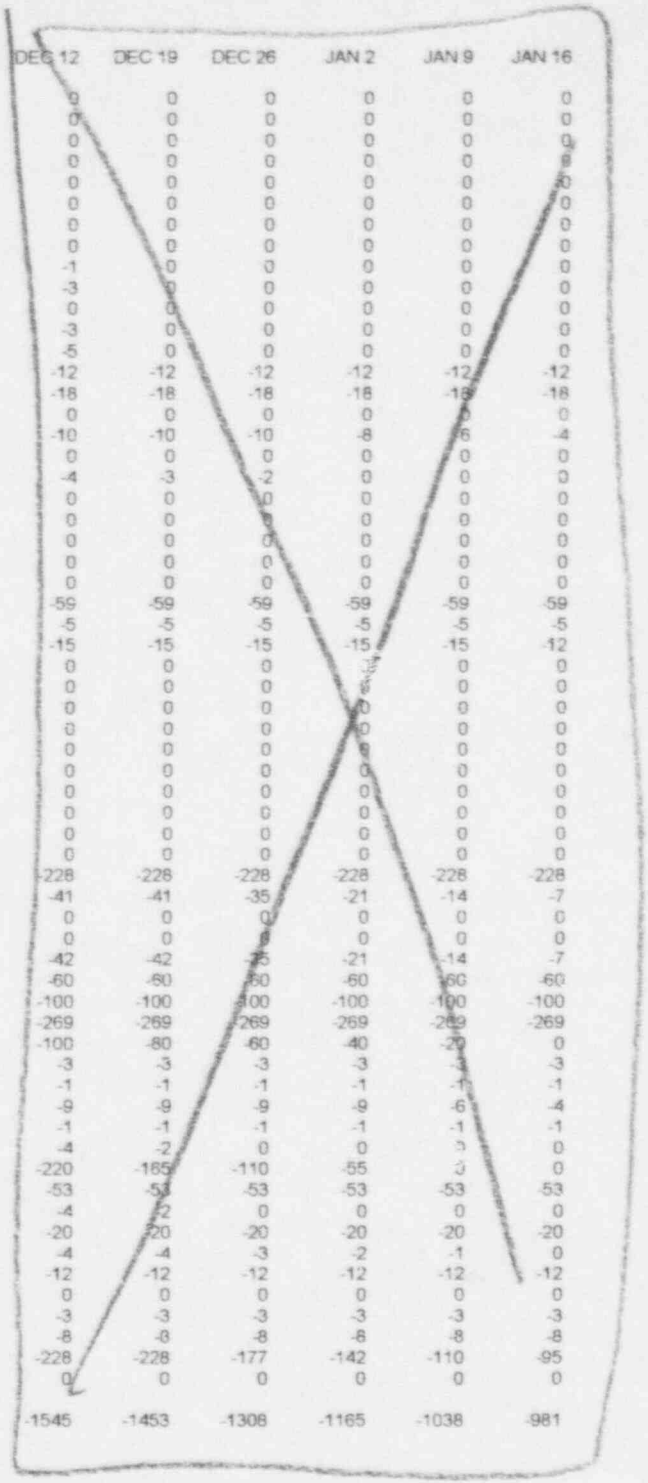
0	0	0	0	0	0
3	3	3	3	3	0
1	1	1	1	1	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
4	4	4	4	4	0

W ACTUAL 12/06/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0	0						
CHAP 2	0	0	2	2	2	2	2	2	2	2	2	2						
3.1	0	0	0	0	0	0	0	0	0	0	0	0						
3.2	2	2	2	2	9	9	9	9	9	9	9	9						
3.3	0	0	0	0	0	0	0	0	0	0	0	0						
3.4	0	0	0	0	0	0	0	0	0	0	0	0						
3.5	0	0	0	0	0	0	0	0	0	0	0	0						
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0						
3.6.2	3	3	3	3	3	3	1	1	1	1	0	0						
3.6.3	7	7	3	7	8	8	8	3	3	3	3	3						
3.7	6	6	4	4	4	4	4	3	3	3	4	4						
3.8.2	2	2	4	4	4	4	4	4	4	4	4	4						
3.8.3	9	12	16	16	16	16	16	16	16	16	16	16						
3.8.4	6	11	11	11	11	11	11	11	11	11	12	12						
3.8.5	12	12	12	12	12	12	12	12	12	12	7	7						
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0						
CH 42	0	8	8	8	8	8	8	8	8	8	8	8						
3.9	12	12	13	13	9	27	21	21	21	21	21	21						
3.10	3	3	3	3	0	2	2	0	1	0	1	0						
3.11	0	6	6	6	6	6	6	6	6	6	6	6						
3.12	2	2	7	7	7	7	5	3	1	2	1	2						
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0						
CHAP 5	0	1	0	0	0	0	0	0	0	0	3	3						
6.1	0	0	0	0	0	0	0	0	0	0	0	0						
6.2	4	7	6	7	2	2	2	2	2	2	2	2						
6.3	1	1	1	1	0	0	0	0	0	0	0	0						
6.4	4	1	6	6	5	5	1	1	1	1	1	1						
6.5	0	0	0	0	0	0	0	0	0	0	0	0						
6.6	0	0	0	0	0	0	0	0	0	0	0	0						
CHAP 7	0	0	0	0	0	0	0	1	1	1	1	5						
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0						
CHAP 9	27	24	16	16	9	3	3	6	6	5	5	5						
CHAP 10	3	3	5	5	5	5	3	3	3	3	3	3						
CHAP 11	1	1	1	1	1	1	1	1	0	0	0	0						
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0						
CHAP 13	6	4	4	4	4	4	3	3	3	3	1	2						
CHAP 14	0	0	0	1	0	0	0	0	0	0	0	0						
CHAP 15	23	22	31	27	24	24	25	24	37	37	38	38						
16.1	0	1	1	1	0	0	0	0	0	0	0	0						
16.2	7	7	8	8	2	1	1	1	1	1	1	1						
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0						
CHAP 18	42	42	42	42	16	16	8	8	8	8	8	3						
LEVEL 1	67	44	60	60	60	60	37	37	37	38	22	22						
LEVEL 2/3	33	100	100	100	100	100	100	89	80	80	80	79						
CHAP 19	57	0	2	2	2	2	1	4	4	4	4	4						
CHAP 20	1	1	1	1	1	1	1	1	1	1	1	2						
SSARREV	3	3	5	5	14	13	23	27	27	27	1	30						
T/H UNC	0	1	1	1	1	1	1	1	1	1		1						
RTNSS	6	8	6	6	8	9	10	10	10	10		9						
FCS PRA	19	0	0	0	0	0	0	0	0	1		1						
ITAAC	18	18	18	18	18	18	18	18	18	18		6						
TEST PRG	52	50	48	48	48	47	48	55	30	29		30						
NOTRUMP	53	53	53	53	53	53	38	38	39	39		39						
LOFTRAN	0	1	1	1	2	2	2	2	3	3		3						
WC/T	8	8	8	8	8	8	8	5	5	2	1	0						
H&MT						13	13	13	13	20	20	20						
LST						4	4	4	4	4	4	4						
SCALING						12	12	12	12	12	12	12						
W&MT						7	7	7	7	0	0	0						
WATER						3	3	3	3	3	3	3						
WGOTHIC	105	105	93	76	77	35	35	31	31	30	30	164						
JNASSIGN	5	12	9	8	-2	-6	-12	-14	-3	-4	-5	-4						
WA TOTAL	610	605	621	605	558	563	505	492	482	477	446	582	0	0	0	0	0	0

N ACTUAL 12/06/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8	8	8	8						
CHAP 2	6	10	10	10	10	10	10	10	10	10	10	10						
3.1	0	0	0	0	0	0		0	0	0	0	0						
3.2	3	3	3	3	10	10	10	10	10	10	10	10						
3.3	0	0	0	0	0	0	0	0	0	0	0	0						
3.4	0	0	0	0	0	0	0	0	0	0	0	0						
3.5	1	1	1	1	1	1	1	1	1	1	1	1						
3.6.1	2	2	2	2	2	2	2	2	2	2	2	2						
3.6.2	4	6	4	4	4	4	4	4	4	4	4	4						
3.6.3	10	21	21	21	22	22	20	16	16	16	15	15						
3.7	14	14	14	14	14	14	14	14	14	14	14	14						
3.8.2	8	12	12	12	12	12	12	12	12	12	11	11						
3.8.3	15	22	22	22	22	22	22	22	22	22	22	22						
3.8.4	12	18	18	18	18	18	18	18	18	18	14	14						
3.8.5	18	18	18	18	18	18	18	18	18	18	18	17						
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0						
CH 42	0	10	10	10	10	10	10	10	10	10	10	10						
3.9	42	41	42	42	39	38	33	33	33	33	33	33						
3.10	7	7	7	7	5	7	7	7	5	5	7	7						
3.11	4	23	23	23	23	23	23	23	21	21	18	13						
3.12	13	13	13	13	13	13	13	9	13	13	13	8						
CHAP 4	2	2	2	2	2	1	1	1	1	1	1	1						
CHAP 5	30	28	27	27	27	27	27	27	27	26	23	21						
6.1	3	3	3	3	3	3	3	3	3	3	3	3						
6.2	59	67	67	68	67	67	67	67	67	66	67	67						
6.3	5	9	9	9	9	9	9	9	9	9	9	9						
6.4	12	11	18	16	15	15	14	14	14	14	14	14						
6.5	1	1	1	1	1	1	1	1	1	1	1	1						
6.6	0	0	0	0	0	0	0	0	0	0	0	0						
CHAP 7	19	16	15	15	15	15	15	16	16	16	16	8						
CHAP 8	11	9	9	9	9	9	9	9	9	9	9	9						
CHAP 9	162	164	161	161	161	161	162	163	163	163	164	163						
CHAP 10	33	32	31	31	31	31	31	31	31	31	31	24						
CHAP 11	46	46	46	46	46	46	46	46	46	46	45	46						
CHAP 12	2	2	2	2	2	2	2	2	2	2	2	2						
CHAP 13	35	35	35	35	35	35	34	34	34	34	30	31						
CHAP 14	74	82	82	82	82	82	82	82	82	82	82	82						
CHAP 15	213	224	227	227	225	225	226	226	181	181	184	184						
16.1	41	102	102	102	102	101	101	101	100	100	103	100						
16.2	1	1	2	1	1	1	1	1	1	1	1	1						
CHAP 17	5	5	5	5	5	5	5	5	5	5	5	5						
CHAP 18	42	48	48	48	48	48	48	48	48	48	48	47						
LEVEL 1	134	44	60	60	60	60	60	60	60	61	61	61						
LEVEL 2/3	137	100	100	100	100	100	101	101	101	101	101	101						
CHAP 19	145	262	264	264	264	264	263	253	252	252	253	252						
CHAP 20	116	117	117	117	117	117	117	117	117	117	117	107						
SSARREV	3	2	4	4	13	12	22	26	26	26	28	30						
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1						
RTNSS	8	10	9	9	11	11	12	13	13	13	13	13						
FCS PRA	37	0	0	0	0	0	0	0	0	1	1	1						
ITAAC	11	11	11	11	7	11	11	11	11	11	12	18						
TEST PRG	322	322	323	323	323	321	143	141	127	127	127	127						
NOTRUMP	53	53	53	53	53	53	53	53	54	54	54	54						
LOFTRAN	5	5	5	5	6	6	6	6	7	7	8	8						
WCAT	8	8	8	8	8	8	8	8	8	8	8	8						
H&MT						13	13	13	13	21	21	21						
LST						4	4	4	4	4	4	4						
SCALING						13	13	13	13	13	13	13						
W&MT						8	8	8	8	0	0	0						
WATER						4	4	4	4	4	4	4						
WGOTHIC	132	131	131	128	128	92	92	92	92	92	92	226						
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36	-36	-39	-32						
NA TOTAL	2152	2161	2180	2178	2179	2175	1997	1991	1932	1932	1927	2034	0	0	0	0	0	0

W DELTA 12/06/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	2	2	2	2	9	9	9	9	9	9	9	9	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	3	3	3	0	1	3	1	1	1	1	0	0	0	0	0	0	0	0
3.6.3	7	7	3	4	6	8	8	3	3	3	3	3	0	0	0	0	0	0
3.7	6	6	4	4	4	4	4	3	3	3	4	4	0	0	0	0	0	0
3.8.2	-1	-1	1	2	3	4	4	4	4	4	4	4	0	0	0	0	0	0
3.8.3	0	3	7	7	7	7	7	7	7	7	7	10	-3	0	0	0	0	0
3.8.4	0	5	5	5	5	5	5	5	5	5	6	6	-6	-4	-2	0	0	0
3.8.5	0	0	0	0	0	0	0	0	0	0	-5	-5	-9	-6	-3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	2	4	6	8	8	0	0	0	0	0	0
3.9	2	5	7	10	9	27	21	21	21	21	21	21	0	0	0	0	0	0
3.10	0	0	0	0	-3	0	1	0	1	0	1	0	0	0	0	0	0	0
3.11	0	6	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0
3.12	2	2	7	7	7	7	5	3	1	2	1	2	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	1	0	0	0	0	0	0	0	0	3	3	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	0	3	2	3	-2	-2	-2	-2	-2	-2	-2	-2	-4	-4	-4	-4	-4	-4
6.3	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0
6.4	0	-3	-1	-1	-2	-2	-6	-6	-6	-6	-6	-6	-5	-3	-2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	1	1	1	1	5	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	27	24	16	16	9	3	3	6	6	5	5	5	0	0	0	0	0	0
CHAP 10	3	3	5	5	5	5	3	3	3	3	3	3	0	0	0	0	0	0
CHAP 11	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	6	4	4	4	4	4	3	3	3	3	1	2	0	0	0	0	0	0
CHAP 14	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	0	-1	8	4	1	1	2	1	1	1	2	2	-36	-36	-36	-36	-36	-35
16.1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0
16.2	7	7	8	8	2	1	1	1	1	1	1	1	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	2	6	10	-12	-8	-12	-8	-4	0	4	3	0	0	0	0	0	0
LEVEL 1	0	3	3	3	0	0	-23	-23	-23	-22	-38	-38	-60	-60	-50	-35	-25	-15
LEVEL 2/3	0	0	0	0	0	0	0	-11	-20	-20	-20	-21	-100	-100	-100	-100	-100	-100
CHAP 19	0	-5	-3	-3	-3	-3	-4	-4	-4	-4	-4	-4	-8	-8	-8	-8	-8	-8
CHAP 20	0	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0
SSARREV	0	0	2	2	11	10	20	24	24	24	27	27	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1
RTNSS	0	2	0	0	2	2	3	3	3	3	6	7	0	0	0	0	0	0
FCS PRA	0	-19	-19	-19	-19	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	0	0	0	0	18	18	18	18	18	18	2	6	0	0	0	0	0	0
TEST PRG	0	1	6	13	20	26	34	48	30	29	31	30	0	0	0	0	0	0
NOTRUMP	0	0	0	0	0	0	-15	-15	-14	-14	-14	-14	-53	-53	-53	-53	-53	-40
LOFTRAN	0	0	0	0	1	1	1	2	3	3	3	3	0	0	0	0	0	0
WG/T	0	0	0	0	0	0	0	-3	-3	-6	-7	-8	-8	-8	-4	0	0	0
H&MT						0	0	0	0	0	0	0	-20	-20	-20	-20	-20	-20
LST						0	1	2	3	4	4	4	0	0	0	0	0	0
SCALING						0	0	0	0	0	0	0	-12	-12	-12	-12	-12	-12
W&MT						0	0	0	0	0	0	0	0	0	0	0	0	0
WATER						0	0	0	0	0	0	0	-3	-3	-3	-3	-3	-3
WGOTHIC	0	15	13	6	17	24	33	31	31	30	30	29	-125	-115	-105	-95	-85	-75
JNASSIGN	5	12	9	8	-2	-6	-12	-14	-3	-4	-5	-4	0	0	0	0	0	0
WD TOTAL	71	77	99	103	108	162	132	136	116	119	98	108	-457	-437	-407	-370	-350	-317

N DELTA 12/06/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8	8	8	8	0	0	0	0	0	0
CHAP 2	0	4	6	8	10	10	10	10	10	10	10	10	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	1	2	3	10	10	10	10	10	10	10	10	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
3.6.1	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0
3.6.2	0	2	0	0	0	0	0	0	0	0	1	2	-1	0	0	0	0	0
3.6.3	0	11	14	0	1	1	-1	-2	-1	4	6	9	-3	0	0	0	0	0
3.7	0	0	7	14	14	14	14	14	14	14	14	14	0	0	0	0	0	0
3.8.2	-4	0	0	0	0	0	0	0	0	0	2	5	-3	0	0	0	0	0
3.8.3	0	7	7	7	7	7	7	7	7	7	7	12	-5	0	0	0	0	0
3.8.4	0	6	6	6	6	6	6	6	6	6	2	2	-12	-12	-12	-12	-12	-12
3.8.5	0	0	0	0	0	0	0	0	0	0	0	-1	-18	-18	-18	-18	-18	-18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-8	-6	-4
3.9	0	-1	-1	-1	-4	-5	-10	-3	4	11	18	25	0	0	0	0	0	0
3.10	0	0	0	0	-2	0	0	0	-2	-2	1	2	-4	-3	-2	0	0	0
3.11	0	19	21	23	23	23	23	23	21	21	18	13	0	0	0	0	0	0
3.12	13	13	13	13	13	13	13	9	13	13	13	8	0	0	0	0	0	0
CHAP 4	0	0	0	2	2	1	1	1	1	1	1	1	0	0	0	0	0	0
CHAP 5	30	28	27	27	27	27	27	27	27	26	23	21	0	0	0	0	0	0
6.1	3	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0
6.2	0	8	8	9	8	8	8	8	8	7	8	8	-59	-59	-59	-59	-59	-59
6.3	0	4	4	4	4	4	4	4	4	4	4	4	-5	-5	-5	-5	-5	-5
6.4	0	-1	3	1	0	0	-1	-1	-1	-1	-1	-1	-15	-15	-15	-15	-15	-12
6.5	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	-3	5	15	15	15	15	16	16	16	16	8	0	0	0	0	0	0
CHAP 8	11	9	9	9	9	9	9	9	9	9	9	9	0	0	0	0	0	0
CHAP 9	-5	53	106	161	161	161	162	163	163	163	164	163	0	0	0	0	0	0
CHAP 10	33	32	31	31	31	31	31	31	31	31	31	24	0	0	0	0	0	0
CHAP 11	46	46	46	46	46	46	46	46	46	46	45	46	0	0	0	0	0	0
CHAP 12	2	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0
CHAP 13	0	0	5	15	25	35	34	34	34	34	30	31	0	0	0	0	0	0
CHAP 14	0	8	8	8	8	8	22	34	46	58	70	82	0	0	0	0	0	0
CHAP 15	0	11	14	14	12	12	13	13	-47	-47	-44	-44	-228	-228	-228	-228	-228	-228
16.1	0	61	61	61	61	60	60	60	59	59	62	59	-41	-41	-35	-21	-14	-7
16.2	0	0	0	-1	-1	-1	1	1	1	1	1	1	0	0	0	0	0	0
CHAP 17	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
CHAP 18	0	6	6	6	6	6	6	6	6	6	6	5	-42	-42	-35	-21	-14	-7
LEVEL 1	0	3	3	3	0	0	0	0	0	1	1	1	-60	-60	-60	-60	-60	-60
LEVEL 2/3	0	0	0	0	0	0	1	1	1	1	1	1	-100	-100	-100	-100	-100	-100
CHAP 19	-2	-4	-2	-2	-2	-2	-3	-16	-17	-17	-16	-17	-269	-269	-269	-269	-269	-269
CHAP 20	0	1	1	1	1	1	1	1	1	1	1	-9	-100	-80	-60	-40	-20	0
SSARREV	0	-1	1	1	10	9	19	23	23	23	25	27	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1
RTNSS	0	2	1	1	3	2	3	4	4	4	4	4	-9	-9	-9	-9	-6	-4
FCS PRA	0	-37	-37	-37	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1
ITAAC	0	0	0	0	-4	0	0	0	0	1	4	12	-4	-2	0	0	0	0
TEST PRG	0	0	1	1	1	-1	-179	-181	-180	-180	-180	-143	-220	-165	-110	-55	0	0
NOTRUMP	0	0	0	0	0	0	0	0	1	1	1	1	-53	-53	-53	-53	-53	-53
LOFTRAN	-3	-3	-3	-3	-2	-2	-2	-2	-1	-1	0	2	-4	-2	0	0	0	0
WC/T	8	8	8	8	8	-5	-5	-5	-5	-12	-12	-12	-20	-20	-20	-20	-20	-20
H&MT	0	0	0	0	0	9	9	9	9	17	17	17	-4	-4	-3	-2	-1	0
LST	0	0	0	0	0	-8	-8	-8	-8	-8	-8	-8	-12	-12	-12	-12	-12	-12
SCALING	0	0	0	0	0	6	6	6	6	13	13	13	0	0	0	0	0	0
W&MT	0	0	0	0	0	5	5	5	5	-3	-3	-3	-3	-3	-3	-3	-3	-3
WATER	-8	-8	-8	-8	-8	-4	-4	-4	-4	-4	-4	-4	-8	-8	-8	-8	-8	-8
WGOTHIC	0	-1	-1	-4	-4	-1	-1	-1	-1	-1	-1	-2	-228	-228	-177	-142	-110	-95
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36	-36	-39	-32	0	0	0	0	0	0
ND TOTAL	219	306	395	464	517	532	374	380	343	365	392	430	-1545	-1453	-1308	-1165	-1038	-981



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To BILL HUFFMAN	From JIM WINTERS
Co US NRC	Co WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

Winters, James

From: Winters, James
To: Corletti, Mike; Israelson, Gordon; Nydes, Robin; Schulz, Terry; Lindgren, Donald A.
Cc: Vijuk, Ron; Winters, James; McIntyre, Brian A.
Subject: My Notes from Today's Call with NRC on Chapter 5
Date: Monday, December 02, 1996 3:01PM

We had two calls in one with NRC on Chapter 5. One covered leak detection in abnormal operation. Lindgren will cover that part. The other covered discussion and status of open items for Sections 5.2.5 and 5.4.11 of the SSAR/DSER. The following are my notes from that part of the call ordered by Open Item number.

157 - We need to tell NRC, explicitly, where we covered the CVS portion of ISLOCA in the SSAR or other document. See responses to RAIs 441.132 and 210.61.
Action - Corletti

158 - How do we really comply with RegGuide 1.45? ABWR put compliance pointers in the sections so it would be obvious to a future reviewer what the method of compliance with 1.45 is. I told them that I would talk to Brian to see if we had any problems with that approach, considering the global precedent it might create.
Action - Winters

164 - same as 157 for different system.
Action - Corletti

NRC took the action to study the action completion times and their justification for the TechSpecs.

166 - Change NRC Status to Closed.

169 - Change the NRC Status to Action W. We need to explicitly tell NRC where in the TechSpec we cover ISLOCA, especially in light of the earlier version of the TechSpec which had RCS pressure boundary valve isolation covered uniquely.
Action - Nydes

170 - Change NRC Status to Closed. This is redundant with 169.

171 - Change NRC Status to Closed. This is redundant with 169.

172 - Change NRC Status to Action W - We need to explicitly explain the action times as they relate to the STS.
Action - Nydes

173 - Change NRC Status to Action W - We need to explicitly explain the action times as they relate to the STS.
Action - Nydes

174 - Change NRC Status to Action N - NRC must review document on comparison to STS.

175 - Change NRC Status to Action N - NRC must review document on comparison to STS.

177 - Leave NRC Status as Action W.

178 - Change NRC Status to Closed.

179 - Change NRC Status to Action N - NRC to review SSAR section 3.8.3.

182 - Change NRC Status to Action W - Give NRC explicit, specific reference to the part of Section 6.3 that answers the question.

Action - Corletti

183 - Change NRC Status to Closed.

184 - Change NRC Status to Action W - Give NRC explicit, specific reference to the part of Section 6.3 that answers the question.
Action - Corletti

185 - Change NRC Status to Closed.

188 - Change NRC Status to Action N.

189 - Change NRC Status to Closed.

This record will be FAXED to Bill Huffman and form the basis for changing OITS.

Thanks
Jim
x5290

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	DECEMBER 2, 1996	NAME:	JIM WINTERS
TO:	TED QUAY	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	US NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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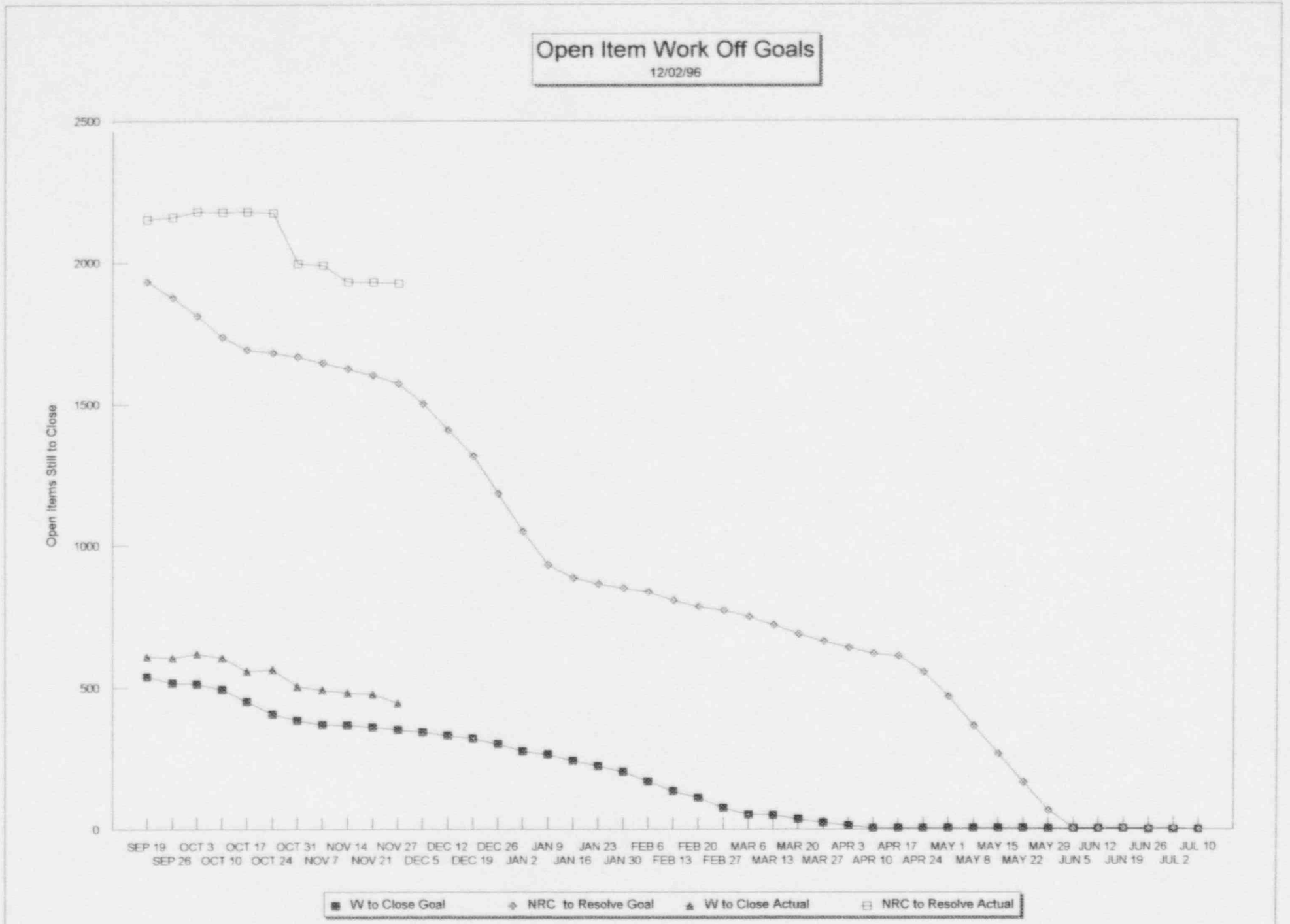
COMMENTS:

TED,

Here's this week's report for last week. Please pass it around to the PM's. THANKS.

Jim


Open Item Work Off Goals
12/02/96
Open Items Still to Close
2500
2000
1500
1000
500
0
SEP 19
SEP 26
OCT 3
OCT 10
OCT 17
OCT 24
OCT 31
NOV 7
NOV 14
NOV 21
NOV 27
DEC 5
DEC 12
DEC 19
DEC 26
JAN 2
JAN 9
JAN 16
JAN 23
JAN 30
FEB 6
FEB 13
FEB 20
FEB 27
MAR 6
MAR 13
MAR 20
MAR 27
APR 3
APR 10
APR 17
APR 24
MAY 1
MAY 8
MAY 15
MAY 22
MAY 29
JUN 5
JUN 12
JUN 19
JUN 26
JUL 2
JUL 10
W to Close Goal
NRC to Resolve Goal
W to Close Actual
NRC to Resolve Actual

W GOAL 12/02/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.3	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.3	9	9	9	9	9	9	9	9	9	9	9	6	3	0	0	0	0	0
3.8.4	6	6	6	6	6	6	6	6	6	6	6	6	6	4	2	0	0	0
3.8.5	12	12	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH. 42	0	8	8	8	8	8	8	6	4	2	0	0	0	0	0	0	0	0
3.9	10	7	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.10	3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0
3.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
6.4	4	4	7	7	7	7	7	7	7	7	7	7	5	3	2	0	0	0
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6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	23	23	23	23	23	23	23	23	36	36	36	36	36	36	36	36	36	36
16.1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
16.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	40	36	32	28	24	20	16	12	8	4	0	0	0	0	0	0	0
LEVEL 1	67	41	57	57	60	60	60	60	60	60	60	60	60	60	50	35	25	15
LEVEL 2/3	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	57	5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	8	8
CHAP 20	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
TAH UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	6	6	6	6	6	7	7	7		7	4	2	0	0	0	0	0	0
PCS PRA	19	19	19	19	19	0	0	0		1	1	1	0	0	0	0	0	0
ITAAC	18	18	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEST PRG	52	49	42	35	28	21	14	7	0	0	0	0	0	0	0	0	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	40
LOFTRAN		1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	4	0	0	0
H&MT						13	13	13	13	20	20	20	20	20	20	20	20	20
LST						4	3	2	1	0	0	0	0	0	0	0	0	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	0	0	0	0	0	0	0	0	0
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	105	90	80	70	60	11	2	0	0	0	0	0	0	0	0	0	0	0
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WG TOTAL	539	516	513	494	452	407	385	370	369	362	353	343	332	322	302	275	265	242

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
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JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
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3	3	3	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0

N GOAL 12/02/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	4	4	4	4	4	4	4	4	4	4	3	2	1	0	0	0	0	0
3.6.3	10	10	7	21	21	21	21	18	15	12	9	6	3	0	0	0	0	0
3.7	14	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0	0	0
3.8.3	15	15	15	15	15	15	15	15	15	15	15	10	5	0	0	0	0	0
3.8.4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
3.8.5	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	6	4
3.9	42	42	43	43	43	43	43	36	29	22	15	8	0	0	0	0	0	0
3.10	7	7	7	7	7	7	7	7	7	7	6	5	4	3	2	0	0	0
3.11	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
6.3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6.4	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	19	19	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	167	111	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	35	35	30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	74	74	74	74	74	74	60	48	36	24	12	0	0	0	0	0	0	0
CHAP 15	213	213	213	213	213	213	213	213	228	228	228	228	228	228	228	228	228	228
16.1	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	21	14	7
16.2	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	21	14	7
LEVEL 1	134	41	57	57	60	60	60	60	60	60	60	60	60	60	60	60	60	60
LEVEL 2/3	137	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	147	266	266	263	266	266	266	269	269	269	269	269	269	269	269	269	269	269
CHAP 20	116	116	116	116	116	116	116	116	116	116	116	116	100	80	60	40	20	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	6	4
FCS PRA	37	37	37	37	0	0	0	0	0	1	1	1	1	1	1	1	1	1
ITAAC	11	11	11	11	11	11	11	11	11	10	8	6	4	2	0	0	0	0
TEST PRG	322	322	322	322	322	322	322	322	307	307	307	270	220	165	110	55	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
LOFTRAN	8	8	8	8	8	8	8	8	8	8	8	6	4	2	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
H&MT						13	13	13	13	20	20	20	20	20	20	20	20	20
LST						4	4	4	4	4	4	4	4	4	3	2	1	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	0	0	0	0	0	0	0	0	0
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	132	132	132	132	132	93	93	93	93	93	93	93	93	93	52	27	5	0
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG TOTAL	1933	1876	1812	1737	1691	1682	1666	1647	1625	1603	1574	1501	1410	1318	1183	1050	933	886

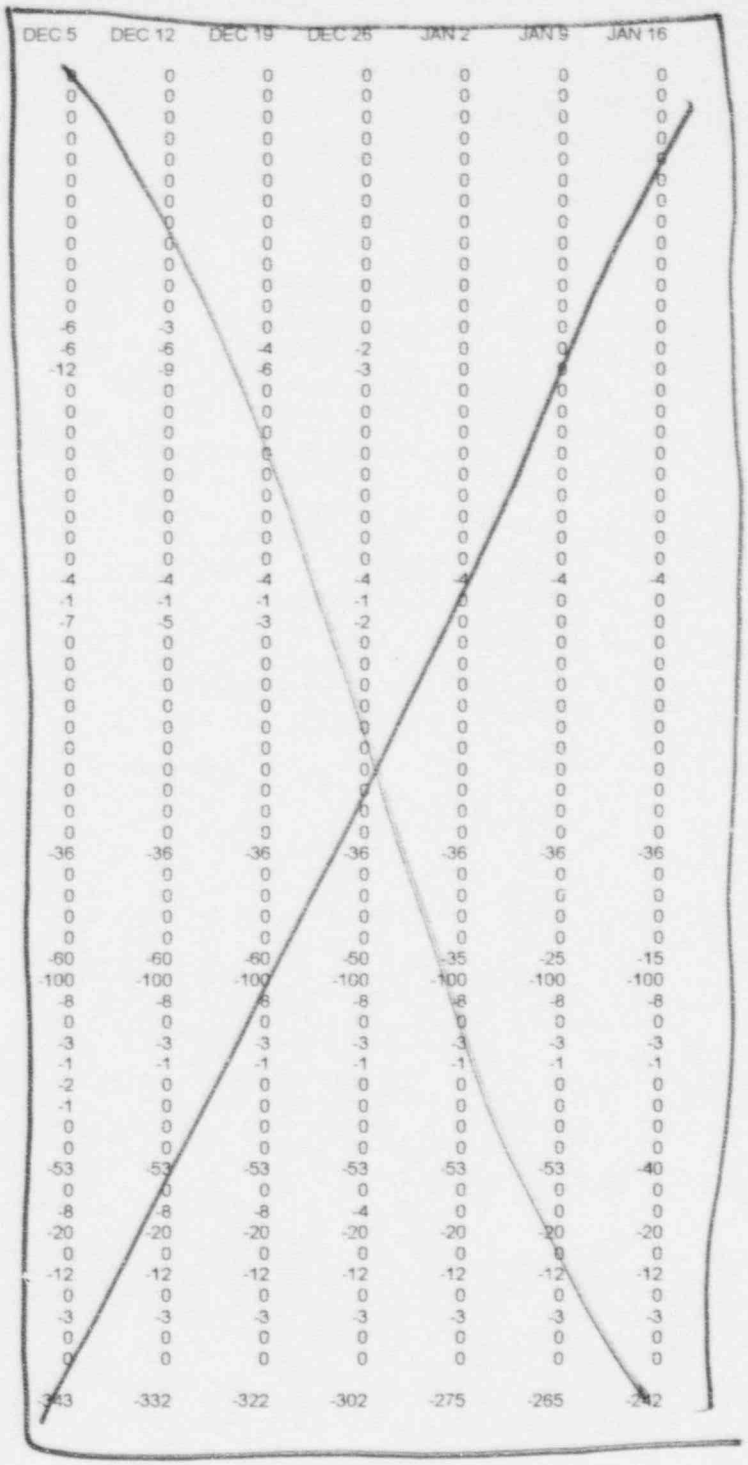
JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	14	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	59	59	59	59	59	59	59	50	40	30	20	10	0	0	0	0	0	0
4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	228	228	228	228	228	228	228	228	228	228	228	228	182	143	107	70	35	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	60	60	45	35	25	15	7	0	0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	60	40	20
269	269	269	269	269	269	269	269	269	269	269	269	269	269	222	176	132	88	44
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	53	53	53	53	53	53	40	30	20	10	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	20	20	20	20	20	12	8	4	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	12	12	12	12	10	8	6	4	2	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
865	850	838	808	786	771	749	721	689	663	641	621	611	555	469	367	266	167	68

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	3	3	0
1	1	1	1	1	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
4	4	4	4	4	0

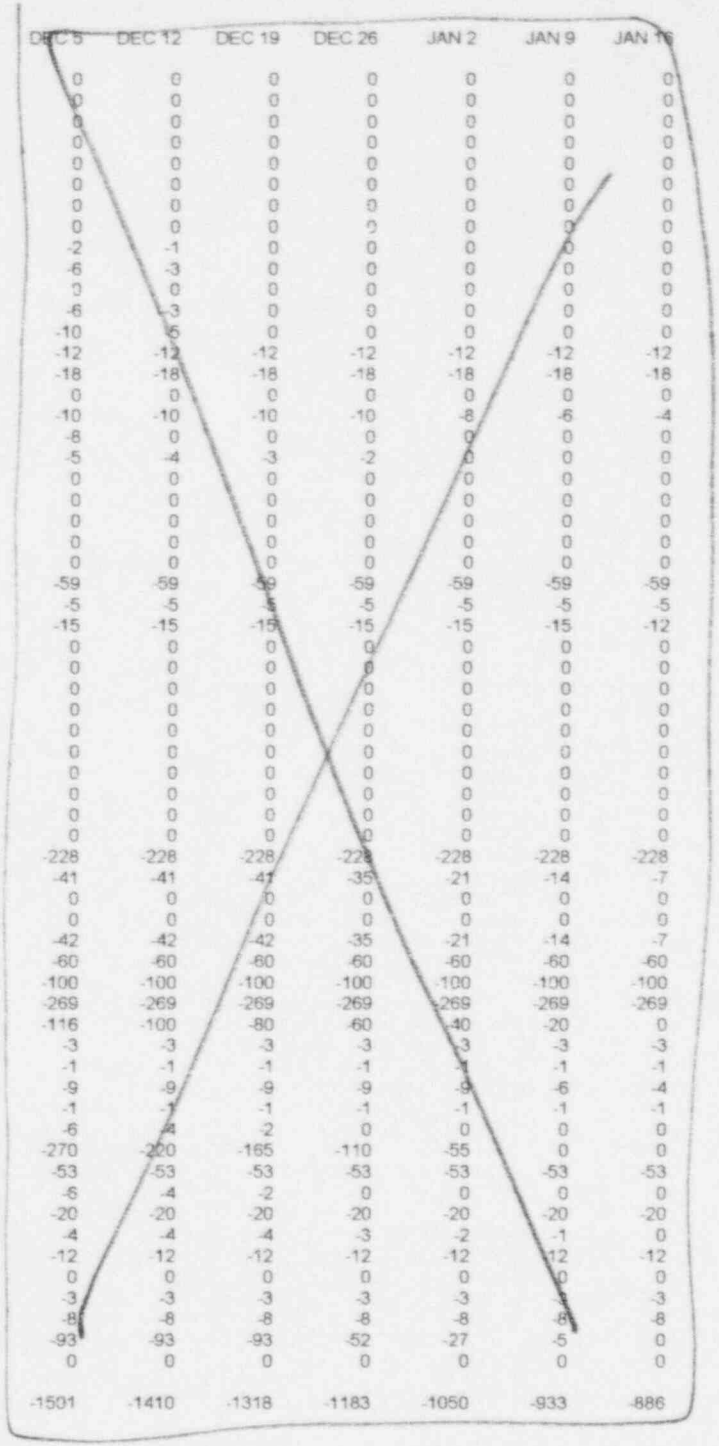
W ACTUAL 12/02/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0							
CHAP 2	0	0	2	2	2	2	2	2	2	2	2							
3.1	0	0	0	0	0	0	0	0	0	0	0							
3.2	2	2	2	2	9	9	9	9	9	9	9							
3.3	0	0	0	0	0	0	0	0	0	0	0							
3.4	0	0	0	0	0	0	0	0	0	0	0							
3.5	0	0	0	0	0	0	0	0	0	0	0							
3.6.1	0	0	0	0	0	0	0	0	0	0	0							
3.6.2	3	3	3	3	3	3	1	1	1	1	0							
3.6.3	7	7	3	7	8	8	8	3	3	3	3							
3.7	6	6	4	4	4	4	4	3	3	3	4							
3.8.2	2	2	4	4	4	4	4	4	4	4	4							
3.8.3	9	12	16	16	16	16	16	16	16	16	16							
3.8.4	6	11	11	11	11	11	11	11	11	11	12							
3.8.5	12	12	12	12	12	12	12	12	12	12	7							
3A &3F	0	0	0	0	0	0	0	0	0	0	0							
CH 42	0	8	8	8	8	8	8	8	8	8	8							
3.9	12	12	13	13	9	27	21	21	21	21	21							
3.10	3	3	3	3	0	2	2	0	1	0	1							
3.11	0	6	6	6	6	6	6	6	6	6	6							
3.12	2	2	7	7	7	7	5	3	1	2	1							
CHAP 4	0	0	0	0	0	0	0	0	0	0	0							
CHAP 5	0	1	0	0	0	0	0	0	0	0	3							
6.1	0	0	0	0	0	0	0	0	0	0	0							
6.2	4	7	6	7	2	2	2	2	2	2	2							
6.3	1	1	1	1	0	0	0	0	0	0	0							
6.4	4	1	6	6	5	5	1	1	1	1	1							
6.5	0	0	0	0	0	0	0	0	0	0	0							
6.6	0	0	0	0	0	0	0	0	0	0	0							
CHAP 7	0	0	0	0	0	0	0	1	1	1	1							
CHAP 8	0	0	0	0	0	0	0	0	0	0	0							
CHAP 9	27	24	16	16	9	3	3	6	6	5	5							
CHAP 10	3	3	5	5	5	5	3	3	3	3	3							
CHAP 11	1	1	1	1	1	1	1	1	0	0	0							
CHAP 12	0	0	0	0	0	0	0	0	0	0	0							
CHAP 13	6	4	4	4	4	4	3	3	3	3	1							
CHAP 14	0	0	0	1	0	0	0	0	0	0	0							
CHAP 15	23	22	31	27	24	24	25	24	37	37	38							
16.1	0	1	1	1	0	0	0	0	0	0	0							
16.2	7	7	8	8	2	1	1	1	1	1	1							
CHAP 17	0	0	0	0	0	0	0	0	0	0	0							
CHAP 18	42	42	42	42	16	16	8	8	8	8	8							
LEVEL 1	67	44	60	60	60	60	37	37	37	38	22							
LEVEL 2/3	33	100	100	100	100	100	100	89	80	80	80							
CHAP 19	57	0	2	2	2	2	1	4	4	4	4							
CHAP 20	1	1	1	1	1	1	1	1	1	1	1							
SSARREV	3	3	5	5	14	13	23	27	27	27	30							
T/H UNC	0	1	1	1	1	1	1	1	1	1	1							
RTNSS	6	8	6	6	8	9	10	10	10	10	10							
FCS PRA	19	0	0	0	0	0	0	0	0	1	1							
ITAAC	18	18	18	18	18	18	18	18	18	18	2							
TEST PRG	52	50	48	48	48	47	48	55	30	29	31							
NOTRUMP	53	53	53	53	53	53	38	38	39	39	39							
LOFTRAN	0	1	1	1	2	2	2	2	3	3	3							
WG/T	8	8	8	8	8	8	8	5	5	2	1							
H&MT						13	13	13	13	20	20							
LST						4	4	4	4	4	4							
SCALING						12	12	12	12	12	12							
W&MT						7	7	7	7	0	0							
WATER						3	3	3	3	3	3							
WGOTHIC	105	105	93	76	77	35	35	31	31	30	30							
JNASSIGN	5	12	9	8	-2	-6	-12	-14	-3	-4	-5							
WA TOTAL	610	605	621	605	558	563	505	492	482	477	446	0	0	0	0	0	0	0

N ACTUAL 12/02/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8	8	8							
CHAP 2	6	10	10	10	10	10	10	10	10	10	10							
3.1	0	0	0	0	0	0		0	0	0	0							
3.2	3	3	3	3	10	10	10	10	10	10	10							
3.3	0	0	0	0	0	0	0	0	0	0	0							
3.4	0	0	0	0	0	0	0	0	0	0	0							
3.5	1	1	1	1	1	1	1	1	1	1	1							
3.6.1	2	2	2	2	2	2	2	2	2	2	2							
3.6.2	4	6	4	4	4	4	4	4	4	4	4							
3.6.3	10	21	21	21	22	22	20	16	16	16	15							
3.7	14	14	14	14	14	14	14	14	14	14	14							
3.8.2	8	12	12	12	12	12	12	12	12	12	11							
3.8.3	15	22	22	22	22	22	22	22	22	22	22							
3.8.4	12	18	18	18	18	18	18	18	18	18	14							
3.8.5	18	18	18	18	18	18	18	18	18	18	18							
3A &3F	0	0	0	0	0	0	0	0	0	0	0							
CH 42	0	10	10	10	10	10	10	10	10	10	10							
3.9	42	41	42	42	39	38	33	33	33	33	33							
3.10	7	7	7	7	5	7	7	7	5	5	7							
3.11	4	23	23	23	23	23	23	23	21	21	18							
3.12	13	13	13	13	13	13	13	9	13	13	13							
CHAP 4	2	2	2	2	2	1	1	1	1	1	1							
CHAP 5	30	28	27	27	27	27	27	27	27	26	23							
6.1	3	3	3	3	3	3	3	3	3	3	3							
6.2	59	67	67	68	67	67	67	67	67	66	67							
6.3	5	9	9	9	9	9	9	9	9	9	9							
6.4	12	11	18	16	15	15	14	14	14	14	14							
6.5	1	1	1	1	1	1	1	1	1	1	1							
6.6	0	0	0	0	0	0	0	0	0	0	0							
CHAP 7	19	16	15	15	15	15	15	16	16	16	16							
CHAP 8	11	9	9	9	9	9	9	9	9	9	9							
CHAP 9	162	164	161	161	161	161	162	163	163	163	164							
CHAP 10	33	32	31	31	31	31	31	31	31	31	31							
CHAP 11	46	46	46	46	46	46	46	46	46	46	45							
CHAP 12	2	2	2	2	2	2	2	2	2	2	2							
CHAP 13	35	35	35	35	35	35	34	34	34	34	30							
CHAP 14	74	82	82	82	82	82	82	82	82	82	82							
CHAP 15	213	224	227	227	225	225	226	226	181	181	184							
16.1	41	102	102	102	102	101	101	101	100	100	103							
16.2	1	1	2	1	1	1	1	1	1	1	1							
CHAP 17	5	5	5	5	5	5	5	5	5	5	5							
CHAP 18	42	48	48	48	48	48	48	48	48	48	48							
LEVEL 1	134	44	60	60	60	60	60	60	60	61	61							
LEVEL 2/3	137	100	100	100	100	100	101	101	101	101	101							
CHAP 19	145	262	264	264	264	264	263	253	252	252	253							
CHAP 20	116	117	117	117	117	117	117	117	117	117	117							
SSARREV	3	2	4	4	13	12	22	26	26	26	28							
T/H UNC	0	1	1	1	1	1	1	1	1	1	1							
RTNSS	8	10	9	9	11	11	12	13	13	13	13							
FCS PRA	37	0	0	0	0	0	0	0	0	1	1							
ITAAC	11	11	11	11	7	11	11	11	11	11	12							
EST PRG	322	322	323	323	323	321	143	141	127	127	127							
NOTRUMP	53	53	53	53	53	53	53	53	54	54	54							
LOFTRAN	5	5	5	5	6	6	6	6	7	7	8							
W&T	8	8	8	8	8	8	8	8	8	8	8							
H&MT						13	13	13	13	21	21							
LST						4	4	4	4	4	4							
SCALING						13	13	13	13	13	13							
W&MT						8	8	8	8	0	0							
WATER						4	4	4	4	4	4							
WGOTHIC	132	131	131	128	128	92	92	92	92	92	92							
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36	-36	-39							
NA TOTAL	2152	2161	2180	2178	2179	2175	1997	1991	1932	1932	1927	0	0	0	0	0	0	0

W DELTA 12/02/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	2	2	2	2	9	9	9	9	9	9	9	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	3	3	3	0	1	3	1	1	1	1	0	0	0	0	0	0	0	0
3.6.3	7	7	3	4	6	8	8	3	3	3	3	0	0	0	0	0	0	0
3.7	6	6	4	4	4	4	4	3	3	3	4	0	0	0	0	0	0	0
3.8.2	-1	-1	1	2	3	4	4	4	4	4	4	0	0	0	0	0	0	0
3.8.3	0	3	7	7	7	7	7	7	7	7	7	-6	-3	0	0	0	0	0
3.8.4	0	5	5	5	5	5	5	5	5	5	6	-6	-6	-4	-2	0	0	0
3.8.5	0	0	0	0	0	0	0	0	0	0	-5	-12	-9	-6	-3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	2	4	6	8	0	0	0	0	0	0	0
3.9	2	5	7	10	9	27	21	21	21	21	21	0	0	0	0	0	0	0
3.10	0	0	0	0	-3	0	1	0	1	0	1	0	0	0	0	0	0	0
3.11	0	6	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0
3.12	2	2	7	7	7	7	5	3	1	2	1	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	1	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	0	3	2	3	-2	-2	-2	-2	-2	-2	-2	-4	-4	-4	-4	-4	-4	-4
6.3	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0
6.4	0	-3	-1	-1	-2	-2	-6	-5	-6	-6	-6	-7	-5	-3	-2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	27	24	16	16	9	3	3	6	6	5	5	0	0	0	0	0	0	0
CHAP 10	3	3	5	5	5	5	3	3	3	3	3	0	0	0	0	0	0	0
CHAP 11	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	6	4	4	4	4	4	3	3	3	3	1	0	0	0	0	0	0	0
CHAP 14	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	0	-1	8	4	1	1	2	1	1	1	2	-36	-36	-36	-36	-36	-36	-36
16.1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0
16.2	7	7	8	8	2	1	1	1	1	1	1	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	2	6	10	-12	-8	-12	-8	-4	0	4	0	0	0	0	0	0	0
LEVEL 1	0	3	3	3	0	0	-23	-23	-23	-22	-38	-60	-60	-60	-50	-35	-25	-15
LEVEL 2/3	0	0	0	0	0	0	0	-11	-20	-20	-20	-100	-100	-100	-100	-100	-100	-100
CHAP 19	0	-5	-3	-3	-3	-3	-4	-4	-4	-4	-4	-8	-8	-8	-8	-8	-8	-8
CHAP 20	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0
SSARREV	0	0	2	2	11	10	20	24	24	24	27	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	0	0	2	2	3	3	3	3	6	-2	0	0	0	0	0	0
FCS PRA	0	-19	-19	-19	-19	0	0	0	0	0	0	-1	0	0	0	0	0	0
ITAAC	0	0	0	0	18	18	18	18	18	18	2	0	0	0	0	0	0	0
TEST PRG	0	1	6	13	20	26	34	48	30	29	31	0	0	0	0	0	0	0
NOTRUMP	0	0	0	0	0	0	-15	-15	-14	-14	-14	-53	-53	-53	-53	-53	-53	-40
LOFTRAN	0	0	0	0	1	1	1	2	3	3	3	0	0	0	0	0	0	0
WC/T	0	0	0	0	0	0	0	-3	-3	-6	-7	-8	-8	-8	-4	0	0	0
H&MT						0	0	0	0	0	0	-20	-20	-20	-20	-20	-20	-20
LST						0	1	2	3	4	4	0	0	0	0	0	0	0
SCALING						0	0	0	0	0	0	-12	-12	-12	-12	-12	-12	-12
W&MT						0	0	0	0	0	0	0	0	0	0	0	0	0
WATER						0	0	0	0	0	0	-3	-3	-3	-3	-3	-3	-3
WGOTHIC	0	15	13	5	17	24	33	31	31	30	30	0	0	0	0	0	0	0
JNASSIGN	5	12	9	8	-2	-5	-12	-14	-3	-4	-5	0	0	0	0	0	0	0
WD TOTAL	71	77	99	103	108	162	132	136	116	119	98	-343	-332	-322	-302	-275	-265	-242



N DELTA 12/02/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8	8	8	0	0	0	0	0	0	0
CHAP 2	0	4	6	8	10	10	10	10	10	10	10	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	1	2	3	10	10	10	10	10	10	10	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
3.6.1	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
3.6.2	0	2	0	0	0	0	0	0	0	0	1	-2	-1	0	0	0	0	0
3.6.3	0	11	14	0	1	1	-1	-2	1	4	6	-6	-3	0	0	0	0	0
3.7	0	0	7	14	14	14	14	14	14	14	14	0	0	0	0	0	0	0
3.8.2	-4	0	0	0	0	0	0	0	0	0	2	-6	-3	0	0	0	0	0
3.8.3	0	7	7	7	7	7	7	7	7	7	7	-10	-5	0	0	0	0	0
3.8.4	0	6	6	6	6	6	6	6	6	6	2	-12	-12	-12	-12	-12	-12	-12
3.8.5	0	0	0	0	0	0	0	0	0	0	0	-18	-18	-18	-18	-18	-18	-18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-8	-6	-4
3.9	0	-1	-1	-1	-4	-5	-10	-3	4	11	18	-8	0	0	0	0	0	0
3.10	0	0	0	0	-2	0	0	0	-2	-2	1	-5	-4	-3	-2	0	0	0
3.11	0	19	21	23	23	23	23	23	21	21	18	0	0	0	0	0	0	0
3.12	13	13	13	13	13	13	13	9	13	13	13	0	0	0	0	0	0	0
CHAP 4	0	0	0	2	2	1	1	1	1	1	1	0	0	0	0	0	0	0
CHAP 5	30	28	27	27	27	27	27	27	27	26	23	0	0	0	0	0	0	0
6.1	3	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0
6.2	0	8	8	9	8	8	8	8	8	7	8	-59	-59	-59	-59	-59	-59	-59
6.3	0	4	4	4	4	4	4	4	4	4	4	-5	-5	-5	-5	-5	-5	-5
6.4	0	-1	3	1	0	0	-1	-1	-1	-1	-1	-15	-15	-15	-15	-15	-15	-12
6.5	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	-3	5	15	15	15	15	16	16	16	16	0	0	0	0	0	0	0
CHAP 8	11	9	9	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0
CHAP 9	-5	53	106	161	161	161	162	163	163	163	164	0	0	0	0	0	0	0
CHAP 10	33	32	31	31	31	31	31	31	31	31	31	0	0	0	0	0	0	0
CHAP 11	46	46	46	46	46	46	46	46	46	46	45	0	0	0	0	0	0	0
CHAP 12	2	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0
CHAP 13	0	0	5	15	25	35	34	34	34	34	30	0	0	0	0	0	0	0
CHAP 14	0	8	8	8	8	8	22	34	46	58	70	0	0	0	0	0	0	0
CHAP 15	0	11	14	14	12	12	13	13	47	47	44	-228	-228	-228	-228	-228	-228	-228
16.1	0	61	61	61	61	60	60	60	59	59	62	-41	-41	-41	-35	-21	-14	-7
16.2	0	0	0	-1	-1	-1	1	1	1	1	1	0	0	0	0	0	0	0
CHAP 17	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0
CHAP 18	0	6	6	6	6	6	6	6	6	6	6	-42	-42	-42	-35	-21	-14	-7
LEVEL 1	0	3	3	3	0	0	0	0	0	1	1	-60	-60	-60	-60	-60	-60	-60
LEVEL 2/3	0	0	0	0	0	0	1	1	1	1	1	-100	-100	-100	-100	-100	-100	-100
CHAP 19	-2	-4	-2	-2	-2	-2	-3	-16	-17	-17	-16	-269	-269	-269	-269	-269	-269	-269
CHAP 20	0	1	1	1	1	1	1	1	1	1	1	-116	-100	-80	-60	-40	-20	0
SSARREV	0	-1	1	1	10	9	19	23	23	23	25	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	1	1	3	2	3	4	4	4	4	-9	-9	-9	-9	-9	-6	-4
FCS PRA	0	-37	-37	-37	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1
ITAAC	0	0	0	0	-4	0	0	0	0	1	4	-6	-4	-2	0	0	0	0
TEST PRG	0	0	1	1	1	-1	-179	-181	-180	-180	-180	-270	-220	-165	-110	-55	0	0
NOTRUMP	0	0	0	0	0	0	0	0	1	1	1	-53	-53	-53	-53	-53	-53	-53
LOFTRAN	-3	-3	-3	-3	-2	-2	-2	-2	-1	-1	0	-6	-4	-2	0	0	0	0
WC/T	8	8	8	8	8	-5	-5	-5	-5	-12	-12	-20	-20	-20	-20	-20	-20	-20
H&MT	0	0	0	0	0	9	9	9	9	17	17	-4	-4	-4	-3	-2	-1	0
LST	0	0	0	0	0	-8	-8	-8	-8	-8	-8	-12	-12	-12	-12	-12	-12	-12
SCALING	0	0	0	0	0	6	6	6	6	13	13	0	0	0	0	0	0	0
W&MT	0	0	0	0	0	5	5	5	5	-3	-3	-3	-3	-3	-3	-3	-3	-3
WATER	-8	-8	-8	-8	-8	-4	-4	-4	-4	-4	-4	-8	-8	-8	-8	-8	-8	-8
WGOTHIC	0	-1	-1	-4	-4	-1	-1	-1	-1	-1	-1	-93	-93	-93	-52	-27	-5	0
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36	-36	-39	0	0	0	0	0	0	0
ND TOTAL	219	306	395	464	517	532	374	380	343	365	392	-1501	-1410	-1318	-1183	-1050	-933	-886



Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	11/27/96	NAME:	JOAN BUTLER
TO:	JOE SEBROSKY	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office:
COMPANY:	NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + |

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COMMENTS:

Joe,

Here's the word change to Chapter 17 as discussed in today's phone call re Chapter 14 (ITP)

Please tell Bill H. you received this. He was asking about it. JB

17.4 Combined License Information Items

The Combined License Applicant will address its design phase Quality Assurance program, as well as its Quality Assurance program for procurement, fabrication, installation, construction, and testing of structures, systems, and components in the facility.

The Combined License applicant will also address its Quality Assurance Program for operations.

17.5 References

1. "Energy Systems Business Unit — Quality Management System," Revision 1.

2. WCAP-8370 Revision 12a, "Energy Systems Business Unit — Power Generation Business Unit Quality Assurance Plan."

3. WCAP-8370/7800, Revision 11A/7A, "Energy Systems Business Unit — Nuclear Fuel Business Unit Quality Assurance Plan."

4. Letter NSD-NRC-96-4670, dated March 26, 1996.

** TX CONFIRMATION REPORT ** AS OF NOV 27 '96 12:05 PAGE.01

AP600 DESIGN CERT

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	STATUS
01	11/27	12:05	813014152002	G3--S	00'54	02	OK

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	11/26/96	NAME:	D. LINDGREN
TO:	D. JACKSON	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: (412)374-4856
COMPANY:	NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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COMMENTS:

THESE ARE THE SECTION 3.7 + 3.8
ACTION W + ACTION N ITEMS AS
OF THE END OF THIS MORNINGS ~~MEETIN~~
PHONE CALL

Don Lindgren

** TX CONFIRMATION REPORT ** AS OF NOV 26 '96 15:30 PAGE.01

AP600 DESIGN CERT

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	STATUS
01	11/26	15:20	#23:NRC	G3--S	10"43	17	OK

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/26/96

Selection: [nrc st code]='Action N' And [DSER Section] like '3.8*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
463	NRR/ECGB	3.8	MTG-OI		Orr, R.	Closed	Action N	
				CONTAINMENT MEETING (3/28&29/94) ACTION ITEM 6 - Reevaluate the need to combine the design wind load with SSE and provide results of evaluation to staff. The staff believes that the design wind load and high wind loads are not extreme conditions in certain coastal sites.				
				Information on wind loads was provided in response to an RAI 220.63 and was added in SSAR Rev 2. Wind does not need to be combined with SSE. Action NRC - The NRC will develop develop a position on combining SSE load with wind and earth quake load for resolution of this issue.				
469	NRR/ECGB	3.8	MTG-OI		Orr, R.	Closed	Action N	
				CONTAINMENT MEETING (3/28&29/94) CONCERN ITEM 4 - Consider the residual stress effect on the tangent modulus for the buckling evaluation of the containment shell				
				This information was provided in revised response to RAI 220.8, Rev 1.				
698	NRR/ECGB	3.8.2.4-20	DSER-OI		Orr/CBI/McDermott	Closed	Action N	
				Westinghouse should provide the leakage estimate through penetrations such as equipment hatches and personnel airlocks.				
				The treatment and the description of the leakage modeling in the severe accident fission product source term analysis is found in chapter 45 of the PRA report, rev. 3. The leakage area in the severe accident is equal to that corresponding to the specified containment leakage of 0.12% at design basis conditions. There is no increase in leakage area caused by containment pressurization. The ultimate pressure capacity for containment function is calculated to occur once the general membrane stresses in the shell reach yield. Thus the general membrane shell remains elastic for pressures up to this ultimate capacity and increased leakage area is not expected due to pressure. See also the response to RAI 220.14 for the equipment hatches.				

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/26/96

Selection: [nrc st code]='Action W' And [DSER Section] like '3.8*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
3252	NRR/ECGB	3.8.5	RAI-OI		Orr / NRCBM	Action W	Action W	
				RAI 230.101 April 5, 1996 letter: In developing bounding pressure distribution for use in the foundation mat design, the soil stiffness parameters used in the analysis should be varied over a range from soft soil to hard rock in determining pressure distribution underneath the foundation mat. In addition, the variation of soil stiffnesses along the basemat length should also be considered in the development of bounding soil pressures.				
				See Open Item 3.8.5-11.				
3253	NRR/ECGB	3.8.5	RAI-OI		Orr / NRCBM	Action W	Action W	
				RAI 230.102 April 5, 1996 letter: Since the basemat is only six feet thick in the auxiliary building area, the effect of large cutouts of pits to the overall design of the basemat could be significant and should be considered.				
				Design calculations are in progress and will be available for review in proposed meeting in September, 1996.				
3254	NRR/ECGB	3.8.5	RAI-OI		Orr / NRCBM	Action W	Action W	
				RAI 230.103 April 5, 1996 letter: Settlements induced by construction procedure and loads may lead to significant locked-in stresses. These settlement induced stresses (both immediate and long-term) and construction loads should be included in the design of the mat foundation.				
				See Open Item 3.8.5-10. Design criteria were discussed in July 11, 1996 meeting and will be incorporated in SSAR.				
3255	NRR/ECGB	3.8.5	RAI-OI		Orr / NRCBM	Action W	Action W	
				RAI 230.104 April 5, 1996 letter: Since normal site investigations may overlook the local soft and/or hard spots existing in the supporting soil foundation, the effect of possible soft/hard spots on the local soil pressure computation should be evaluated and included in the design.				
				See Open Item 3.8.5-11.				
3256	NRR/ECGB	3.8.5	RAI-OI		Orr / NRCBM	Action W	Action W	
				RAI 230.105 April 5, 1996 letter: In order to resist high shear stresses, Westinghouse applied heavy shear reinforcement in the area of the auxiliary building (especially the mat foundation at the junction of the shield and auxiliary buildings). With relative small thickness of foundation mat (the mat foundation at the junction between the shield and auxiliary buildings is 6 ft), the congestion of reinforcement at these locations may cause reduction of the shear resistance of foundation mat. This should be considered in the foundation mat design				
				The shear reinforcement in the basemat is not excessive. Preliminary sizing was discussed in July 11, 1996 meeting. NRC will review final design in proposed meeting in Fall, 1996.				
3375	NRR/ECGB	3.8.4	RAI-OI		Orr	Resolved	Action W	NSD-NRC-96-4732
				RAI 220.103 July 3, 1996 letter - Westinghouse needs to demonstrate that there are sufficient shear connectors to develop full composite action between the precast panel units and the second pour of the shield building roof structure along (a) a sloping surface, a vertical surface at the location of the tension ring at the outer circumference, (b) a vertical surface at the location of the compression ring at the inner cylinder of the roof structure.				
				Action W - The shear connectors on the sloping surface and the vertical surface at the tension ring include adequate shear connectors to develop composite action. The vertical surface at the compression ring can also be assumed to be composite since there is a steel connection across the plane. This information was provided to the NRC in letter NSD-NRC-96-4732, dated May 30, 1996. The supporting calculations will be available at the audit of the shield building roof structure				

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
3246	NRR/ECGB	3.8.2.1	RAI-OI		Orr	Closed	Action W	
				RAI 230.97 April 5, 1996 letter: Westinghouse is requested to include the geometrical properties for the containment vessel elipsodal head in the SSAR				
				Closed - The geometrical information is included in SSAR Rev. 7 subsection 3.8.2.1.1				
3247	NRR/ECGB	3.8.3.4	RAI-OI		Orr	Closed	Action W	
				RAI 230.98 April 5, 1996 letter: Westinghouse should complete the new design of structural modules (using shear studs) and submit the design for staff review.				
				Closed - The structural module design with shear studs and other changes is described in SSAR subsection 3.8.3.1 Rev. 7				
3248	NRR/ECGB	3.8.4	RAI-OI		Orr / Bechtel/ NRCBM	Action W	Action W	
				RAI 230.99 April 5, 1996 letter: In the design of peripheral embedded walls of nuclear island structures, the SSAR states that the embedded exterior walls of seismic Category I structures are designed to resist the worst case lateral earth pressure loads. However, during design review meetings, the staff found that (1) the soil pressure used for the design of walls was much lower than the soil passive pressure used for the NI sliding analysis, and (2) the dynamic soil pressure due to the structure-to-structure interaction effects from the adjacent structures (turbine building, annex buildings, and radwaste building) was not included in the wall design. In addition, for resisting the high shear stress due to the external earth pressure (both static and dynamic), Westinghouse applied heavy shear reinforcement at locations such as the junction between walls and foundation mat. With the relatively small thickness of walls (the wall thickneass at junction with the foundation mat is 3 ft), the congestion of the reinforcement at these locations may cause reduction of shear resistance of walls. Westinghouse should consider these concerns in the final design of these wall:				
				Design of exterior walls will be available for audit in Fall, 1996.				
3249	NRR/ECGB	3.8.4	RAI-OI		Orr / NRCAB	Action W	Action W	
				RAI 230.100(a) April 5, 1996 letter: The following concerns regarding analysis and design of shield building roof structures need to be addressed by Westinghouse: The vertical component of the earthquake ground motion tends to increase (add to) the water pressure against the passive containment cooling system (PCS) tank walls. This pressure should be considered in the design of outer tank wall and the connection between the tank wall and conical roof. However the staff found, during the meeting discussion with Westinghouse, that the design loads for the outer tank wall are very low. Westinghouse should demonstrate and justify the adequacy of these design loads.				
				NRC comment is addressed in updated design calculation which is available for audit in Fall, 1996. Member forces will be compared against Ames Lab independent results.				
3250	NRR/ECGB	3.8.4	RAI-OI		Orr	Resolved	Action W	
				RAI 230.100(b) April 5, 1996 letter: The following concerns regarding analysis and design of shield building roof structures need to be addressed by Westinghouse: Because the slope of the conical shell is relatively shallow (35) degree, a high horizontal component of the in-plane seismic force in the conical shell due to vertical excitation of the tank under an SSE should be expected to apply at the top of the tension ring beam which supports the conical shell. This horizontal force will (1) induce high hoop stress in the tension ring beam and cause the tension ring beam to be significantly cracked, and (2) produce torsional moment on the tension ring beam and bending moment at the top of the supporting columns to the tension ring beam. Westinghouse should consider these two effects in the tension ring beam design.				
				Comments have been reviewed and design considers these issues. Design calculation is available for audit in Fall, 1996.				
3251	NRR/ECGB	3.8.4	RAI-OI		Orr / NRCAB	Resolved	Action W	
				RAI 230.100(c) April 5, 1996 letter: The following concerns regarding analysis and design of shield building roof structures need to be addressed by Westinghouse: The precast pannels of the shield building roof are temporarily supported on the containmeat vessel during construction. Westinghouse's analysis calculated the maximum reaction loads applied on the containment vessel dome and also indicated that these maximum reaction loads would be reduced as, during construction, increasing number of roof panels are installed, and the stiffness of the overall structure increases as each panel is erected. Westinghouse should evaluate the significance (potential of buckling) of these construction loads to the containment vessel dome.				
				Comments have been reviewed and design considers these issues. Design calculation is available for audit in Fall, 1996.				

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
2515	NRR/ECGB	3.8	TEL-OI		Orr	Closed	Action W		
				Telecon June 23, 1995 - Westinghouse should address the issue of fatigue and corrosion of containment bellows. The number of thermal cycles and loading and information included in the design specification should be addressed. The material requirements and effect of corrosion should also be included.					
				Closed - SSAR section 3.8.2.1.5 has been revised to include material and additional information on the displacement cycles. Fatigue is evaluated in accordance with ASME subsection NE as stated in SSAR subsection 3.8.2.1.5. Bellows materials are stainless steel or nickel alloy. Corrosion is not expected; if there is any degradation it would be observed by inservice inspection or testing. The bellows are included in the ISI of the containment vessel as well as the containment leak rate testing.					
2816	NRR/ECGB	3.8.2	RAI-OI		Orr	Closed	Action W	NSD-NRC-96-4641	
				Identify the differences between Revision 0 and Revision 1 of ASME Code Case 284 and evaluate the significance of these differences with respect to the design of the steel containment shell, stiffeners, and penetrations. Submit to the staff for review.					
				2/15/96 Proposed - Evaluation was provided to NRC in DCP/NRC0461					
2928	NRR/ECGB	3.8.2	MTG-OI		Orr	Closed	Action W		
				Revise SSAR section 3.8.2.4.1.1 to include the consideration of the vertical component of earthquake motions.					
				Closed - Included in SSAR revision 7.					
2929	NRR/ECGB	3.8.2	MTG-OI		Orr	Closed	Action W		
				Provide a table similar to SSAR Table 3.7.2-14 to describe the models and associated analysis methods used to analyze each portion of the containment vessel.					
				Closed - Included in SSAR Revision 7, subsection 3.8.2 as Table 3.8.2-4.					
2930	NRR/ECGB	3.8.2	MTG-OI		Orr	Closed	Action W		
				Verify the adequacy of seismic input motions (horizontal and vertical) provided to NRC for confirmatory analysis.					
				Seismic input motions transmsitted to NRC were verified and found adequate.					
3057	NRR/ECGB	3.8.3	MTG-OI		Orr	Closed	Action W	NSD-NRC-96-4732	5/31/96
				Describe how concrete cracking is considered in the thermal analysis and provide justification for the adaquacy of the methods used.					
				Closed - Response provided in item 1 of letter NSD-NRC-96-4732, dated May 30, 1996					
3058	NRR/ECGB	3.8.3	MTG-OI		Orr	Closed	Action W	NSD-NRC-96-4732	5/31/96
				Show the correspondence between the numbers sections in the shield building roof section illustrated in Attachement 2 of the NRC meeting summary dated March 21 and the sections in the ANSALDO analysis Tables 72 to 76 in the Westinghouse presentation material					
				Closed - Response provided in item 2 of letter NSD-NRC-96-4732, dated May 30, 1996					
3059	NRR/ECGB	3.8.3	MTG-OI		ORR	Closed	Action W	NSD-NRC-96-4732	5/31/96
				Provide the masses of the PCS valve room and stair enclosure and their center of gravity locations.					
				Closed - Response provided in item 3 of letter NSD-NRC-96-4732, dated May 30, 1996					
3060	NRR/EMCB	3.8.3	MTG-OI		Orr	Closed	Action W	NSD-NRC-4732	5/31/96
				Provide the loads for the shield building roof structure including the digitized six-degrees-of freedom (three translational and three rotational) raw floor response spectra at elevation 180 ft. corresponding to all design site conditions for the imput loads of the staff's confirmatory analysis.					
				Closed - Response provided in item 4 of letter NSD-NRC-96-4732, dated May 30, 1996					

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
777	NRR/ECGB	3.8.5-19	DSER-OI		Orr / INI/ NRCBM	Closed	Action W	
				Westinghouse should consider in the design the effect of the impact between the foundation mat and the rock, and the load concentration at edges and corners.				
				Magnitude of lift-off is included in documentation of basemat analyses. For soft to medium soil it is about 0.4 inches neglecting effects of side soil. Effect of side soil was evaluated and it was found that side soil almost eliminates liftoff.. For hard rock site the liftoff is proportional to shear modulus which is about 10 times higher. Hence liftoff would be about 0.04 inches neglecting effect of side soils and almost zero with side soils. Therefore impact is not significant. Load concentrations at edges and corners are evaluated in studies of subgrade modulus variations and found to be acceptable. Documentation is available for review in meeting in December.				
778	NRR/ECGB	3.8.5-20	DSER-OI		Orr	Closed	Action W	
				Westinghouse should validate by an independent U.S. reference the reference used for the foundation design.				
				Independent U.S references have been used to validate the subgrade modulus. Action W - Westinghouse will provide technical information and final design calculations for the staff to review in meeting in December.				
779	NRR/ECGB	3.8.5-21	DSER-OI		Orr	Closed	Action W	
				Westinghouse should perform an independent review of the existing design calculations, and should verify the adequacy of INITEC's in-house post-process computer programs used for the foundation mat design. In addition, Westinghouse should perform simplified analyses to confirm the adequacy of the existing design results, and should provide the independent review results for staff review.				
				An independent review of the existing design has been performed. Conclusions have been presented to the NRC in a number of meetings. A report has been written and is available. The in-house postprocess computer programs have ben reviewed and comparisons made against hand calculations. Action W - Westinghouse will provide technical information and final design calculations for the staff to review in meeting in December				
1888	NRR/ECGB	3.8.2.4-1	DSER-COL		Orr	Closed	Action W	
				3.8.2.4-1 The COL applicant should demonstrate that EPAs to be used shall be at least as strong as the AP600 SCV.				
				Discussed in meeting at CBI 8/30 - 31/95. Expand COL information to include demonstration that EPA satisfies Service Level C pressure and temperature requirement. Revise SSAR 3.8.6.1 to change "ultimate capacities" to "ultimate pressure capacities" Closed: additional clarification is requested under RAI 220.102 transmitted by NRC letter dated April 4, 1996.				
2347	NRR/ECGB	3.8.3	MTG-OI		Orr / NRCSM	Action W	Action W	
				Westinghouse should describe the design process used for the structural module design in the SSAR.				
				This is part of the module behavior study in progress as well as the update to the hydrodynamic analyses. See open item 3.8.3.4-10 (item # 729) and item # 2348.				
2348	NRR/ECGB	3.8.3	MTG-OI		Orr / NRCSM	Resolved	Action W	
				Westinghouse should revise Appendix 3F to address questions related to analysis methods and ADS loads for the structural module design.				
				Appendix 3F has been replaced by material in subsection 3.8.3. Detailed questions have been addressed in design calculations which are available for audit in late 1996.				
2349	NRR/ECGB	3.8.3	MTG-OI		Orr / NRCSM	Action W	Action W	
				Westinghouse should complete analysis of a 30 inch wall in the M-1 structural module and make the analysis available for audit.				
				Analyses of 30" wall are being finalized and will be available for audit in late 1996.				

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Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
766	NRR/ECGB	3.8.5-8	DSER-OI		Orr	Closed	Action W	
				Westinghouse should provide the validation package of INITEC's in-house computer codes for review and should verify the adequacy of the post-processed results obtained from these codes.				
				Closed - Validation package is available for review in proposed basemat meeting in December, 1996. Comparisons of results of computer code versus hand calaculation are included in revised documentation. Action W - Westinghouse will provide technical information and final design calculations for the staff to review in meeting in December.				
767	NRR/ECGB	3.8.5-9	DSER-OI		Orr	Closed	Action W	
				Westinghouse should perform additional review of the basemat analysis, and should use simplified analysis (based on ACI 336 procedures) to verify the design adequacy.				
				Westinghouse has performed additional review. Simplified analyses have been performed to verify design adequacy. Action W - Westinghouse will provide technical information and final design calculations for the staff to review in December meeting.				
768	NRR/ECGB	3.8.5-10	DSER-OI		Orr / Bechtel / NRCBM	Action W	Action W	
				Westinghouse should perform additional analyses for construction loads.				
				Analyses have been performed for construction loads as described in SSAR subsection 3.8.5.4.2. The results are used in reinforcement design. As discussed in June, 1996 meeting, Westinghouse will consider effect of long term settlement. NRC requested that the acceptable settlement during construction should be addressed in the SSAR.				
769	NRR/ECGB	3.8.5-11	DSER-OI		Orr / NRCBM	Action W	Action W	
				Westinghouse should perform additional analyses to evaluate the effects of (1) local soft spots of soil foundation, (2) soil springs to the foundation mat design with non-uniform stiffnesses, and (3) soil stiffness corresponding to other soil conditions used in the design.				
				Additional analyses have been performed as described in SSAR subsection 3.8.5.4.2. Action W - Subject was dis ussed during meeting on July 11, 1996. Westinghouse will include in the SSAR site interface criteria related to the local variability of soil stiffness below the foundation. The allowable variability will be included in the design of the basemat. Soil varaibility has been addressed in the documentation available for review in meeting in December. A draft SSAR revision is being prepared.				
770	NRR/ECGB	3.8.5-12	DSER-OI		Orr / NRCBM	Closed	Action W	
				Westinghouse should perform additional analyses and design for the seismic shears and moments due to out-of-phase vibration between the shield building, containment shell, and internal structures.				
				Time history plots of seismic shears and moments of the shield building, containment vessel, and containment internal structures show that the loads are in phase at the time of maximum loads. Westinghouse will complete documentation. Action W - These plots are available for review in proposed meeting in December, 1996.				
775	NRR/ECGB	3.8.5-17	DSER-OI		Orr / NRCBM	Closed	Action W	
				Westinghouse should include the construction loads and the sequence of these loads in the design of the NI foundation mat.				
				Action W - Analyses have been performed for construction loads as described in SSAR subsection 3.8.5.4.2. The results have been used to finalize the reinforcement design. Documentation is available for review during meeting in December				
776	NRR/ECGB	3.8.5-18	DSER-OI		Orr / Bechtel / NRCBM	Closed	Action W	
				Westinghouse should provide overhangs at the end of the NI foundation mat (to ensure adequate rebar development length), or should use special end plates for rebar anchorage, to resist the bending moments from the soil pressure (static and dynamic) against peripheral walls.				
				Overhangs are not required at the end of the NI foundation mat (to ensure adequate rebar development length). Typical details for wall to mat connection are available for review during the meeting in December, 1996				

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
754	NRR/ECGB	3.8.4.4-6	DSER-OI		Orr / NRCSM	Action W	Action W	
				Westinghouse should provide analysis procedures and design details of the spent fuel pool, including fuel racks, the fuel transfer canal, and the new fuel storage area.				
				The spent fuel pool and transfer canal are part of module M20/M21. Additional details will be provided in response to OI 3.8.4.5-1. Analysis and design details of the fuel racks are covered in SSAR Chapter 9. NRC to review design calculations during meeting in January, 1997.				
755	NRR/ECGB	3.8.4.4-7	DSER-OI		Orr / NRCBM	Action W	Action W	
				Westinghouse's list of components provided in the June 30, 1994 response to Q220.83 should include both the IRWST (as part of containment internal structures), and the air baffle (as part of the shield building).				
				The description of the open item is misleading. This open item covers the design reports for the nuclear island basemat, auxiliary building, containment internal structure and the shield building. Design reports for the nuclear island basemat, auxiliary building, containment internal structure and the shield building will be available in meetings in December, 1996 and January 1997.				
757	NRR/ECGB	3.8.4.5-1	DSER-OI		Orr / NRCSM	Action W	Action W	
				Westinghouse should include in Appendix 3A of the SSAR, a description of criteria used for the different configurations and applications if there are differences in the details of these modules.				
				See OI 3.8.4.1-3.				
758	NRR/ECGB	3.8.4.5-2	DSER-OI		Orr / Ritz / NRCSM	Action W	Action W	
				Westinghouse should provide requirements in the SSAR for modular construction in the auxiliary building.				
				Additional information to be added to SSAR as discussed in December, 1994 meeting. See NRC letter dated 7/15/96 - more information needed on quality control				
761	NRR/ECGB	3.8.5-3	DSER-OI		Orr / NRCBM	Closed	Action W	
				Westinghouse should combine the effect of accident pressure with other design loads when designing the foundation mat.				
				Containment pressure is included in revised design of the basemat as described in SSAR subsection 3.8.5.3, Revision 7. Design documentation is available for staff review during meeting in December, 1996.				
762	NRR/ECGB	3.8.5-4	DSER-OI		Orr/BPC	Closed	Action W	NTD-NRC-95-4464
				Westinghouse should acceptably address the issues pertaining to potential overturning and sliding of NI structures due to an SSE.				
				Information requested was provided in response to RAI 220.50 Revision 1. It is incorporated into SSAR Revision 3. Treatment of buoyancy will be clarified in SSAR revision as discussed during meeting in June, 1996.				
763	NRR/ECGB	3.8.5-5	DSER-OI		Orr	Closed	Action W	
				The consideration of only horizontal springs (without including the vertical soil springs) to represent the flexibility of the soil foundation is not acceptable to the staff.				
				There are two issues in this item. The first related to wording in the SSAR was resolved by revision 7 of SSAR subsection 3.8.5.4.1. The second related to inclusion of horizontal springs in areas where the mat lifts off, was addressed by parametric studies which showed that the location of horizontal springs is not significant to the design of the basemat. These studies were discussed in meeting in San Francisco in 1995, and will be available for review by NRC staff in meeting in December, 1996. In latest basemat analyses the horizontal springs are deleted in areas where there is liftoff.				

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730	NRR/ECGB	3.8.3.4-11	DSER-OI		Orr / NRCSM	Resolved	Action W	
				Westinghouse should complete the design of the connection details and provide the design for staff review.				
				Resolved - Selected connection details will be available for review during the structural module audit.				
731	NRR/ECGB	3.8.3.4-12	DSER-OI		Orr / NRCSM	Resolved	Action W	
				Westinghouse should compile design summary reports using the format and attributes described in Appendix C to Section 3.8.4 of the SRP, and should submit the reports for staff review.				
				Resolved - The design report will be available for review during the structural module audit.				
732	NRR/ECGB	3.8.3.4-13	DSER-OI		Orr / NRCSM	Resolved	Action W	
				The staff will perform a structural design audit of the containment internal structures.				
				Resolved - The structural module audit is planned for late 1996				
740	NRR/ECGB	3.8.4.1-3	DSER-OI		Orr / NRCSM	Action W	Action W	
				Westinghouse should provide in the SSAR a description and design details of modules located in the auxiliary building, and should indicate the difference between these modules and those located inside the containment.				
				Additional information as provided in RAI response has been incorporated in SSAR Rev 3 for the structural modules in the fuel handling area and for the finned floors. Further discussion will be added in SSAR Revision once module behavior study is completed (see DSER OIs on section 3.8.3).				
744	NRR/ECGB	3.8.4.2-4	DSER-OI		Orr	Action W	Action W	
				Westinghouse's use of Appendix B to the ACI-349 Code may lead to unconservative results for the design of steel embedments.				
				SSAR Revision 7, section 3.8.4.5.1 provides supplemental criteria. Telecon 11/26/96 - W to clarify the fifth bullet in SSAR.				
745	NRR/ECGB	3.8.4.3-1	DSER-OI		Orr / Prasad	Action W	Action W	NTD-NRC-95-4464
				Westinghouse should acceptably address the issues regarding the consideration of live load in the seismic model.				
				SSAR subsection 3.8.4.3.2.3 has been added and 3.7.2.3.1 has been revised. Meeting 6/15/95 - NRC will provide copy of staff position on combination of live load with SSE. Westinghouse should address this position. NRC position provided in letter of July 18, 1996.				
749	NRR/ECGB	3.8.4.4-1	DSER-OI		Orr/BPC	Closed	Action W	NTD-NRC-95-4464
				Westinghouse should describe in the SSAR which specific combined design load conditions were considered in the design calculation.				
				SSAR Rev 3 Subsection 3.8.4.4.1 includes additonal information on methods of analysis used for each type of load. Meeting 6/15/95 - Provide additional information in the SSAR on the analysis and design models used for the shield building roof. SSAR Subsection 3.8.4.4.1, Revision 7 provides requested information. NRC to review design calculations during meeting in December.				
750	NRR/ECGB	3.8.4.4-2	DSER-OI		Orr/ANSALDO	Closed	Action W	
				Westinghouse should provide for staff review the final design calculation for the shield building and the passive containment cooling water storage tank.				
				Methodology was presented to NRC in meeting on March 2. The final design calculation for the shield building and the passive containment cooling water storage tank were reviewed during the meeting in June 1995. Westinghouse should address comments identified in meeting notes. Comments from meeting have been addressed and were discussed during meeting on March 7, 1996. Closed: remaining issues are tracked under new RAI 230.100 transmitted by letter of April 5, 1996. NRC to review design calculations during meeting in December.				

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/26/96

Selection: [nrc st code]='Action W' And [DSER Section] like '3.8*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
717	NRR/ECGB	3.8.3.3-1	DSER-OI		Orr / Ritz / NRCSM	Action W	Action W	
				Westinghouse should address in the SSAR the entire construction process, from off-site fabrication to final on-site placement.				
				Closed - NRC will review revision 7 of SSAR, subsections 3.8.3 and 3.8.4. See NRC letter dated 7/15/96 - Address use of sections 1.23, 1.25, and 1.28 of AISC N690.				
718	NRR/ECGB	3.8.3.3-2	DSER-OI		Orr / NRCSM	Action W	Action W	
				Westinghouse should address the construction-induced stress following the curing of the concrete.				
				Closed - SSAR subsection 3.8 was revised to address stress in module due to concrete placement. NRC meeting notes 7/1/96 show this as Action W - expand SSAR description of the methods for considering the hydrostatic pressure due to construction in the design.				
719	NRR/ECGB	3.8.3.3-3	DSER-OI		Orr / NRCSM	Resolved	Action W	
				Westinghouse should consider, in the design of the IRWST, the combination of the load from ADS actuation and the SSE load. In addition, the thermal loading should be considered in the internal structural steel frame design.				
				SSAR Revision 7 subsection 3.8.3.3.1 combines ADS and SSE loads. Thermal loading on steel structures is considered as shown in Table 3.8.4-1. Calculations will be reviewed during the structural module audit.				
720	NRR/ECGB	3.8.3.4-1	DSER-OI		Orr	Closed	Action W	NTD-NRC-95-4433
				Westinghouse should correct the inconsistency between the SSAR and RAI responses regarding seismic analysis methods.				
				A table was included in SSAR Rev. 2 clarifying the seismic analysis methods. Staff update provided during 8/17/95 meeting: Table 3.7.2-14 not consistent with Figures 3.7.2-1 through -3. SSAR revised in rev 7.				
722	NRR/ECGB	3.8.3.4-3	DSER-OI		Orr / NRCSM	Resolved	Action W	
				Westinghouse should demonstrate the adequacy of the design based on the assumption of a composite section.				
				Resolved based on information in the module behavior study.				
724	NRR/ECGB	3.8.3.4-5	DSER-OI		Orr	Action W	Action W	
				Westinghouse should use a local 3D solid model of the module geometry and materials as the basis for developing equivalent isotropic shell properties, or for justifying the equations currently used.				
				Closed - This issue was addressed in the module behavior study NRC meeting notes 7/1/96 show this as Action W - to provide the analysis and design results to demonstrate and confirm the adequacy of the method used for design. Design calculations are available for audit.				
725	NRR/ECGB	3.8.3.4-6	DSER-OI		Orr	Action W	Action W	
				Westinghouse should acceptably address issues relating to the seismic modeling of the containment internal structures.				
				Closed - This issue was addressed in the module behavior study NRC meeting notes 7/1/96 show this as Action W - design calculations to be audited by NRC				
729	NRR/ECGB	3.8.3.4-10	DSER-OI		Orr	Action W	Action W	
				Westinghouse should revise the combined stress equations in Section 3A.3.1.3 of the SSAR to reflect realistic action of the walls if biaxial bending is required.				
				Closed - This issue was addressed in the module behavior study NRC meeting notes 7/1/96 show this as Action W - to reexamine interaction equations described in SSAR.				

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/26/96

Selection: [nic. st code]='Action W' And [DSER Section] like '3.8*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
706	NRR/ECGB	3.8.2.4-28	DSER-OI		Orr	Action W	Action W	NTD-NRC-95-4464

Westinghouse should provide in the SSAR an assessment of the pressure capability of the main steamline and main feedwater line bellows, a corresponding failure probability distribution curve, and the impact on the overall cumulative failure probability curve.

The effect of containment pressure on the bellows was addressed in the response to RAI 720.206. This response has been incorporated in SSAR Subsection 3.8.2.4.2.6, Rev 3. The bellows remain intact when the containment shell remains elastic and imposed deflections remain close to the design conditions. Failure of the bellows is assumed to occur once the containment cylinder yields. This mechanism is already included in the failure probability curve for the cylinder.

Discussed in meeting at CBI 8/30 - 31/95. Additional discussion was provided in draft SSAR or PRA report that bellows failure mode and fragility is included in the containment vessel cylinder yield failure mode.
Closed: further review is under new RAI 220.99 transmitted by NRC letter of April 4, 1996

NRC Status Update provided in September 5, 1996 letter:
This staff does not agree that this item is closed or resolved due to RAI# 220.99. Both this open item and OI# 3268 (RAI #220.99) should be tracked individually to resolution. Action Westinghouse

708	NRR/ECGB	3.8.2.4-30	DSER-OI		Orr/CBI	Action W	Action W	

Westinghouse should increase the thickness or use stiffeners (as in the ABB-CE System 80+ design) to meet the ASME Service Level C limits at the ambient temperature of 908 kPa (117 psig) for a 6.7 m (22-ft) diameter hatch, and 763.2 kPa (96 psig) for a 4.9-m (16- ft) diameter hatch.

ASME have confirmed that the method used for the AP600 complies with ASME Code Case N 284.
Westinghouse position is that use of code case N284 satisfies the deterministic Service Level C criteria approved by the commissioners.
NRC staff will review N284, Revision 1 and the ASME confirmation of the AP600 interpretation.
Closed: further review is under new RAI 220.100 transmitted by NRC letter of April 4, 1996
NRC Status Update provided in September 5, 1996 letter:
This staff does not agree that this item is closed or resolved due to AI# 220.100. Both this open item and OI 3269 (RAI #220.100) should be tracked individually to resolution. Action Westinghouse

710	NRR/ECGB	3.8.3.1-1	DSER-OI		Orr / Bechtel / NRCSM	Action W	Action W	

Westinghouse should provide in the SSAR the connection details between "M" modules, and between "M" modules and other types of modules.

Module behavior study is in progress. Design calculations for modules will be updated following completion of the behavior study to include any changes in methodology defined by the study. Additional connection details will be developed during this update and will be included in design data to be audited during a meeting scheduled for September/October of 1996. Typical connection details will be described in SSAR.

711	NRR/ECGB	3.8.3.1-2	DSER-OI		Orr / INI / NRCBM	Action W	Action W	

Westinghouse should demonstrate that the structure will not lift up during an SSE.

Liftoff of the CIS basemat from the containment vessel and NI basemat was included in the nuclear island basemat analyses. Additional analyses of the CIS and NI basemat response to seismic loads is in progress. These analyses will demonstrate that liftoff of one side of the CIS basemat is not significant. Result will be available at structural audit.

716	NRR/ECGB	3.8.3.2-5	DSER-OI		Orr / NRCSM	Action W	Action W	

Westinghouse should justify the use of the ANSI/AISC N690 Standard and the ACI 349 Code for concrete-filled steel M modules.

Closed - This issue is addressed in the module behavior study and included in SSAR Rev. 7. Based on review by the NRC in a meeting on May 22, this issue is closed.
Meeting notes dated July 1, 1996 show this item as still open. Westinghouse to finalize all design criteria for structural modules.

AP600 Open Item Tracking System Database: Executive Summary

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Selection: [nrc st code]='Action W' And [DSER Section] like '3.8*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
678	NRR/ECGB	3.8.2.3-1	DSER-OI		Orr	Action W	Action W		

Westinghouse should acceptably address concerns regarding loads and load combinations used for the containment vessel design.

Design conditions
Design external pressure has been included as a design condition in the SSAR table.
Level A Service Limits
Multiple safety relief valve discharge is not a load case for a PWR. AP600 includes an automatic depressurization system (ADS) which discharges into the IRWST. The IRWST is independent of the containment and ADS does not apply load to the containment.
The external pressure case occurs in combination with a normal operating plant condition as defined by the T0 and R0 loads. The external pressure results from a loss of containment heating in extremely cold weather, as described in SSAR section 6.2.1.1.2. It is a separate event from the LOCA.
Level B Service Limits
There are no load combinations to be evaluated against these limits.
Level C Service Limits
See discussion under Service Level A limits
Operating pressure has been included with SSE in SSAR table
External pressure is not combined with SSE because the two events are independent. The safe shutdown earthquake is assumed to cause loss of all nonsafety systems. As described in SSAR section 6.2.1.1.2, the worst external pressure occurs due to loss of all AC in extreme cold weather. This event leads to a reduction in the internal containment heat loads from the reactor coolant system and other active components, thus resulting in a temperature reduction within the containment and an accompanying pressure reduction. The pressure reduction occurs slowly and the reduction is not significant during the 30 second duration of the seismic event.

There is no requirement to combine the effects of two extreme environmental conditions, such as SSE and cold weather. In addition, even if the SSE were to occur during very cold weather, the pressure reduction would not occur until after the earthquake has finished. Thus, the loads do not occur concurrently and are not combined.
Level D Service Limits
See discussion under Service Level A limits

Action W - Discussed in meeting at CBI 8/30 - 31/95:
Items other than combination of external pressure and SSE were accepted and resolved.
Westinghouse demonstrated, and NRC concurred, that the containment vessel can withstand external pressure of 3 psi plus SSE within Service Level C. This combination is incorporated in SSAR Revision 7.

See NRC letter dated 7/15/66 which requests additional SSAR documentation

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
681	NRR/ECGB	3.8.2.4-3	DSER-OI		Orr /WSL / NRCCV	Action W	Action W	NTD-NRC-95-4464	

Westinghouse should demonstrate that calculated stresses in the vicinity of the concentrated masses based on an equivalent static analysis bound the local stresses computed by the dynamic analysis.

Local dynamic analyses are performed for the responses of the local masses using as input the floor response spectra at the appropriate elevation of the containment vessel. The local analyses have been added in SSAR Rev. 3.
Action W - Discussed at meeting at CBI 8/30 - 31/95:
Westinghouse stated that detailed analyses and design of the
containment vessel in the vicinity of concentrated masses are beyond the scope of the AP600 standard design. However, Westinghouse agreed to expand SSAR Section 3.8.2.4.1.2 to include (1) a detailed description of methods to be used for the dynamic analysis of local masses, (2) the approach for analyzing the local buckling potential of the containment shell adjacent to major penetrations, (3) the stress redistribution criteria to be applied for the shell adjacent to local masses, and (4) methods for
evaluating the compressive strength of the containment shell in the vicinity of major penetrations.

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Date: 11/26/96

Selection: [nrc st code]='W Confrm' And [DSER Section] like '3.7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
663	NRR/ECGB	3.7.2.8-6	DSER-OI		SSARREV	Resolved	W Confrm		

Westinghouse should demonstrate that Category II structures will not be excessively deformed and will not affect the function of any safety-related items during an SSE.

SSAR was revised to show that Category II structures are designed to the same methodology as seismic Category I structures. They will not be excessively deformed and will not affect the function of any safety-related items during an SSE.
Gaps between adjacent buildings are defined in proposed SSAR revision in letter NSD-NRC-96-4854, dated 10/22/96.

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Date: 11/26/96

Selection: [nrc st code]='Action N' And [DSER Section] like '3.7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
660	NRR/ECGB	3.7.2.8-3	DSER-OI		Orr / Lapay / NRCSEIS	Closed	Action N	NTD-NRC-95-4433	
				Westinghouse should provide the basis to classify the single-story portion of the Radwaste Building as non-seismic, and the high bay area of the Radwaste Building as seismic Category II.					
				Seismic classification of buildings adjacent to the nuclear island were revised in SSAR Revision 2. NRC Letter dated July 18, 1996, Westinghouse to demonstrate that collapse / pounding of radwaste building does not jeopardize safety related functions of nuclear island. Demonstrate that collapse of the building does not cause release of radioactive material in excess of limits. Classification of radwaste building is justified in letter NSD-NRC-96-4854, dated 10/22/96. NRC to discuss review in meeting in December, 1996.					
661	NRR/ECGB	3.7.2.8-4	DSER-OI		Orr / SCS	Closed	Action N	NTD-NRC-95-4433	
				Westinghouse should perform a design evaluation to show that the avoidance of collapse during an SSE or margins earthquake relies upon the available ductility reserve.					
				Closed: Seismic classification of buildings adjacent to the nuclear island were revised in SSAR Revision 2. NRC letter of 4/5/96 requested additional justification for use of 60% increase in allowables with AISC S326. This was revised in SSAR revision 7, subsection 3.7.2 to show acceptance criteria for seismic Category II structures to ACI 349 and AISC N690 similar to seismic Category I structures. Minor revisions to SSAR in Revision 9 to clarify that supplemental requirements are also applicable. Action N - review use of commercial codes for seismic Category II plus QA provision required by Reg. Guide 1.26.					
672	NRR/ECGB	3.7.3.2-2	DSER-OI		Orr/Lapay	Closed	Action N	NTD-NRC-95-4464	
				Westinghouse should justify the adequacy of using the equivalent static analysis method for the analysis of subsystems. (steel platforms and frames)					
				Closed - SSAR Subsection 3.7.3.5 revised (Revision 7). Equivalent static analysis will not be used for complex non-rigid steel platforms and frames supporting seismic Category I components.					
1886	NRR/ECGB	3.7.4-1	DSER-COL		Orr	Closed	Action N		
				3.7.4-1 The COL applicant should set the seismic instrumentation system to record at least 3 seconds of pre-event signal.					
				A minimum of 3 seconds was added to the description of the instrumentation in SSAR Rev 2.					
1887	NRR/ECGB	3.7.4-2	DSER-COL		Orr	Closed	Action N		
				3.7.4-2 The COL applicant should specify plant procedures following an earthquake and that the plant procedures following an earthquake are contained in the EPRI reports NP-5930, NP-6695, and TR-100982.					
				SSAR subsection 3.7.5.2 includes this COL item.					

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Selection: [nrc st code]='Action W' And [DSER Section] like '3.7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
1885	NRR/ECGB	3.7.2.16-1	DSER-COL		Orr	Closed	Action W		
				3.7.2.16-1 The COL applicant should perform an analysis and evaluation using the design basis earthquake ground motion and plant specific site conditions to confirm the design adequacy of the AP600 design.					
				SSAR Subsection 2.5 provides the information requirements for the COL applicant. Site-specific soil structure interaction analyses may be performed by the Combined License applicant to demonstrate acceptability by comparison of floor response spectra. These analyses would use the site specific soil conditions and safe shutdown earthquake. The COL applicant requirement is included in SSAR Section 2.5.4.5.5. See open item 3.7.1.1-1 for details and issue B.1 of NRC Letter dated July 18, 1996.					
3245	NRR/ECGB	3.7.2.3	RAI-OI		Orr	Closed	Action W	NSD-NRC-96-4825	
				RAI 230.96 April 5, 1996 letter (page 12). Westinghouse should justify the adequacy of the multi-stick model which was used for generating seismic responses (structural member forces and floor response spectra) for the design of safety-related structures, systems and components.					
				Closed - Response provided in NSD-NRC-96-4825 dated September 25, 1996. Results compare well between the two models.					

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/26/96

Selection: [nrc st code]='Action W' And [DSER Section] like '3.7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
664	NRR/ECGB	3.7.2.8-7	DSER-OI		Orr/Lapay	Closed	Action W	NTD-NRC-95-4464	

Westinghouse should demonstrate and document in the SSAR, for the evaluation of seismic margin, that both seismic Category II and non-seismic structures can withstand an earthquake up to 0.5g without collapse.

Seismic Category II and nonseismic structures are not directly included in the seismic margins assessment. The seismic design of these structures is described in Subsection 3.7.2.8 of the SSAR.
Seismic Category II building structures are designed for the safe shutdown earthquake using the same methods as are used for seismic Category I structures. The seismic Category II structures are the annex building and the stair tower to the shield building roof. These would have seismic capability similar to the seismic Category I structures. Therefore, it is expected that they will withstand an earthquake greater than 0.50g as shown in the seismic margin assessment for the seismic Category I structures in Appendix H of the PRA report, revison 1.
Nonseismic structures are generally analyzed and designed for seismic loads according to the Uniform Building Code requirements for Zone 2A with an Importance Factor of 1.25. The radwaste and turbine buildings are nonseismic structures. As described in Subsection 3.7.2.8, collapse of the radwaste building would not would impair the integrity of the reinforced concrete nuclear island.

As described in Subsection 3.7.2.8, the major structure of the turbine building is separated from the nuclear island by approximately eighteen feet and the seismic design of the turbine building has been upgraded to UBC Zone 3 with an Importance Factor of 1.0 in order to provide margin against collapse during the safe shutdown earthquake. The turbine building may not withstand the 0.5g earthquake without potential local collapse. However, it is separated from the nuclear island, and the equipment essential to safe shutdown is well protected by the thick concrete walls, floors and roof slab of the nuclear island. Hence the failure of the turbine building is not considered in the seismic margins assessment since its collapse is unlikely to impair the integrity of equipment essential to safe shutdown.

Staff update provided during 8/17/95 meeting: Statement made above that "collapse of the radwaste building would not impair the integrity of the reinforced concrete nuclear island" is a judgemental conclusion. Also, floors between T-building and NI may impact the safety of NI.
Discussion will be added in seismic margin report on why collapse of the nonseismic buildings is not expected to result in core damage.
Meeting 7/17-20/96 - Westinghouse evaluation of collapse of turbine building to be reviewed during seismic margins meeting.
Closed in chapter 3.7: transferred to seismic margins review

668	NRR/ECGB	3.7.2.12-1	DSER-OI		Orr/BPC	Proposed	Action W		

Westinghouse should compare the results from the response spectrum analysis method to those of the modal time-history analysis method.

Preliminary comparison of results from the response spectrum analysis method vs. the modal time-history analysis was presented in meeting with NRC on 6/13/95.
Comparison is included in SSAR Revision 7. Editorial changes included in SSAR revision 9.
Reopened in telecon 11/26/96. Westinghouse to provide additional comparisons in meeting in December, 1996.

670	NRR/ECGB	3.7.2.16-1	DSER-OI		Orr/BPC/Lindgren	Closed	Action W	NTD-NRC-95-4433	

Westinghouse should commit in the SSAR that the COL applicant should perform an analysis and evaluation using the design basis earthquake ground motion and plant-specific site conditions to confirm the adequacy of the AP600 design.

SSAR Subsection 2.5.4 provides the information requirements for the COL applicant. Site-specific soil structure interaction analyses may be performed by the Combined License applicant to demonstrate acceptability by comparison of floor response spectra. These analyses would use the site specific soil conditions and safe shutdown earthquake.
NRC Letter dated July 18, 1996, NRC/DCP0525 NRC position is that a minimum 0.3g ground motion should be used at ALL sites regardless of actual conditions. See OI # 3.7.1.1-1.

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/26/96

Selection: [nrc st code]='Action W' And [DSER Section] like '3.7*' Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
623	NRR/ECGB	3.7.1-2	DSER-OI		Orr	Proposed	Action W	NTD-NRC-95-4464
				Westinghouse should revise the SSAR to use acceptable damping values for cable tray and HVAC systems.				
				Reopened in telecon 11/26/96. W position defined in meeting in June, 1996. NRC requires further justification for electrical cable tray damping which is higher than recommended in recent BNL report.				
628	NRR/ECGB	3.7.1.1-1	DSER-OI		Orr / NRCSEIS	Action N	Action W	
				Westinghouse should commit, in the SSAR, that the potential plant site needs to meet the identified bounding parameters.				
				Closed - The shallow soil site (shear wave velocity < 1000 fps, depth to bedrock < 100 ft.) is excluded by the requirement that the shear wave velocity be greater than 1000 fps. Clarification requested in NRC letter of 4/5/96 - Requirement for site specific time history and PSD criteria added in SSAR 2.5.4.5.5 which covers site specific seismic input. Action W - Resolve the differences in NRC and Westinghouse position on site qualification. The shallow soil site (shear wave velocity < 1000 fps, depth to bedrock < 100 ft.) is excluded by the requirement that the shear wave velocity be greater than 1000 fps. COL must demonstrate that site is acceptable for the AP600 design. NRC position is that site specific analysis must use ZPA of 0.3 for SSE. Westinghouse position is that site specific earthquake should be used for sites outside the interface. Discussed at NRC Management meeting 7-17-96 - further technical discussions required to clarify issue. Westinghouse position identified in letter NSD-NRC-96-4804, dated 8/26/96.				
649	NRR/ECGB	3.7.2.4-7	DSER-OI		Orr / BPC / NRCSEIS	Closed	Action W	NSD-NRC-96-4825
				Westinghouse should evaluate the localized through-soil SSI effect of non-seismic Category I structures on the design of embedded seismic Category I walls and the potential for pounding between structures. Additional issues identified in NRC Letter dated July 18, 1996.				
				Results of the 2D SASSI analyses to determine the loads on the exterior walls below grade are included in SSAR Revision 7, Appendix 2C. Potential for pounding between buildings is addressed in SSAR 3.7.2.8. Action W- See meeting notes 7/18/96. Determine the effect of adjacent non-seismic Category I buildings on the lateral pressure on nuclear island walls below grade due to horizontal seismic ground motions; justify that existing analyses adequately represent the gap between the buildings. Closed - Response provided in NSD-NRC-96-4825. Refined model has minimal effect on results. Relative deflections from SASSI 2D analyses are available for review in December, 1996 meeting.				
662	NRR/ECGB	3.7.2.8-5	DSER-OI		Orr / SCS/ NRCSEIS	Proposed	Action W	NTD-NRC-95-4433
				Westinghouse should acceptably address two issues related to the design o. oracing systems of structures adjacent to the NI structures.				
				Westinghouse to provide following additional information on turbine building: Demonstrate that collapse of floors between the turbine building and the nuclear island in event of SSE will not impair safety functions of the nuclear island. NRC Letter dated July 18, 1996 - B.3. Demonstrate that the turbine building frames can withstand with concentric bracing a seismic ground acceleration of 0.3g. Establish post-construction verification of structural members, connections, dimensions, etc to provide that these are consistent with the design. Demonstrate that the turbine building foundation will not pound the nuclear island wall at the foundation level. Classification of turbine building is discussed in letter NSD-NRC-96-4854, dated 10/22/96. Further discussion is needed on behavior of K versus X bracing.				

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	November 26, 1996	NAME:	Jim Winters
TO:	Diane Jackson	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 2

The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane,

Here are markups for Items 3.a and 3.b of your 10/17/96 letter

They will be in SSAR Revision 10 unless we hear from you.

Jim Winters

cc: Winters
McIntyre
Cummins
Ron Vijuk
Hutchings
Lindgren

The system conditions and filters outside air supplied to the containment for compatibility with personnel access during maintenance and refueling operations based on the maximum and minimum outside air normal temperature conditions shown in Chapter 2, Table 2-1, the system supplies air between 50 and 70°F. The air is distributed and conditioned within containment by the Containment Recirculation System (subsection 9.4.6).

Radiologically Controlled Areas Outside Containment

The containment air filtration system provides filtration of exhaust air from the fuel handling area, auxiliary, or annex buildings to maintain these areas at a slightly negative pressure with respect to the adjacent areas when the radiologically controlled area ventilation system detects high airborne radioactivity or pressure differential. Refer to subsection 9.4.3 for a description of the radiologically controlled area ventilation system.

9.4.7.2 System Description

The containment air filtration system is shown in Figure 9.4.7-1.

9.4.7.2.1 General Description

The containment air filtration system consists of two 100 percent capacity supply air handling units, a ducted supply and exhaust air system with containment isolation valves and piping, registers, exhaust fans, filtration units, automatic controls and accessories. The supply air handling units are located in the south air handling equipment room of the annex building at elevation 158′-0″. The supply air handling units are connected to a common air intake plenum, located at the south end of the fan room, and discharge the supply air towards the east containment recirculation cooling system (VCS) recirculation unit to distribute the purge air within the containment. Refer to subsection 9.4.6 for a description of the containment recirculation cooling system.

The exhaust air filtration units are located within the radiologically controlled area of the annex building at elevation 135′-3″ and 146′-3″. The filtration units are connected to a ducted system with isolation dampers to provide HEPA filtration and charcoal adsorption of exhaust air from the containment, fuel handling area, auxiliary and annex buildings. A gaseous radiation monitor is located downstream of the exhaust air filtration units in the common ductwork to provide an alarm if abnormal gaseous releases are detected. The plant vent exhaust flow is monitored for gaseous, particulate and iodine releases to the environment. During containment purge, the exhaust air filtration units satisfy 10 CFR 50 Appendix I guidelines (Reference 20) for offsite releases and meets 10 CFR 20 (Reference 21) allowable effluent concentration limits when combined with gaseous releases from other sources. During conditions of abnormal airborne radioactivity in the fuel handling area, auxiliary and/or annex buildings, the filtration units provide filtered exhaust to minimize unfiltered offsite releases.

The size of the containment air filtration system supply and exhaust air lines that penetrate the containment pressure boundary is 36 inches in diameter. Each penetration includes an inboard and outboard branch connection with 16 inch diameter containment isolation valves that are opened when the containment air filtration system is connected to the containment.

Position indicating lights are provided for automatic dampers.

9.4.9 Turbine Building Ventilation System

The turbine building ventilation system (VTS) operates during startup, shutdown, and normal plant operations. The system maintains acceptable air temperatures in the turbine building for equipment operation and for personnel working in the building.

9.4.9.1 Design Basis

9.4.9.1.1 Safety Design Basis

The turbine building ventilation system serves no safety-related function and therefore has no nuclear safety design basis.

9.4.9.1.2 Power Generation Design Basis

The turbine building ventilation system provides the following functions:

- Maintains acceptable temperatures for equipment operation
- Provides for removal of chemical fumes from the secondary sampling laboratory room, flammable vapors from the lube oil reservoir room and the clean and dirty lube oil storage room, and vitiated air from the toilets
- Provides conditioning air to maintain acceptable temperatures for electrical equipment rooms and personnel work areas
- Maintains the following ~~minimum and maximum~~ temperature ~~conditions~~ is based on the maximum and minimum normal outside air temperature conditions shown in Chapter 2, Table 2-1:
  - General area (operating deck, intermediate levels, and base slab) ..... 50-105°F
  - Auxiliary boiler room ..... 50-105°F
  - Fire pump rooms (diesel and motor driven) ..... 50-105°F
  - Electrical equipment rooms (switchgear room 1, switchgear room 2, electrical equipment room, and variable frequency drive [VFD] power converter room) ..... 50-105°F
  - Personnel work areas (Secondary sampling laboratory, office space at elevation 149′-0″ and elevation 171′-0″) ..... 73-78°F

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DATE:	November 25, 1996	NAME:	Jim Winters
TO:	Bill Huffman	LOCATION:	ENERGY CENTER - EAST
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Bill Huffman

Here's the stuff on Intermediate Range. Sorry for the miss on the first round. Please call to confirm receipt.

Thanks.

Jim W.

Change 3: Neutron Flux Instrumentation Design Change

Introduction

The documents affected by this proposed change are:

SSAR Section 4.4.6.3, Revision 3; Section 7.1.2.8.2, Revision 5 and Table 7.5-1 (Sheet 1 of 12), Revision 7

Marked-up copies of each of these document are attached.

FOAKE PMS-J7-001, Revision 0, Protection and Safety Monitoring System (PMS) System Specification Document

Change Description

It proposed to change the Intermediate Range Neutron Flux detector from a compensated ionization chamber to a pulse fission chamber.

Change Justification

The Intermediate Range Neutron Flux channels provide neutron flux data to the Post Accident Monitoring System and therefore must operate in post accident environments, including high γ dose rates. Under these high γ dose conditions, the compensated ionization chamber can not discriminate the neutron flux data from the γ radiation. Pulse fission chambers provides high discrimination and acceptable performance for measurement of intermediate range neutron flux. Pulse fission chambers have been used in measurement of intermediate range neutron flux at San Onofre Unit 1. In addition, the secondary protection system at Sizewell B incorporates a pulse fission chamber bases neutron flux channel for reactor trip initiation and the generation of interlock signals as well as for post fault monitoring.

A description of the process sensors is included as part of the description of each process system provided in other chapters. The process variables measured by the protection and safety monitoring system are listed in Sections 7.2, 7.3, and 7.5.

7.1.2.8.2 Nuclear Instrumentation Detectors

Three types of neutron detectors are used to monitor the leakage neutron flux from a completely shutdown condition to 120 percent of full power. The power range channels are capable of measuring overpower excursions up to 200 percent of full power.

The lowest range (source range) covers six decades of leakage neutron flux. The lowest observed count rate depends on the strength of the neutron sources in the core and the core multiplication associated with the shutdown reactivity. This generally is greater than two counts per second. The next range (intermediate range) covers eight decades. Detectors and instrumentation are chosen to provide overlap between the higher portion of the source range and the lower portion of the intermediate range. The highest range of instrumentation (power range) covers approximately two decades of the total instrumentation range. This is a linear range that overlaps the higher portion of the intermediate range. The neutron detectors are installed in tubes located around the reactor vessel in the primary shield. Detector types for these three ranges are:

- Source range - proportional counter
- Intermediate range - pulse fission ~~compensated ionization~~ chamber
- Power range - uncompensated ionization chamber

7.1.2.8.3 Equipment Status Inputs

Some inputs to the protection system are not measurements of process or nuclear variables, but are discrete indications of the status of certain equipment. Examples include manual switch positions, contact status inputs, and indications provided by valve limit switches.

7.1.2.9 Intercabinet Communications

Integrated Protection Cabinet to Integrated Protection Cabinet

Isolated fiber-optic data links are used for these communications links. The global trip subsystem in each integrated protection cabinet controls this communication link. These are standard one-way (simplex) communications used to transmit bistable trip status between integrated protection cabinets for use in two-out-of-four reactor trip logic.

Integrated Protection Cabinet to Engineered Safety Features Actuation Cabinet

Isolated fiber-optic data links in each integrated protection cabinet transmit bistable trip outputs to the engineered safety features actuation cabinet for use in engineered safety features actuation logic. These data links are one-way links that only transmit data to the engineered safety features actuation cabinets.

There are eight radial locations containing a total of twelve neutron flux detectors installed around the reactor between the vessel and the primary shield. Four proportional counters for the source range are located at the highest fluence portions of the core containing the primary startup sources at an elevation approximately one-fourth of the core height. Four pulse fission ~~compensated ionization~~ chambers for the intermediate range, located in the same instrument wells as the source range detectors, are positioned at an elevation corresponding to one-half of the core height. Four uncompensated ionization chamber assemblies for the power range are installed vertically at the four corners of the core. These assemblies are located equidistant from the reactor vessel along the length and, to minimize neutron flux pattern distortions, within approximately one foot of the reactor vessel. Each power range detector provides two signals corresponding to the neutron flux in the upper and in the lower sections of a core quadrant. The three ranges of detectors are used as inputs to monitor neutron flux from a completely shutdown condition to 120 percent of full power, with the capability of recording overpower excursions up to 200 percent of full power.

The output of the power range channels is used for:

- Protecting the core against the consequences of rod ejection accidents
- Protecting the core against the consequences of adverse power distributions resulting from dropped rods
- The rod speed control function
- Alerting the operator to an excessive power imbalance between the quadrants

The intermediate range detectors also provide signals for the post-accident monitoring system.

Details of the neutron detectors and nuclear instrumentation design and the control and trip logic are given in Chapter 7. The limits on neutron flux operation and trip setpoints are given in the technical specifications.

4.4.6.4 Digital Metal Impact Monitoring System

The digital metal impact monitoring system is a nonsafety-related system that monitors the reactor coolant system for metallic loose parts. It consists of several active instrumentation channels, each comprising a piezoelectric accelerometer (sensor), signal conditioning, and diagnostic equipment. The digital impact monitoring system conforms with Regulatory Guide 1.133.

The digital metal impact monitoring system is designed to detect a loose parts that weigh from 0.25 to 30 pounds, and can also detect impact with a kinetic energy of 0.5 foot-pounds on the inside surface of the reactor coolant system pressure boundary within three feet of a sensor.

The digital impact monitoring system consists of several redundant instrumentation channels, each comprised of a piezoelectric accelerometer (sensor), preamplifier, and signal conditioning

Table 7.5-1 (Sheet 1 of 12)

Post-Accident Monitoring System

Variable	Range/ Status	Type/ Category	Qualification		Number of Instruments Required	Power Supply	QDPS Indication (Note 2)	Remarks
			Environmental	Seismic				
RCS pressure	0-3300 psig	B1, B2, D2, C1, F2	Harsh	Yes	3 (Note 4)	1E	Yes	Located inside containment
RCS T_H (Wide Range)	50-700° F	B1, B2, D2, F2	Harsh	Yes	2	1E	Yes	Diverse Measurement: Core exit temperature
RCS T_C (Wide Range)	50-700° F	B1, B2, D2, F2	Harsh	Yes	3 (Note 4)	1E	Yes	
Steam generator water level (wide range)	0-100% of span	D2, F3	Harsh	Yes	1/SG	1E	Yes	
Steam generator water level (narrow range)	0-100% of span	D2, F2	Harsh	Yes	1/SG	1E	Yes	
Pressurizer level	0-100%	B1, D2, F2	Harsh	Yes	3 (Note 4)	1E	Yes	
Pressurizer reference leg temperature	50-420°F	B1, D2	Harsh	Yes	3 (Note 4)	1E	Yes	
Neutron flux	10^{-6} - 200% power	B1	Harsh	Yes	3 (Note 4)	1E	Yes	~~Includes source, intermediate, and power ranges~~
Control rod position	0-228 steps	B3, D3	None	None	1/control rod	Non-1E	No	
Containment water level	0-100%	B1, C1, F2	Harsh	Yes	3 (Note 4)	1E	Yes	72 ft to 108 ft

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TED

HERE IS THIS WEEK'S REPORT. PLEASE DISTRIBUTE AS YOU SEE FIT. THANKS.

Jim Winters

W GOAL 11/22/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.3	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.3	9	9	9	9	9	9	9	9	9	9	9	6	3	0	0	0	0	0
3.8.4	6	6	6	6	6	6	6	6	6	6	6	6	6	4	2	0	0	0
3.8.5	12	12	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH. 42	0	8	8	8	8	8	8	6	4	2	0	0	0	0	0	0	0	0
3.9	10	7	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.10	3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0
3.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
6.4	4	4	7	7	7	7	7	7	7	7	7	7	5	3	2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	23	23	23	23	23	23	23	23	36	36	36	36	36	36	36	36	36	36
16.1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
16.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	40	36	32	28	24	20	16	12	8	4	0	0	0	0	0	0	0
LEVEL 1	67	41	57	57	60	60	60	60	60	60	60	60	60	60	50	35	25	15
LEVEL 2/3	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	57	5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	8	8
CHAP 20	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	6	6	6	6	6	7	7	7	7	7	4	2	0	0	0	0	0	0
FCS PRA	19	19	19	19	19	0	0	0	0	1	1	1	0	0	0	0	0	0
ITAAC	18	18	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEST PRG	52	49	42	35	28	21	14	7	0	0	0	0	0	0	0	0	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	40
LOFTRAN		1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	3	8	4	0	0	0
H&MT						13	13	13	13	20	20	20	20	20	20	20	20	20
LST						4	3	2	1	0	0	0	0	0	0	0	0	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	0	0	0	0	0	0	0	0	0
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	105	90	80	70	60	11	2	0	0	0	0	0	0	0	0	0	0	0
UNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WG TOTAL	539	516	513	494	452	407	385	370	369	362	353	343	332	322	302	275	265	242

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	4	3	2	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	36	36	35	36	36	36	36	25	16	8	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	100	80	60	40	20	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	8	8	8	8	8	8	5	4	2	1	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	20	20	20	20	4	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	203	170	136	112	76	52	51	36	25	14	5	4	4	4	4	4	4	3

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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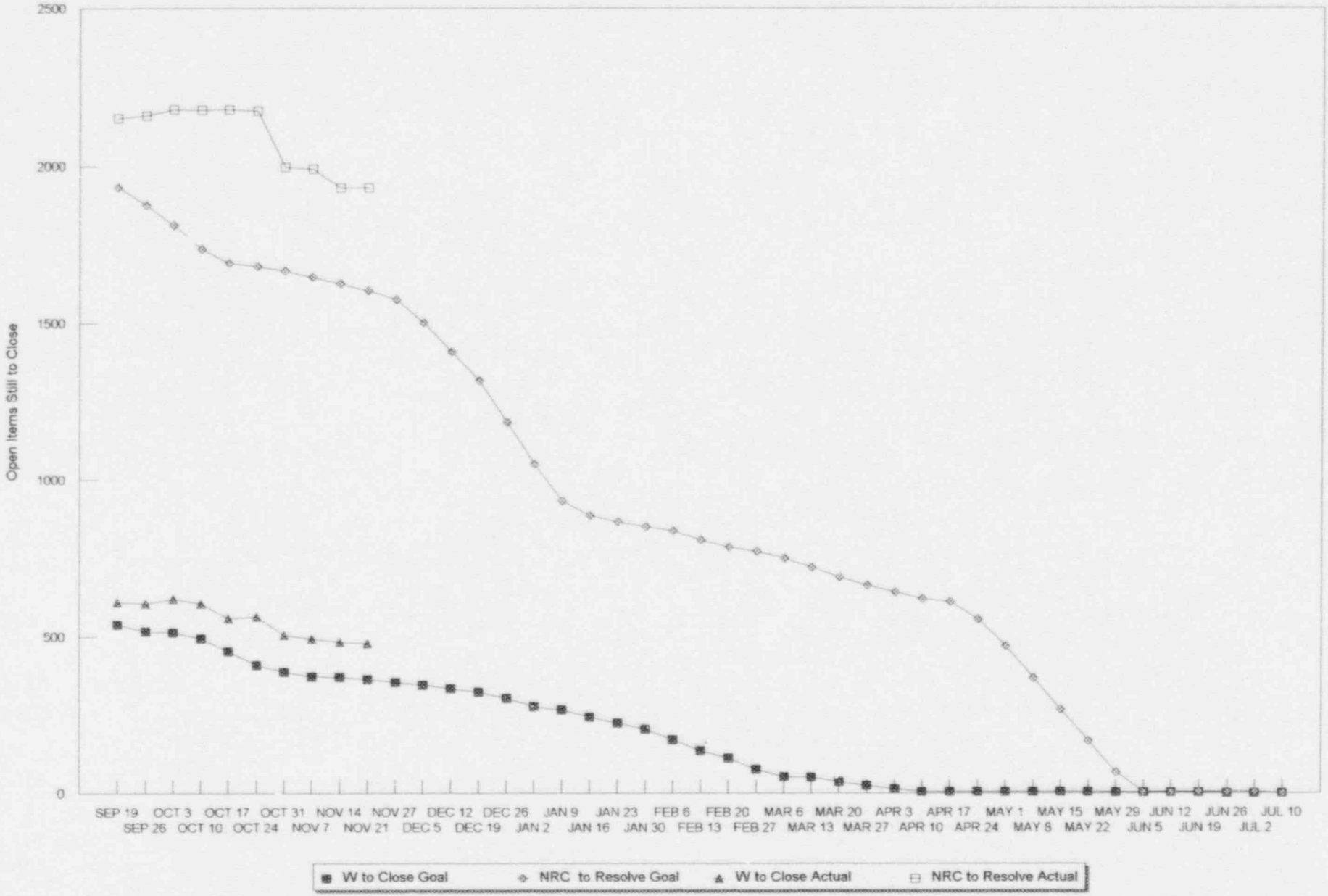
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0

Open Item Work Off Goals

11/22/96



N GOAL 11/22/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	4	4	4	4	4	4	4	4	4	4	3	2	1	0	0	0	0	0
3.6.3	10	10	7	21	21	21	21	18	15	12	9	6	3	0	0	0	0	0
3.7	14	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0	0	0
3.8.3	15	15	15	15	15	15	15	15	15	15	15	10	5	0	0	0	0	0
3.8.4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
3.8.5	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	6	4
3.9	42	42	43	43	43	43	43	36	29	22	15	8	0	0	0	0	0	0
3.10	7	7	7	7	7	7	7	7	7	7	6	5	4	3	2	0	0	0
3.11	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
6.3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6.4	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	19	19	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	167	111	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	35	35	30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	74	74	74	74	74	74	60	48	36	24	12	0	0	0	0	0	0	0
CHAP 15	213	213	213	213	213	213	213	213	228	228	228	228	228	228	228	228	228	228
15.1	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	21	14	7
16.2	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	21	14	7
LEVEL 1	134	41	57	57	60	60	60	60	60	60	60	60	60	60	60	60	60	60
LEVEL 2/3	137	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	147	266	266	266	266	266	266	269	269	269	269	269	269	269	269	269	269	269
CHAP 20	116	116	116	116	116	116	116	116	116	116	116	116	100	80	60	40	20	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	6	4
FCS PRA	37	37	37	37	0	0	0	0	0	1	1	1	1	1	1	1	1	1
ITAAC	11	11	11	11	11	11	11	11	11	10	8	6	4	2	0	0	0	0
TEST PRG	322	322	322	322	322	322	322	322	307	307	307	270	220	165	110	55	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
LOFTRAN	8	8	8	8	8	8	8	8	8	8	8	6	4	2	0	0	0	0
WCT	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
H&MT						13	13	13	13	20	20	20	20	20	20	20	20	20
LST						4	4	4	4	4	4	4	4	4	3	2	1	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	0	0	0	0	0	0	0	0	0
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	132	132	132	132	132	93	93	93	93	93	93	93	93	93	52	27	5	0
UNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG TOTAL	1933	1876	1812	1737	1691	1682	1666	1647	1625	1603	1574	1501	1410	1318	1183	1050	933	886

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	14	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	59	59	59	59	59	59	59	50	40	30	20	10	0	0	0	0	0	0
4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	228	228	228	228	228	228	228	228	228	228	228	228	182	143	107	70	35	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	60	60	45	35	25	15	7	0	0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	60	40	20
269	269	269	269	269	269	269	269	269	269	269	269	269	269	222	176	132	88	44
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	53	53	53	53	53	53	40	30	20	10	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	20	20	20	20	20	12	8	4	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	12	12	12	12	10	8	6	4	2	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
865	850	838	808	786	771	749	721	689	663	641	621	611	555	469	367	266	167	68

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
4	4	4	4	4	0

W ACTUAL 11/22/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0								
CHAP 2	0	0	2	2	2	2	2	2	2	2								
3.1	0	0	0	0	0	0	0	0	0	0								
3.2	2	2	2	2	9	9	9	9	9	9								
3.3	0	0	0	0	0	0	0	0	0	0								
3.4	0	0	0	0	0	0	0	0	0	0								
3.5	0	0	0	0	0	0	0	0	0	0								
3.6.1	0	0	0	0	0	0	0	0	0	0								
3.6.2	3	3	3	3	3	3	1	1	1	1								
3.6.3	7	7	3	7	8	8	8	3	3	3								
3.7	6	6	4	4	4	4	4	3	3	3								
3.8.2	2	2	4	4	4	4	4	4	4	4								
3.8.3	9	12	16	16	16	16	16	16	16	16								
3.8.4	6	11	11	11	11	11	11	11	11	11								
3.8.5	12	12	12	12	12	12	12	12	12	12								
3A &3F	0	0	0	0	0	0	0	0	0	0								
CH 42	0	8	8	8	8	8	8	8	8	8								
3.9	12	12	13	13	9	27	21	21	21	21								
3.10	3	3	3	3	0	2	2	0	1	0								
3.11	0	6	6	6	6	6	6	6	6	6								
3.12	2	2	7	7	7	7	5	3	1	2								
CHAP 4	0	0	0	0	0	0	0	0	0	0								
CHAP 5	0	1	0	0	0	0	0	0	0	0								
6.1	0	0	0	0	0	0	0	0	0	0								
6.2	4	7	6	7	2	2	2	2	2	2								
6.3	1	1	1	1	0	0	0	0	0	0								
6.4	4	1	6	6	5	5	1	1	1	1								
6.5	0	0	0	0	0	0	0	0	0	0								
6.6	0	0	0	0	0	0	0	0	0	0								
CHAP 7	0	0	0	0	0	0	0	1	1	1								
CHAP 8	0	0	0	0	0	0	0	0	0	0								
CHAP 9	27	24	16	16	9	3	3	6	6	5								
CHAP 10	3	3	5	5	5	5	3	3	3	3								
CHAP 11	1	1	1	1	1	1	1	1	0	0								
CHAP 12	0	0	0	0	0	0	0	0	0	0								
CHAP 13	6	4	4	4	4	4	3	3	3	3								
CHAP 14	0	0	0	1	0	0	0	0	0	0								
CHAP 15	23	22	31	27	24	24	25	24	37	37								
16.1	0	1	1	1	0	0	0	0	0	0								
16.2	7	7	8	8	2	1	1	1	1	1								
CHAP 17	0	0	0	0	0	0	0	0	0	0								
CHAP 18	42	42	42	42	16	16	8	8	8	8								
LEVEL 1	67	44	60	60	60	60	37	37	37	38								
LEVEL 2/3	33	100	100	100	100	100	100	89	80	80								
CHAP 19	57	0	2	2	2	2	1	4	4	4								
CHAP 20	1	1	1	1	1	1	1	1	1	1								
SSARREV	3	3	5	5	14	13	23	27	27	27								
T/H UNC	0	1	1	1	1	1	1	1	1	1								
RTNSS	6	8	6	6	8	9	10	10	10	10								
FCS PRA	19	0	0	0	0	0	0	0	0	1								
ITAAC	18	18	18	18	18	18	18	18	18	18								
TEST PRG	52	50	48	48	48	47	48	55	30	29								
NOTRUMP	53	53	53	53	53	53	38	38	39	39								
LOFTRAN	0	1	1	1	2	2	2	2	3	3								
WC/T	8	8	8	8	8	8	8	5	5	2								
H&MT						13	13	13	13	20								
LST						4	4	4	4	4								
SCALING						12	12	12	12	12								
W&MT						7	7	7	7	0								
WATER						3	3	3	3	3								
WGOTHIC	105	105	93	76	77	35	35	31	31	30								
JNASSIGN	5	12	9	8	-2	-6	-12	-14	-3	-4								
WA TOTAL	610	605	621	605	558	563	505	492	482	477	0	0	0	0	0	0	0	0

N ACTUAL 11/22/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8	8								
CHAP 2	6	10	10	10	10	10	10	10	10	10								
3.1	0	0	0	0	0	0		0	0	0								
3.2	3	3	3	3	10	10	10	10	10	10								
3.3	0	0	0	0	0	0	0	0	0	0								
3.4	0	0	0	0	0	0	0	0	0	0								
3.5	1	1	1	1	1	1	1	1	1	1								
3.6.1	2	2	2	2	2	2	2	2	2	2								
3.6.2	4	6	4	4	4	4	4	4	4	4								
3.6.3	10	21	21	21	22	22	20	16	16	16								
3.7	14	14	14	14	14	14	14	14	14	14								
3.8.2	8	12	12	12	12	12	12	12	12	12								
3.8.3	15	22	22	22	22	22	22	22	22	22								
3.8.4	12	18	18	18	18	18	18	18	18	18								
3.8.5	18	18	18	18	18	18	18	18	18	18								
3A &3F	0	0	0	0	0	0	0	0	0	0								
CH 42	0	10	10	10	10	10	10	10	10	10								
3.9	42	41	42	42	39	38	33	33	33	33								
3.10	7	7	7	7	5	7	7	7	5	5								
3.11	4	23	23	23	23	23	23	23	21	21								
3.12	13	13	13	13	13	13	13	9	13	13								
CHAP 4	2	2	2	2	2	1	1	1	1	1								
CHAP 5	30	28	27	27	27	27	27	27	27	26								
6.1	3	3	3	3	3	3	3	3	3	3								
6.2	59	67	67	68	67	67	67	67	67	66								
6.3	5	9	9	9	9	9	9	9	9	9								
6.4	12	11	18	16	15	15	14	14	14	14								
6.5	1	1	1	1	1	1	1	1	1	1								
6.6	0	0	0	0	0	0	0	0	0	0								
CHAP 7	19	16	15	15	15	15	15	16	16	16								
CHAP 8	11	9	9	9	9	9	9	9	9	9								
CHAP 9	162	164	161	161	161	161	162	163	163	163								
CHAP 10	33	32	31	31	31	31	31	31	31	31								
CHAP 11	46	46	46	46	46	46	46	46	46	46								
CHAP 12	2	2	2	2	2	2	2	2	2	2								
CHAP 13	35	35	35	35	35	35	34	34	34	34								
CHAP 14	74	82	82	82	82	82	82	82	82	82								
CHAP 15	213	224	227	227	225	225	226	226	181	181								
16.1	41	102	102	102	102	101	101	101	100	100								
16.2	1	1	2	1	1	1	1	1	1	1								
CHAP 17	5	5	5	5	5	5	5	5	5	5								
CHAP 18	42	48	48	48	48	48	48	48	48	48								
LEVEL 1	134	44	60	60	60	60	60	60	60	61								
LEVEL 2/3	137	100	100	100	100	100	101	101	101	101								
CHAP 19	145	262	264	264	264	264	263	253	252	252								
CHAP 20	116	117	117	117	117	117	117	117	117	117								
SSARREV	3	2	4	4	13	12	22	26	26	26								
T/H UNC	0	1	1	1	1	1	1	1	1	1								
RTNSS	8	10	9	9	11	11	12	13	13	13								
FCS PRA	37	0	0	0	0	0	0	0	0	1								
ITAAC	11	11	11	11	7	11	11	11	11	11								
TEST PRG	322	322	323	323	323	321	143	141	127	127								
NOTRUMP	53	53	53	53	53	53	53	53	54	54								
LOFTRAN	5	5	5	5	6	6	6	6	7	7								
WC/T	8	8	8	8	8	8	8	8	8	8								
H&MT						13	13	13	13	21								
LST						4	4	4	4	4								
SCALING						13	13	13	13	13								
W&MT						8	8	8	8	0								
WATER						4	4	4	4	4								
WGOTHIC	132	131	131	128	128	92	92	92	92	92								
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36	-36								
NA TOTAL	2152	2161	2180	2178	2179	2175	1997	1991	1932	1932	0	0	0	0	0	0	0	0

W DELTA 11/22/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	2	2	2	2	9	9	9	9	9	9	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	3	3	3	0	1	3	1	1	1	1	0	0	0	0	0	0	0	0
3.6.3	7	7	3	4	6	8	8	3	3	3	0	0	0	0	0	0	0	0
3.7	6	6	4	4	4	4	4	3	3	3	0	0	0	0	0	0	0	0
3.8.2	-1	-1	1	2	3	4	4	4	4	4	0	0	0	0	0	0	0	0
3.8.3	0	3	7	7	7	7	7	7	7	7	-9	-6	-3	0	0	0	0	0
3.8.4	0	5	5	5	5	5	5	5	5	5	-6	-6	-6	-4	-2	0	0	0
3.8.5	0	0	0	0	0	0	0	0	0	0	-12	-12	-9	-6	-3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	2	4	6	0	0	0	0	0	0	0	0
3.9	2	5	7	10	9	27	21	21	21	21	0	0	0	0	0	0	0	0
3.10	0	0	0	0	-3	0	1	0	1	0	0	0	0	0	0	0	0	0
3.11	0	6	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	0
3.12	2	2	7	7	7	7	5	3	1	2	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	0	3	2	3	-2	-2	-2	-2	-2	-2	-4	-4	-4	-4	-4	-4	-4	-4
6.3	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0
6.4	0	-3	-1	-1	-2	-2	-6	-6	-6	-6	-7	-7	-5	-3	-2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	27	24	16	16	9	3	3	6	6	5	0	0	0	0	0	0	0	0
CHAP 10	3	3	5	5	5	5	3	3	3	3	0	0	0	0	0	0	0	0
CHAP 11	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	6	4	4	4	4	4	3	3	3	3	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	0	-1	8	4	1	1	2	1	1	1	-36	-36	-36	-36	-36	-36	-36	-36
16.1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0
16.2	7	7	8	8	2	1	1	1	1	1	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	2	6	10	-12	-8	-12	-8	-4	0	-4	0	0	0	0	0	0	0
LEVEL 1	0	3	3	3	0	0	-23	-23	-23	-22	-60	-60	-60	-60	-50	-35	-25	-15
LEVEL 2/3	0	0	0	0	0	0	0	-11	-20	-20	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	0	-5	-3	-3	-3	-3	-4	-4	-4	-4	-8	-8	-8	-8	-8	-8	-8	-8
CHAP 20	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
SSARREV	0	0	2	2	11	10	20	24	24	24	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	0	0	2	2	3	3	3	3	-4	-2	0	0	0	0	0	0
FCS PRA	0	-19	-19	-19	-19	0	0	0	0	0	-1	-1	0	0	0	0	0	0
ITAAC	0	0	0	0	18	18	18	18	18	18	0	0	0	0	0	0	0	0
TEST PRG	0	1	6	13	20	26	34	48	30	29	0	0	0	0	0	0	0	0
NOTRUMP	0	0	0	0	0	0	-15	-15	-14	-14	-53	-53	-53	-53	-53	-53	-53	-40
LOFTRAN	0	0	0	0	1	1	1	2	3	3	0	0	0	0	0	0	0	0
WC/T	0	0	0	0	0	0	0	-3	-3	-6	-8	-8	-8	-8	-4	0	0	0
H&MT						0	0	0	0	0	-20	-20	-20	-20	-20	-20	-20	-20
LST						0	1	2	3	4	0	0	0	0	0	0	0	0
SCALING						0	0	0	0	0	-12	-12	-12	-12	-12	-12	-12	-12
W&MT						0	0	0	0	0	0	0	0	0	0	0	0	0
WATER						0	0	0	0	0	-3	-3	-3	-3	-3	-3	-3	-3
WGOTHIC	0	15	13	6	17	24	33	31	31	30	0	0	0	0	0	0	0	0
UNASSIGN	5	12	9	8	-2	-6	-12	-14	-3	-4	0	0	0	0	0	0	0	0
WD TOTAL	71	77	99	103	108	162	132	136	116	119	-343	-343	-332	-322	-302	-275	-265	-242

N DELTA 11/22/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0
CHAP 2	0	4	6	8	10	10	10	10	10	10	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	1	2	3	10	10	10	10	10	10	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
3.6.1	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0
3.6.2	0	2	0	0	0	0	0	0	0	0	-3	-2	-1	0	0	0	0	0
3.6.3	0	11	14	0	1	1	-1	-2	1	4	-9	-6	-3	0	0	0	0	0
3.7	0	0	7	14	14	14	14	14	14	14	0	0	0	0	0	0	0	0
3.8.2	-4	0	0	0	0	0	0	0	0	0	-9	-6	-3	0	0	0	0	0
3.8.3	0	7	7	7	7	7	7	7	7	7	-15	-10	-5	0	0	0	0	0
3.8.4	0	6	6	6	6	6	6	6	6	6	-12	-12	-12	-12	-12	-12	-12	-12
3.8.5	0	0	0	0	0	0	0	0	0	0	-18	-18	-18	-18	-18	-18	-18	-18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-10	-8	-6	-4
3.9	0	-1	-1	-1	-4	-5	-10	-3	4	11	-15	-8	0	0	0	0	0	0
3.10	0	0	0	0	-2	0	0	0	-2	-2	-6	-5	-4	-3	-2	0	0	0
3.11	0	19	21	23	23	23	23	23	21	21	0	0	0	0	0	0	0	0
3.12	13	13	13	13	13	13	13	9	13	13	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	2	2	1	1	1	1	1	0	0	0	0	0	0	0	0
CHAP 5	30	28	27	27	27	27	27	27	27	26	0	0	0	0	0	0	0	0
6.1	3	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0
6.2	0	8	8	9	8	8	8	8	8	7	-59	-59	-59	-59	-59	-59	-59	-59
6.3	0	4	4	4	4	4	4	4	4	4	-5	-5	-5	-5	-5	-5	-5	-5
6.4	0	-1	3	1	0	0	-1	-1	-1	-1	-15	-15	-15	-15	-15	-15	-15	-12
6.5	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	-3	5	15	15	15	15	16	16	16	0	0	0	0	0	0	0	0
CHAP 8	11	9	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0
CHAP 9	-5	53	106	161	161	161	162	163	163	163	0	0	0	0	0	0	0	0
CHAP 10	33	32	31	31	31	31	31	31	31	31	0	0	0	0	0	0	0	0
CHAP 11	46	46	46	46	46	46	46	46	46	46	0	0	0	0	0	0	0	0
CHAP 12	2	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0
CHAP 13	0	0	5	15	25	35	34	34	34	34	0	0	0	0	0	0	0	0
CHAP 14	0	8	8	8	8	8	22	34	46	58	-12	0	0	0	0	0	0	0
CHAP 15	0	11	14	14	12	12	13	13	-47	-47	-228	-228	-228	-228	-228	-228	-228	-228
16.1	0	61	61	61	61	60	60	60	59	59	-41	-41	-41	-41	-35	-21	-14	-7
16.2	0	0	0	-1	-1	-1	1	1	1	1	0	0	0	0	0	0	0	0
CHAP 17	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0
CHAP 18	0	6	6	6	6	6	6	6	6	6	-42	-42	-42	-42	-35	-21	-14	-7
LEVEL 1	0	3	3	3	0	0	0	0	0	1	-60	-60	-60	-60	-60	-60	-60	-60
LEVEL 2/3	0	0	0	0	0	0	1	1	1	1	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	-2	-4	-2	-2	-2	-2	-3	-16	-17	-17	-269	-269	-269	-269	-269	-269	-269	-269
CHAP 20	0	1	1	1	1	1	1	1	1	1	-116	-116	-100	-80	-60	-40	-20	0
SSARREV	0	-1	1	1	10	9	19	23	23	23	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	1	1	3	2	3	4	4	4	-9	-9	-9	-9	-9	-9	-6	-4
FCS PRA	0	-37	-37	-37	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1
ITAAC	0	0	0	0	-4	0	0	0	0	1	-8	-6	-4	-2	0	0	0	0
TEST PRG	0	0	1	1	1	-1	-179	-181	-180	-180	-307	-270	-220	-165	-110	-55	0	0
NOTRUMP	0	0	0	0	0	0	0	0	1	1	-53	-53	-53	-53	-53	-53	-53	-53
LOFTRAN	-3	-3	-3	-3	-2	-2	-2	-2	-1	-1	-8	-6	-4	-2	0	0	0	0
WG/T	8	8	8	8	8	-5	-5	-5	-5	-12	-20	-20	-20	-20	-20	-20	-20	20
H&MT	0	0	0	0	0	9	9	9	9	17	-4	-4	-4	-4	-3	-2	-1	0
LST	0	0	0	0	0	-8	-8	-8	-8	-8	-12	-12	-12	-12	-12	-12	-12	-12
SCALING	0	0	0	0	0	6	6	5	6	13	0	0	0	0	0	0	0	0
W&MT	0	0	0	0	0	5	5	5	5	-3	-3	-3	-3	-3	-3	-3	-3	-3
WATER	-8	-8	-8	-8	-8	-4	-4	-4	-4	-4	-8	-8	-8	-8	-8	-8	-8	-8
WGOTHIC	0	-1	-1	-4	-4	-1	-1	-1	-1	-1	-93	-93	-93	-93	-52	-27	-5	0
UNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36	-36	0	0	0	0	0	0	0	0
ND TOTAL	219	306	395	464	517	532	374	380	343	365	-1574	-1501	-1410	-1318	-1183	-1050	-933	-886

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	Nov. 15, 1996	NAME:	Jim Winters
TO:	Diane Jackson	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 3

The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane,

Here are three new Detail Status writeups for Fire Protection items. These should be available for Tuesday.

Jim

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/15/96

Selection: [item no] between 308 And 308 Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
308	NRR/SPLB	9.5.1	MTG-OI		Winters	Closed	Action W		

M9.5.1-3 (FIRE PROTECTION)
The SRM dated July 21, 1993 specifies that the Commission (with all Commissioners agreeing) has approved the staff's position in SECY-93-087 that the passive plants should also be reviewed against the enhanced fire protection criteria approved in the Commission's SRM June 26, 1990.

SECY-93-087 provides the staff's recommendations approved by the commissions concerning Advance Evolutionary Reactors. SECY-93-087 indicates that the staff proposed to require that evolutionary ALWR designers must ensure that safe shutdown can be achieved assuming that all equipment in any one fire area will be rendered inoperable by fire and that re-entry into the fire area for repairs and operator actions is not possible. The AP600 may require repair to bring the unit to cold shutdown conditions.

Westinghouse is requested to discuss in detail repairs on the defense-in-depth equipment and operator actions needed to bring the unit to cold shutdown conditions. Westinghouse should also provide the technical bases of why safe shutdown equipment is not needed to go to cold shutdown as required by SECY-93-087 and BTP CMEB 9.5-1.

Closed - Consistent with SECY-94-084 and with the AP600 plant design, the "safe shutdown" mode is adequate for meeting the "cold shutdown" requirements in BTP CMEB 9.5-1. The plant will come to a "safe stable shutdown condition" with primary temperature of 420 F with only passive safety related systems. This is equivalent to a "cold shutdown" definition for plants with active safety systems.

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/15/96

Selection: [item no] between 309 And 309 Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
309	NRR/SPLB	9.5.1	MTG-OI		Winters	Closed	Action W		

M9.5.1-4 (FIRE PROTECTION)
Section 9A.2.7.1 of the SSAR, "Zone of Influence," states that a postulated fire does not exceed the boundary of the area. For fire areas outside the containment, the fire is assumed to disable all equipment and electrical cabling located in the fire area, unless the fire protection analysis demonstrates otherwise. However, no credit is taken for complete fire damage in cases in which complete damage is beneficial and partial damage is not. Inside containment, potential fire damage is evaluated on a zone-by-zone basis.

Westinghouse is requested to provide a list of all areas where the fire protection analysis demonstrates that a fire does not disable all equipment (other shutdown equipment) within a fire area (fire Zone of Influence).

Closed - SSAR Appendix 9A subsection 9A.2.7.1, Revision 8, "Zone of Influence" portion has been revised to indicate the credit taken for partial and complete fire damage in accordance with NRC agreed approach. Within containment, the zone of influence is defined to be the whole of a given fire zone.

AP600 Open Item Tracking System Database: Executive Summary

Date: 11/15/96

Selection: [item no] between 323 And 323 Sorted by Item #

Item No.	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
323	NRR/SPLB	9.5.1	M\ OI		Winters/BPC	Closed	Action W		

M9.5.1-18 (FIRE PROTECTION)
SECY-90-016 and SECY-93-087 indicate that ALWR designers should ensure that smoke, hot gases, or the fire suppressant will not migrate to other fire areas to the extent they could adversely affect safe shutdown capabilities including operator action.

In Section 9A.3.1.1 of the SSAR, Westinghouse indicates that "Smoke and Hot gasses are removed from the fire area by portable exhaust fans and flexible ductwork." In other areas, Westinghouse smoke control features consists of fire dampers closing on high temperatures to control the spread of fire and combustion products. Smoke and hot gases are removed from the fire area by reopening the fire dampers after a fire. The nuclear island nonradioactive ventilation system is manually aligned to the smoke purge mode to exhaust smoke and hot gases to the atmosphere.

The 14th edition of the NFPA Handbook, Section 6, Chapter 8, "Confinement of Fire and Smoke in Buildings," indicates that one method of smoke control involves confinement and the use of physical barriers such as doors, walls or dampers. Although the physical barrier blocks the movement of smoke, no workable system have been devised that are able to confine smoke by means of physical barriers alone. An alternative to physical barrier confinement is the use of a pressure differential between the smoky atmosphere and the protected area. This pressurization, with or without simultaneous exhausting creates an effective barrier. The combination of pressurization with physical barriers seems to be the most practical method of protecting an area from the intrusion of any products of combustion.

Westinghouse is requested to describe in detail how smoke will be prevented from migrating to other fire areas such that hot gases will not adversely affect safe shutdown, including operator action, for all safe shutdown and safety related areas.

Closed - Section 9.4 describes the limits and capabilities of the HVAC systems for smoke removal. Section 9.5 and Appendix 9A describes the use of the HVAC for smoke removal for each fire area.

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 2

To	From
DIANE JACKSON	JIM WINTERS
Co. US NRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

Winters, James

From: Winters, James
To: Butler, John C.
Cc: Hutchings, Donald; Mandava, Rao; Winters, James; Mcintyre, Brian A. 001
Subject: Plant Systems Phone Call (11/14/96)
Date: Thursday, November 14, 1996 3:34PM

Teleconference with NRC Plant Systems Branch
NRC- Januk Raval, Diane Jackson
Westinghouse - Jim Winters, Don Hutchings, John Butler

Item Status/Action

7.a.5 Reviewed wording in SSAR, item (1) ok
Item (2) is Action W to clarify wording on containment isolation.
Item (3) is Action W to check the inservice testing for safety related dampers and monitors for VBS.

7.a.6 Action W - Clarify wording on p. 9.4-10 that either meet GDC 19 or that we switchover to VES

7.a.7 Action W - see 2.b (same action)

7.b.1 (item 270) Resolved

7.b.2 Resolved

7.b.3 Action W - same as 1b&d

7.b.4 Resolved

7.b.5 Action W - same as 1b

7.b.6 Action W - Modify page 18 to reflect that MSIV room has only a low efficiency filter

Action N - NRC to look at OITS response for item 273

7.b.7 Action W - same as 1b

7.b.8 Action W - same as 1b

7.c General Action: Action W - same as 1c&e action

7.c.1 Action W - include percentage of safe level of H2 concentration on page 9.4-32

7.c.2 Action N - Develop general question on inclusion or exclusion of fire dampers in Table 3.2-3

7.c.3 Action N - Develop general question on Table 3.2-3

7.c.4 Action W - Correct reference number on the bottom of page 9.4-30 reference 25 should be 26
Action N - Develop general question on table 3.2-3

Action N - Develop general guidelines for design detail for non-safety, non-DID systems

7.c.5 Action N - Develop general guidelines for design detail for non-safety, non-DID systems

7.c.6 Action N - Same two Action N's as 7.c.4

Next phone call on Friday November 22nd at 1:00

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	11/14/96	NAME:	Jim Wintons
TO:	Ted Quay	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412 374 5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Ted

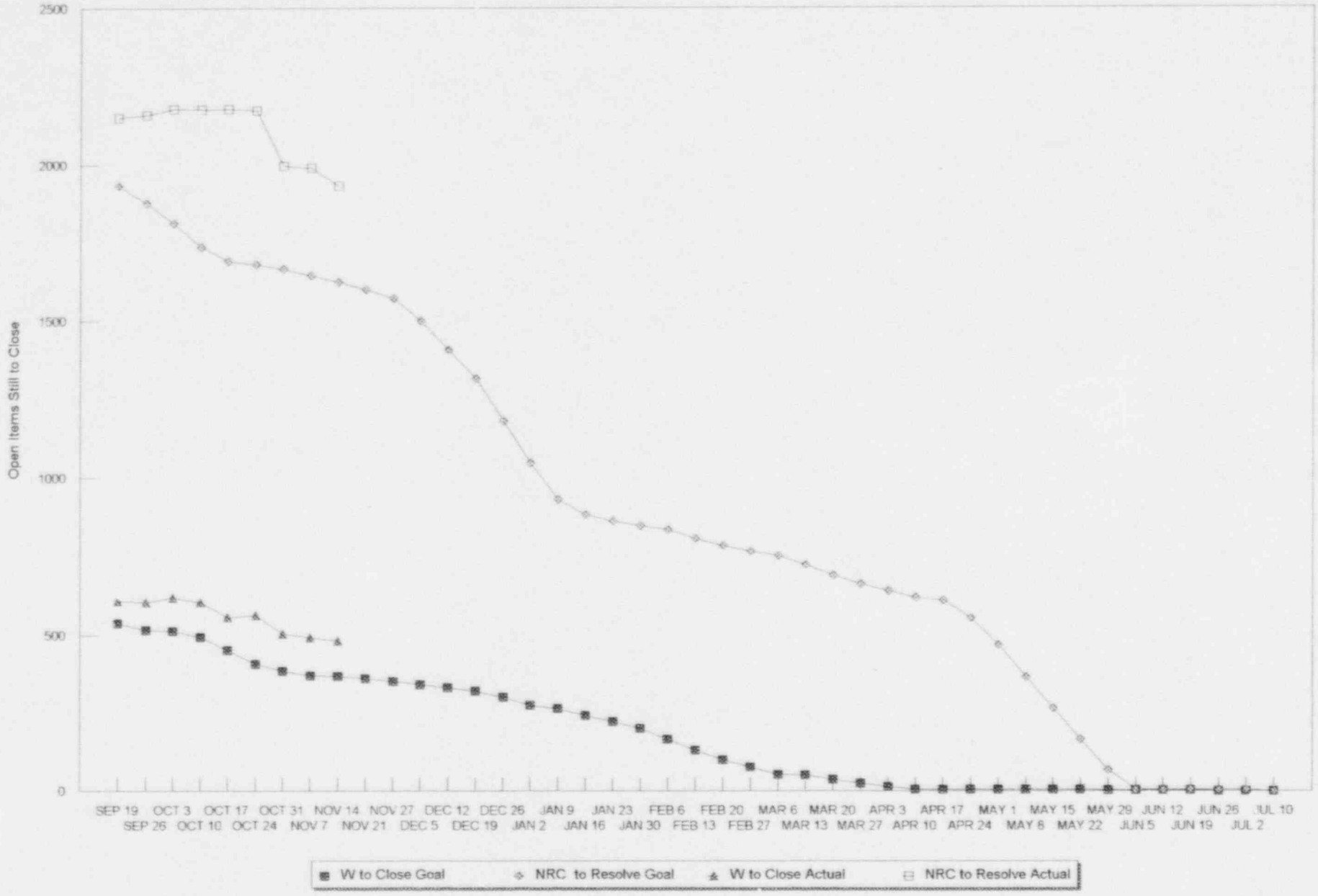
Here is this week's report. Please pass it on to The Project Managers

Thanks.

Jim

Open Item Work Off Goals

11/14/96



W GOAL 11/14/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.3	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.3	9	9	9	9	9	9	9	9	9	9	9	6	3	0	0	0	0	0
3.8.4	6	6	6	6	6	6	6	6	6	6	6	6	6	4	2	0	0	0
3.8.5	12	12	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	8	8	8	8	8	8	6	4	2	0	0	0	0	0	0	0	0
3.9	10	7	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.10	3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0
3.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
6.4	4	4	7	7	7	7	7	7	7	7	7	7	5	3	2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	23	23	23	23	23	23	23	23	36	36	36	36	36	36	36	36	36	36
16.1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
16.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	40	36	32	28	24	20	16	12	8	4	0	0	0	0	0	0	0
LEVEL 1	67	41	57	57	60	60	60	60	60	60	60	60	60	60	50	35	25	15
LEVEL 2/3	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	57	5	5	5	5	5	5	8	8	8	8	8	8	8	8	8	8	8
CHAP 20	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	6	6	6	6	6	7	7	7	7	7	4	2	0	0	0	0	0	0
FCS PRA	19	19	19	19	19	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	18	18	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEST PRG	52	49	42	35	28	21	14	7	0	0	0	0	0	0	0	0	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	40
LOFTRAN		1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	4	0	0	0
H&MT						13	13	13	13	13	13	13	13	13	13	13	13	13
LST						4	3	2	1	0	0	0	0	0	0	0	0	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	7	7	7	7	7	7	7	7	7
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	105	90	80	70	60	11	2	0	0	0	0	0	0	0	0	0	0	0
UNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WG TOTAL	539	516	513	494	452	407	385	370	369	361	352	342	332	322	302	275	265	242

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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36	36	36	36	36	36	36	36	25	16	8	0	0	0	0	0	0	0	0
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7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	100	80	60	40	20	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	8	8	8	8	8	8	5	4	2	1	0	0	0	0	0	0	0
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13	13	13	12	8	4	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	5	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	201	167	131	100	76	52	51	36	25	14	5	4	4	4	4	4	4	3

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0

N GOAL 11/14/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	4	4	4	4	4	4	4	4	4	4	3	2	1	0	0	0	0	0
3.6.3	10	10	7	21	21	21	21	18	15	12	9	6	3	0	0	0	0	0
3.7	14	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0	0	0
3.8.3	15	15	15	15	15	15	15	15	15	15	15	10	5	0	0	0	0	0
3.8.4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
3.8.5	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	6	4
3.9	42	42	43	43	43	43	43	36	29	22	15	8	0	0	0	0	0	0
3.10	7	7	7	7	7	7	7	7	7	7	6	5	4	3	2	0	0	0
3.11	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
6.3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6.4	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	19	19	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	167	111	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	35	35	30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	74	74	74	74	74	74	60	48	36	24	12	0	0	0	0	0	0	0
CHAP 15	213	213	213	213	213	213	213	213	228	228	228	228	228	228	228	228	228	228
16.1	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	21	14	7
16.2	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	21	14	7
LEVEL 1	134	41	57	57	60	60	60	60	60	60	60	60	60	60	60	60	60	60
LEVEL 2/3	137	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	147	266	266	266	266	266	266	269	269	269	269	269	269	269	269	269	269	269
CHAP 20	116	116	116	116	116	116	116	116	116	116	116	116	100	80	60	40	20	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	6	4
FCS PRA	37	37	37	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	11	11	11	11	11	11	11	11	11	10	8	6	4	2	0	0	0	0
TEST PRG	322	322	322	322	322	322	322	322	307	307	307	270	220	165	110	55	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
LOFTRAN	8	8	8	8	8	8	8	8	8	8	8	6	4	2	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
H&MT						13	13	13	13	13	13	13	13	13	13	13	13	13
LST						4	4	4	4	4	4	4	4	4	3	2	1	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	7	7	7	7	7	7	7	7	7
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	132	132	132	132	132	93	93	93	93	93	93	93	93	93	52	27	5	0
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG TOTAL	1933	1876	1812	1737	1691	1682	1666	1647	1625	1602	1573	1500	1409	1317	1182	1049	932	885

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	14	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	59	59	59	59	59	59	59	50	40	30	20	10	0	0	0	0	0	0
4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	228	228	228	228	228	228	228	228	228	228	228	228	182	143	107	70	35	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	60	60	45	35	25	15	7	0	0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	60	40	20
269	269	269	269	269	269	269	269	269	269	269	269	269	269	222	176	132	88	44
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	53	53	53	53	53	53	40	30	20	10	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	13	13	13	13	13	12	8	4	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	12	12	12	12	10	8	6	4	2	0	0	0	0	0	0	0	0	0
7	7	7	7	7	5	4	3	2	1	0	0	0	0	0	0	0	0	0
3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
864	849	837	807	785	768	753	724	691	664	641	621	611	555	469	367	266	167	68

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
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0	0	0	0	0	0
3	3	3	3	3	0
1	1	1	1	1	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
4	4	4	4	4	0

W ACTUAL 11/14/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0									
CHAP 2	0	0	2	2	2	2	2	2	2									
3.1	0	0	0	0	0	0	0	0	0									
3.2	2	2	2	2	9	9	9	9	9									
3.3	0	0	0	0	0	0	0	0	0									
3.4	0	0	0	0	0	0	0	0	0									
3.5	0	0	0	0	0	0	0	0	0									
3.6.1	0	0	0	0	0	0	0	0	0									
3.6.2	3	3	3	3	3	3	1	1	1									
3.6.3	7	7	3	7	8	8	8	3	3									
3.7	6	6	4	4	4	4	4	3	3									
3.8.2	2	2	4	4	4	4	4	4	4									
3.8.3	9	12	16	16	16	16	16	16	16									
3.8.4	6	11	11	11	11	11	11	11	11									
3.8.5	12	12	12	12	12	12	12	12	12									
3A &3F	0	0	0	0	0	0	0	0	0									
CH 42	0	8	8	8	8	8	8	8	8									
3.9	12	12	13	13	9	27	21	21	21									
3.10	3	3	3	3	0	2	2	0	1									
3.11	0	6	6	6	6	6	6	6	6									
3.12	2	2	7	7	7	7	5	3	1									
CHAP 4	0	0	0	0	0	0	0	0	0									
CHAP 5	0	1	0	0	0	0	0	0	0									
6.1	0	0	0	0	0	0	0	0	0									
6.2	4	7	6	7	2	2	2	2	2									
6.3	1	1	1	1	0	0	0	0	0									
6.4	4	1	6	6	5	5	1	1	1									
6.5	0	0	0	0	0	0	0	0	0									
6.6	0	0	0	0	0	0	0	0	0									
CHAP 7	0	0	0	0	0	0	0	1	1									
CHAP 8	0	0	0	0	0	0	0	0	0									
CHAP 9	27	24	16	16	9	3	3	6	6									
CHAP 10	3	3	5	5	5	5	3	3	3									
CHAP 11	1	1	1	1	1	1	1	1	0									
CHAP 12	0	0	0	0	0	0	0	0	0									
CHAP 13	6	4	4	4	4	4	3	3	3									
CHAP 14	0	0	0	1	0	0	0	0	0									
CHAP 15	23	22	31	27	24	24	25	24	37									
16.1	0	1	1	1	0	0	0	0	0									
16.2	7	7	8	8	2	1	1	1	1									
CHAP 17	0	0	0	0	0	0	0	0	0									
CHAP 18	42	42	42	42	16	16	8	8	8									
LEVEL 1	67	44	60	60	60	60	37	37	37									
LEVEL 2/3	33	100	100	100	100	100	100	89	80									
CHAP 19	57	0	2	2	2	2	1	4	4									
CHAP 20	1	1	1	1	1	1	1	1	1									
SSARREV	3	3	5	5	14	13	23	27	27									
T/H UNC	0	1	1	1	1	1	1	1	1									
RTNSS	6	8	6	6	8	9	10	10	10									
FCS PRA	19	0	0	0	0	0	0		0									
ITAAC	18	18	18	18	18	18	18	18	18									
TEST PRG	52	50	48	48	48	47	48	55	30									
NOTRUMP	53	53	53	53	53	53	38	38	39									
LOFTRAN	0	1	1	1	2	2	2	2	3									
WCIT	8	8	8	8	8	8	8	5	5									
H&MT						13	13	13	13									
LST						4	4	4	4									
SCALING						12	12	12	12									
W&MT						7	7	7	7									
WATER						3	3	3	3									
WGOTHIC	105	105	93	76	77	35	35	31	31									
JNASSIGN	5	12	9	8	-2	-6	-12	-14	-3									
WA TOTAL	610	605	621	605	553	563	505	492	482	0	0	0	0	0	0	0	0	0

N ACTUAL 11/14/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8									
CHAP 2	6	10	10	10	10	10	10	10	10									
3.1	0	0	0	0	0	0		0	0									
3.2	3	3	3	3	10	10	10	10	10									
3.3	0	0	0	0	0	0	0	0	0									
3.4	0	0	0	0	0	0	0	0	0									
3.5	1	1	1	1	1	1	1	1	1									
3.6.1	2	2	2	2	2	2	2	2	2									
3.6.2	4	6	4	4	4	4	4	4	4									
3.6.3	10	21	21	21	22	22	20	16	16									
3.7	14	14	14	14	14	14	14	14	14									
3.8.2	8	12	12	12	12	12	12	12	12									
3.8.3	15	22	22	22	22	22	22	22	22									
3.8.4	12	18	18	18	18	18	18	18	18									
3.8.5	18	18	18	18	18	18	18	18	18									
3A &3F	0	0	0	0	0	0	0	0	0									
CH 42	0	10	10	10	10	10	10	10	10									
3.9	42	41	42	42	39	38	33	33	33									
3.10	7	7	7	7	5	7	7	7	5									
3.11	4	23	23	23	23	23	23	23	21									
3.12	13	13	13	13	13	13	13	9	13									
CHAP 4	2	2	2	2	2	1	1	1	1									
CHAP 5	30	28	27	27	27	27	27	27	27									
6.1	3	3	3	3	3	3	3	3	3									
6.2	59	67	67	68	67	67	67	67	67									
6.3	5	9	9	9	9	9	9	9	9									
6.4	12	11	18	16	15	15	14	14	14									
6.5	1	1	1	1	1	1	1	1	1									
6.6	0	0	0	0	0	0	0	0	0									
CHAP 7	19	16	15	15	15	15	15	16	16									
CHAP 8	11	9	9	9	9	9	9	9	9									
CHAP 9	162	164	161	161	161	161	162	163	163									
CHAP 10	33	32	31	31	31	31	31	31	31									
CHAP 11	46	46	46	46	46	46	46	46	46									
CHAP 12	2	2	2	2	2	2	2	2	2									
CHAP 13	35	35	35	35	35	35	34	34	34									
CHAP 14	74	82	82	82	82	82	82	82	82									
CHAP 15	213	224	227	227	225	225	226	226	181									
16.1	41	102	102	102	102	101	101	101	100									
16.2	1	1	2	1	1	1	1	1	1									
CHAP 17	5	5	5	5	5	5	5	5	5									
CHAP 18	42	48	48	48	48	48	48	48	48									
LEVEL 1	134	44	60	60	60	60	60	60	60									
LEVEL 2/3	137	100	100	100	100	100	101	101	101									
CHAP 19	145	262	264	264	264	264	263	253	252									
CHAP 20	116	117	117	117	117	117	117	117	117									
SSARREV	3	2	4	4	13	12	22	26	26									
T/H UNC	0	1	1	1	1	1	1	1	1									
RTNSS	8	10	9	9	11	11	12	13	13									
FCS PRA	37	0	0	0	0	0	0	0	0									
ITAAC	11	11	11	11	7	11	11	11	11									
TEST PRG	322	322	323	323	323	321	143	141	127									
NOTRUMP	53	53	53	53	53	53	53	53	54									
LOFTRAN	5	5	5	5	6	6	6	6	7									
WCT	8	8	8	8	8	8	8	8	8									
H&MT						13	13	13	13									
LST						4	4	4	4									
SCALING						13	13	13	13									
W&MT						8	8	8	8									
WATER						4	4	4	4									
WGOTHIC	132	131	131	128	128	92	92	92	92									
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36									
NA TOTAL	2152	2161	2180	2178	2179	2175	1997	1991	1932	0	0	0	0	0	0	0	0	0

W DELTA 11/14/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	2	2	2	2	9	9	9	9	9	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	3	3	3	0	1	3	1	1	1	0	0	0	0	0	0	0	0	0
3.6.3	7	7	3	4	6	8	8	3	3	0	0	0	0	0	0	0	0	0
3.7	6	6	4	4	4	4	4	3	3	0	0	0	0	0	0	0	0	0
3.8.2	-1	-1	1	2	3	4	4	4	4	0	0	0	0	0	0	0	0	0
3.8.3	0	3	7	7	7	7	7	7	7	-9	-9	-6	-3	0	0	0	0	0
3.8.4	0	5	5	5	5	5	5	5	5	-6	-6	-6	-6	-4	-2	0	0	0
3.8.5	0	0	0	0	0	0	0	0	0	-12	-12	-12	-9	-6	-3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	2	4	-2	0	0	0	0	0	0	0	0
3.9	2	5	7	10	9	27	21	21	21	0	0	0	0	0	0	0	0	0
3.10	0	0	0	0	-3	0	1	0	1	0	0	0	0	0	0	0	0	0
3.11	0	6	6	6	6	6	6	6	6	0	0	0	0	0	0	0	0	0
3.12	2	2	7	7	7	7	5	3	1	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	0	3	2	3	-2	-2	-2	-2	-2	-4	-4	-4	-4	-4	-4	-4	-4	-4
6.3	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0
6.4	0	-3	-1	-1	-2	-2	-6	-6	-6	-7	-7	-7	-5	-3	-2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	27	24	16	16	9	3	3	6	6	0	0	0	0	0	0	0	0	0
CHAP 10	3	3	5	5	5	5	3	3	3	0	0	0	0	0	0	0	0	0
CHAP 11	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	6	4	4	4	4	4	3	3	3	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	0	-1	8	4	1	1	2	1	1	-36	-36	-36	-36	-36	-36	-36	-36	-36
16.1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0
16.2	7	7	8	8	2	1	1	1	1	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	2	6	10	-12	-8	-12	-8	-4	-8	-4	0	0	0	0	0	0	0
LEVEL 1	0	3	3	3	0	0	-23	-23	-23	-60	-60	-60	-60	-60	-58	-35	-25	-15
LEVEL 2/3	0	0	0	0	0	0	0	-11	-20	-100	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	0	-5	-3	-3	-3	-3	-4	-4	-4	-8	-8	-8	-8	-8	-8	-8	-8	-8
CHAP 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SSARREV	0	0	2	2	11	10	20	24	24	-3	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	0	0	2	2	3	3	3	-7	-4	-2	0	0	0	0	0	0
FCS PRA	0	-19	-19	-19	-19	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	0	0	0	0	18	18	18	18	18	0	0	0	0	0	0	0	0	0
TEST PRG	0	1	6	13	20	26	34	48	30	0	0	0	0	0	0	0	0	0
NOTRUMP	0	0	0	0	0	0	-15	-15	-14	-53	-53	-53	-53	-53	-53	-53	-53	-40
LOFTRAN	0	0	0	0	1	1	1	2	3	0	0	0	0	0	0	0	0	0
WC/T	0	0	0	0	0	0	0	-3	-3	-8	-8	-8	-8	-8	-4	0	0	0
H&MT						0	0	0	0	-13	-13	-13	-13	-13	-13	-13	-13	-13
LST						0	1	2	3	0	0	0	0	0	0	0	0	0
SCALING						0	0	0	0	-12	-12	-12	-12	-12	-12	-12	-12	-12
W&MT						0	0	0	0	-7	-7	-7	-7	-7	-7	-7	-7	-7
WATER						0	0	0	0	-3	-3	-3	-3	-3	-3	-3	-3	-3
WGOTHIC	0	15	13	6	17	24	33	31	31	0	0	0	0	0	0	0	0	0
JNASSIGN	5	12	9	8	-2	-6	-12	-14	-3	0	0	0	0	0	0	0	0	0
WD TOTAL	71	77	99	103	108	162	132	136	116	-361	-352	-342	-332	-322	-302	-275	-265	-242

N DELTA 11/14/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0
CHAP 2	0	4	6	8	10	10	10	10	10	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	1	2	3	10	10	10	10	10	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
3.6.1	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
3.6.2	0	2	0	0	0	0	0	0	0	-4	-3	-2	-1	0	0	0	0	0
3.6.3	0	11	14	0	1	1	-1	-2	1	-12	-9	-6	-3	0	0	0	0	0
3.7	0	0	7	14	14	14	14	14	14	0	0	0	0	0	0	0	0	0
3.8.2	-4	0	0	0	0	0	0	0	0	-12	-9	-6	-3	0	0	0	0	0
3.8.3	0	7	7	7	7	7	7	7	7	-15	-15	-10	-5	0	0	0	0	0
3.8.4	0	6	6	6	6	6	6	6	6	-12	-12	-12	-12	-12	-12	-12	-12	-12
3.8.5	0	0	0	0	0	0	0	0	0	-18	-18	-18	-18	-18	-18	-18	-18	-18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-10	-10	-8	-6	-4
3.9	0	-1	-1	-1	-4	-5	-10	-3	4	-22	-15	-8	0	0	0	0	0	0
3.10	0	0	0	0	-2	0	0	0	-2	-7	-6	-5	-4	-3	-2	0	0	0
3.11	0	19	21	23	23	23	23	23	21	0	0	0	0	0	0	0	0	0
3.12	13	13	13	13	13	13	13	9	13	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	2	2	1	1	1	1	0	0	0	0	0	0	0	0	0
CHAP 5	30	28	27	27	27	27	27	27	27	0	0	0	0	0	0	0	0	0
6.1	3	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0
6.2	0	8	8	9	8	8	8	8	8	-59	-59	-59	-59	-59	-59	-59	-59	-59
6.3	0	4	4	4	4	4	4	4	4	-5	-5	-5	-5	-5	-5	-5	-5	-5
6.4	0	-1	3	1	0	0	-1	-1	-1	-15	-15	-15	-15	-15	-15	-15	-15	-12
6.5	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	-3	5	15	15	15	15	16	16	0	0	0	0	0	0	0	0	0
CHAP 8	11	9	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0
CHAP 9	-5	53	106	161	161	161	162	163	163	0	0	0	0	0	0	0	0	0
CHAP 10	33	32	31	31	31	31	31	31	31	0	0	0	0	0	0	0	0	0
CHAP 11	46	46	46	46	46	46	46	46	46	0	0	0	0	0	0	0	0	0
CHAP 12	2	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	5	15	25	35	34	34	34	0	0	0	0	0	0	0	0	0
CHAP 14	0	8	8	8	8	8	22	34	46	-24	-12	0	0	0	0	0	0	0
CHAP 15	0	11	14	14	12	12	13	13	-47	-228	-228	-228	-228	-228	-228	-228	-228	-228
16.1	0	61	61	61	61	60	60	60	59	-41	-41	-41	-41	-41	-35	-21	-14	-7
16.2	0	0	0	-1	-1	-1	1	1	1	0	0	0	0	0	0	0	0	0
CHAP 17	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0
CHAP 18	0	6	6	6	6	6	6	6	6	-42	-42	-42	-42	-42	-35	-21	-14	-7
LEVEL 1	0	3	3	3	0	0	0	0	0	-60	-60	-60	-60	-60	-60	-60	-60	-60
LEVEL 2/3	0	0	0	0	0	0	1	1	1	-100	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	-2	-4	-2	-2	-2	-2	-3	-16	-17	-269	-269	-269	-269	-269	-269	-269	-269	-269
CHAP 20	0	1	1	1	1	1	1	1	1	-116	-116	-116	-100	-80	-60	-40	-20	0
SSARREV	0	-1	1	1	10	9	19	23	23	-3	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	1	1	3	2	3	4	4	-9	-9	-9	-9	-9	-9	-9	-6	-4
FCS PRA	0	-37	-37	-37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	0	0	0	0	-4	0	0	0	0	-10	-8	-6	-4	-2	0	0	0	0
TEST PRG	0	0	1	1	1	-1	-179	-181	-180	-307	-307	-270	-220	-165	-110	-55	0	0
NOTRUMP	0	0	0	0	0	0	0	0	1	-53	-53	-53	-53	-53	-53	-53	-53	-53
LOFTRAN	-3	-3	-3	-3	-2	-2	-2	-2	-1	-8	-8	-6	-4	-2	0	0	0	0
WC/T	8	8	8	8	8	-5	-5	-5	-5	-13	-13	-13	-13	-13	-13	-13	-13	-13
H&MT	0	0	0	0	0	9	9	9	9	-4	-4	-4	-4	-4	-3	-2	-1	0
LST	0	0	0	0	0	-8	-8	-8	-8	-12	-12	-12	-12	-12	-12	-12	-12	-12
SCALING	0	0	0	0	0	6	6	6	6	-7	-7	-7	-7	-7	-7	-7	-7	-7
W&MT	0	0	0	0	0	5	5	5	5	-3	-3	-3	-3	-3	-3	-3	-3	-3
WATER	-8	-8	-8	-8	-8	-4	-4	-4	-4	-8	-8	-8	-8	-8	-8	-8	-8	-8
WGOTHIC	0	-1	-1	-4	-4	-1	-1	-1	-1	-93	-93	-93	-93	-93	-52	-27	-5	0
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36	-36	0	0	0	0	0	0	0	0	0
ND TOTAL	219	306	395	464	517	532	374	380	343	-1602	-1573	-1500	-1409	-1317	-1182	-1049	-932	-885

Corletti, Winters, Gene Hsii call

To: Corletti, Winters
From: "Donald A. Lindgren" <lindgrda@wcsmail.com>
Subject: Gene Hsii call
Cc:
Bcc:
X-Attachments:

The following changes to open items were agreed to in a phone call with Gene Hsii on November 18, 1996. The call discussed reactor systems branch items in Chapter 5 of the SSAR.

944 Change NRC status to Action W and add to status detail - Waiting for shutdown evaluation report. Change Responsible Engineer to SD (Shutdown)

945 Change NRC Status to Action N

Items 2291 to 2309 Change DSER Section to 5.4.7

2298 Reference 2294, 2295, and 2296 in the status detail.

2300 Change NRC Status to Action N.

2305 Change NRC Status to Action W

2306 Add the status detail.

2307 Change NRC Status to Action N

2308 Change NRC Status to Action W

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 2

To DIANE JACKSON	From JIM WINTERS
Co. US NRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

Winters, James

From: Winters, James
To: Hutchings, Donald; Butler, John C.; McIntyre, Brian A.
Cc: Cummins, Ed; Mandava, Rao; Winters, James
Subject: Telecon on HVAC with NRC
Date: Friday, November 08, 1996 11:35AM

Notes from 11/7/96 telecon with NRC Plant Systems Branch

Participants: NRC - Januk Raval, Diane Jackson
W - Jim Winters, Don Hutchings, John Butler

Subject: HVAC, comments on October 17, 1996 letter

1.a. NRC wanted us to add Figure 9.4.1-1, Sheet 5 of 6 (Revision 1)

Action W - We will add a functional sketch in place of adding back old figure

1.b&d. NRC wants Figure 9.4.2-3, Sheet 3 (Revision 1) added back in.

Action W - add wording in 9.4.2.2.3.5 p9.4-24, Mechanical Equipment HVAC, to describe which rooms are supplied (e.g., demineralized water deoxygenating room)
and do same for other subsystems.

Action W - Send supplemental information package to NRC containing HVAC P&IDs

1.c&e. add better verbal description of distribution to 9.4.3 and simplified sketch for the rest of the subsystems in VAS

2.a. NRC will investigate handling of electrical load information.

Action W - Westinghouse will provide proposed expansion covering major equipment for each subsystem

2b. Westinghouse will add to SSAR a modified form of "Table 9.4-2" in response to RAI 410.240" including appropriate "notes" similar to notes in "Draft Rev 3" (June 19th '95 meeting)

3a&b Westinghouse agrees and will comply with request

4. Westinghouse will review "Draft Rev. 3" and verify reference designations in current revision.

5. Westinghouse will provide draft markup or explanation
6.a.1-8

6.a.9 Westinghouse will review response of VBS to containment isolation (high radiation) and explain

7.a.1 Westinghouse and review and ask for clarification as needed.

7.a.2 Westinghouse will clarification statement on compliance with ASME N509 regarding fan orientation

7.a.3 Westinghouse will add reference to IE 80-03 or explain why reference is not needed

7.a.4 On B-36 Westinghouse will investigate and recommend appropriate reference in section 9.4. On B-66 Westinghouse will investigate appropriate reference in 6.4. On SSAR page 9.4-10 "abnormal plant operation",

add increased discussion of relationship between various signals (high, high-high, etc.) and VES.

These notes will be faxed to Diane Jackson

Next phone call 11/14/96 at 1:00-4:00 (Thursday)

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 2

To	From
Bill Huffman	Jim Winters
Co. US NRC	Co. Westinghouse
Dept.	Phone # 412-374-5290
Fax #	Fax #

Winters, James

From: Winters, James
To: Corletti, Mike; Nydes, Robin; Piplica, Gene; Butler, John C.; Lindgren, Donald A.; Mcintyre, Brian A.
Cc: Winters, James; Mahlab, Moshe X.
Subject: Telephone Meeting with NRC on Chapter 5
Date: Thursday, November 07, 1996 4:08PM

These are my notes from the telephone meeting between NRC (Huffman and Hsii) and Westinghouse (Winters, Lindgren, Mahlab, Nydes, Piplica, and Corletti) held in two parts on November 6 and 7, 1997. I will fax this to Bill Huffman and it will become the basis for changes to the OITS. It will also be sent formally at a later date. The items are ordered by OITS number although they were discussed in a different order.

886 - Show the NRC Status as Action N. Add to Status Detail that Action N is pending satisfactory review of LOFTRAN by the staff. Show the Responsible Engineer as LOFTRAN.
887 - Show the NRC Status as Resolved.
926 - Fix Status Detail to reference the correct flow definition in accordance with Table 15.0-3 and pages 5.1 - 7 & 8.
927 - Show the NRC Status as Resolved.
928 - Expand Status Detail to say what the original concern was and why it went away. Include that the design accommodated the concern without modification and that the SSAR was modified to reflect this position.
929 - Show the NRC Status as Resolved.
936 - Show the NRC Status as Resolved.
937 - Show Responsible Engineer as ITAAC.
940 - Add to end of Status Detail: ", except for ADS valve roadmap required by RAI 952.96 (OITS 1616)."
941 - Show the NRC Status as Action N. Add a reference to the ASI report submittal in the Status Detail.
945 - Show the NRC Status as Action N.
946 - We need to check ERG for action related to stuck open RNS relief valve and include reference to ERG paragraph in Status Detail. We need to check ITAAC for RNS relief valve and include specific reference in Status Detail, if applicable.
955 - Add sentence to second paragraph of 5.4.12 to cover water release by head vent during transients, if required.
- Add sizing basis for head vent orifices.
- Correct page 3.9-147 for valve V150C.
- Correct last paragraph of 5.4.12.3 to cover all high point vents with orifices.
- Following fax submittal of all markups above show NRC Status as W-Confrm.

957 - Show Responsible Engineer as SAR-Ch15.
959 - Show Responsible Engineer as SAR-Ch15. Add PRHR Report submittal reference in Status Detail.
1900 - Show the NRC Status as Resolved.
2275 - No change, this is still open as indicated in OITS.
2277 - We need to check ERG for action related to stuck open LTOP valve and include reference to ERG paragraph in Status Detail. We need to check ITAAC for LTOP valve and include specific reference in Status Detail, if applicable.
2289 - Show the NRC status as Closed.
2290 - Show the NRC status as Closed. Include a statement in the Status Detail that we satisfy URD requirements by including applicable requirements in the equipment specifications.

Other items discussed that did not have an OITS item specifically associated with them:

Put note in Status Detail for at least 943, 944 and 945 that the DSER section numbering is inconsistent between Chapters 1 and 5 of the DSER and therefore inconsistent in the OITS. We will check to determine what other items need this note.

Fix Figure 5.1-5 (all sheets) to have the correct system title.

Our next telephone meeting on Chapter 5 items related to Reactor Systems Branch will be at 1PM on Thursday,

November 14.

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	November 7, 1996	NAME:	Jim Winters
TO:	Ted Quay	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 11

The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

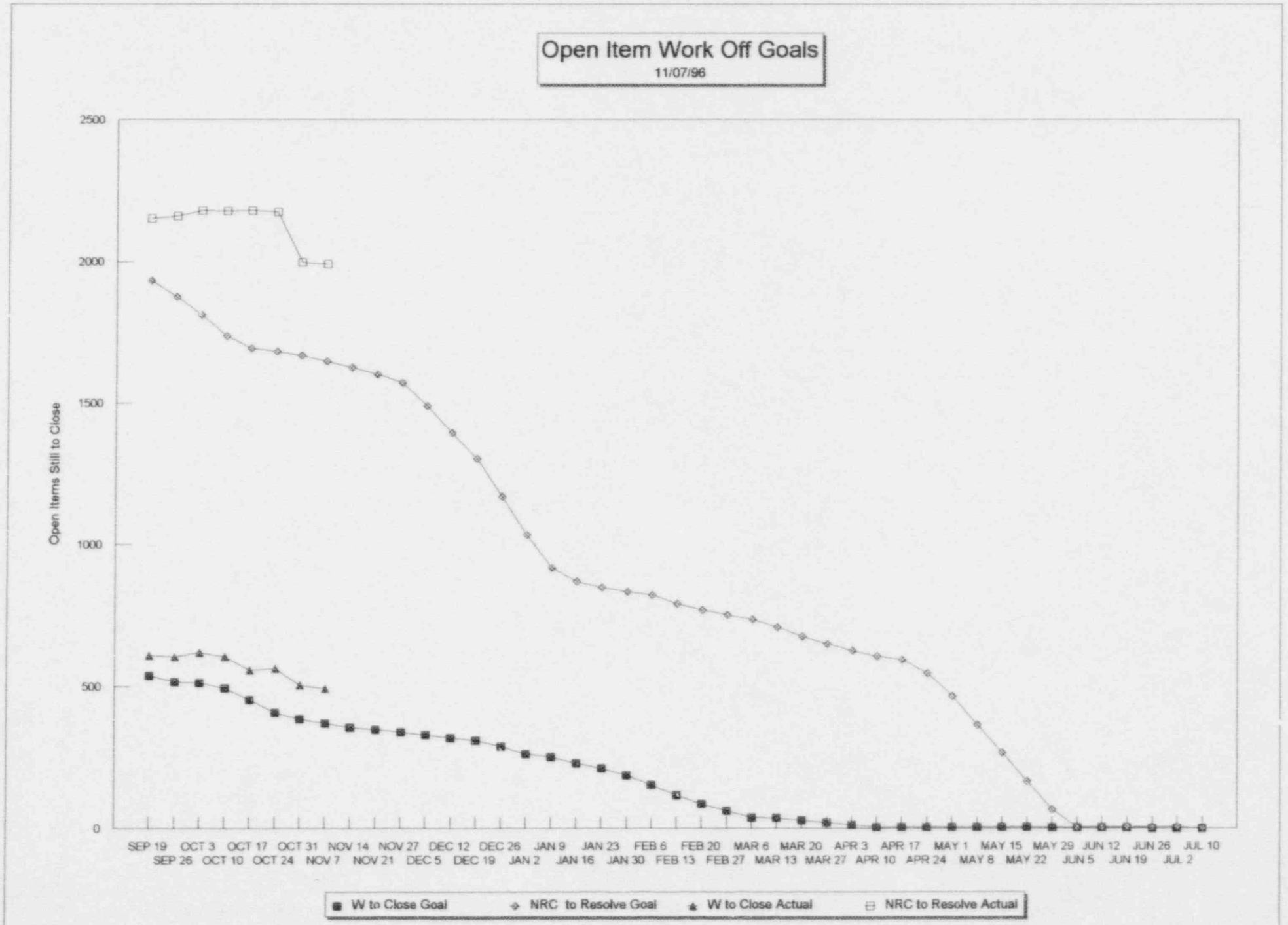
COMMENTS:

Ted

Here is this weeks Open Item Woolcoff Report. Neither WOG nor NRC lost much ground to the Goal Line. Compared to last week. The largest, and easiest, chunk of "NRC Items" is Chapter 9. Many of the 163 items can be called "Resolved." We have three hot chunks, Test Programs, WGOTHIC and IST.

Jim Winters

RETRY FOR ALL PAGES


Open Item Work Off Goals
11/07/96
Open Items Still to Close
2500
2000
1500
1000
500
0
SEP 19
SEP 26
OCT 3
OCT 10
OCT 17
OCT 24
OCT 31
NOV 7
NOV 14
NOV 21
NOV 27
DEC 5
DEC 12
DEC 19
DEC 26
JAN 2
JAN 9
JAN 16
JAN 23
JAN 30
FEB 6
FEB 13
FEB 20
FEB 27
MAR 6
MAR 13
MAR 20
MAR 27
APR 3
APR 10
APR 17
APR 24
MAY 1
MAY 8
MAY 15
MAY 22
MAY 29
JUN 5
JUN 12
JUN 19
JUN 26
JUL 2
JUL 10
W to Close Goal
NRC to Resolve Goal
W to Close Actual
NRC to Resolve Actual

W GOAL 11/07/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
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CHAP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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LEVEL 2/3	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
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CHAP 20	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
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W&MT						7	7	7	7	7	7	7	7	7	7	7	7	7
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
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JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
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211	188	154	118	87	63	39	38	29	21	12	5	4	4	4	4	4	4	3

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
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0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0

N GOAL 11/07/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	4	4	4	4	4	4	4	4	4	4	3	2	1	0	0	0	0	0
3.6.3	10	10	7	21	21	21	21	18	15	12	9	6	3	0	0	0	0	0
3.7	14	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0	0	0
3.8.3	15	15	15	15	15	15	15	15	15	15	15	10	5	0	0	0	0	0
3.8.4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
3.8.5	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	6	4
3.9	42	42	43	43	43	43	43	36	29	22	15	8	0	0	0	0	0	0
3.10	7	7	7	7	7	7	7	7	7	7	6	5	4	3	2	0	0	0
3.11	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
6.3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6.4	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	19	19	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	167	111	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	35	35	30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	74	74	74	74	74	74	60	48	36	24	12	0	0	0	0	0	0	0
CHAP 15	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213
16.1	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	21	14	7
16.2	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	21	14	7
LEVEL 1	134	41	57	57	60	60	60	60	60	60	60	60	60	60	60	60	60	60
LEVEL 2/3	137	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	147	266	266	266	266	266	266	269	269	269	269	269	269	269	269	269	269	269
CHAP 20	116	116	116	116	116	116	116	116	116	116	116	116	100	80	60	40	20	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	6	4
FCS PRA	37	37	37	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	11	11	11	11	11	11	11	11	11	10	8	6	4	2	0	0	0	0
TEST PRG	322	322	322	322	322	322	322	322	322	322	322	275	220	165	110	55	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
LOFTRAN	8	8	8	8	8	8	8	8	8	8	8	6	4	2	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
H&MT						13	13	13	13	13	13	13	13	13	13	13	13	13
LST						4	4	4	4	4	4	4	4	4	3	2	1	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	7	7	7	7	7	7	7	7	7
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	132	132	132	132	132	93	93	93	93	93	93	93	93	93	52	27	5	0
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG TOTAL	1933	1876	1812	1737	1691	1682	1666	1647	1625	1602	1573	1490	1394	1302	1167	1034	917	870

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	14	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
59	59	59	59	59	59	59	59	50	40	30	20	10	0	0	0	0	0	0
4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213	213	213	213	213	213	213	213	213	213	213	213	213	175	140	105	70	35	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	60	60	45	35	25	15	7	0	0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	60	40	20
269	269	269	269	269	269	269	269	269	269	269	269	269	269	222	176	132	88	44
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	53	53	53	53	53	53	40	30	20	10	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	13	13	13	13	13	12	8	4	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	12	12	12	12	10	8	6	4	2	0	0	0	0	0	0	0	0	0
7	7	7	7	7	5	4	3	2	1	0	0	0	0	0	0	0	0	0
3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
849	834	822	792	770	753	738	709	676	649	626	606	596	548	466	365	266	167	68

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	3	3	0
1	1	1	1	1	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
4	4	4	4	4	0

W ACTUAL 11/07/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0										
CHAP 2	0	0	2	2	2	2	2	2										
3.1	0	0	0	0	0	0	0	0										
3.2	2	2	2	2	9	9	9	9										
3.3	0	0	0	0	0	0	0	0										
3.4	0	0	0	0	0	0	0	0										
3.5	0	0	0	0	0	0	0	0										
3.6.1	0	0	0	0	0	0	0	0										
3.6.2	3	3	3	3	3	3	1	1										
3.6.3	7	7	3	7	8	8	8	3										
3.7	6	6	4	4	4	4	4	3										
3.8.2	2	2	4	4	4	4	4	4										
3.8.3	9	12	16	16	16	16	16	16										
3.8.4	6	11	11	11	11	11	11	11										
3.8.5	12	12	12	12	12	12	12	12										
3A &3F	0	0	0	0	0	0	0	0										
CH 42	0	8	8	8	8	8	8	8										
3.9	12	12	13	13	9	27	21	21										
3.10	3	3	3	3	0	2	2	0										
3.11	0	6	6	6	6	6	6	6										
3.12	2	2	7	7	7	7	5	3										
CHAP 4	0	0	0	0	0	0	0	0										
CHAP 5	0	1	0	0	0	0	0	0										
6.1	0	0	0	0	0	0	0	0										
6.2	4	7	6	7	2	2	2	2										
6.3	1	1	1	1	0	0	0	0										
6.4	4	1	6	6	5	5	1	1										
6.5	0	0	0	0	0	0	0	0										
6.6	0	0	0	0	0	0	0	0										
CHAP 7	0	0	0	0	0	0	0	1										
CHAP 8	0	0	0	0	0	0	0	0										
CHAP 9	27	24	16	16	9	3	3	6										
CHAP 10	3	3	5	5	5	5	3	3										
CHAP 11	1	1	1	1	1	1	1	1										
CHAP 12	0	0	0	0	0	0	0	0										
CHAP 13	6	4	4	4	4	4	3	3										
CHAP 14	0	0	0	1	0	0	0	0										
CHAP 15	23	22	31	27	24	24	25	24										
16.1	0	1	1	1	0	0	0	0										
16.2	7	7	8	8	2	1	1	1										
CHAP 17	0	0	0	0	0	0	0	0										
CHAP 18	42	42	42	42	16	16	8	8										
LEVEL 1	67	44	60	60	60	60	37	37										
LEVEL 2/3	33	100	100	100	100	100	100	89										
CHAP 19	57	0	2	2	2	2	1	4										
CHAP 20	1	1	1	1	1	1	1	1										
SSARREV	3	3	5	5	14	13	23	27										
T/H UNC	0	1	1	1	1	1	1	1										
RTNSS	6	8	6	6	8	9	10	10										
FCS PRA	19	0	0	0	0	0	0											
ITAAC	18	18	18	18	18	18	18	18										
TEST PRG	52	50	48	48	48	47	48	55										
NOTRUMP	53	53	53	53	53	53	38	38										
LOFTRAN	0	1	1	1	2	2	2	2										
WCT	8	8	8	8	8	8	8	5										
H&MT						13	13	13										
LST						4	4	4										
SCALING						12	12	12										
W&MT						7	7	7										
WATER						3	3	3										
WGOTHIC	105	105	93	76	77	35	35	31										
JNASSIGN	5	12	9	8	-2	-6	-12	-14										
WA TOTAL	610	605	621	605	558	563	505	492	0	0	0	0	0	0	0	0	0	0

N ACTUAL 11/07/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8										
CHAP 2	6	10	10	10	10	10	10	10										
3.1	0	0	0	0	0	0		0										
3.2	3	3	3	3	10	10	10	10										
3.3	0	0	0	0	0	0	0	0										
3.4	0	0	0	0	0	0	0	0										
3.5	1	1	1	1	1	1	1	1										
3.6.1	2	2	2	2	2	2	2	2										
3.6.2	4	6	4	4	4	4	4	4										
3.6.3	10	21	21	21	22	22	20	16										
3.7	14	14	14	14	14	14	14	14										
3.8.2	8	12	12	12	12	12	12	12										
3.8.3	15	22	22	22	22	22	22	22										
3.8.4	12	18	18	18	18	18	18	18										
3.8.5	18	18	18	18	18	18	18	18										
3A &3F	0	0	0	0	0	0	0	0										
CH 42	0	10	10	10	10	10	10	10										
3.9	42	41	42	42	39	38	33	33										
3.10	7	7	7	7	5	7	7	7										
3.11	4	23	23	23	23	23	23	23										
3.12	13	13	13	13	13	13	13	9										
CHAP 4	2	2	2	2	2	1	1	1										
CHAP 5	30	28	27	27	27	27	27	27										
6.1	3	3	3	3	3	3	3	3										
6.2	59	67	67	68	67	67	67	67										
6.3	5	9	9	9	9	9	9	9										
6.4	12	11	18	16	15	15	14	14										
6.5	1	1	1	1	1	1	1	1										
6.6	0	0	0	0	0	0	0	0										
CHAP 7	19	16	15	15	15	15	15	16										
CHAP 8	11	9	9	9	9	9	9	9										
CHAP 9	162	164	161	161	161	161	162	163										
CHAP 10	33	32	31	31	31	31	31	31										
CHAP 11	46	46	46	46	46	46	46	46										
CHAP 12	2	2	2	2	2	2	2	2										
CHAP 13	35	35	35	35	35	35	34	34										
CHAP 14	74	82	82	82	82	82	82	82										
CHAP 15	213	224	227	227	225	225	226	226										
16.1	4*	102	102	102	102	101	101	101										
16.2	1	1	2	1	1	1	1	1										
CHAP 17	5	5	5	5	5	5	5	5										
CHAP 18	42	48	48	48	48	48	48	48										
LEVEL 1	134	44	60	60	60	60	60	60										
LEVEL 2/3	137	100	100	100	100	100	101	101										
CHAP 19	145	262	264	264	264	264	263	253										
CHAP 20	116	117	117	117	117	117	117	117										
SSARREV	3	2	4	4	13	12	22	26										
T/H UNC	0	1	1	1	1	1	1	1										
RTNSS	8	10	9	9	11	11	12	13										
FCS PRA	37	0	0	0	0	0	0	0										
ITAAC	11	11	11	11	7	11	11	11										
TEST PRG	322	322	323	323	323	321	143	141										
NOTRUMP	53	53	53	53	53	53	53	53										
LOFTRAN	5	5	5	5	6	6	6	6										
WC/T	8	8	8	8	8	8	8	8										
H&MT						13	13	13										
LST						4	4	4										
SCALING						13	13	13										
W&MT						8	8	8										
WATER						4	4	4										
WGOTHiC	132	131	131	128	128	92	92	92										
JNASSIGN	78	-21	-27	-23	-29	-39	-43	-36										
NA TOTAL	2152	2161	2180	2178	2179	2175	1997	1991	0	0	0	0	0	0	0	0	0	0

W DELTA 11/07/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	2	2	2	2	9	9	9	9	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	3	3	3	0	1	3	1	1	0	0	0	0	0	0	0	0	0	0
3.6.3	7	7	3	4	6	8	8	3	0	0	0	0	0	0	0	0	0	0
3.7	6	6	4	4	4	4	4	3	0	0	0	0	0	0	0	0	0	0
3.8.2	-1	-1	1	2	3	4	4	4	0	0	0	0	0	0	0	0	0	0
3.8.3	0	3	7	7	7	7	7	7	-9	-9	-9	-6	-3	0	0	0	0	0
3.8.4	0	5	5	5	5	5	5	5	-6	-6	-6	-6	-6	-4	-2	0	0	0
3.8.5	0	0	0	0	0	0	0	0	-12	-12	-12	-12	-9	-6	-3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	2	-4	-2	0	0	0	0	0	0	0	0
3.9	2	5	7	10	9	27	21	21	0	0	0	0	0	0	0	0	0	0
3.10	0	0	0	0	-3	0	1	0	0	0	0	0	0	0	0	0	0	0
3.11	0	6	6	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0
3.12	2	2	7	7	7	7	5	3	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	0	3	2	3	-2	-2	-2	-2	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
6.3	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0
6.4	0	-3	-1	-1	-2	-2	-6	-6	-7	-7	-7	-7	-5	-3	-2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	27	24	16	16	9	3	3	6	0	0	0	0	0	0	0	0	0	0
CHAP 10	3	3	5	5	5	5	3	3	0	0	0	0	0	0	0	0	0	0
CHAP 11	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	6	4	4	4	4	4	3	3	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	0	-1	8	4	1	1	2	1	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23
16.1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0
16.2	7	7	8	8	2	1	1	1	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	2	6	10	-12	-8	-12	-8	-12	-8	-4	0	0	0	0	0	0	0
LEVEL 1	0	3	3	3	0	0	-23	-23	-60	-60	-60	-60	-60	-60	-50	-35	-25	-15
LEVEL 2/3	0	0	0	0	0	0	0	-11	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	0	-5	-3	-3	-3	-3	-4	-4	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
CHAP 20	0	0	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0
SSARREV	0	0	2	2	11	10	20	24	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	0	0	2	2	3	3	-7	-7	-4	-2	0	0	0	0	0	0
FCS PRA	0	-19	-19	-19	-19	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	0	0	0	0	18	18	18	18	0	0	0	0	0	0	0	0	0	0
TEST PRG	0	1	6	13	20	26	34	48	0	0	0	0	0	0	0	0	0	0
NOTRUMP	0	0	0	0	0	0	-15	-15	-53	-53	-53	-53	-53	-53	-53	-53	-53	-40
LOFTRAN	0	0	0	0	1	1	1	2	0	0	0	0	0	0	0	0	0	0
WC/T	0	0	0	0	0	0	0	-3	-8	-8	-8	-8	-8	-8	-4	0	0	0
H&MT						0	0	0	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13
LST						0	1	2	-1	0	0	0	0	0	0	0	0	0
SCALING						0	0	0	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
W&MT						0	0	0	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7
WATER						0	0	0	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
WGOTHIC	0	15	13	6	17	24	33	31	0	0	0	0	0	0	0	0	0	0
JNASSIGN	5	12	9	8	-2	-6	-12	-14	0	0	0	0	0	0	0	0	0	0
WD TOTAL	71	77	99	103	108	162	132	136	-356	-348	-339	-329	-319	-309	-289	-262	-252	-229

N DELTA 11/07/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	4	6	8	10	10	10	10	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	1	2	3	10	10	10	10	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
3.6.1	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0
3.6.2	0	2	0	0	0	0	0	0	-4	-4	-3	-2	-1	0	0	0	0	0
3.6.3	0	11	14	0	1	1	-1	-2	-15	-12	-9	-6	-3	0	0	0	0	0
3.7	0	0	7	14	14	14	14	14	0	0	0	0	0	0	0	0	0	0
3.8.2	-4	0	0	0	0	0	0	0	-12	-12	-9	-6	-3	0	0	0	0	0
3.8.3	0	7	7	7	7	7	7	7	-15	-15	-15	-10	-5	0	0	0	0	0
3.8.4	0	6	6	6	6	6	6	6	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
3.8.5	0	0	0	0	0	0	0	0	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	0	-10	-10	-10	-10	-10	-10	-10	-8	-6	-4
3.9	0	-1	-1	-1	-4	-5	-10	-3	-29	-22	-15	-8	0	0	0	0	0	0
3.10	0	0	0	0	-2	0	0	0	-7	-7	-6	-5	-4	-3	-2	0	0	0
3.11	0	19	21	23	23	23	23	23	0	0	0	0	0	0	0	0	0	0
3.12	13	13	13	13	13	13	13	9	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	2	2	1	1	1	0	0	0	0	0	0	0	0	0	0
CHAP 5	30	28	27	27	27	27	27	27	0	0	0	0	0	0	0	0	0	0
6.1	3	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0
6.2	0	8	8	9	8	8	8	8	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59
6.3	0	4	4	4	4	4	4	4	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
6.4	0	-1	3	1	0	0	-1	-1	-15	-15	-15	-15	-15	-15	-15	-15	-15	-12
6.5	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	-3	5	15	15	15	15	16	0	0	0	0	0	0	0	0	0	0
CHAP 8	11	9	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0
CHAP 9	-5	53	106	161	161	161	162	163	0	0	0	0	0	0	0	0	0	0
CHAP 10	33	32	31	31	31	31	31	31	0	0	0	0	0	0	0	0	0	0
CHAP 11	46	46	46	46	46	46	46	46	0	0	0	0	0	0	0	0	0	0
CHAP 12	2	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	5	15	25	35	34	34	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	8	8	8	8	8	22	34	-36	-24	-12	0	0	0	0	0	0	0
CHAP 15	0	11	14	14	12	12	13	13	-213	-213	-213	-213	-213	-213	-213	-213	-213	-213
16.1	0	61	61	61	61	60	60	60	-41	-41	-41	-41	-41	-41	-35	-21	-14	-7
16.2	0	0	0	-1	-1	-1	1	1	0	0	0	0	0	0	0	0	0	0
CHAP 17	5	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	6	6	6	6	6	6	6	-42	-42	-42	-42	-42	-42	-35	-21	-14	-7
LEVEL 1	0	3	3	3	0	0	0	0	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
LEVEL 2/3	0	0	0	0	0	0	1	1	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	-2	-4	-2	-2	-2	-2	-3	-15	-269	-269	-269	-269	-269	-269	-269	-269	-269	-269
CHAP 20	0	1	1	1	1	1	1	1	-116	-116	-116	-116	-100	-80	-60	-40	-20	0
SSARREV	0	-1	1	1	10	9	19	23	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	-2	1	1	3	2	3	4	-9	-9	-9	-9	-9	-9	-9	-9	-6	-4
FCS PRA	0	-37	-37	-37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	0	0	0	0	-4	0	0	0	-11	-10	-8	-6	-4	-2	0	0	0	0
TEST PRG	0	0	1	1	1	-1	-179	-181	-322	-322	-322	-275	-220	-165	-110	-55	0	0
NOTRUMP	0	0	0	0	0	0	0	0	-53	-53	-53	-53	-53	-53	-53	-53	-53	-53
LOFTRAN	-3	-3	-3	-3	-2	-2	-2	-2	-8	-8	-8	-6	-4	-2	0	0	0	0
WC/T	8	8	8	8	8	-5	-5	-5	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13
H&MT	0	0	0	0	0	9	9	9	-4	-4	-4	-4	-4	-4	-3	-2	-1	0
LST	0	0	0	0	0	-8	-8	-8	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
SCALING	0	0	0	0	0	6	6	6	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7
W&MT	0	0	0	0	0	5	5	5	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
WATER	-8	-8	-8	-8	-8	-4	-4	-4	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
WGOTHIC	0	-1	-1	-4	-4	-1	-1	-1	-93	-93	-93	-93	-93	-93	-52	-27	-5	0
JNASSIGN	78	-21	-27	-23	-29	-30	-43	-36	0	0	0	0	0	0	0	0	0	0
ND TOTAL	219	306	395	464	517	532	374	380	-1625	-1602	-1573	-1490	-1394	-1302	-1167	-1034	-917	-870

FAX TO TED QUAY @ NRC

Ted,
Please pass this along to your Project Managers.
Consistent with our discussion from last Wednesday about changing our Open Item progress metric, I've taken the actions outlined below. Remember we discussed moving to a measuring system that uses the NRC Status portion of OITS after we agree what that status is. The status would reflect who has the next action if one is required. Therefore, the allowable status entries could be: Action W, Action N, W Confirm, Resolved, Closed. The W Confirm status is new. It should reflect that NRC agrees with the information or markups W has provided, the item is resolved, but W must issue the agreed language in a formal revision to the SSAR or WCAP. This means that we must move all current status entries into one of these 5 buckets and then discuss any where the W Status is different from the N Status. One they are the same we can legitimately track our progress from the N Status portion of OITS. So towards that end we:

Showed W Status as Action W for Item 308.
Showed NRC Status as Closed for Item 475.
Showed W Status as Action N for Item 628.
Showed W Status as Closed for Item 664.
Showed W Status as Action W for Item 724.
Showed W Status as Action W for Item 725.
Showed W Status as Action N for Item 973.
Showed W Status as Action W for Item 1612.
Showed NRC Status as Closed for Item 2517.
Showed NRC Status as Closed for Item 2518.
Showed NRC Status as Closed for Item 2519.

This took care of all current items with W Status of Active and Proposed and all current items with NRC Status of Inactive. Next is to redefine the status of items with NRC Status of Active (53) and with NRC Status of Proposed (17).

Please have any one call with questions or comments.

Jim

Jim Winters
412-374-5290

11/4/96

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To	From
DIANE JACKSON	JIM WINTERS
Co. USNRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

Winters, James

From: Winters, James
To: Butler, John C.; Lindgren, Donald A.; McIntyre, Brian A.
Cc: Hutchings, Donald; Israelson, Gordon; Winters, James
Subject: Telephone Call with NRC on Parts of Chapter 9
Date: Tuesday, November 05, 1996 1:00PM

These are my notes from the call we had with NRC today. I will fax this to NRC and it will be the basis for changing the NRC Status for identified items in OITS.

Section 9.3.1

Item 237 - Show NRC Status as Resolved.
Item 239 - Provide NRC with fax of markup of section 9.3.1 stating that the compressors are sized to 100% per train in the instrument and service air subsystems. Then show NRC Status as W Confirm.
Item 243 - Provide NRC with fax of markup to section 9.3.2.2.1 which better explains where the nitrogen comes from for the main steam isolation valves. Then show NRC Status as W Confirm.
Item 244 - Provide NRC with fax of markup to section 9.3.1.4 (p. 9.3-6) to state "sudden" loss and "gradual" reduction of pressure. Then show NRC Status as W Confirm.
Item 245 - Show NRC Status as Action N.
Item 2815 - Show NRC Status as Action N.
New Item 11-5-1 - Add receiver drain valves and containment isolation valve numbers to Figure 9.3.1-1.
New Item 11-5-2 - Add text in section 9.3.1.2.3 to describe differences in breathing air supply and use and connection incompatibility between the high pressure and service air subsystems.
New Item 11-5-3 - Add text to section 9.3.1 to specify cleanliness requirements for the instrument air subsystem. If reference to ANSI/ISA S7.3 is used, make sure S7.3 is a standard and not a recommendation.

Section 9.3.5

Item 253 - Add text or sketch or both to section 9.3.5 to indicate the number of sumps and the general areas serviced by the equipment and floor drainage subsystems. Show NRC Status as Action W.
Item 249 - Show NRC Status as Resolved.
Item 250 - Show NRC Status as Action N.
Item 254 - Show NRC Status as Resolved.
Item 255 - Show NRC Status as Resolved.
Item 1099 - Show NRC Status as Action N.

Section 9.5.4

Item 326 - Show NRC Status as Resolved.
Item 326 - Show NRC Status as Resolved.
Item 330 - Fix COL item on page 9.5-27 to address source of fuel oil requirements as the diesel engine manufacturer recommendations. Then show NRC Status as W Confirm.
Item 333 - Fix section 9.5.4 to list the topics from the RAI and address the system's acceptability. Put pointers to other SSAR sections where appropriate. Then show NRC Status as W Confirm.
Item 335 - Replace sheet 3 of figure on page 9.5-75 with proper figure. In addition, confirm whether standard practice has only a strainer at fill point from tanker truck. Then show NRC Status as W Confirm.
Item 337 - Show NRC Status as Resolved.
Item 338 - NRC will provide markup of deleted table to indicate items important enough to put back into the SSAR. Then we will provide an SSAR markup. Show NRC Status as Action W.
Item 339 - We have indicated that DEMA standards are obsolete but have referenced them in Table 3.2-3. We will provide markup of SSAR and provide alternate standards of good commercial practice. Show NRC Status as Action N.
Item 340 - Same as for Item 339 above.

Item 341 - We need to make Table 3.2-3, Figure 9.5.4-1, section 9.5.4.1.3 and section 8.3.1.1.2.1 consistent and provide NRC with a markup. Show NRC Status as Action W.
Item 342 - We need to include mention of items from RAI 410.181 in section 8.3 as indicated in DSER. Show NRC Status as Action W.
Item 344 - We need to include a statement in section 8.3.1.1.2.1of commitment to manufacturer's recommendations for items in this question. Show NRC Status as W Confirm.
Item 346 - We need to include mention of items from question in section 8.3 Show NRC Status as Action N.
Item 348 - We need to include a statement in section 8.3.1 of commitment to manufacturer's recommendations for items in this question. Show NRC Status as W Confirm.
Item 350 - We need to include a statement in section 8.3.1 of commitment to manufacturer's recommendations for items in this question. Show NRC Status as W Confirm.
Item 357 - We need to include a statement in section 8.3.1 of commitment to manufacturer's recommendations for items in this question. Show NRC Status as W Confirm.
Item 1127 - Show NRC Status as Action N.
Item 1128 - Show NRC Status as Action N.
Item 1129 - Show NRC Status as W Confirm.
Item 1130 - Show NRC Status as Action N.
Item 1131 - Show NRC Status as W Confirm.
Item 1132 - Show NRC Status as W Confirm.
Item 1923 - Show NRC Status as Action N.
Item 1924 - Show NRC Status as Action N.

Please call me with comments or questions.

Jim
x5290

Winters, James

From: Winters, James
To: Butler, John C.; Lindgren, Donald A.; Mcintyre, Brian A.
Cc: Winters, James; Novendstern, Earl
Subject: LOFTRAN Open Items
Date: Tuesday, November 05, 1996 4:02PM

This is to document a telephone conversation I had with NRC (Huffman) today. It also forms the basis for our modifying the NRC Status entry for four Open Items. I will fax a copy of this message to Bill Huffman.
Bill and I discussed the items associated with LOFTRAN where we have identified them as Closed and NRC show them as Action W. Bill has agreed that Open Items 3135, 3136, 3138 and 3139 should show NRC Status as Action N.

If you have any questions, please call me.

Jim
x5290

Post-It™ brand fax transmittal memo 7671	# of pages ▸ 1
To BILL HUFFMAN	From JIM WINTERS
Co. USNRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax # RETRY IN CASE TOP WAS CUT OFF	Fax #

Winters, James

From: Winters, James
To: Butler, John C.; Lindgren, Donald A.; Mcintyre, Brian A.
Cc: Winters, James; Novendstern, Earl
Subject: RE: LOFTRAN Open Items
Date: Tuesday, November 05, 1996 4:04PM

In addition, we will indicate in the Status Detail field: "Action N - NRC to review acceptability of RAI response."

Jim
x5290

From: Winters, James
To: Butler, John C.; Lindgren, Donald A.; Mcintyre, Brian A.
Cc: Winters, James; Novendstern, Earl
Subject: LOFTRAN Open Items
Date: Tuesday, November 05, 1996 4:02PM

This is to document a telephone conversation I had with NRC (Huffman) today. It also forms the basis for our modifying the NRC Status entry for four Open Items. I will fax a copy of this message to Bill Huffman.
Bill and I discussed the items associated with LOFTRAN where we have identified them as Closed and NRC show them as Action W. Bill has agreed that Open Items 3135, 3136, 3138 and 3139 should show NRC Status as Action N.

If you have any questions, please call me.

Jim
x5290

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To B. C. HUFFMAN	From JIM WINTERS
Co. US NRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	November 5, 1996	NAME:	Jim Winters
TO:	Diane Jackson	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 1

The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane,

Here is a Redend of the markup for 9.1.35. It has a typed version of the previous markup AND an additional markup. It will be included in Revision 10 of the SSAR unless I hear from you.

Jim

cc: McIntyre
Cummins
Ron Vijuk
Butler
Winters
Israelson.

9.1.3.4.3.4 Station Blackout

Following a loss of ac power (off-site power and both diesel generators), the heat capacity of the water in the pool is such that cooling of the fuel is maintained. Table 9.1-4 provides the times before boiling would occur in the pool following station blackout for various scenarios as well as the minimum levels of water that would be reached. Activity releases due to pool boiling are analyzed. The release concentrations at the site boundary are small fractions of the limits specified in 10 CFR 20, Appendix B with no credit for removal of activity by building ventilation systems (which are not available during loss of ac power situations). See subsection 9.1.3.1. The equipment in the fuel handling area exposed to elevated temperature and humidity conditions as a result of pool boiling does not provide a safety-related mitigation of the effects of spent fuel pool boiling or station blackout.

Spent fuel pool makeup for long term station blackout can be provided through a seismically qualified safety-related makeup connection. This connection is located in an area of the auxiliary building that can be accessed without exposing operating personnel to excessive levels of radiation or adverse environmental conditions during boiling of the pool. Operating personnel are not required to enter the fuel handling area when normal cooling is not available, and are not required to enter the area to recover normal cooling.

9.1.3.5 Safety Evaluation

The only spent fuel pool cooling system safety-related functions are containment isolation and emergency makeup connections to the spent fuel pool. Containment isolation evaluation is described in subsection 6.2.3. The following provides the evaluation of the design of the spent fuel pool as well as the spent fuel pool cooling system:

- The spent fuel pool is designed such that a water level is maintained above the spent fuel assemblies for at least 72 hours following a loss of the spent fuel pool cooling system, and without makeup (see Table 9.1-4). The minimum water level to achieve sufficient cooling is the sub-cooled, collapsed level (without vapor voids) required to cover the top of the fuel assemblies. The water available for fuel cooling includes water in the reactor cavity which will flow by gravity through the fuel transfer tube through the containment in to the fuel transfer canal which is connected to the pool. The fuel transfer tube is open during shutdown fuel handling operations and when the full core is located in the pool. 2 refueling operations

- The heat load is assumed to be the heat load assumed for a full core off load.

- The spent fuel pool cooling system includes safety-related connections to establish makeup to the spent fuel pool within 72 hours following a design basis event including a seismic event.

Radiation shielding normally provided by the water above the fuel is not required when normal spent fuel pool cooling is not available. Personnel are not permitted in the area when the level in the pool is below the minimum level.

WESTINGHOUSE ELECTRIC CORPORATION
PO BOX 355
PITTSBURGH, PA 15230-0355

AP600

ADVANCED PLANT SAFETY AND LICENSING

FAX NO: 412-374-4887 (WIN 284)
CONFIRMATION NO: 412-374-4237

DATE: 11/4/97

TO: Bill Huffman

LOCATION: NRC

FAX NUMBER: (301) 415-2002

FROM: **John C. Butler**

PHONE: WIN: 284-5268
BELL: 412-374-5268

NUMBER OF PAGES (INCLUDING COVER SHEET): 2

COMMENTS / MESSAGE:

Bill,

In our letter NSD-NRC-96-4801 (dated August 14, 1996) we provided proposed SSAR revisions to address review comments on the Plant Lighting System. You subsequently identified in a 11/1/96 fax the desire for a word clarification in subsection 9.5.3.1.1. This clarification has been added and is shown on the attached draft page. This change will appear in Revision 10 of the SSAR unless we hear otherwise from you.

cc: Jim Winters, Ed Cummins, Ron Vijuk, Tom Hayes, Brian McIntyre

9.5.3 Plant Lighting System

The plant lighting system includes normal, emergency, panel, and security lighting. The normal lighting provides normal illumination during plant operating, maintenance, and test conditions. The emergency lighting provides illumination in areas where emergency operations are performed upon loss of normal lighting. The panel lighting in the control room is designed to provide the minimum illumination required at the safety panels. The security lighting system is described in separate security documents. See subsection 13.6.8.

9.5.3.1 Design Basis

9.5.3.1.1 Safety Design Basis

- The normal and emergency lighting in the main control room and in the remote shutdown area is non-Class 1E. The emergency lighting in these plant areas is fed from a Class 1E uninterruptible power supply through two series fuses that are coordinated for isolation. The emergency lighting provides illumination for 72 hours upon loss of normal lighting. In other plant areas, the emergency lighting provides illumination for 8 hours.

- Lighting for the safety panels in the control room is provided by the panel lighting system. The power for the panel lighting is from the Divisions B and C Class 1E inverters through Class 1E distribution panels. The panel lighting circuits up to the lighting fixture are classified as associated and are routed in Seismic Category I raceways. The bulbs are not seismically qualified.

- During the 72 hour period following a loss of all ac power sources, the normal lighting in the main control room and in the remote shutdown area can be provided as described in subsection 9.5.3.2.2.

9.5.3.1.2 Power Generation Design Basis

- The plant lighting system is non-Class 1E.

- The plant lighting system provides illumination levels for normal and emergency lighting as recommended in Illuminating Engineering Society Lighting Handbook (Reference 5).

- Mercury vapor lamps and mercury switches are not used in fuel handling areas.

- High-intensity discharge (HID) and fluorescent lamps are not used in the containment and fuel handling areas due to their mercury content. Incandescent lighting or other lighting not containing restricted materials is used in these areas.

Working added to address NRC comment.

** TX CONFIRMATION REPORT ** AS OF NOV 4 '96 16:56 PAGE.01

AP600 DESIGN CERT

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	STATUS
01	11/ 4	16:55	8130141520002	G3--S	01'02	02	OK

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	October 31, 1996	NAME:	Jim Winters
TO:	Diane Jackson	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

Cover + Pages 1 + 2

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WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane

Here are the markups that resolve Items 2 & 3 from our September 11, 1996 call on Spent Fuel Cooling with Walker and Poheida. The first item on the extra scenario for analysis will be addressed after Commission action on the policy issues. These markups will go in Rev. 10 of the SSAR ~~if~~ unless we hear from you.

Jim Winters

cc: Israelson
Lindgren
McIntyre
Cummins
Ron Visuk
Winters.

9.1.3.4.3.4 Station Blackout

Following a loss of ac power (off-site power and both diesel generators), the heat capacity of the water in the pool is such that cooling of the fuel is maintained. Table 9.1-4 provides the times before boiling would occur in the pool following station blackout for various scenarios as well as the minimum levels of water that would be reached. Activity releases due to pool boiling are analyzed. The release concentrations at the site boundary are small fractions of the limits specified in 10 CFR 20, Appendix B with no credit for removal of activity by building ventilation systems (which are not available during loss of ac power situations). See subsection 9.1.3.1. The equipment in the fuel handling area exposed to elevated temperature and humidity conditions as a result of pool boiling does not provide a safety-related mitigation of the effects of spent fuel pool boiling or station blackout.

Spent fuel pool makeup for long term station blackout can be provided through a seismically qualified safety-related makeup connection. This connection is located in an area of the auxiliary building that can be accessed without exposing operating personnel to excessive levels of radiation or adverse environmental conditions during boiling of the pool. Operating personnel are not required to enter the fuel handling area when normal cooling is not available, and are not required to enter the area to recover normal cooling.

9.1.3.5 Safety Evaluation

The only spent fuel pool cooling system safety-related functions are containment isolation and emergency makeup connections to the spent fuel pool. Containment isolation evaluation is described in subsection 6.2.3. The following provides the evaluation of the design of the spent fuel pool as well as the spent fuel pool cooling system:

- The spent fuel pool is designed such that a water level is maintained above the spent fuel assemblies for at least 72 hours following a loss of the spent fuel pool cooling system, and without makeup (see Table 9.1-4). The minimum water level to achieve sufficient cooling is the sub-cooled, collapsed level (without vapor voids) required to cover the top of the fuel assemblies.

- The heat load is assumed to be the heat load assumed for a full core off load.

- The spent fuel pool cooling system includes safety-related connections to establish makeup to the spent fuel pool within 72 hours following a design basis event including a seismic event.

Radiation shielding normally provided by the water above the fuel is not required when normal spent fuel pool cooling is not available. Personnel are not permitted in the area when the level in the pool is below the minimum level.

The acceptability of the design of the spent fuel pool cooling system is based on specific General Design Criteria (GDCs) and Regulatory Guides as described in Sections 3.1 and 1.9.

The water available for fuel cooling includes water in the reactor cavity which will flow by gravity through the fuel transfer tube through containment into the fuel transfer canal which is connected to the pool. The fuel transfer tube is open during shutdown fuel handling operations and when the full core is located in the pool.

9.1.3.6 Inspection and Testing Requirements

Active components of the spent fuel pool cooling system are either in continuous or intermittent use during normal system operation. Periodic visual inspection and preventive maintenance are conducted.

No specific equipment tests are required since system components are normally in operation when spent fuel is stored in the fuel pool. Sampling of the fuel pool water for gross activity, tritium and particulate matter is conducted periodically.

9.1.3.7 Instrumentation Requirements

The instrumentation provided for the spent fuel pool cooling system is discussed in the following paragraphs. Alarms and indications are provided as noted.

A. Temperature

Instrumentation is provided to measure the temperature of the water in the spent fuel pool and to give indication as well as annunciation in the main control room when normal temperatures are exceeded.

Instrumentation is also provided to give indication of the temperature of the spent fuel pool water as it leaves either heat exchanger.

B. Pressure

Instrumentation is provided to measure and give indication of the pressures in the spent fuel pool pump suction and discharge lines. Instrumentation is also provided at locations upstream and downstream from the spent fuel pool filter and demineralizer so that pressure differential across this equipment can be determined. High differential pressure across the spent fuel pool filter and demineralizer is annunciated in the main control room.

C. Flow

Instrumentation is provided to measure and give remote indication of the spent fuel pool cooling loop flow downstream of the spent fuel pool pumps. Purification flow is also continuously measured.

D. Level

Safety-related

Instrumentation is provided to give an alarm in the main control room when the water level in the spent fuel pool reaches either the high-level or low-level setpoint. This instrumentation is used for post-accident monitoring of the spent fuel pool level. (See Table 7.5-1)

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	October 31 1996	NAME:	Jim Winters
TO:	Bill Huffman	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

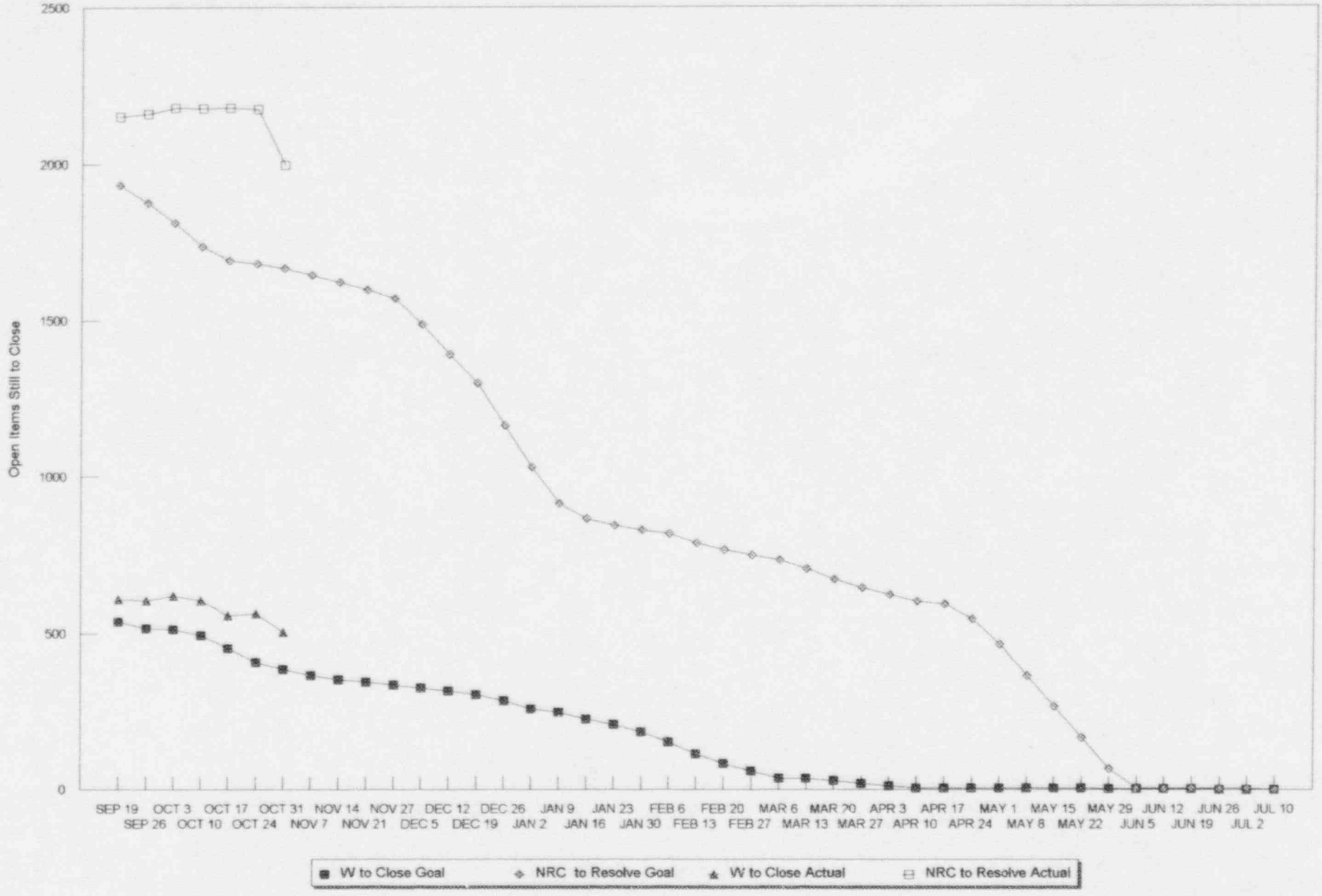
Bill

Here is this week's REPORT. PLEASE GET IT AROUND TO OTHER PROJECT MANAGERS. THANKS.

Jim

Open Item Work Off Goals

10/31/96



W GOAL 10/31/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.3	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.3	9	9	9	9	9	9	9	9	9	9	9	6	3	0	0	0	0	0
3.8.4	6	6	6	6	6	6	6	6	6	6	6	6	6	4	2	0	0	0
3.8.5	12	12	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	8	8	8	8	8	8	6	4	2	0	0	0	0	0	0	0	0
3.9	10	7	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.10	3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0
3.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
6.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0
6.4	4	4	7	7	7	7	7	7	7	7	7	7	5	3	2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
16.1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
16.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	40	36	32	28	24	20	16	12	8	4	0	0	0	0	0	0	0
LEVEL 1	67	41	57	57	60	60	60	60	60	60	60	60	60	60	50	35	25	15
LEVEL 2/3	33	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	57	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
CHAP 20	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
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FCS PRA	19	19	19	19	19	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	18	18	18	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TEST PRG	52	49	42	35	28	21	14	7	0	0	0	0	0	0	0	0	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	40
LOFTRAN		1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	4	0	0	0
H&MT						13	13	13	13	13	13	13	13	13	13	13	13	13
LST						4	3	2	1	0	0	0	0	0	0	0	0	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	7	7	7	7	7	7	7	7	7
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	105	90	80	70	60	11	2	0	0	0	0	0	0	0	0	0	0	0
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WG TOTAL	539	516	513	494	452	407	385	367	353	345	336	326	316	306	286	259	249	226

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	4	4	4	4	4	4	3	2	1	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	23	23	23	23	23	23	23	18	12	6	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	100	80	60	40	20	0	0	0	0	0	0	0	0	0	0	0	0	0
5	5	5	5	5	5	5	5	4	3	2	1	0	0	0	0	0	0	0
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3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	13	13	12	8	4	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	5	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	185	151	115	84	60	36	35	28	20	12	5	4	4	4	4	4	4	3

JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
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0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	0	0	0

N GOAL 10/31/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	4	4	4	4	4	4	4	4	4	4	3	2	1	0	0	0	0	0
3.6.3	10	10	7	21	21	21	21	18	15	12	9	6	3	0	0	0	0	0
3.7	14	14	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	12	12	12	12	12	12	12	12	12	12	9	6	3	0	0	0	0	0
3.8.3	15	15	15	15	15	15	15	15	15	15	15	10	5	0	0	0	0	0
3.8.4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
3.8.5	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	10	10	10	10	10	10	10	10	10	10	10	10	10	10	8	6	4
3.9	42	42	43	43	43	43	43	36	29	22	15	8	0	0	0	0	0	0
3.10	7	7	7	7	7	7	7	7	7	7	6	5	4	3	2	0	0	0
3.11	4	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59
6.3	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
6.4	12	12	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	12
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	19	19	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	157	111	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	35	35	30	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	74	74	74	74	74	74	60	48	36	24	12	0	0	0	0	0	0	0
CHAP 15	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213
16.1	41	41	41	41	41	41	41	41	41	41	41	41	41	41	35	21	14	7
16.2	1	1	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	42	42	42	42	42	42	42	42	42	42	42	42	42	42	35	21	14	7
LEVEL 1	134	41	57	57	60	60	60	60	60	60	60	60	60	60	60	60	60	60
LEVEL 2/3	137	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
CHAP 19	147	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266	266
CHAP 20	116	116	116	116	116	116	116	116	116	116	116	116	100	80	60	40	20	0
SSARREV	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
T/H UNC	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RTNSS	8	8	8	8	8	9	9	9	9	9	9	9	9	9	9	9	6	4
FCS PRA	37	37	37	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	11	11	11	11	11	11	11	11	11	10	8	6	4	2	0	0	0	0
TEST PRG	322	322	322	322	322	322	322	322	322	322	322	275	220	165	110	55	0	0
NOTRUMP	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
LOFTRAN	8	8	8	8	8	8	8	8	8	8	8	6	4	2	0	0	0	0
WC/T	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
H&MT						13	13	13	13	13	13	13	13	13	13	13	13	13
LST						4	4	4	4	4	4	4	4	4	3	2	1	0
SCALING						12	12	12	12	12	12	12	12	12	12	12	12	12
W&MT						7	7	7	7	7	7	7	7	7	7	7	7	7
WATER						3	3	3	3	3	3	3	3	3	3	3	3	3
WGOTHIC	132	132	132	132	132	93	93	93	93	93	93	93	93	93	52	27	5	0
JNASSIGN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NG TOTAL	1933	1876	1812	1737	1691	1682	1666	1644	1622	1599	1570	1487	1391	1299	1164	1031	914	867

JAN 23	JAN 30	FEB 6	FEB 13	FEB 20	FEB 27	MAR 6	MAR 13	MAR 20	MAR 27	APR 3	APR 10	APR 17	APR 24	MAY 1	MAY 8	MAY 15	MAY 22	MAY 29
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	9	6	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	14	10	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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59	59	59	59	59	59	59	59	50	40	30	20	10	0	0	0	0	0	0
4	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	7	5	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213	213	213	213	213	213	213	213	213	213	213	213	213	175	140	105	70	35	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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60	60	60	45	35	25	15	7	0	0	0	0	0	0	0	0	0	0	0
100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	80	60	40	20
266	266	266	266	266	266	266	266	266	266	266	266	266	266	220	176	132	88	44
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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53	53	53	53	53	53	53	40	30	20	10	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	8	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	13	13	13	13	13	12	8	4	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	12	12	12	12	10	8	6	4	2	0	0	0	0	0	0	0	0	0
7	7	7	7	7	5	4	3	2	1	0	0	0	0	0	0	0	0	0
3	3	3	3	3	2	1	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
846	831	819	789	767	750	735	706	673	646	623	603	593	545	464	365	266	167	68

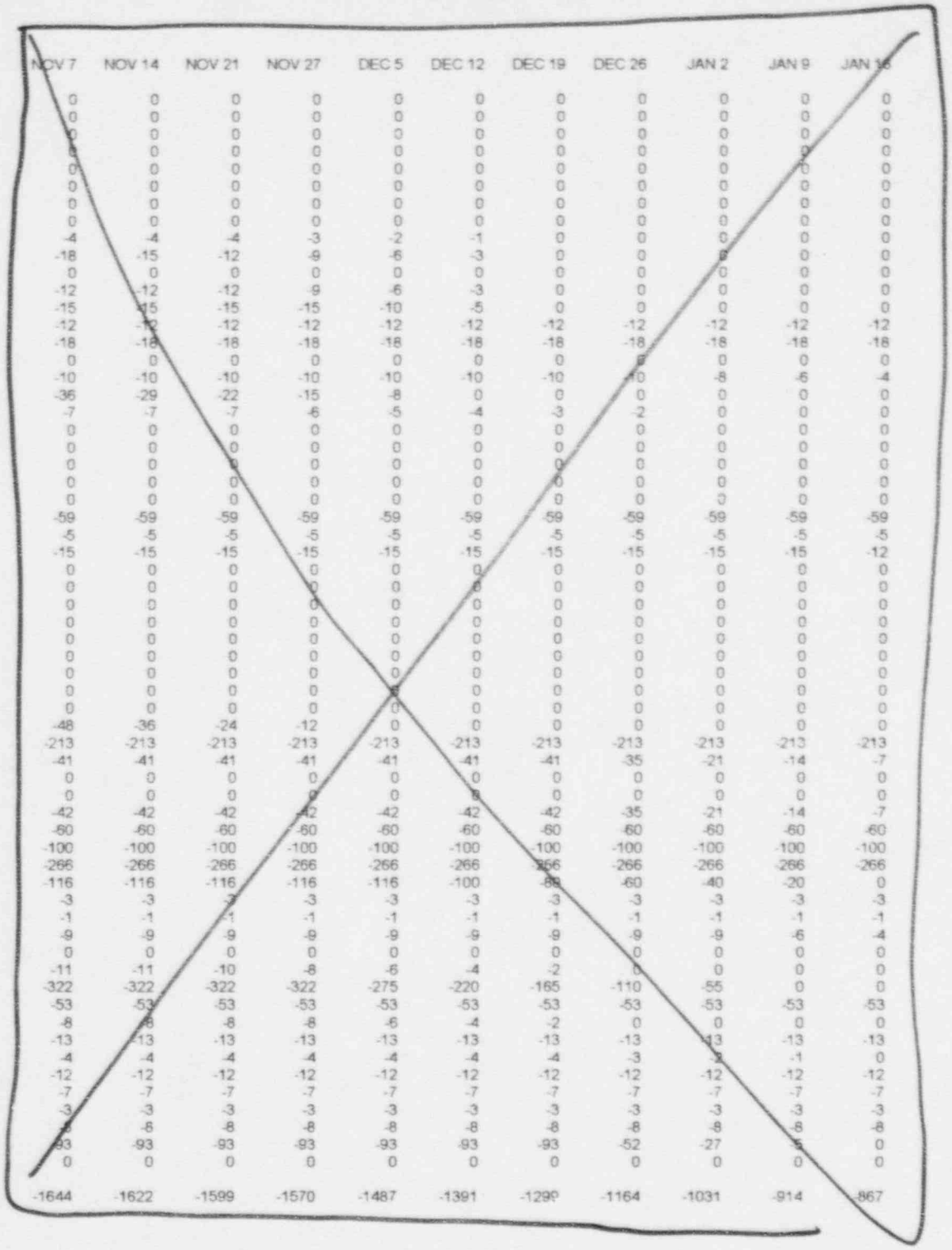
JUN 5	JUN 12	JUN 19	JUN 26	JUL 2	JUL 10
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
3	3	3	3	3	0
1	1	1	1	1	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
4	4	4	4	4	0

W ACTUAL 10/31/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0											
CHAP 2	0	0	2	2	2	2	2											
3.1	0	0	0	0	0	0	0											
3.2	2	2	2	2	9	9	9											
3.3	0	0	0	0	0	0	0											
3.4	0	0	0	0	0	0	0											
3.5	0	0	0	0	0	0	0											
3.6.1	0	0	0	0	0	0	0											
3.6.2	3	3	3	3	3	3	1											
3.6.3	7	7	3	7	8	8	8											
3.7	6	6	4	4	4	4	4											
3.8.2	2	2	4	4	4	4	4											
3.8.3	9	12	16	16	16	16	16											
3.8.4	6	11	11	11	11	11	11											
3.8.5	12	12	12	12	12	12	12											
3A &3F	0	0	0	0	0	0	0											
CH 42	0	8	8	8	8	8	8											
3.9	12	12	13	13	9	27	21											
3.10	3	3	3	3	0	2	2											
3.11	0	6	6	6	6	6	6											
3.12	2	2	7	7	7	7	5											
CHAP 4	0	0	0	0	0	0	0											
CHAP 5	0	1	0	0	0	0	0											
6.1	0	0	0	0	0	0	0											
6.2	4	7	6	7	2	2	2											
6.3	1	1	1	1	0	0	0											
6.4	4	1	6	6	5	5	1											
6.5	0	0	0	0	0	0	0											
6.6	0	0	0	0	0	0	0											
CHAP 7	0	0	0	0	0	0	0											
CHAP 8	0	0	0	0	0	0	0											
CHAP 9	27	24	16	16	9	3	3											
CHAP 10	3	3	5	5	5	5	3											
CHAP 11	1	1	1	1	1	1	1											
CHAP 12	0	0	0	0	0	0	0											
CHAP 13	6	4	4	4	4	4	3											
CHAP 14	0	0	0	1	0	0	0											
CHAP 15	23	22	31	27	24	24	25											
16.1	0	1	1	1	0	0	0											
16.2	7	7	8	8	2	1	1											
CHAP 17	0	0	0	0	0	0	0											
CHAP 18	42	42	42	42	16	16	8											
LEVEL 1	67	44	60	60	60	60	37											
LEVEL 2/3	33	100	100	100	100	100	100											
CHAP 19	57	0	2	2	2	2	1											
CHAP 20	1	1	1	1	1	1	1											
SSARREV	3	3	5	5	14	13	23											
T/H UNC	0	1	1	1	1	1	1											
RTNSS	6	8	6	6	8	9	10											
FCS PRA	19	0	0	0	0	0	0											
ITAAC	18	18	18	18	18	18	18											
TEST PRG	52	50	48	48	48	47	48											
NOTRUMP	53	53	53	53	53	53	38											
LOFTRAN	0	1	1	1	2	2	2											
WC/T	8	8	8	8	8	8	8											
H&MT						13	13											
LST						4	4											
SCALING						12	12											
W&MT						7	7											
WATER						3	3											
WGOTHIC	105	105	93	76	77	35	35											
JNASSIGN	5	12	9	8	-2	-6	-12											
WA TOTAL	610	605	621	605	558	563	505	0	0	0	0	0	0	0	0	0	0	0

N ACTUAL 10/31/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8											
CHAP 2	6	10	10	10	10	10	10											
3.1	0	0	0	0	0	0												
3.2	3	3	3	3	10	10	10											
3.3	0	0	0	0	0	0	0											
3.4	0	0	0	0	0	0	0											
3.5	1	1	1	1	1	1	1											
3.6.1	2	2	2	2	2	2	2											
3.6.2	4	6	4	4	4	4	4											
3.6.3	10	21	21	21	22	22	20											
3.7	14	14	14	14	14	14	14											
3.8.2	8	12	12	12	12	12	12											
3.8.3	15	22	22	22	22	22	22											
3.8.4	12	18	18	18	18	18	18											
3.8.5	18	18	18	18	18	18	18											
3A &3F	0	0	0	0	0	0	0											
CH 42	0	10	10	10	10	10	10											
3.9	42	41	42	42	39	38	33											
3.10	7	7	7	7	5	7	7											
3.11	4	23	23	23	23	23	23											
3.12	13	13	13	13	13	13	13											
CHAP 4	2	2	2	2	2	1	1											
CHAP 5	30	28	27	27	27	27	27											
6.1	3	3	3	3	3	3	3											
6.2	59	67	67	68	67	67	67											
6.3	5	9	9	9	9	9	9											
6.4	12	11	18	16	15	15	14											
6.5	1	1	1	1	1	1	1											
6.6	0	0	0	0	0	0	0											
CHAP 7	19	16	15	15	15	15	15											
CHAP 8	11	9	9	9	9	9	9											
CHAP 9	162	164	161	161	161	161	162											
CHAP 10	33	32	31	31	31	31	31											
CHAP 11	46	46	46	46	46	46	46											
CHAP 12	2	2	2	2	2	2	2											
CHAP 13	35	35	35	35	35	35	34											
CHAP 14	74	82	82	82	82	82	82											
CHAP 15	213	224	227	227	225	225	226											
16.1	41	102	102	102	102	101	101											
16.2	1	1	2	1	1	1	1											
CHAP 17	5	5	5	5	5	5	5											
CHAP 18	42	48	48	48	48	48	48											
LEVEL 1	134	44	60	60	60	60	60											
LEVEL 2/3	137	100	100	100	100	100	101											
CHAP 19	145	262	264	264	264	264	263											
CHAP 20	116	117	117	117	117	117	117											
SSARREV	3	2	4	4	13	12	22											
T/H UNC	0	1	1	1	1	1	1											
RTNSS	8	10	9	9	11	11	12											
FCS PRA	37	0	0	0	0	0	0											
ITAAC	11	11	11	11	7	11	11											
TEST PRG	322	322	323	323	323	321	143											
NOTRUMP	53	53	53	53	53	53	53											
LOFTRAN	5	5	5	5	6	6	6											
WC/T	8	8	8	8	8	8	8											
H&MT						13	13											
LST						4	4											
SCALING						13	13											
W&MT						8	8											
WATER						4	4											
WGOTHIC	132	131	131	128	128	92	92											
JNASSIGN	78	-21	-27	-23	-29	-39	-43											
NA TOTAL	2152	2161	2180	2178	2179	2175	1997	0	0	0	0	0	0	0	0	0	0	0

W DELTA 10/31/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	0	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	2	2	2	2	9	9	9	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	3	3	3	0	1	3	1	0	0	0	0	0	0	0	0	0	0	0
3.6.3	7	7	3	4	6	8	8	0	0	0	0	0	0	0	0	0	0	0
3.7	6	6	4	4	4	4	4	0	0	0	0	0	0	0	0	0	0	0
3.8.2	-1	-1	1	2	3	4	4	0	0	0	0	0	0	0	0	0	0	0
3.8.3	0	3	7	7	7	7	7	-9	-9	-9	-9	-6	-3	0	0	0	0	0
3.8.4	0	5	5	5	5	5	5	-6	-6	-6	-6	-6	-6	-4	-2	0	0	0
3.8.5	0	0	0	0	0	0	0	-12	-12	-12	-12	-12	-9	-6	-3	0	0	0
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	-6	-4	-2	0	0	0	0	0	0	0	0
3.9	2	5	7	10	9	27	21	0	0	0	0	0	0	0	0	0	0	0
3.10	0	0	0	0	-3	0	1	0	0	0	0	0	0	0	0	0	0	0
3.11	0	6	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	0
3.12	2	2	7	7	7	7	5	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.2	0	3	2	3	-2	-2	-2	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4	-4
6.3	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0
6.4	0	-3	-1	-1	-2	-2	-6	-7	-7	-7	-7	-7	-5	-3	-2	0	0	0
6.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	27	24	16	16	9	3	3	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	3	3	5	5	5	5	3	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	6	4	4	4	4	4	3	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 15	0	-1	8	4	1	1	2	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23
16.1	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	0
16.2	7	7	8	8	2	1	1	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	2	6	10	-12	-8	-12	-16	-12	-8	-4	0	0	0	0	0	0	0
LEVEL 1	0	3	3	3	0	0	-23	-60	-60	-60	-60	-60	-60	-60	-50	-35	-25	-15
LEVEL 2/3	0	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	0	-5	-3	-3	-3	-3	-4	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
CHAP 20	0	0	0	0	0	0	0	-1	-1	0	0	0	0	0	0	0	0	0
SSARREV	0	0	2	2	11	10	20	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	0	0	2	2	3	-7	-7	-7	-4	-2	0	0	0	0	0	0
FCS PRA	0	-19	-19	-19	-19	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	0	0	0	0	18	18	18	0	0	0	0	0	0	0	0	0	0	0
TEST PRG	0	1	6	13	20	26	34	-7	0	0	0	0	0	0	0	0	0	0
NOTRUMP	0	0	0	0	0	0	-15	-53	-53	-53	-53	-53	-53	-53	-53	-53	-53	-40
LOFTRAN	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0
WC/T	0	0	0	0	0	0	0	-8	-8	-8	-8	-8	-8	-8	-4	0	0	0
H&MT						0	0	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13
LST						0	1	-2	-1	0	0	0	0	0	0	0	0	0
SCALING						0	0	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
W&MT						0	0	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7
WATER						0	0	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
WGOTHIC	0	15	13	6	17	24	33	0	0	0	0	0	0	0	0	0	0	0
UNASSIGN	5	12	9	8	-2	-6	-12	0	0	0	0	0	0	0	0	0	0	0
WD TOTAL	71	77	99	103	108	162	132	-367	-353	-345	-336	-326	-316	-306	-286	-259	-249	-226

N DELTA 10/31/96	SEP 19	SEP 26	OCT 3	OCT 10	OCT 17	OCT 24	OCT 31	NOV 7	NOV 14	NOV 21	NOV 27	DEC 5	DEC 12	DEC 19	DEC 26	JAN 2	JAN 9	JAN 16
CHAP 1	8	8	9	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	4	6	8	10	10	10	0	0	0	0	0	0	0	0	0	0	0
3.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.2	0	1	2	3	10	10	10	0	0	0	0	0	0	0	0	0	0	0
3.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3.5	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
3.6.1	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
3.6.2	0	2	0	0	0	0	0	-4	-4	-4	-3	-2	-1	0	0	0	0	0
3.6.3	0	11	14	0	1	1	-1	-18	-15	-12	-9	-6	-3	0	0	0	0	0
3.7	0	0	7	14	14	14	14	0	0	0	0	0	0	0	0	0	0	0
3.8.2	-4	0	0	0	0	0	0	-12	-12	-12	-9	-6	-3	0	0	0	0	0
3.8.3	0	7	7	7	7	7	7	-15	-15	-15	-15	-10	-5	0	0	0	0	0
3.8.4	0	6	6	6	6	6	6	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
3.8.5	0	0	0	0	0	0	0	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18	-18
3A &3F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CH 42	0	0	0	0	0	0	0	-10	-10	-10	-10	-10	-10	-10	-10	-8	-6	-4
3.9	0	-1	-1	-1	-4	-5	-10	-36	-29	-22	-15	-8	0	0	0	0	0	0
3.10	0	0	0	0	-2	0	0	-7	-7	-7	-6	-5	-4	-3	-2	0	0	0
3.11	0	19	21	23	23	23	23	0	0	0	0	0	0	0	0	0	0	0
3.12	13	13	13	13	13	13	13	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	2	2	1	1	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	30	28	27	27	27	27	27	0	0	0	0	0	0	0	0	0	0	0
6.1	3	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0
6.2	0	8	8	9	8	8	8	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59
6.3	0	4	4	4	4	4	4	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
6.4	0	-1	3	1	0	0	-1	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-12
6.5	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
6.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 7	0	-3	5	15	15	15	15	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	11	9	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	-5	53	106	161	161	161	162	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	33	32	31	31	31	31	31	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	46	46	46	46	46	46	46	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	2	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	5	15	25	35	34	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	8	8	8	8	8	22	-48	-36	-24	-12	0	0	0	0	0	0	0
CHAP 15	0	11	14	14	12	12	13	-213	-213	-213	-213	-213	-213	-213	-213	-213	-213	-213
16.1	0	61	61	61	61	60	60	-41	-41	-41	-41	-41	-41	-41	-35	-21	-14	-7
16.2	0	0	0	-1	-1	-1	1	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	5	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	6	6	6	6	6	6	-42	-42	-42	-42	-42	-42	-42	-35	-21	-14	-7
LEVEL 1	0	3	3	3	0	0	0	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
LEVEL 2/3	0	0	0	0	0	0	1	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	-2	-4	-2	-2	-2	-2	-3	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266
CHAP 20	0	1	1	1	1	1	1	-116	-116	-116	-116	-116	-100	-80	-60	-40	-20	0
SSARREV	0	-1	1	1	10	9	19	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	1	1	3	2	3	-9	-9	-9	-9	-9	-9	-9	-9	-9	-6	-4
FCS PRA	0	-37	-37	-37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ITAAC	0	0	0	0	-4	0	0	-11	-11	-10	-8	-6	-4	-2	0	0	0	0
TEST PRG	0	0	1	1	1	-1	-179	-322	-322	-322	-322	-275	-220	-165	-110	-55	0	0
NOTRUMP	0	0	0	0	0	0	0	-53	-53	-53	-53	-53	-53	-53	-53	-53	-53	-53
LOFTRAN	-3	-3	-3	-3	-2	-2	-2	-8	-8	-8	-8	-6	-4	-2	0	0	0	0
WC/T	8	8	8	8	8	-5	-5	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13	-13
H&MT	0	0	0	0	0	9	9	-4	-4	-4	-4	-4	-4	-4	-3	-2	-1	0
LST	0	0	0	0	0	-8	-8	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
SCALING	0	0	0	0	0	6	6	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7
W&MT	0	0	0	0	0	5	5	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
WATER	-8	-8	-8	-8	-8	-4	-4	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
WGOTHIC	0	-1	-1	-4	-4	-1	-1	-93	-93	-93	-93	-93	-93	-93	-52	-27	-5	0
JNASSIGN	78	-21	-27	-23	-29	-39	-43	0	0	0	0	0	0	0	0	0	0	0
ND TOTAL	219	306	395	464	517	532	374	-1644	-1622	-1599	-1570	-1487	-1391	-1299	-1164	-1031	-914	-867



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FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	10/30/96	NAME:	JOHN BUTLER
TO:	DIANE JACKSON	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE: 2002	PHONE:	Office:
COMPANY:	NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Diane,

Info on NGOTHIC heat sinks, per your request.

JB

There are two faces for each heat sink modeled in WGOTHIC. The heat transfer coefficient is specified separately for each face. Heat sinks are classified as either internal or external. Typically, for internal heat sinks, each face of the conductor is connected to the same fluid volume; for external heat sinks, each face of the conductor is connected to a different fluid volume.

For external heat sinks, both faces are assumed to be of equal surface area and the input area represents the surface area of one face. The input thickness is the actual thickness of the conductor.

For internal heat sinks with heat transfer from both surfaces, the input area represents the surface area of only one of the two faces (i.e. 1/2 of the exposed surface area). The input thickness is the actual thickness of the conductor.

For internal heat sinks with heat transfer from only one surface (the other face is insulated), the input area represents the surface area of one face. The input thickness is the actual thickness of the conductor.

Tables 4-50 through 4-100 from the WGOTHIC Applications Report provide a description of the material and thickness for each of the 51 conductors that make up the heat sinks in the AP600 model.

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FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	10/30/96	NAME:	JOHN BUTLER
TO:	BILL HUFFMAN	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE: 2002	PHONE:	Office:
COMPANY:	NRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

Bill,

Additional information on PH scenarios to support today's phone call. JB

Question 470.30

Re: pH Control System

Provide the configuration of water volumes and water flow paths in the containment for dissolving and mixing the trisodium phosphate following an DBA.

Response:

The sources of water and boron that can be involved in post accident flooding of the containment include the following:

	Water Volume (max / min ft3)	Boron Concentration (max / min ppm)
RCS (without Pzr)	7060 ft3	2000 ppm
	6840 ft3	0 ppm
Pressurizer	1008 ft3	2000 ppm
	660 ft3	0
Core Makeup Tank	2040 ft3	3700 ppm
	2000	3400
Accumulator	1732 ft3	2900 ppm
	1667 ft3	2600
IRWST	80000 ft3	2900 ppm
	74500	2600
CVS Boric Acid Tank	8700 ft3	4375 ppm
	0	na

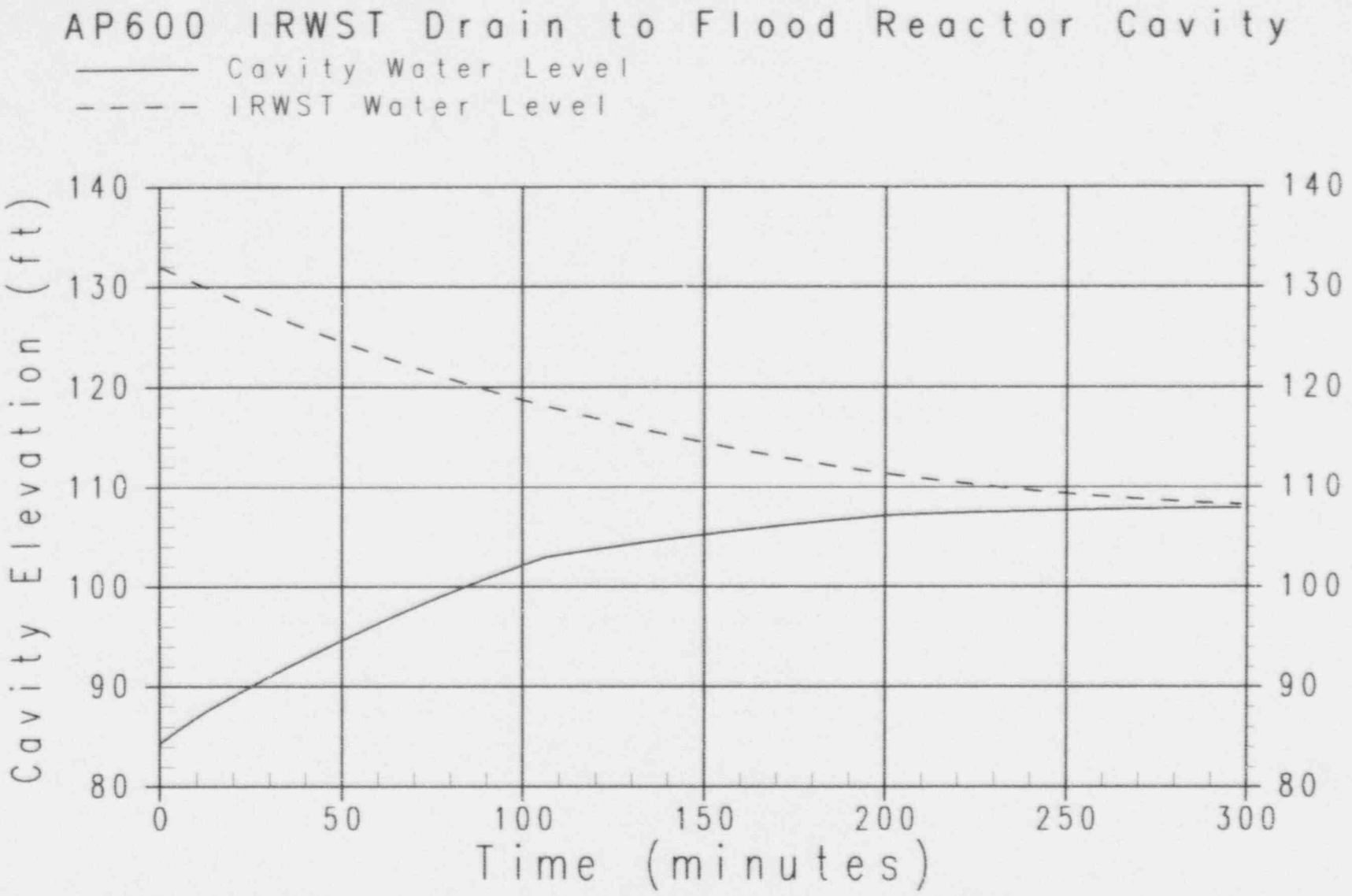
Note that the CVS boric acid tank is a nonsafety-related component and as a result its minimum injected volume is zero. Two bounding combinations of these water sources are shown below. The minimum post accident pH occurs with the maximum amount of water and boron, as shown in the "Min pH" case. The maximum post accident pH occurs with the minimum amount of water and boron, as shown in the "Max pH" case.

	Max pH	Min pH	
Total amount water	5.39×10^6	6.37×10^6	lb
Boron concentration	2474	3007	ppm

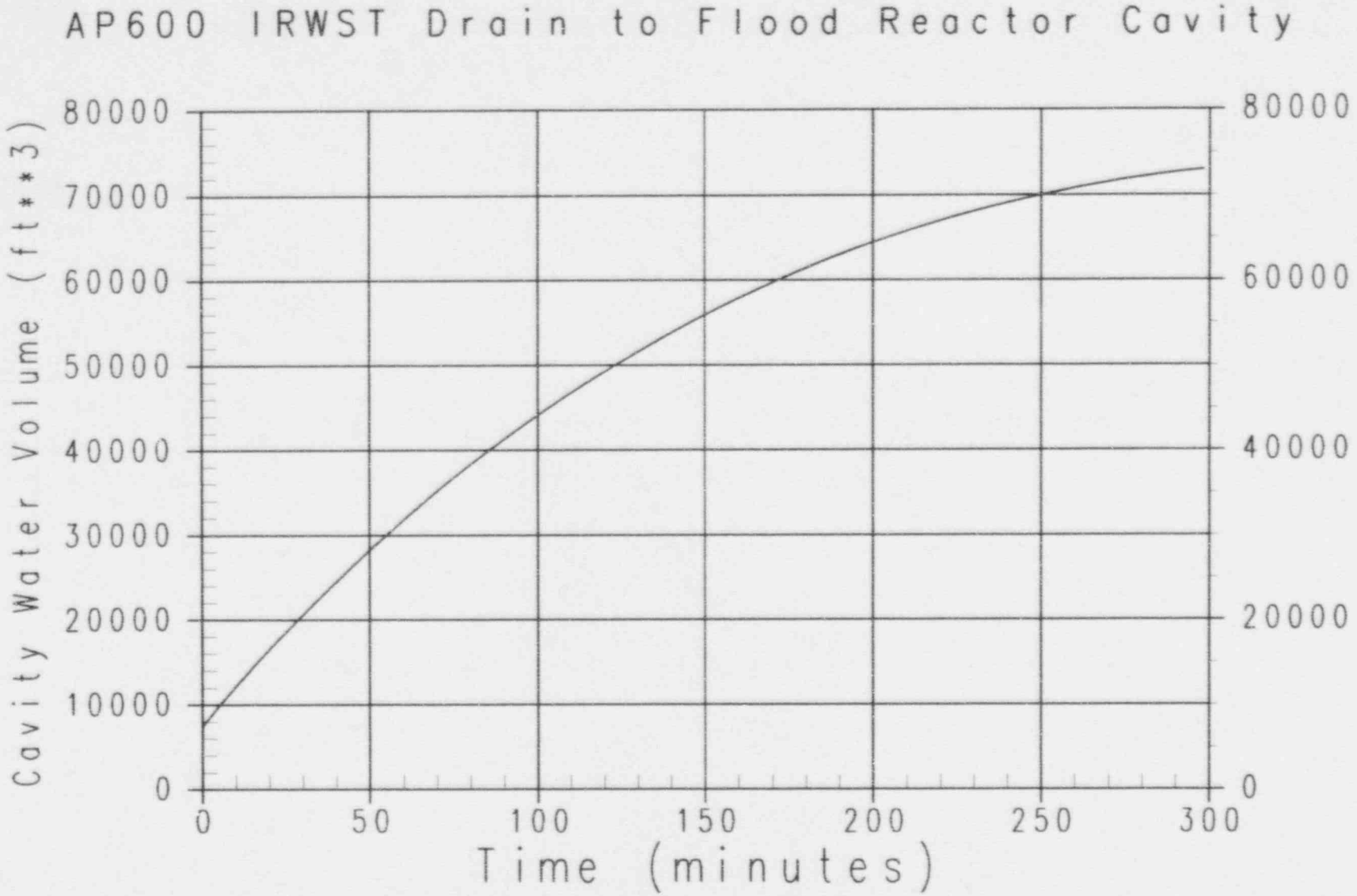
The distribution of this water in the containment is described in section 4 of WCAP-1470, WGOTHIC Application to AP600. Note that the final post accident containment water flood level is about the 108' 2" elevation. Since the IRWST bottom is at the 103' elevation, some of the IRWST will not drain. The IRWST has a internal surface area of 2760 ft2; this results in about 14260 ft3 of water remaining in the IRWST.

In the event of a severe accident, the primary mixing mechanism is natural circulation driven by the hot reactor vessel containing the damaged fuel. Water and steam will flow up along the outside of the hot reactor vessel and into the loop compartments. The water carried into the loop compartments will flow through the corridor between the loop compartments past where the TSP baskets are located and down a vertical access tunnel to the reactor vessel compartment. This flow path promotes mixing of the TSP with the water inside the containment.

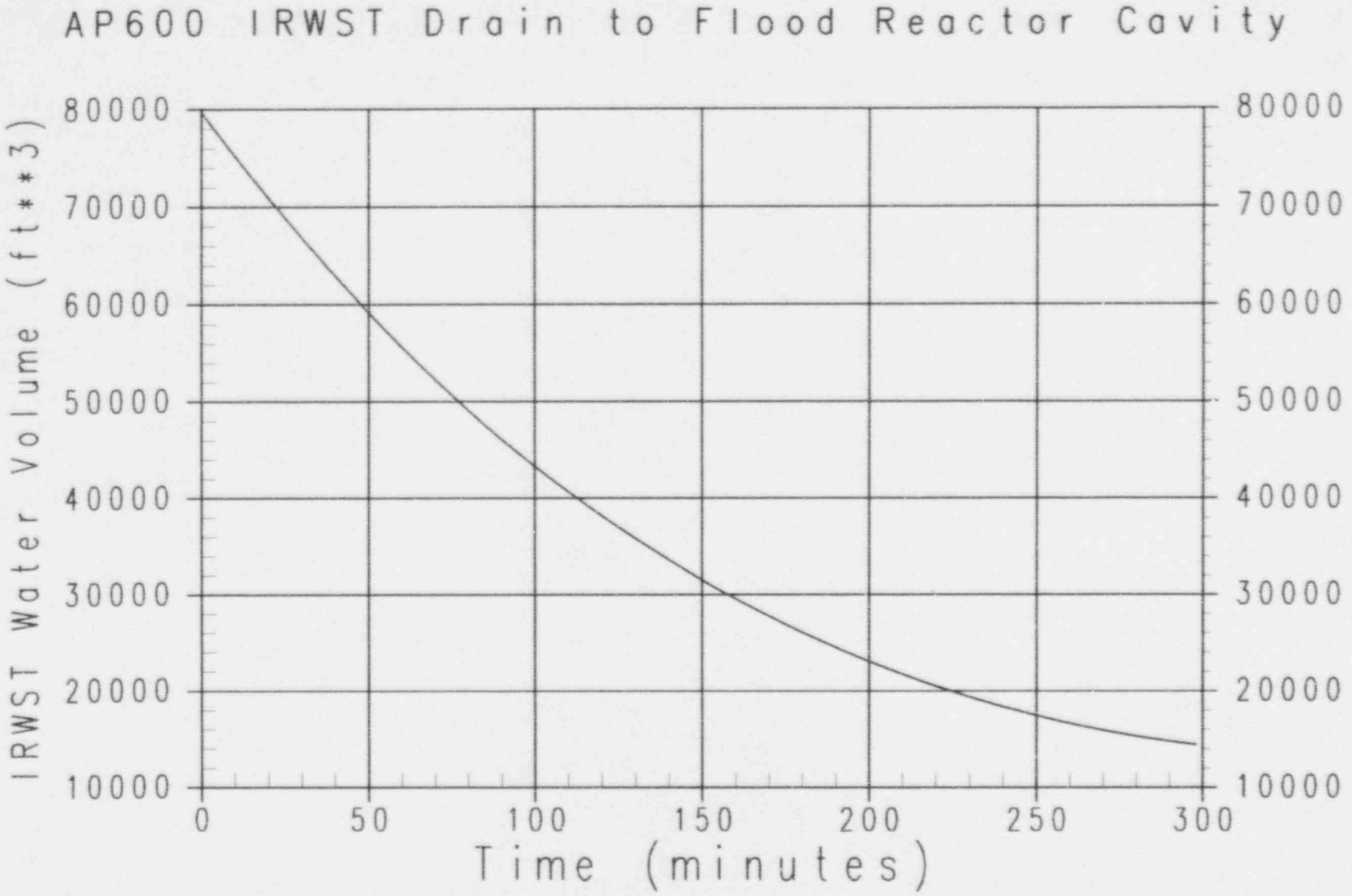
SSAR Revision: NONE


AP600 IRWST Drain to Flood Reactor Cavity
Cavity Water Level
IRWST Water Level
Cavity Elevation (ft)
140
130
120
110
100
90
80
0
50
100
150
200
250
300
Time (minutes)

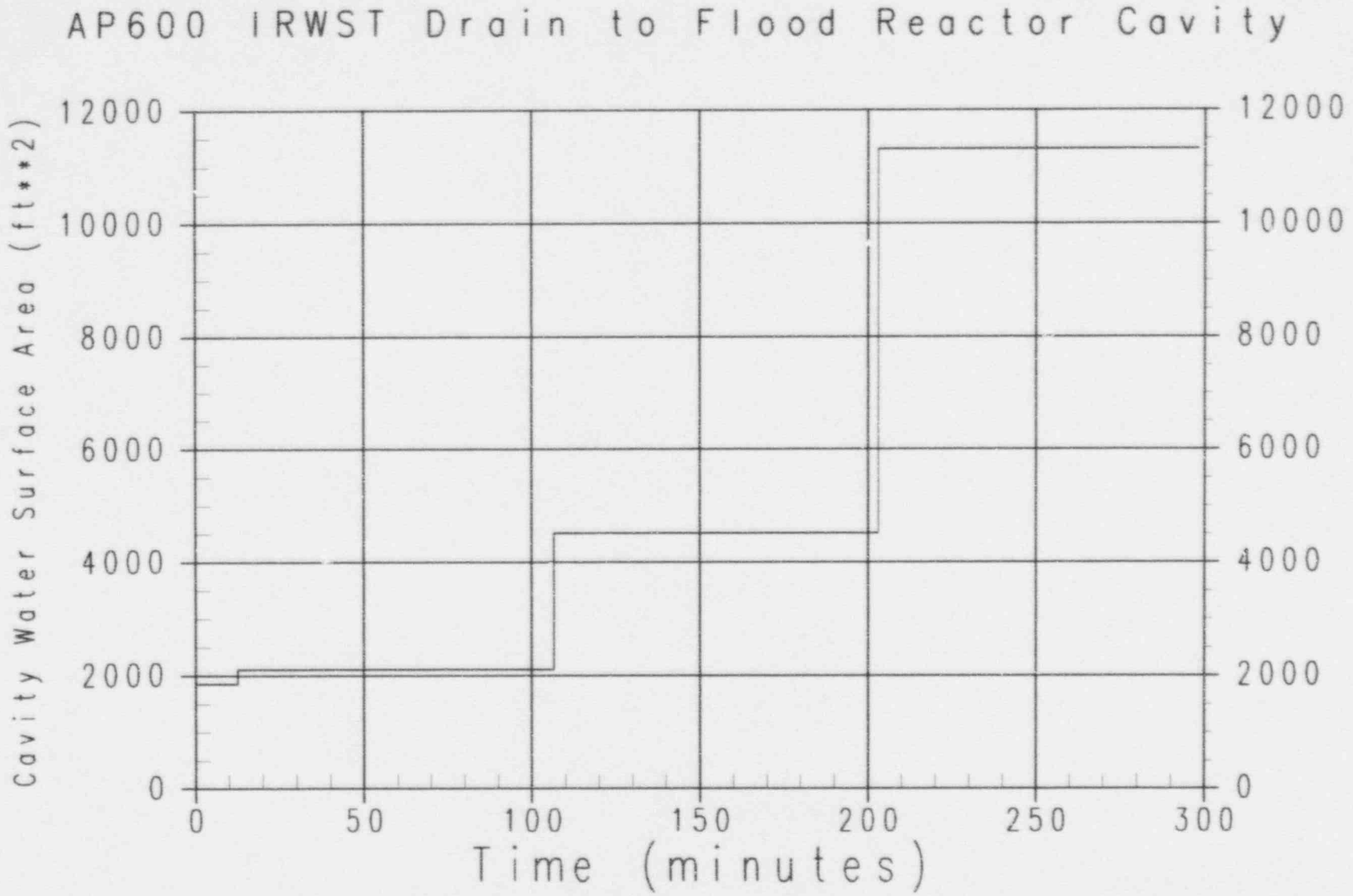
DRAFT

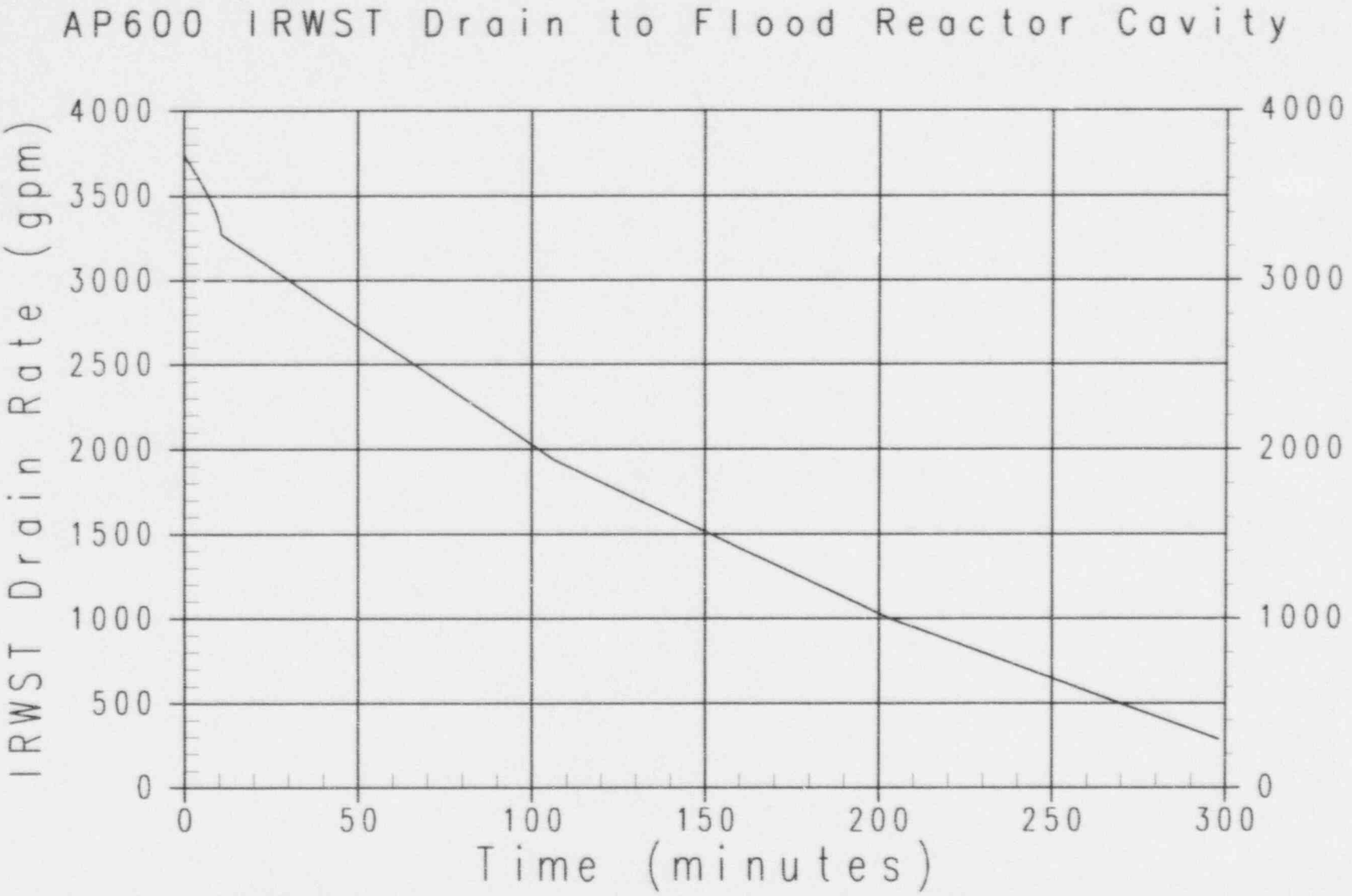

AP600 IRWST Drain to Flood Reactor Cavity
Cavity Water Volume (ft**3)
80000
70000
60000
50000
40000
30000
20000
10000
0
0
50
100
150
200
250
300
Time (minutes)

DRAFT


AP600 IRWST Drain to Flood Reactor Cavity
IRWST Water Volume (ft**3)
80000
70000
60000
50000
40000
30000
20000
10000
0
50
100
150
200
250
300
Time (minutes)

DRAFT


AP600 IRWST Drain to Flood Reactor Cavity
Cavity Water Surface Area (ft**2)
12000
10000
8000
6000
4000
2000
0
0
50
100
150
200
250
300
Time (minutes)


AP600 IRWST Drain to Flood Reactor Cavity
IRWST Drain Rate (gpm)
4000
3500
3000
2500
2000
1500
1000
500
0
0
50
100
150
200
250
300
Time (minutes)

Attachment - Description of pH Adjustment Analysis Cases

DRAFT

The following identifies two cases bound the post accident containment water pH adjustment of the AP600. It is expected that case 1 will result in a larger 2 hr offsite dose. Case 2 is expected to result in a larger 30 day offsite dose.

These cases assume the same release of radioactivity from the RCS during the same time period. The containment leak rate is 0.12%/day for first day; after the first day the leak rate drops to 50%.

Case 1 - Challenge to pH Adjustment in Containment

Accident - 2" CL LOCA

System Operation -

ADS stages 1/2/3 fail, all stage 4 work
Two CMT inject
Two Accumulator inject
IRWST doesn't inject (causes core damage)
IRWST dump to containment works (both lines)
IRWST gutter doesn't work
CVS BAT is injected

Comments - All of the activity released from the RCS initially enters the containment atmosphere. Mechanistic retention and transport of activity in the containment must be assumed.

It should be assumed that some water circulates from the containment into / through the IRWST. This assumption results in the largest challenge to the pH in the containment by mixing in the borated water in the bottom of the IRWST.

Case 2 - Challenge to pH Adjustment in IRWST

Accident - Spurious ADS (stage 1)

System Operation -

ADS stages 1/2/3 all work, all stage 4 fail
Two CMT inject
Two Accumulator inject
IRWST doesn't inject (causes core damage)
IRWST drain to containment works (both lines)
IRWST gutter works
CVS BAT is injected

Comments - All of the activity released from the RCS initially enters the IRWST through the ADS spargers under water. The retention of activity in the IRWST water and subsequent release to the IRWST gas space must be treated mechanistically. In addition, the treatment of activity retention in the containment and transport back to the IRWST must also be treated mechanistically.

The IRWST drain to the containment should be assumed to be initiated just as activity release from RCS is completed. The activity initially retained in the IRWST water is assumed to be uniformly distributed in the IRWST. The drain should be assumed to occur over 2 hours. This case will result in water in the bottom of the IRWST that

has not mixed with TSP from the containment (no recirculation should be assumed as was in case 1). As a result the IRWST pH will remain low.

IRWST Gas Space Exchange with Containment; During the ADS stage 1/2/3 blowdown from the RCS, significant quantities of steam are released to the IRWST. In about a 1/2 hour the IRWST becomes saturated and steam is then vented to the containment through IRWST vents. These vents have gravity operated louvers which close when there is no flow through them. After the blowdown of the RCS and the subsequent release of non-condensable gases as the core is damaged, the vents will close. Because of the transfer of fission products into the IRWST, some decay heat will be produced in the IRWST. This heat input will result in some steam generation which will also vent to the containment. It is recommended that the long term flow from the IRWST to the containment be based on this steam generation. This steam generation is estimated to be about 250 cfm at 2 hours, decreasing to 100 cfm at 24 hours and to 40 cfm in 6 days.

Gutter Operation; Because there is no LOCA in this case and the ADS stage 4 valves do not open, the containment pressure will not increase until the ADS stage 1/2/3 lines heatup the IRWST to saturation. This will happen in about 1/2 hour. After that the containment pressure will increase to 29 psia in about 2 hours. Much of the steam generated in this two hours will not return to the IRWST because it ends up in the containment atmosphere or it condenses on surfaces other than the containment shell. The containment pressure will decrease gradually to about 22 psia in 30 days. Because of the slower / delayed changes in containment pressure, the rate of steam condensation return to the IRWST will stay within its capability.

It is recommended that the steam condensation return to the IRWST be based on the following assumptions:

- Steam release to containment should be based on decay heat (ANS 79 plus 2 sigma).
- Steam condensed on containment shell should be assumed to be same as that generated by decay heat.
- Gutter return efficiency should be assumed to be 100% of the steam condensed on the containment shell.

These assumptions maximize the gutter return flow which is conservative for this case.

CHAPTER 2

SITE CHARACTERISTICS

This chapter defines the site-related parameters for which the AP600 plant is designed. The site ~~interface~~ parameters used as a basis for design certification are in Table 2-1. These parameters envelope most potential sites in the United States. The sections of this chapter follow the standard format and discuss how the specific interfaces are to be used in the AP600 design and how the Combined License applicant is to demonstrate that the site meets the interface.

The site is acceptable if the site characteristics fall within the AP600 plant site design parameters in Table 2-1. For cases where a site characteristic exceeds the envelope parameter, it is necessary for the Combined License applicant referencing the AP600 to demonstrate that the site characteristic does not exceed the capability of the design.

2.1 Geography and Demography

The geography and demography are site specific and will be defined by the Combined License applicant.

2.1.1 Combined License Information for Geography and Demography

Combined License applicants referencing the AP600 certified design will provide site-specific information related to site location and description, exclusion area authority and control, and population distribution.

Site Information - Site-specific information on the site and its location will include political subdivisions, natural and man-made features, population, highways, railways, waterways, and other significant features of the area.

Exclusion Area - Site-specific information on the exclusion area will include the size of the area and the exclusion area authority and control. Activity that may be permitted within the exclusion area will be included in the discussion.

Population Distribution - Site-specific information will be included on population distribution.

2.2 Nearby Industrial, Transportation, and Military Facilities

The plant has inherent capability to withstand certain types of external accidents due to the specified design conditions associated with earthquakes, wind loading, and radiation shielding. Acceptability for external accidents associated with a given site will be covered in the Combined License application.

Table 2-1 (Sheet 1 of 2)

SITE ~~INTERFACE~~ PARAMETERS USED AS A BASIS FOR DESIGN CERTIFICATION

Air Temperature Limits		
	Maximum Safety [a]	115°F dry bulb/80°F coincident wet bulb 81°F wet bulb (noncoincident)
	Minimum Safety [a]	-40°F
	Maximum Normal [b]	100°F dry bulb/77°F coincident wet bulb 80°F wet bulb (noncoincident) [d]
	Minimum Normal [b]	-10°F
Wind Speed Limits		
	Operating Basis	110 mph; importance factor 1.11 (safety), 1.0 (nonsafety)
	Tornado	300 mph
Seismic		
	SSE	0.30g peak ground acceleration [c]
	Fault Displacement Potential	None
Soil		
	Bearing Strength	Soils must support the AP600 under specified conditions. The average static bearing reaction due to the dead weight of the AP600 nuclear island is about 8000 pounds/square foot; the maximum static bearing reaction at a corner is about 12,000 pounds per square foot.
	Shear Wave Velocity	Greater than or equal to 1000 ft/sec based on low strain best estimate soil properties
	Liquefaction Potential	None

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	DECEMBER 10, 1996	NAME:	JAMES WINTERS
TO:	DIANE JACKSON/TOM KENYON	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-5290
COMPANY:	USNRC	Facsimile:	win: 284-4887 outside: (412)374-4887
LOCATION:			

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The following pages are being sent from the Westinghouse Energy Center, East Tower, Monroeville, PA. If any problems occur during this transmission, please call:

WIN: 284-5125 (Janice) or Outside: (412)374-5125.

COMMENTS:

DIANE,

THIS MARKUP SHOULD CLOSE ITEM 7.C.(1) OF YOUR 10/17/96 LETTER AND ~~OUR~~ ITEM 7.C.1 of OUR 11/14/96 TELECON (OITE 284). IT WILL BE INCLUDED IN REVISION 10 OF THE SSAR UNLESS WE HEAR FROM YOU.

CC: BUTLER
LINDGREN
MCINTYRE
RON VIJUK
CUMMINS
WINTERS
HUTCHINGS
ISRAELSON
JEANNE EVANS

9.4.3.2.3 System Operation

9.4.3.2.3.1 Auxiliary/Annex Building Ventilation Subsystem

Normal Plant Operation

During normal plant operation, both supply air handling units and both exhaust fans operate continuously to ventilate the areas served on a once-through basis. The supply airflow rate is modulated to maintain the areas served at a slightly negative pressure differential with respect to the outside environment. The exhaust air is unfiltered and directed to the plant vent for discharge and monitoring of offsite gaseous releases.

The temperature of the supply air is controlled by temperature sensors located in the supply air ducts. When the supply air temperature is low, the face and bypass dampers across the supply air hot water heating coil are modulated to heat the supply air. Local thermostats operate supply duct heating coils and unit heaters to provide supplemental heating for building areas that have conductive heat loss to the outside environment during periods of cold outside temperature conditions. When the supply air temperature is high, the flow of chilled water is modulated to cool the supply air. The ventilation air is continuously monitored by smoke monitors located in the common ductwork downstream of the supply air handling units and upstream of the exhaust fans.

A supply air handling unit is automatically shut down if one of the following conditions is detected:

- Airflow rate of the fan is below a predetermined setpoint
- Supply air temperature is below a predetermined setpoint

Each chemical and volume control system makeup pump and normal residual heat removal system pump unit cooler automatically starts whenever the associated pump receives a start signal or a high room temperature signal.

The gaseous radwaste equipment areas have sufficient ventilation to remove hydrogen gas that may leak from the radwaste equipment into the equipment rooms to maintain the concentration of hydrogen below a safe level of about 1%. Instrumentation available to monitor hydrogen concentration is listed in Table 11.3-2.

Abnormal Plant Operation

If high airborne radioactivity is detected in the exhaust air from the auxiliary or annex buildings, the supply and exhaust duct isolation dampers automatically close to isolate the affected area from the outside environment. The containment air filtration system mitigates the exfiltration of unfiltered airborne radioactivity by maintaining the isolated zone at a slightly negative pressure with respect to the outside environment and adjacent unaffected plant areas. The auxiliary/annex building ventilation subsystem remains in operation at a reduced capacity if either the auxiliary or annex building is not isolated. A disruption in the

Winters, James

From: Winters, James
To: Butler, John C.
Cc: Mankowski, Mike; Winters, James; Lindgren, Donald A.; Mcintyre, Brian A.
Subject: NRC Status Changes in OITS
Date: Wednesday, December 11, 1996 1:[illegible]PM

Based upon our new definitions of Status categories in OITS and upon the action descriptions in the 11/13 NRC letter, I have made the following changes to the NRC Status in OITS. I believe that the real status has not changed, only the category.

OITS Item	New NRC Status
226	CFRM-W
229	CFRM-W
362	CFRM-N
363	ACTION W
368	ACTION W
370	ACTION W
1090	ACTION W
1133	CFRM-N
1134	ACTION W
1142	ACTION W
1143	ACTION N
1151	ACTION W
1152	ACTION W

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To DIANE JACKSON	From JIM WINTERS
Co. USNRC	Co. WESTINGHOUSE
Dept.	Phone # 412-374-5290
Fax #	Fax #

I will FAX this to NRC (and later you will send it by letter) to let them know of these changes.

Jim
x5290