Westinghouse Electric Corporation Energy Systems

Box 355
Pittsburgh Pennsylvania 15230-0355

AW-96-1027

October 28, 1996

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

ATTENTION: T. R. QUAY

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

SUBJECT: INFORMAL CORRESPONDENCE

Dear Mr. Quay:

The application for withholding is submitted by Westinghouse Electric Corporation ("Westinghouse") pursuant to the provisions of paragraph (b)(1) of Section 2.790 of the Commission's regulations. It contains commercial strategic information proprietary to Westinghouse and customarily held in confidence.

The proprietary material for which withholding is being requested is identified in the proprietary version of the subject report. In conformance with 10CFR Section 2.790, Affidavit AW-96-1027 accompanies this application for withholding setting forth the basis on which the identified proprietary information may be withheld from public disclosure.

Accordingly, it is respectfully requested that the subject information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10CFR Section 2.790 of the Commission's regulations.

Correspondence with respect to this application for withholding or the accompanying affidavit should reference AW-96-1027 and should be addressed to the undersigned.

Very truly yours,

Brian A. McIntyre, Manager
Advanced Plant Safety and Licensing

/nja

cc: Kevin Bohrer NRC 12H5

AW-96-1027

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

ss

COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared Brian A. McIntyre, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Corporation ("Westinghouse") and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

Brian A. McIntyre, Manager
Advanced Plant Safety and Licensing

Sworn to and subscribed
before me this 28th day
of October, 1996

Janet A. Schwab
Notary Public

Notarial Seal
Janet A. Schwab, Notary Public
Monroeville Boro, Allegheny County
My Commission Expires May 22, 2000
Member, Pennsylvania Association of Notaries

2974A

(1) I am Manager, Advanced Plant Safety And Licensing, in the Advanced Technology Business Area, of the Westinghouse Electric Corporation and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rulemaking proceedings, and am authorized to apply for its withholding on behalf of the Westinghouse Energy Systems Business Unit.

(2) I am making this Affidavit in conformance with the provisions of 10CFR Section 2.790 of the Commission's regulations and in conjunction with the Westinghouse application for withholding accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by the Westinghouse Energy Systems Business Unit in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.790 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information which is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10CFR Section 2.790, it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) Enclosed is Letter NSD-NRC-96-4864, October 28, 1996 being transmitted by Westinghouse Electric Corporation (W) letter and Application for Withholding Proprietary Information from Public Disclosure, Brian A. McIntyre (W), to Mr. T. R. Quay, Office of NRR. The proprietary information as submitted for use by Westinghouse Electric Corporation is in response to questions concerning the AP600 plant and the associated design certification application and is expected to be applicable in other licensee submittals in response to certain NRC requirements for justification of licensing advanced nuclear power plant designs.

This information is part of that which will enable Westinghouse to:

(a) Demonstrate the design and safety of the AP600 Passive Safety Systems.

(b) Establish applicable verification testing methods.

(c) Design Advanced Nuclear Power Plants that meet NRC requirements.

(d) Establish technical and licensing approaches for the AP600 that will ultimately result in a certified design.

(e) Assist customers in obtaining NRC approval for future plants.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of similar information to its customers for purposes of meeting NRC requirements for advanced plant licenses.

(b) Westinghouse can sell support and defense of the technology to its customers in the licensing process.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar advanced nuclear power designs and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended for developing analytical methods and receiving NRC approval for those methods.

Further the deponent sayeth not.

Attachment 1 to Westinghouse Letter NSD-NRC-96-4864

(This attachment contains information which is proprietary to Westinghouse Electric Corporation)

Attachment 2 to Westinghouse Letter NSD-NRC-96-4864

Attachment 2 to Westinghouse Letter NSD-NRC-96-4864

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	Bill Huffman	NAME:	Jim Whatley
TO:	10/24/96	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 + 10

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:

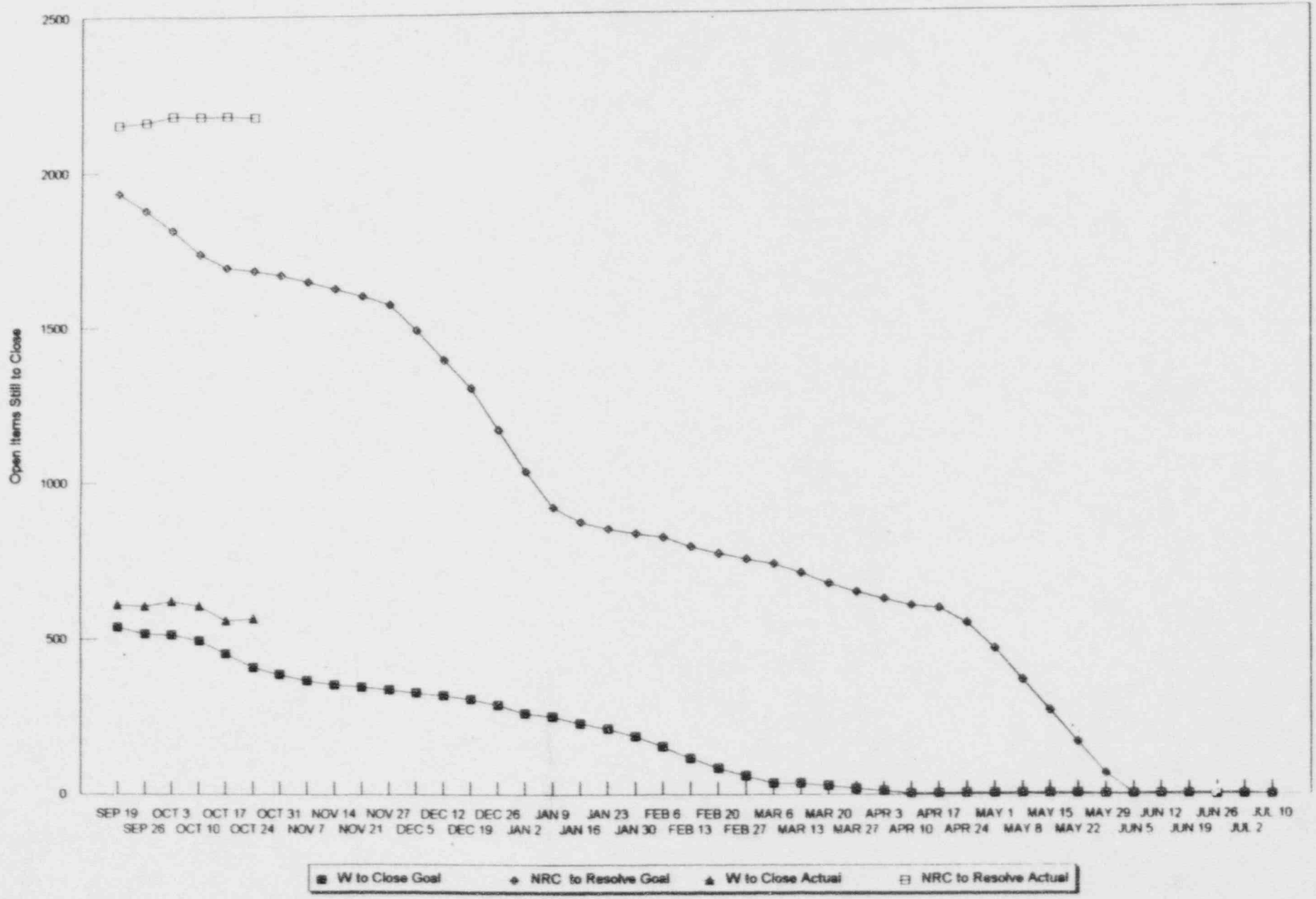
Bill,

Here is this week's workoff update. Please get it around to the other Project Managers. Thanks

Jim Whatley

Open Item Work Off Goals

10/24/98



W GOAL	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
10/24/96																		
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CHAP 2	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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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
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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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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
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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
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 10/24/96	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	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
TAH 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
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	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
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
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
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	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
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
0	0	0	0	0	0
0	0	0	0	0	0
4	4	4	4	4	0

W ACTUAL 10/24/96	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												
CHAP 2	0	0	2	2	2	2												
3 1	0	0	0	0	0	0												
3 2	2	2	2	2	9	9												
3 3	0	0	0	0	0	0												
3 4	0	0	0	0	0	0												
3 5	0	0	0	0	0	0												
3 6 1	0	0	0	0	0	0												
3 6 2	3	3	3	3	3	3												
3 6 3	7	7	3	7	8	8												
3 7	6	6	4	4	4	4												
3 8 2	2	2	4	4	4	4												
3 8 3	9	12	16	16	16	16												
3 8 4	6	11	11	11	11	11												
3 8 5	12	12	12	12	12	12												
3A &3F	0	0	0	0	0	0												
CH 42	0	8	8	8	8	8												
3 9	12	12	13	13	9	27												
3 10	3	3	3	3	0	2												
3 11	0	6	6	6	6	5												
3 12	2	2	7	7	7	7												
CHAP 4	0	0	0	0	0	0												
CHAP 5	0	1	0	0	0	0												
6 1	0	0	0	0	0	0												
6 2	4	7	6	7	2	2												
6 3	1	1	1	1	0	0												
6 4	4	1	6	6	5	5												
6 5	0	0	0	0	0	0												
6 6	0	0	0	0	0	0												
CHAP 7	0	0	0	0	0	0												
CHAP 8	0	0	0	0	0	0												
CHAP 9	27	24	16	16	9	3												
CHAP 10	3	3	5	5	5	5												
CHAP 11	1	1	1	1	1	1												
CHAP 12	0	0	0	0	0	0												
CHAP 13	6	4	4	4	4	4												
CHAP 14	0	0	0	1	0	0												
CHAP 15	23	22	31	27	24	24												
16 1	0	1	1	1	0	0												
16 2	7	7	8	8	2	1												
CHAP 17	0	0	0	0	0	0												
CHAP 18	42	42	42	42	16	16												
LEVEL 1	67	44	60	60	60	60												
LEVEL 2/3	33	100	100	100	100	100												
CHAP 19	57	0	2	2	2	2												
CHAP 20	1	1	1	1	1	1												
SSARREV	3	3	5	5	14	13												
T/H UNC	0	1	1	1	1	1												
RTNSS	6	8	6	6	8	9												
FCS PRA	19	0	0	0	0	0												
ITAAC	18	18	18	18	18	18												
TEST PRG	52	50	48	48	48	47												
NOTRUMP	53	53	53	53	53	53												
LOFTRAN	0	1	1	1	2	2												
WCAP	8	8	8	8	8	8												
H&MT						13												
LST						4												
SCALING						12												
W&MT						7												
WATER						3												
WGOTHIC	105	105	93	76	77	35												
JNASSIGN	5	12	9	8	-2	-8												
WA TOTAL	810	805	821	805	556	563	0	0	0	0	0	0	0	0	0	0	0	0

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

N DELTA	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
10/24/96																		
CHAP 1	8	8	9	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 2	0	4	6	8	10	10	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	1	2	3	10	10	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	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
3.6.1	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
3.6.2	0	2	0	0	0	0	-4	-4	-4	-4	-3	-2	-1	0	0	0	0	0
3.6.3	0	11	14	0	1	1	-21	-18	-15	-12	-9	-6	-3	0	0	0	0	0
3.7	0	0	7	14	14	14	0	0	0	0	0	0	0	0	0	0	0	0
3.8.2	-4	0	0	0	0	0	-12	-12	-12	-12	-9	-6	-3	0	0	0	0	0
3.8.3	0	7	7	7	7	7	-15	-15	-15	-15	-15	-10	-5	0	0	0	0	0
3.8.4	0	6	6	6	6	6	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12
3.8.5	0	0	0	0	0	0	-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	0	0	0	0	0	-10	-10	-10	-10	-10	-10	-10	-10	-10	-8	-6	-4
3.9	0	-1	-1	-1	-4	-5	-43	-36	-29	-22	-15	-8	0	0	0	0	0	0
3.10	0	0	0	0	-2	0	-7	-7	-7	-6	-6	-5	-4	-3	-2	0	0	0
3.11	0	19	21	23	23	23	0	0	0	0	0	0	0	0	0	0	0	0
3.12	13	13	13	13	13	13	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 4	0	0	0	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 5	30	28	27	27	27	27	0	0	0	0	0	0	0	0	0	0	0	0
6.1	3	3	3	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0
6.2	0	8	8	9	8	8	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59	-59
6.3	0	4	4	4	4	4	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5	-5
6.4	0	-1	3	1	0	0	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-15	-12
6.5	1	1	1	1	1	1	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	-3	5	15	15	15	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 8	11	9	9	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 9	-5	53	106	161	161	161	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 10	33	32	31	31	31	31	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 11	46	46	46	46	46	46	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 12	2	2	2	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 13	0	0	5	15	25	35	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 14	0	8	8	8	8	8	-60	-48	-36	-24	-12	0	0	0	0	0	0	0
CHAP 15	0	11	14	14	12	12	-213	-213	-213	-213	-213	-213	-213	-213	-213	-213	-213	-213
16.1	0	61	61	61	61	60	-41	-41	-41	-41	-41	-41	-41	-41	-35	21	-14	-7
16.2	0	0	0	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 17	5	5	5	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0
CHAP 18	0	6	6	6	6	6	-42	-42	-42	-42	-42	-42	-42	-42	-35	-21	-14	-7
LEVEL 1	0	3	3	3	0	0	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
LEVEL 2/3	0	0	0	0	0	0	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100	-100
CHAP 19	-2	-4	-2	-2	-2	-2	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266	-266
CHAP 20	0	1	1	1	1	1	-116	-116	-116	-116	-116	-115	-100	-80	-60	-40	-20	0
SSARREV	0	-1	1	1	10	9	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
T/H UNC	0	0	0	0	0	0	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
RTNSS	0	2	1	1	3	2	-9	-9	-9	-9	-9	-9	-9	-8	-8	-9	-8	-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	-11	-11	-11	-10	-8	-6	-4	-2	0	0	0	0
TEST PRG	0	0	1	1	1	-1	-322	-322	-322	-322	-322	-275	-220	-165	-110	-55	0	0
NOTRUMP	0	0	0	0	0	0	-53	-53	-53	-53	-53	-53	-53	-53	-53	53	-53	53
LOFTRAN	-3	-3	-3	-3	-2	-2	-8	-8	-8	-8	-8	-6	-4	-2	0	0	0	0
WC/Y	8	8	8	8	8	-5	-13	-13	-13	-13	-13	-13	-13	-13	-13	13	-13	13
H&MT	0	0	0	0	0	9	-4	-4	-4	-4	-4	-4	-4	-4	-3	-2	-1	0
LST	0	0	0	0	0	-8	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	-12	12
SCALING	0	0	0	0	0	6	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7	-7
W&MT	0	0	0	0	0	5	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3	-3
WATER	-8	-8	-8	-8	-8	-4	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8	-8
WGOTHIC	0	-1	-1	-4	-4	-1	-93	-93	-93	-93	-93	-93	-93	-93	-53	27	5	0
JNASSIGN	78	-21	-27	-23	-29	-39	0	0	0	0	0	0	0	0	0	0	0	0
ND TOTAL	219	306	395	464	517	532	-1666	-1644	-1622	-1589	-1570	-1487	-1391	-1299	-1164	-1031	-914	-867

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	10/24/96	NAME:	John Buth
TO:	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 +

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,

Terry Scully's description of Scenario A & B

Attachment - Description of pH Adjustment Analysis Cases

The following discusses two cases which bound the post accident containment water pH adjustment of the AP600. These cases assume the same release of radioactivity from the RCS during the same time period. The differences between these cases bound the pH adjustment performance and radioactivity release from the AP600. It is expected that case 1 will result in the largest 2 hr offsite dose. Case 2 is expected to result in a larger 30 day offsite dose and control room dose.

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. 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 dump 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 IRWST dump is assumed to be initiated just as activity release from RCS is completed. This case will result in water in the bottom of the IRWST that is not mixed with the containment water & TSP (no recirculation should be assumed as was done in case 1). As a result its pH will remain low.

Note that the IRWST has vents to the containment that open under tank pressurization and close when vent flow stops. Gravity operated louvers close the vents. The vent area is about 5% of the IRWST roof surface area. As a result, after the blowdown of the RCS and the subsequent release of activity, the vents are expected to close. However, some exchange of IRWST air space with the containment atmosphere should be assumed due to leakage. Sensitivity studies may be required to determine the importance of this assumption.

** TX CONFIRMATION REPORT ** AS OF OCT 24 '96 15:44 PAGE.01

AP600 DESIGN CERT

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	STATUS
01	10/24	15:43	813014152002	G3--S	01'03	02	OK

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	October 21 1996	NAME:	J. W. Winters
TO:	Diane Jackson	LOCATION:	ENERGY CENTER - EAST
PHONE:	FACSIMILE:	PHONE:	Office: 412-374-4250
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:

Diane

Here are our thoughts on all the Open Items for 9.4. The follow-up letter to this FAX will put this information on the docket. We should use these as the basis for our Thursday discussion. Good luck

Jim

AP600 Open Item Tracking System Database: Executive Summary

Date: 10/21/96

Selection: [DSER Section] like '9.4*' Sorted by Item #

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
268	NRR/SPLB	9.4.2	MTG-OI		Winters/BRC	Closed	Resolved	
				M9.4.2-4 (ANNEX/AUX. BUILDINGS NON-RADIOACTIVE HVAC SYSTEMS) Clarify MSIV area design temperature since the AP600 SSAR states that the MSIV area design temperature limit is 104 F while the SSAR Table states that it is 105 F.				
				Closed - SSAR subsection 9.4.2.1.2, 9.4.2.2.1.4 and 9.4.2.2.3.4, Revision 7, have been revised to be consistant and show the design temperature for the MSIV area as 105 F.				
269	NRR/SPLB	9.4.2	MTG-OI		Winters/BRC	Closed	Action W	
				M9.4.2-5 (ANNEX/AUX. BUILDINGS NON-RADIOACTIVE HVAC SYSTEMS) Provide men's and women's locker room exhaust fans data for the general area HVAC system in Table 9.4.2-2 of the SSAR.				
				Closed - SSAR subsection 9.4.2.2.1.1, Revision 7, includes a description of the operation of the toilet exhaust fans. These fans are not in a safety-related or defence-in-depth portion of the system. They are not included in the equipment tables or system sketches provided for the system.				
270	NRR/SPLB	9.4.2	MTG-OI		Winters/BRC	Closed	Action W	
				M9.4.2-6 (ANNEX/AUX. BUILDINGS NON-RADIOACTIVE HVAC SYSTEMS) Provide air and water temperature data for entrance and exit conditions for air handling unit (AHU) heating and cooling coils for general area HVAC system, equipment room HVAC system, switchgear room HVAC system, MSIV compartment HVAC system, demineralized water degasifier room HVAC system and valve/piping penetration room HVAC system in Table 9.4.2-2 through 9.4.2-7, respectively.				
				Closed - Contrary to the agreement made in 12/13/94 meeting between Westinghouse and NRC Plant Systems Branch, air and water temperature data for heating and cooling coils in air handling units is not to be provided in the SSAR. Consistent with past practice, including, for example the CE System 80+, this information is to detailed for SSAR inclusion and is not necessary to support a general understanding of the system design.				
271	NRR/SPLB	9.4.2	MTG-OI		Winters/BRC	Closed	Action W	
				M9.4.2-7 (ANNEX/AUX. BUILDINGS NON-RADIOACTIVE HVAC SYSTEMS) Figure 9.4.2-2 of the SSAR shows three hot water unit heaters with temperature switches serving the mechanical equipment room in the annex I building with a provision for the hot water to be provided from the VYS. Additionally, the mechanical equipment room HVAC subsystem also serves the RCC and inadequate core cooling non-class 1E penetration rooms and reactor trip switchgear I and II rooms in the auxiliary building. Westinghouse needs to reflect the above information with its associated details in the Section 9.4.2.2.2 of the SSAR.				
				Closed - SSAR subsection 9.4.2.2.3, Revision 7, includes a description of the operation of heaters in each of the annex/auxiliary buildings nonradioactive HVAC subsystems.				
272	NRR/SPLB	9.4.2	MTG-OI		Winters/BRC	Closed	Active	
				M9.4.2-8 (ANNEX/AUX. BUILDINGS NON-RADIOACTIVE HVAC SYSTEMS) Explain how 2400 standard cubic feet per minute (SCFM) is accounted for from equipment room HVAC system AHU since it supplies 27,600 SCFM while the return flow is only 25,200 SCFM and 1200 SCFM is exhausted from the battery room (Table 9.4.2-3 of the SSAR shows 2-100 percent capacity battery room exhaust fans, each rated at 1200 SCFM).				
				Closed - SSAR subsection 9.4.2.2.1.3, REvision 7, includes a description of the equipment room HVAC subsystem with its two 100% capacity air handling units and its two 100% capacity battery room exhaust fans (one for each non-Class 1E battery room). For normal operation, one air handling unit and both battery room exhaust fans are operating. See SSAR subsection 9.4.2.2.3.3, Revision 7.				

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
273	NRR/SPLB	9.4.2	MTG-OI		Winters/BRC	Closed	Action W	
				M9.4.2-9 (ANNEX/AUX. BUILDINGS NON-RADIOACTIVE HVAC SYSTEMS) Provide the rationale for selecting the MSIV compartment HVAC system's only filter with an efficiency of 25 percent. Revise Table 9.4.2-5 of the SSAR accordingly.				
				Closed - SSAR subsectiob 9.4.2 describes the defense-in-depth functions of the annex/auxiliary buildings nonradioactive HVAC systems. There are no safety related functions. The MSIV compartment HVAC subsystem has no defense-in-depth function. As such, the filters fot the MSIV compartment AHU's are selected solely for the purpose of keeping the cooling and heating coils clean. The specific selection of filters for this purpose is consistant with industry practice and ASHRAE recommendations of the 1992 HVAC Systems and Equipment Handbook, Chapter 25, Table 2.				
274	NRR/SPLB	9.4.2	MTG-OI		Winters/BRC	Closed	Action W	
				M9.4.2-10 (ANNEX/AUX. BUILDINGS NON-RADIOACTIVE HVAC SYSTEMS) Table 9.4.2-7 of the SSAR for the valve/piping penetration room HVAC system shows 2-100 percent AHU whil, Figure 9.4.2-3 shows a single AHU. Reconcile the difference and revise the SSAR accordingly.				
				Closed - SSAR subsection 9.4.2.2.1.6, Revision 7, states that the valve/piping penetration room HVAC subsystem consists of two 100 percent capacity air handling units. The SSAR is now consistent.				
275	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.3-1 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Provide a description of the unit heaters components in Section 9.4.3.2 of the SSAR and data in Table 9.4.3-1. Also provide Yannex II building unit heaters classification data in Table 3.2-3 of the SSAR.				
				Closed - SSAR subsection 9.4.3.2.2, Revision 7, includes a description of the unit heaters in the radiologically controlled area ventilation system. These heaters are not in a safety-related or defence-in-depth portion of the system. They are not included in Table 9.4.3-1 or the system sketch.				
276	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.3-2 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Revise Section 9.4.12 of the SSAR to include the reference of UL 1025 for the unit heaters, as indicated on Table 3.2-3.				
				Closed - Throughout Section 9.4, Revision 7, descriptions of electric unit heaters include reference to UL 1025.				
277	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Action W	
				M9.4.3-3 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Provide local effluent holdup tank exhaust unit component description in Section 9.4.3.2 of the SSAR and data in Tables 9.4.3-1 and 9.4-1.				
				Closed - SSAR subsection 9.4.3, Revision 7, has been revised to reflect the deletion of the effluent holdup tank exhaust air HEPA filters.				
278	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Closed	
				M9.4.3-4 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Provide efficiency and flow information data in Table 9.4-1 of the SSAR for AABVS and fuel-handling are ventilation system (FHAVS) high-efficiency particulate air (HEPA) filters.				
				Closed. DISCUSSED AT 12/13/94 MEETING BETWEEN WESTINGHOUSE AND NRC PLANT SYSTEMS BRANCH.				

AP600 Open Item Tracking System Database: Executive Summary

Date: 10/21/96

Selection: [DSER Section] like '9.4*' Sorted by Item #

Item No	Branch	DSER Section/ Question	Type	Title/Description Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
279	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.3-5 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Revise Table 9.4.3-1 of the SSAR to include component data for RCLVS supply units and revise exhaust units data as two 100 percent units, as stated in Section 9.4.3.4.				
				Closed - The rad chem lab ventilation subsystem is not safety related. As such, SSAR subsection 9.4.3, Revision 7, provides a level of detail consistant with this classification. The rad chem lab ventilation system is based on two 100% capacity supply air handling units.				
280	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.3-6 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Revise Section 9.4.3.2 of the SSAR to provide AHU outlet design temperature for AABVS, FHAVS, and RCLVS and state that the AHUs are controlled by temperature controllers with their sensors in the corresponding subsystem supply duct to maintain the specified temperature.				
				Closed - SSAR subsection 9.4.3, as well as, the balance of Section 9.4, has been revised in Revision 7 to consistently address the supply air temperatures, ambient temperatures and temperature control.				
281	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Action N	
				M9.4.3-7 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Revise Table 3.2-3 of the SSAR to provide classification of all major components as shown in Figure 9.4.3-1, including fire dampers.				
				Closed: Classification table only deals with A,B,C,D. There may be some D in VAS but also E. DISCUSSED AT 1/25/95 MEETING BETWEEN WESTINGHOUSE AND NRC PLANT SYSTEMS BRANCH Table 3.2.3				
282	NRR/SPLB	9.4.3	MTG-OI		3.2-3/Lindgren	Closed	Resolved	
				M9.4.3-8 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) State the specific applicable codes and standards for all VAS equipment in Section 9.4.3 of the SSAR and Table 3.2-3.				
				Closed - SSAR subsection 9.4.3, Revision 7, was revised to reference the appropiate equipment standards, Table 3.2-3 has been revised (Rev. 8) to properly address the safety-related components in the VAS.				
283	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.3-9 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Provide clarification of the number of fire dampers provided for RCLVS and revise applicable AP600 SSAR documents accordingly.				
				Closed - The rad chem lab ventilation subsystem is not safety related. As such, SSAR subsection 9.4.3, Revision 7, does not provide a level of detail that includes the exact number of fire dampers in the sub-system. Fire damper placment will be consistant with detailed duct routing and in accordance with the fire area drawings included in the SSAR.				
284	NRR/SPLB	9.4.3	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.3-10 (RADIOLOGICALLY CONTROLLED AREA VENTILATION SYSTEM) Provide ventilation details and safe hydrogen level for the gaseous rad-waste module area to keep the equipment compartment below the predetermined limit of safe hydrogen concentration level.				
				Closed - Revision 7 of the SSAR has included, in the fifth paragraph of subsection 9.4.3.2.3.1, a statement that ventilation is adequate to maintain safe hydrogen concentration in the gaseous radwaste area.				

Total Records: 63

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
285	NRR/SPLB	9.4.6	MTG-OI		Lindgren,D.	Closed	Action W	
				M9.4.6-1 (CONTAINMENT RECIRCULATION COOLING SYSTEM) Westinghouse states that the VCS conforms to the applicable codes and standards as listed in Section 3.2 of the SSAR. However, Table 3.2-3 does not list the classification of VCS components.				
				Closed - No containment recirculation cooling system components are Class A, B, C or D. They are not included in the general codes and standards discussions of SSAR subsection 3.2. The applicable ANSI/AMCA standards are delineated in SSAR subsection 9.4.6.2.2, Revision 7.				
286	NRR/SPLB	9.4.6	MTG-OI		Winters/BPC	Closed	Closed	
				M9.4.6-2 (CONTAINMENT RECIRCULATION COOLING SYSTEM) Westinghouse needs to provide (1) radiation monitor inside each steam generator compartment, (2) component details and conformance with ASME N509-1989 standards, including Table 4-2, ASME N510-1989 standards and RG 1.140 for portable exhaust air filtration unit, and (3) update SSAR Tables 3.2-3 by providing classification of components data, 9.4.6-1 to list design parameters, 9.4-1 for air flow rate and efficiency data, and 9.4-2 for minimum instrumentation.				
				Closed. DISCUSSED AT 1/25/95 MEETING BETWEEN WESTINGHOUSE AND NRC PLANT SYSTEMS BRANCH.				
287	NRR/SPLB	9.4.6	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.6-3 (CONTAINMENT RECIRCULATION COOLING SYSTEM) Figure 9.4.6-1 of the SSAR, Note 6, indicates that the duct mounted relief dampers will be located when duct layout is finalized. The staff considers the relief damper locations on VCS Figure 9.4.6-1 of the SSAR to be a discrepancy.				
				Closed - Note 4, formally Note 6, of SSAR Figure 9.4.6-1, Revision 7, has been changed to state that the relief damper location is typical and that the final location will be indicated when duct layout is finalized.				
288	NRR/SPLB	9.4.7	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.7-1 (CONTAINMENT AIR FILTRATION SYSTEM) What are the ambient summer and winter design temperatures for which the VFS supply air subsystems are designed, specified temperature maintained at AHUs (controlled by temperature controllers with their sensors in the supply duct), and temperature ranges maintained in the served areas?				
				Closed - Revision 7 of the SSAR includes, in subsections 9.4.3.1.2 and 9.4.7.1.2, a reference to the ambient summer and winter design temperatures in subsection 2 and lists of the temperature ranges maintained in the served areas.				
289	NRR/SPLB	9.4.7	MTG-OI		Lindgren,D.	Closed	Action N	
				M9.4.7-2 (CONTAINMENT AIR FILTRATION SYSTEM) Table 3.2-3 of the SSAR does not list the VFS components classification.				
				Closed - The VFS components were included in Table 3.2-2 except for the outstanding issue of the correct number of dampers. The damper consistency question is coversed by Open Item 283.				
290	NRR/SPLB	9.4.7	MTG-OI		Winters/BPC	Closed	Resolved	
				M9.4.7-3 (CONTAINMENT AIR FILTRATION SYSTEM) What are the specific applicable codes and standards for the VFS equipment in Section 9.4.7 and Table 3.2-3 of the SSAR?				
				Closed - SSAR subsection 9.4.7.2.2, Revision 7 includes appropriate references to SSAR section 3.2, as well as, identifying the specific applicable codes and standards for containment air filtration system components.				

AP600 Open Item Tracking System Database: Executive Summary

Date: 10/21/96

Selection: [DSER Section] like '9.4*' Sorted by Item #

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
291	NRR/SPLB	9.4.7	MTG-OI		Winters/BPC	Closed	Action W		
				M9.4.7-4 (CONTAINMENT AIR FILTRATION SYSTEM) What are the locations of the air intakes? State whether they are protected against the tornado-generated external missiles.					
				Closed - A description of the air intake plenums is provided in SSAR Revision 7, subsection 9.4.7.2.1, first paragraph.					
292	NRR/SPLB	9.4.8	MTG-OI		3.2-3/Lindgren	Closed	Action W		
				M9.4.8-1 (RADWASTE BUILDING HVAC SYSTEM) Revise Table 3.2-3 of the SSAR for vacuum relief system (VRS) components including unlisted system dampers and high and low efficiency filters.					
				Closed - The Radwaste Building HVAC System (VRS) system does not have components that are classified as AP600 Equipment Class A, B, C, or D. Only Class A, B, C, and D equipment and valves are included on Table 3.2-3. The VRS is not included in Table 3.2-3.					
293	NRR/SPLB	9.4.8	MTG-OI		Winters/BRC	Closed	Action N		
				M9.4.8-2 (RADWASTE BUILDING HVAC SYSTEM) List separately the VRS efficiency data for all VRS high and low efficiency filters in Table 9.4.8-1 and show all them on Figure 9.4.8-1 accordingly.					
				Closed - Filter data for all filters is provided in SSAR Revision 7 Table 9.4.8-1 and Figure 9.4.8-1. NRC - Action N - staff reviewing					
294	NRR/SPLB	9.4.8	MTG-OI		Winters/BRC	Closed	Action W		
				M9.4.8-3 (RADWASTE BUILDING HVAC SYSTEM) Revise Section 9.4.8 of the SSAR to provide industry code data for VRS components concerning their design, construction and testing.					
295	NRR/SPLB	9.4.8	MTG-OI		Winters/BRC	Closed	Closed		
				M9.4.8-4 (RADWASTE BUILDING HVAC SYSTEM) Provide data for men's and women's locker room exhaust fans in Table 9.4.8-1 of the SSAR.					
				Closed. The Radwaste Building arrangement has been revised. This building no longer contains lockers. Locker room exhaust fans are no longer required.					
296	NRR/SPLB	9.4.8	MTG-OI		Winters/BRC	Closed	Action W	NTD-NRC-95-4464	
				M9.4.8-5 (RADWASTE BUILDING HVAC SYSTEM) Update Section 9.4.8 of the SSAR to provide code data for the system components.					
				Closed - No radwaste building HVAC cooling system component are Class A, B, C, or D. The applicable ANSI/AMCA code and standards are delineated in subsection 9.4.8.2.2.					
297	NRR/SPLB	9.4.8	MTG-OI		Winters/BRC	Closed	Action W	NTD-NRC-95-4464	
				M9.4.8-6 (RADWASTE BUILDING HVAC SYSTEM) What are the ambient summer and winter design temperatures for which the VXS subsystems are designed?					
				Closed - The specific design room temperatures and a reference to the ambient temperatures are included in SSAR subsection 9.4.8.1, Revision 7.					
298	NRR/SPLB	9.4.9	MTG-OI		Winters/SCS	Closed	Active		
				M9.4.9-1 (TURBINE BUILDING VENTILATION SYSTEM) Section 9.4.9 of the SSAR describes the system briefly. Provide design parameters for system components or piping, instrumentation diagram, and classification of the VTS system and components in Table 3.2-3 of the SSAR.					
				Closed - The turbine building ventilation system serves no safety - related functions and has no safety design basis. None of its components are classified A,B,C, or D. The system and component description provided in SSAR subsection 9.4.9, Revision 7, provides sufficient detail for a determination of the system's effect on plant safety.					

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
299	NRR/SPLB	9.4.10	MTG-OI		Winters/BRC	Closed	Resolved	
				M9.4.10-1 (DIESEL GENERATOR BUILDING HVAC SYSTEM) Provide the specific AHU outlet temperature maintained and state that AHUs are controlled by temperature controllers with their sensors in the supply duct to maintain the air supply at this specified temperature.				
				Closed - The specific ambient and design room temperatures are included in SSAR subsection 9.4.10.1 revision 7.				
300	NRR/SPLB	9.4.10	MTG-OI		Winters/BRC	Closed	Action W	
				M9.4.10-2 (DIESEL GENERATOR BUILDING HVAC SYSTEM) To determine the extent of conformance with GDC 17, as it relates to ensuring proper functioning of the standby onsite ac electric power system, Westinghouse should confirm that the VZS standby exhaust ventilation systems are equipped with the air filters and that the louver locations for outside air intake conform with the guidance of NUREG/CR-0660 [6.1 m (20 ft) above grade] to control the dust and other particulates. Revise Figure 10.4.10-1 of the SSAR accordingly.				
				Closed - As indicated in the "AP600 Compliance" statement for GDC 17 in SSAR subsection 3.1.1, Revision 7, the diesel generators are not part of the safety-related power sources for AP600. As such, NUREG/CR-0660 need not apply to the design of the diesel generators, the diesel generator building or the diesel generator building HVAC. However, since NUREG/CR-0660 does provide prudent design guidance, the diesel generator building heating and ventilation system does not comply as follows: The air intake to the service module, which houses the major electrical equipment associated with the DG unit, is located as high up on the building as practical. Outside air to the service module is filtered to prevent the spread of dust and dirt onto electrical equipment. In all operating modes, air supplied to electrical equipment areas is filtered. Electrical equipment cabinets are specified to be dust tight. Air provided to the engine room is filtered and is taken through intakes located as high as in the building as practical. Combustion air is taken from the outdoors via a combustion air cleaner, not from the engine room. The standby exhaust ventilation subsystem operates only when the diesels are running and supplies ventilation only to the engine rooms. The supply of filtered air to electrical equipment is unaffected by operation of the standby exhaust ventilation subsystem.				
301	NRR/SPLB	9.4.10	MTG-OI		Winters/BRC	Closed	Action W	
				M9.4.10-3 (DIESEL GENERATOR BUILDING HVAC SYSTEM) Evaluate the equipment operability for the equipment located inside DG area exposed to 130 F while DG in operation.				
				Closed - Equipment to be located in the diesel generator building will be specified to operate in an ambient of 130 F. A room temperature of 130 F is typical and acceptable for diesel engines and generators. The specification of 130 F ambient is consistant with URD requirements. The 130 F requirement is not explicitly stated in the SSAR because no equipment located in the diesel generator building is safety related.				
302	NRR/SPLB	9.4.11	MTG-OI		3.2-3/Winters	Closed	Action W	
				M9.4.11-1 (HEALTH PHYSICS AND HOT MACHINE SHOP HVAC SYSTEM) Update Table 3.2-3 of the SSAR for VHS components including unlisted system dampers and hot machine shop filtration unit subsystem components.				
				Closed: Revision of SSAR Table 3.2-3 includes safety-related items in the VHS				
303	NRR/SPLB	9.4.11	MTG-OI		Winters/BRC	Closed	Closed	
				M9.4.11-2 (HEALTH PHYSICS AND HOT MACHINE SHOP HVAC SYSTEM) Provide the specified AHU outlet temperature and state that AHUs are controlled by temperature controllers with their sensors in the supply duct to maintain the air supply at this specified temperature.				
				Closed: DISCUSSED AT 12/13/94 MEETING BETWEEN WESTINGHOUSE AND NRC PLANT SYSTEMS BRANCH.				

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. /	Date
304	NRR/SPLB	9.4.11	MTG-OI		Winters/BRC	Closed	Action W		
				M9.4.11-3 (HEALTH PHYSICS AND HOT MACHINE SHOP HVAC SYSTEM) Clarify the number of radiation monitors with associated MCR high and high-high alarms and number of filtration unit for the hot machine shop are provided and revise affected SSAR section, figure, table, and drawing, accordingly.					
				Closed - There is a single radiation monitor in the exhaust of the health physics and hot machine shop HVAC system to the plant vent stack. This is indicated in SSAR subsection 9.4.11.2.1, Revision 7 and in Subsection 11.5, Revision 6.					
305	NRR/SPLB	9.4.11	MTG-OI		Winters/BRC	Closed	Action W		
				M9.4.11-4 (HEALTH PHYSICS AND HOT MACHINE SHOP HVAC SYSTEM) Revise Table 9.4.11-1, Sheet 2 of 2 to state "filter requirements," not "heating coil requirements." Also, the table needs to list the correct number of HEPA filters for VHS or AP600 SSAR section and figure need to be revised, accordingly.					
				Closed - The health physics and hot machine shop HVAC system is not safety related. As such, SSAR subsection 9.4.3, Revision 7, provides a level of detail that does not include the exact number of filters in the system. The system does not include HEPA filters.					
1103	NRR/SPLB	9.4.1-1	DSER-OI		Winters	Closed	Action N		
				The staff has not yet determined the acceptability of the design of the nuclear island nonradioactive ventilation system.					
				Closed - SSAR 9.4.1, Revision 7, closes meeting open items 261 thru 264. This completes the Westinghouse submittals required for NRC review of the nuclear islanf nonradioactive ventilation system.					
1104	NRR/SPLB	9.4.2-1	DSER-OI		Winters	Closed	Active		
				The staff has not yet determined the acceptability of the design of the non-radioactive HVAC system in the annex/auxiliary buildings.					
				Closed - Westinghouse has provided all information formally requested. See Open Items 265 through 274.					
1105	NRR/SPLB	9.4.3-1	DSER-OI		Winters/BPC/WEC	Closed	Action N	NTD-NRC-95-4464	
				The staff has not yet determined the acceptability of the design of the radiologically controlled area ventilation system.					
				Closed. SSAR Rev.3 includes resolution to meeting open items 275 to 284					
1106	NRR/SPLB	9.4.5-1	DSER-OI		Winters/WEC	Closed	Active		
				The staff has not yet determined the acceptability of ventilation systems for RTNSS-important systems.					
				Closed - SSAR Section 9.4, Revision 7, includes information on the portions of the air-conditioning, heating, cooling and ventilation systems that perform safety-related and defense-in-depth functions. There is no more information requested by NRC for "ventilation systems for RTNSS-important systems." There is no "Engineered Safety Features Ventilation System." Specific requests for additional information from NRC will be covered by future open items.					
1107	NRR/SPLB	9.4.6-1	DSER-OI		Winters/WEC/INI	Closed	Action W		
				The staff has not yet determined the acceptability of the design of the containment recirculation cooling system.					
				Closed - With the issue of SSAR Section 9.4, Revision 7, Open Item numbers 285, 286, 287 and 1766 are closed. There are no more specific requests from NRC for information on the containment recirculation cooling system.					

AP600 Open Item Tracking System Database: Executive Summary

Date: 10/21/96

Selection: [DSER Section] like '9.4*' Sorted by Item #

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No. / Date
1108	NRR/SPLB	9.4.7-1	DSER-OI		Winters/BPC	Closed	Action W	NTD-NRC-95-4464
				The staff has not yet determined the acceptability of the design of the containment air filtration system.				
				Closed - With the issue of SSAR Section 9.4, Revision 7, Open Item numbers 288, 289, 290 and 291 are closed. There are no more specific requests from NRC for information on the containment air filtration system.				
1109	NRR/SPLB	9.4.8-1	DSER-OI		Winters	Closed	Action W	
				The staff has not yet determined the acceptability of the design of the radwaste building HVAC system.				
				Closed - The issue of SSAR Revision 8, which includes Table 3.2-3, completes submittal of all information requested by the NRC for the review of the radwaste building HVAC. No additional NRC requests for information are outstanding.				
1110	NRR/SPLB	9.4.9-1	DSER-OI		Winters/SCS	Closed	Action W	
				The staff has not yet determined the acceptability of the design of the turbine building ventilation system.				
				Closed - The turbine building ventilation system has no safety-related or defense-in-depth functions or components. See Open item 298 for more details. There are no other requests for information.				
1111	NRR/SPLB	9.4.10-1	DSER-OI		Winters/BRC	Closed	Action W	
				The staff has not yet determined the acceptability of the design of the diesel generator building heating and ventilation system.				
				Closed - With the issue of SSAR Section 9.4, Revision 7, Open item numbers 299, 300 and 301 are closed. Ther are no more specific requests from NRC for information on the diesel generator building heating and ventilation system.				
1112	NRR/SPLB	9.4.11-1	DSER-OI		Winters	Closed	Action W	
				The staff has not yet determined the acceptability of the design of the health physics and hot machine shop HVAC system.				
				Closed - All requested information has been provided to the NRC.				
1766	NRR/SPLB	9.4.6	MTG-OI		Lindgren	Closed	Action N	
				M9.4.6-4 (CONTAINMENT RECIRCULATION COOLING SYSTEM) Staff to determine any additional needs for Table 3.2.3 & basis (other than what has already been identified in 283) ACTION FROM 1/25/95 MEETING BETWEEN WESTINGHOUSE AND NRC PLANT SYSTEMS BRANCH				
				Closed - Westinghouse has completed necessary submittals to support staff review.				
1767	NRR/SPLB	9.4.7	MTG-OI		Lindgren	1	Action W	
				M9.4.7-5 (CONTAINMENT AIR FILTRATION SYSTEM) RAI 410.237. Ref. C not provided under references. Should be Table 1.1-1. ACTION FROM 1/25/95 MEETING BETWEEN WESTINGHOUSE AND NRC PLANT SYSTEMS BRANCH				
				Closed - SSAR Section 1.7 no longer has a reference to Reference C. Table 1.7-2 is the list of AP600 systems.				
2890	NRR/SPLB	9.4.1	TEL-OI		Winters/BPC	Closed	Action W	
				In SSAR Section 9.4.1 address VBS filtration unit conformance to GSI B-36, ASME N 509-1989, and ASME N 510-1989 and address VBS duct work and housing outside of main control room conformance to GSI B-66, ASME N 509-1989, and ASME N 510-1989. Evaluate whether COL items must be added.				
				Closed - Consistant with other sections and systems presented for AP600 Design Certification in the SSAR, no COL item will be added to ensure compliance with codes and standards identified in the SSAR on a system-by-system basis. It is assumed that, since these codes and standards are called out in the DCD following Design Certification, they are followed in order to maintain compliance with the Rule.				

Total Records: 63

AP600 Open Item Tracking System Database: Executive Summary

Date: 10/21/96

Selection: [DSER Section] like '9.4*' 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). For example, 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. For example, redundancy for the main control room / technical support center HVAC subsystem is contained in 9.4.1.2.3.1. 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.

3085	NRR/SPLB	9.4	RAI-OI		Winters	Closed	Action W	NSD-NRC-96-4727	

410.276 SSAR Section 9.4.1, Nuclear Island Nonradioactive Ventilation System

Table 9.4.1-1 of the SSAR identifies assumed in-leakages through the Main Control Room (MCR) access doors and the MCR/Technical Support Center (TSC) equipment ductwork (operating) and out leakages through the MCR structure and the through MCR/TSC Heating, Ventilation and Air Conditioning (HVAC) equipment and ductwork (operating). Westinghouse should state that during abnormal operation with high airborne radioactivity conditions, the MCR/TSC HVAC subsystem can limit the doses to the control room operators to General Design Criteria (GDC) 19 dose limits given the assumed in-and out-leakages.

Closed - Response provided by NSD-NRC-96-4727.

3086	NRR/SPLB	9.4	RAI-OI		3.2-3/Winters	Closed	Action W	NSD-NRC-96-4817	

410.277 Westinghouse should revise SSAR text and table as follows:
a. Revise SSAR Table 3.2-3 and SSAR text and table in Section 9.4.2 to include component and Code data for the steam humidifier, hot water unit heaters, and electrical reheat coils.

b. Revise SSAR Table 3.2-3 and SSAR text and tables in Section 9.4.3 to include component and Code data for steam humidifier, hot water unit heaters, and electrical reheat coil.

Closed - Information on the safety-related and defense-in-depth portions of the Annex/Auxiliary Buildings Noradioactive HVAC system is included in Table 3.2-3.

Closed - In response to letter NSD-NRC-96-4817 dated Sept. 10, 1996

3087	NRR/SPLB	9.4	RAI-OI		Winters	Closed	Action W	NSD-NRC-96-4727	

410.278 SSAR section 9.4.8, Radwaste Building HVAC System

The Westinghouse should state in Section 9.4.8 of the SSAR that (1) fire dampers are provided at duct penetrations through fire barriers to maintain the fire resistance ratings of the barriers and meet the design and installation requirements of UL-555 (1990), (2) VRS (radwaste building ventilation system) mobile filtration units, including HEPA filters, conforming the guidance of RG 1.140, Positions C.1 and C.2, (3) the supply and exhaust air system ductwork is designed, fabricated and installed to conform with the requirements of Sheet Metal and Air Conditioning Contractors National Association (SMACNA) standards, and (4) shielding of components and personnel during normal plant operation is commensurate with radiation sources in the vicinity of the VRS equipment.

Closed - Response provided by NSD-NRC-96-4727.

AP600 Open Item Tracking System Database: Executive Summary

Date: 10/21/96

Selection: [DSER Section] like '9.4*' Sorted by Item #

Item No	Branch	DSER Section/ Question	Type	Title/Description / Detail Status	Resp Engineer	(W) Status	NRC Status	Letter No /	Date
3482	NRR/SPLB	9.4	RAI-OI		Butler	Closed	Action W	NSD-NRC-96-4850	

RAI# 410.296 - NRC letter 8/15/1996 Some SSAR figures are not legible, for example: Figures 9.4.1-1, 9.4.2-1, 9.4.3-1, 9.4.6-1, 10.3.2-1, and 11.4-1. Westinghouse is requested to revise the SSAR figures to be legible.

Closed - Response provided via Westinghouse letter NSD-NRC-96-4850, dated 10/17/96.

FAX to Diane Jackson at NRC

This is to amplify our "doneness" for section 3.9 of the SSAR and DSER. Revision 9 (August, 1996) of the SSAR provided our last planned revision of section 3.9 to reflect design changes. This chapter will be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 97 of the 111 items associated with section 3.9 show "(W) Status" of "Closed". Of the remaining 14 items 5 are awaiting Revision 10 of the SSAR and are tracked as "Resolved, SSARREV" items. Two items are associated with the Chapter 14 and are being tracked with other Chapter 14 related open items. The remaining 7 items require dialog with NRC and closure. The "(NRC) Status" for the 111 items associated with section 3.9 shows 66 that are "Resolved" or "Closed." Westinghouse knows of no further submittal requirements for 38 of the section 3.9 items which do not indicate "Resolved" or "Closed." As indicated on the schedule provided to NRC on October 15, 1996, it is our intent to supply NRC with all information necessary for it to complete the section 3.9 portion of the FSER by December 12, 1996. We request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for section 3.9 except for the 7 outstanding items identified above. We should have a teleconference definitively scheduled to resolve any remaining NRC concern.

Jim Winters
October 17, 1996

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	October 17 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 + 5

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:

This is being sent to satisfy Item 365 from our 9/23 Telecon. It is DRAFT and will not be provided formally in the Tech Specs until the NRC Tech Spec Branch requests its inclusion formally and provides some justification. Call if you have questions.

Jim Winters

10/17/96

3.7 PLANT SYSTEMS

3.7.8 Secondary Coolant System Leakage

LCO 3.7.8 The secondary coolant system pressure boundary leakage into containment shall not exceed 5.0 gpm.

APPLICABILITY: MODES 1, 2, 3, and 4 with reactor coolant system (RCS) not cooled by normal residual heat removal system (RNS).

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Secondary coolant system pressure boundary leakage into containment sump not within limit.	A.1 Reduce leakage to within limit.	8 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 4 with RCS cooling provided by the RNS.	8 hours 24 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	Verify unidentified leakage into the containment sump is less than limit.	72 hours

B.3.7 PLANT SYSTEMS

B 3.7.8 Secondary Coolant System Leakage

BASES

BACKGROUND

Detection of leaks in steam generator (SG) secondary side piping and nozzles is necessary to ensure that the leak-before-break (LBB) pipe service conditions are met for the lines to which LBB applies. These conditions apply only to the main steam and main feedwater lines which are inside containment. By limiting operation following the detection of leaks associated with the postulated leakage flaw (crack) size, pipe rupture is precluded. Flaws smaller than the critical size normally only increase in size due to pressure or temperature transient cycles. Flaws larger than the critical size are considered unstable and may increase in size due to a constant applied stress (i.e., pressure load). Because pipe rupture is precluded, the equipment qualification design bases for equipment in the LBB pipe local area do not include conditions associated with pipe rupture. The primary advantage of this approach is that for these lines, the pipe restraints are not designed to withstand forces and displacements associated with a pipe rupture (Ref. 1).

This design approach requires that small pressure boundary leaks be detected and if not isolatable, action be taken to shutdown the plant. Detection of leaks in excess of 0.5 gpm is necessary to preclude pipe rupture in MODES 1 through 4 due to a safe shutdown earthquake (SSE). Therefore, pressure boundary leaks through cracks must be detected and action taken to isolate the leakage. Leakage past gaskets and seals are not associated with conditions leading to pipe rupture and, therefore, are not considered to be pressure boundary leakage.

The same leak detection instrumentation, required to be OPERABLE by LCO 3.4.10, "RCS Leakage Detection Instrumentation," in MODES 1 through 4 for detection of reactor coolant system (RCS) leakage, is used for detection of secondary coolant system leakage in containment. Evaluation of potential secondary coolant system leaks in excess of 5.0 gpm is required. Additional instrumentation is available for evaluation of these leaks and is discussed in SSAR Section 5.2.5 (Ref. 2).

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The limit on leakage ensures that conditions leading to pipe rupture are detected and the event is avoided, thus reducing the probability of a secondary coolant system break inside containment. Early detection of leakage permits operators to take action to limit the likelihood and consequences of postulated events.

Piping established by analysis to be LBB will not rupture, provided the critical flaw size is not exceeded. The leakage limit is conservatively selected to correspond to a leakage crack size that is detectable, structurally stable under seismic loads, and permits sufficient time for operator corrective action to preclude pipe rupture. The size of the leakage crack is established such that the expected leakage is 10 times the minimum leak detection capability for that location (Ref. 1).

Limiting pressure boundary leaks in LBB piping permits elimination of local dynamic effects of postulated pipe ruptures from the equipment qualification design bases for essential structures, systems and components. Local dynamic effects include; pipe whip, jet impingement, missiles, local pressurizations, pipe break reaction forces, and decompression waves in the intact portions of that piping or communication piping.

Although LBB piping will not rupture, provided leakage limits are met, global effects of steam generator secondary side piping line breaks are addressed in safety analyses, consistent with Draft Standard Review Plan 3.6.3 (Ref. 3)

Although the secondary coolant system leakage limit is not required by any of the criteria of the NRC Policy Statement, this specification has been included in Technical Specifications in accordance with NRC direction (Ref. 4).

LCO

This LCO ensures that the leakage from steam generator secondary side LBB lines inside containment associated with the critical crack size assumed in the LBB analysis is not exceeded. This leakage limit precludes LBB pipe rupture, thus preserving the equipment qualification design basis.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

The unidentified leakage must be verified to be less than the LCO limit each 72 hours. Leakage past gaskets and seals shall not be classified as pressure boundary leakage. The containment sump level monitor required to be OPERABLE by LCO 3.4.10, "RCS Leakage Detection Instrumentation," in MODES 1 through 4 continuously monitors leakage collected in the sump and will detect and alarm flow rate increases of 5.0 gpm. The LCO 3.4.10 instrumentation along with other available instrumentation provides the capability to establish the leak source (Ref. 2).

REFERENCES

1. AP600 SSAR, Section 3.6 "Protection Against the Dynamic Effects Associated with the Postulated Rupture of Piping".

2. AP600 SSAR, Section 5.2.5 "Detection of Leakage Through Reactor Coolant Pressure Boundary".

3. Standard Review Plan, Draft Section 3.6.3, "Leak Before Break Evaluation Procedures" FR32626, 8/28/87.

4. NRC letter, Diane T. Jackson to Westinghouse (Nicholas J. Liparulo), dated September 5, 1996, "Staff Update to Draft Safety Evaluation Report (DSER) Open Items (OIs) Regarding the Westinghouse AP600 Advanced Reactor Design," Open Item #365.

BASES (continued)

APPLICABILITY

In MODES 1, 2,3, and 4, when the SG is being used for RCS heat removal, the secondary system pressure and temperature conditions are capable of causing pressure boundary growth of a critical size crack which in combination with an SSE could result in pipe rupture.

The secondary system temperature and pressure conditions in MODES 4, 5, and 6, with RCS cooling provided by the normal residual heat removal system (RNS), are not sufficient to propagate a leakage crack. Additionally, the local dynamic effects of a postulated pipe rupture in MODES 4, 5, and 6, with RNS cooling, are insignificant from the standpoint of equipment qualification design bases for essential structures, systems, and components. Therefore, leakage monitoring is not required in MODES 4, 5, and 6, with RCS cooling provided by the RNS.

ACTIONS

A.1

With secondary coolant system pressure boundary leakage into containment in excess of the LCO limit, action must be taken. to reduce the leakage within 8 hours. This Completion Time is based on predicted crack growth rate and allows time to isolate the leak or take other appropriate action to reduce the leak rate. This action is necessary to prevent further deterioration of the secondary coolant system pressure boundary.

B.1

With steam generator secondary side leakage in excess of the limit, the unit is in a condition potentially outside the LBB analysis. Therefore, the unit must be placed in MODE 4 with RCS cooling provided by the RNS, where the probability and consequences of crack growth in the secondary coolant system pressure boundary inside containment are minimized. To achieve this status, the plant must be placed in at least MODE 3 within 8 hours, and in MODE 4, with RCS cooling provided by the RNS, within 24 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required conditions from full power, in an orderly manner, and without challenging plant systems.

(continued)

Summary of 10/15/96 Telecon with NRC on:

NRC's October 10, 1996 Comments on MAAP4 and T/H Uncertainty RAI Responses (attached)		
RAI #	Subject	October 15 Telecon Discussion
492.15	Provide a quantitative estimate of what Westinghouse considers "ample margin" to the PCT limit as discussed in this response	"Ample margin" is based on expecting calculated PCTs to be in the range of 1200° to 1800°F, which is below the temperature of significant zirc oxidation.
	Regarding the response to how margins will be reflected in the overall baseline PRA, Westinghouse has indicated that scenarios which have less than 1% impact on the focused PRA will not be considered. Although this may be justifiable for the focused PRA, scenarios that are less than 1% of the focused PRA frequencies are of the same order of magnitude as the baseline PRA and would appear to potentially impact the baseline results. Please provide additional information on this.	Westinghouse will address the impact on the Baseline PRA, as well as the Focused PRA, if the MAAP4 benchmarking identifies issues that switch scenarios from successful core cooling to failure. The reference to the letter that discusses the T/H uncertainty resolution process is to indicate that that process is a subset of (it will "supplement") the assessment; the T/H uncertainty resolution is not the entirety of the assessment mentioned in the RAI response.
492.21	Why is the core heat transfer not ranked "high" or "important" in the PIRT? The staff is more interested in the heat transfer during the transition from covered to uncovered and the return to covered.	Discussion centered on the predicted PCT dependency on the two-phase mixture level. Westinghouse agreed to search through our existing LOCA documentation to find support for position that the ranking of the two-phase mixture level is sufficient, and the effect of the core heat transfer on PCT is small.
492.23	The staff's question regarding this RAI response is how one differentiates between the importance of one source of ECC injection and another in terms of its PIRT ranking.	The issue is why the CMT temperature is not ranked as high importance on the PIRT, while the IRWST temperature is. The CMT operates at high enough pressures that the CMT water injecting will be significantly subcooled. By contrast, the IRWST injects at low pressures, and relatively small changes in the temperature can affect the subcooling. It was also noted that while CMT temperature is not identified as "high importance," it is identified as an area of "high interest" because it is unique to AP600. Therefore, CMT temperature is a parameter that will be examined in the benchmarking.

NRC's October 10, 1996 Comments on MAAP4 and T/H Uncertainty RAI Responses		
RAI #	Subject	October 15 Telecon Discussion
492.23 (Cont)	The response states that there "is no modelling consideration of whether RNS prevents ADS-4 actuation." It was the staff's understanding that if RNS was available in a baseline PRA LOCA event tree, it affected the consideration of whether ADS-4 was needed...	There is a difference between saying that RNS prevents ADS-4 actuation and whether ADS-4 actuation is needed for RNS. ADS-4 is not needed to lower the RCS pressure to achieve RNS injection. Therefore, ADS-4 is not a decision point on event paths that have successful RNS. Questions that do not differentiate between successful core cooling and core damage are not asked on the event trees. It was also noted that if the ADS-4 question is not asked on an event tree, that does not mean that its actuation has been prevented; it only means that it was not credited. During the discussion, another issue on a potential adverse interaction was identified by the NRC. However, the issue has already been transmitted via an RAI, and will be addressed through that pathway.
492.24	The RAI response does not provide a convincing argument that the break discharge coefficient should not be an important parameter in the PIRT. Westinghouse should be prepared to explain the values of discharge coefficients used in the T-H analyses and why they are conservative.	The discussion started with Westinghouse re-iterating the position that analyzing a range of break sizes addresses the issue. The dialogue turned to a discussion of a broader issue of whether the uncertainties of all the high importance items in the PIRT are going to be substantiated as being bounded. It was agreed between Westinghouse and the NRC that we need further discussion on this broader issue.
492.25	The questions are on the interpretation of trends in the comparison of MAAP4 and NOTRUMP, and what is meant by code deficiencies.	Westinghouse and the NRC agreed that we will need to see the results of the benchmarking to be sure that we agree on the interpretation of trends, and whether differences are significant. The NRC noted that the key to this issue is the last statement of the RAI response: "This will be judged based on whether wrong conclusions would be drawn if analysis results were available from MAAP4 only."
492.30	The staff notes that one aspect of a SGTR that distinguishes it from a SBLOCA scenario is the potential for containment bypass.	Westinghouse agrees with the comment, and will include this issue within documentation.

October 10, 1996

TO: Cindy Haag

FROM: Bill Huffman

SUBJ: AP600 T-H Uncertainty RAI Responses

Cindy,

below are some of Alan Levin's comments on the RAI responses provided in your August 30, 1996 submittal on T-H uncertainty. If you can have some kind of written response prepared for our Friday afternoon telecon, I will write a telecon summary which will document the responses.

RAI

492.15 Please provide a quantitative estimate of what Westinghouse considers "ample margin" to the PCT limit as discussed in this response.

Regarding the response to how margins will be reflected in the overall baseline PRA, Westinghouse has indicated that scenarios which have less than 1% impact on the focused PRA will not be considered. Although this may be justifiable for the focused PRA, scenarios that are less than 1% of the focused PRA frequencies are of the same order of magnitude as the baseline PRA and would appear to potentially impact the baseline results. Please provide additional information on this.

492.21 The response to this question did not specifically address the staff's concerns. It is understood that during steam cooling conditions there is relatively little difference in the results if either "good" or "poor" heat transfer is assumed. The staff is more interested in the heat transfer during the transition from covered to uncovered and the return to covered. For those sequences in which the core uncovers but "damage" is not predicted because the core recovers before PCT exceeds whatever cutoff is established (to account for "adequate margin), the timing and modeling of the transition from nucleate boiling to steam cooling and vice-versa may have a significant effect on the predicted peak temperature. It is for this reason that it would appear that core heat transfer should be a high-importance phenomenon (it is tied to some extent to calculation of the two-phase level, as well). The transition of most interest is probably from uncovered to rewetted. It is assumed that dryout is modelled as essentially concurrent with reaching a void fraction of 1 at a particular level (though that may not actually be the physical case). However, depending on the rod surface temperature when the mixture level recovers, "quenching" may well not coincide with the mixture level reaching a given elevation. If there is a delay between recovery and rewet, the calculation of film boiling heat transfer and the transition to nucleate boiling is important.

492.23 The staff's question regarding this RAI response is how one differentiates between the importance of one source of ECC injection and another in terms of its PIRT ranking. Westinghouse did not address this aspect in the response.

In addition, the response states that there "is no modelling consideration of whether RNS prevents ADS-4 actuation." It was the staff's understanding that if RNS was available in a baseline PRA LOCA event tree, it affected the consideration of whether ADS-4 was needed--i.e., failure of ADS-4 would not need to be considered in the event tree. Please provide additional information on the role of RNS in the baseline PRA.

492.24 The response to this RAI does not clarify how Westinghouse will treat the discharge coefficient for breaks that are near or equal to the pipe diameter in question. Specifically, for full diameter breaks (or equivalent), how would Westinghouse establish the break coefficient impact without varying it explicitly. The staff has seen analysis results from Westinghouse that appeared to indicate that relatively small changes in this parameter could cause significant changes in calculated peak temperatures (although it was not clear why that should have been the case). The RAI response does not provide a convincing argument that the break discharge coefficient should not be an important parameter in the PIRT. Westinghouse should be prepared to explain the values of discharge coefficients used in the T-H analyses and why they are conservative.

492.25 Please provide some elaboration on this response. For instance, if both NOTRUMP and MAAP show the same "trend" of decreasing core mixture level, but NOTRUMP uncovers and MAAP does not, is that "okay" or "not okay?" Further, the second part of the answer seems in part to contradict the first, or at least, they do not appear entirely consistent. For the first paragraph, if differences in the trend are, in fact, caused by a "well-defined deficiency in MAAP4" does this mean that the comparison is "okay?" (That's what the sentence seems to say.) If there is a "well-defined deficiency in MAAP4," wouldn't this be a case where (in para. 2) "phenomena are encountered that are beyond the capability of MAAP4?" (i.e., doesn't a deficiency imply a situation beyond the capability of the code?)

492.30 The staff notes that one aspect of a SGTR that distinguishes it from a SBLOCA scenario is the potential for containment bypass. Westinghouse should address this difference when it prepares the pertinent documentation the discusses SGTRs and SBLOCAs

Westinghouse

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DATE:	OCT 17 1996	NAME:	Jim Winters
TO:	Ted Quay	LOCATION:	ENERGY CENTER - EAST
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COMMENTS:

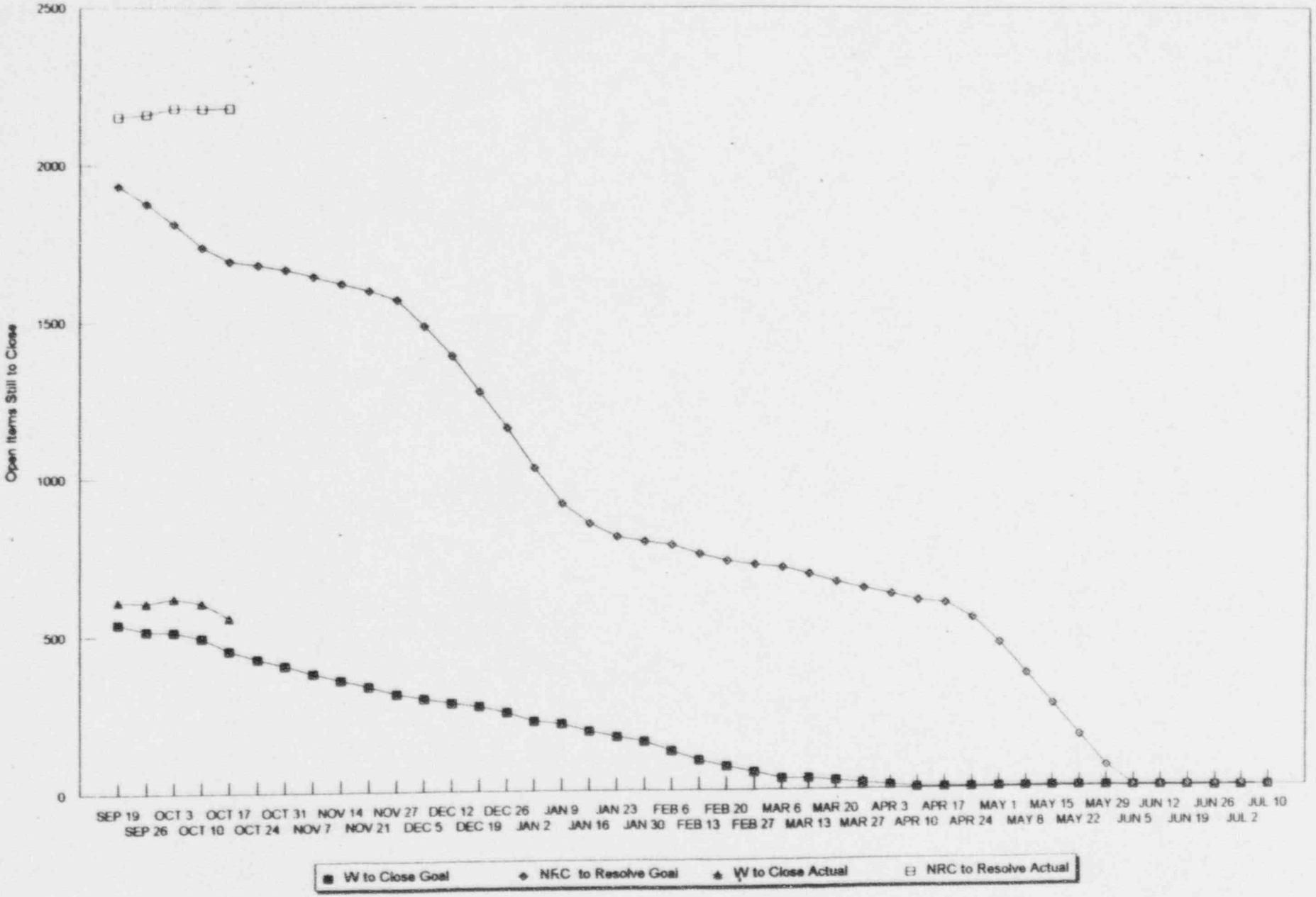
Ted

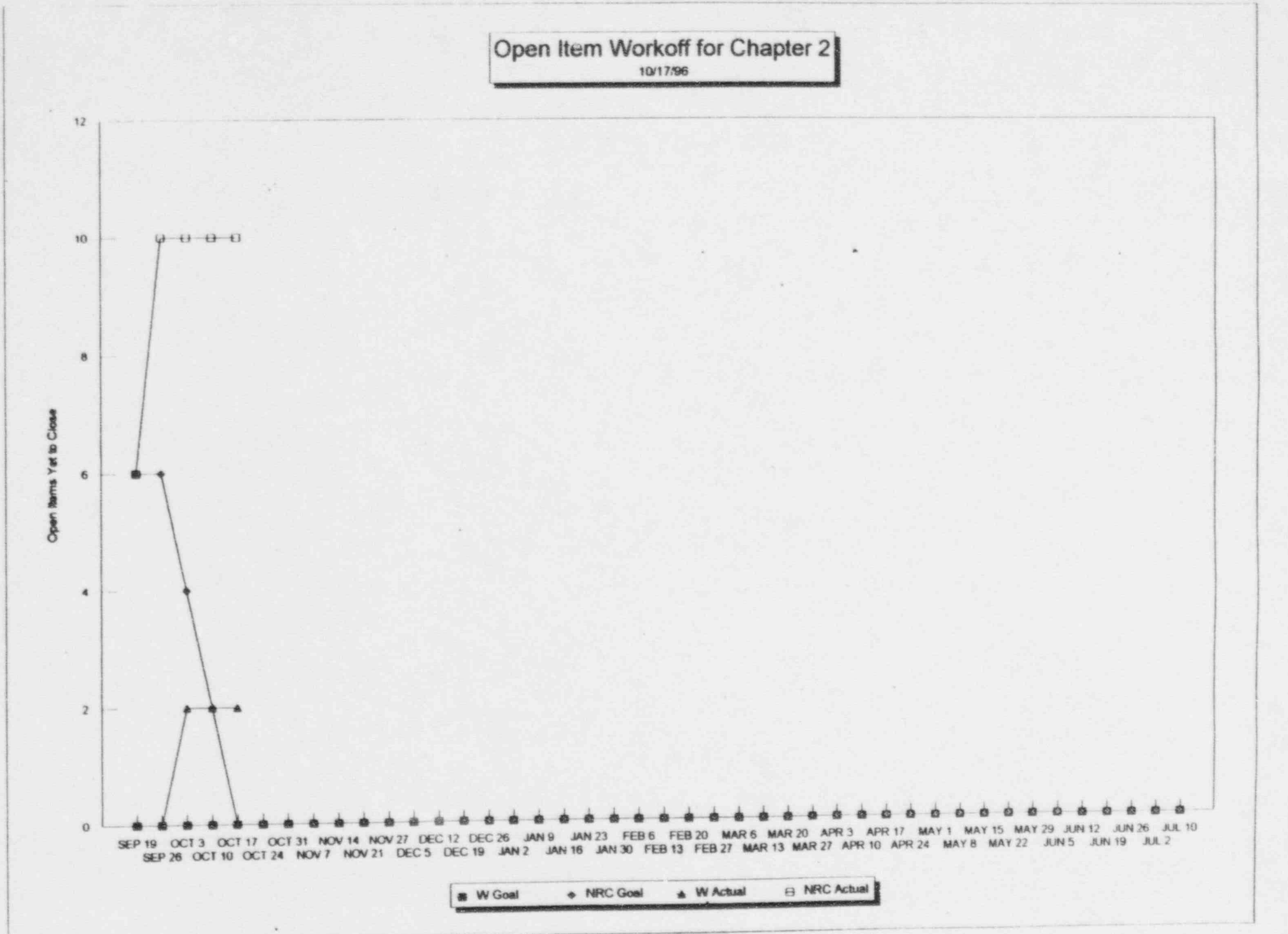
Here are today's covers. I've just included the overall and one each for the chapters we're taking to ACRS in December

Jim Winters

Open Item Work Off Goals

10/17/96

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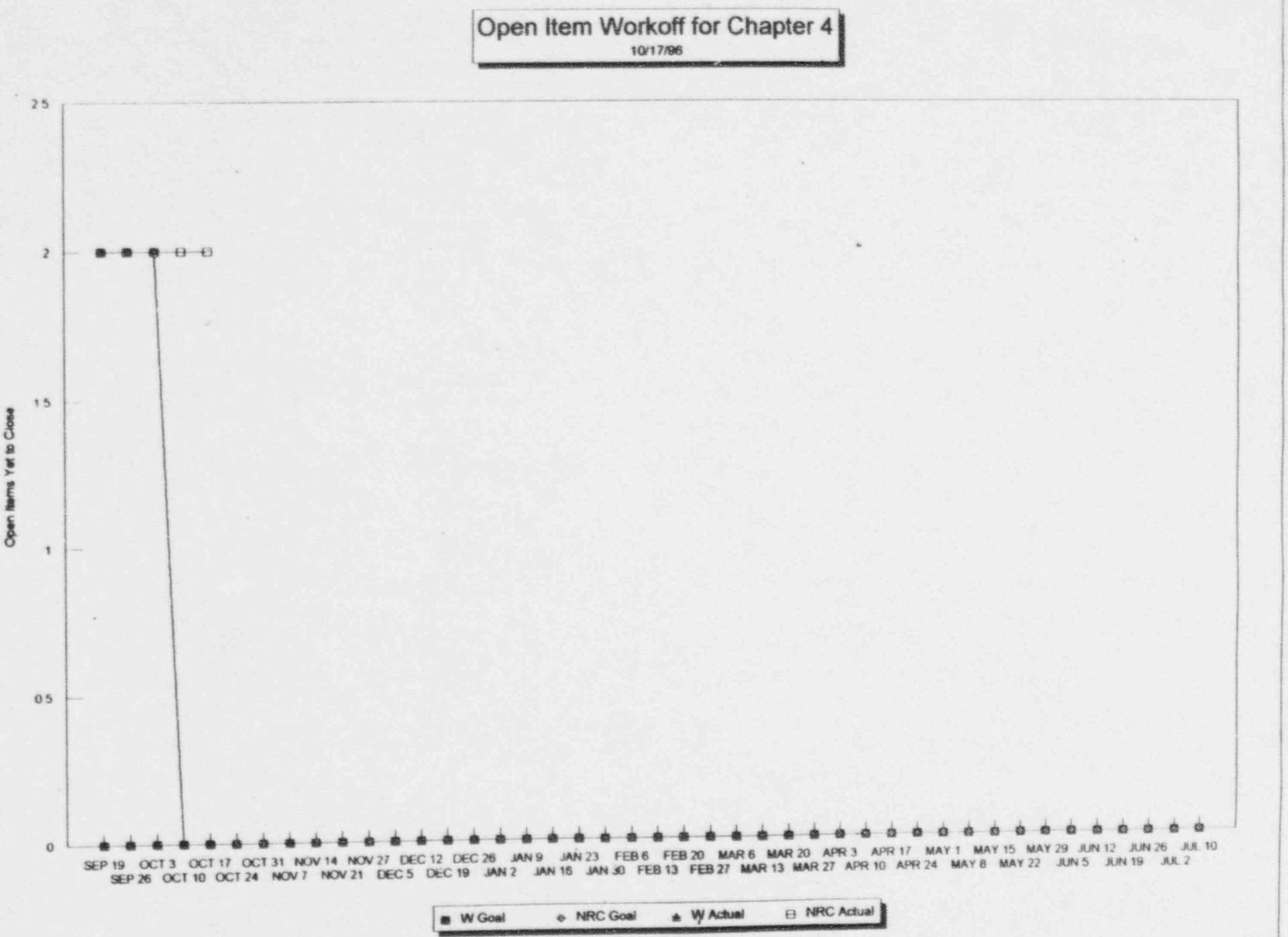
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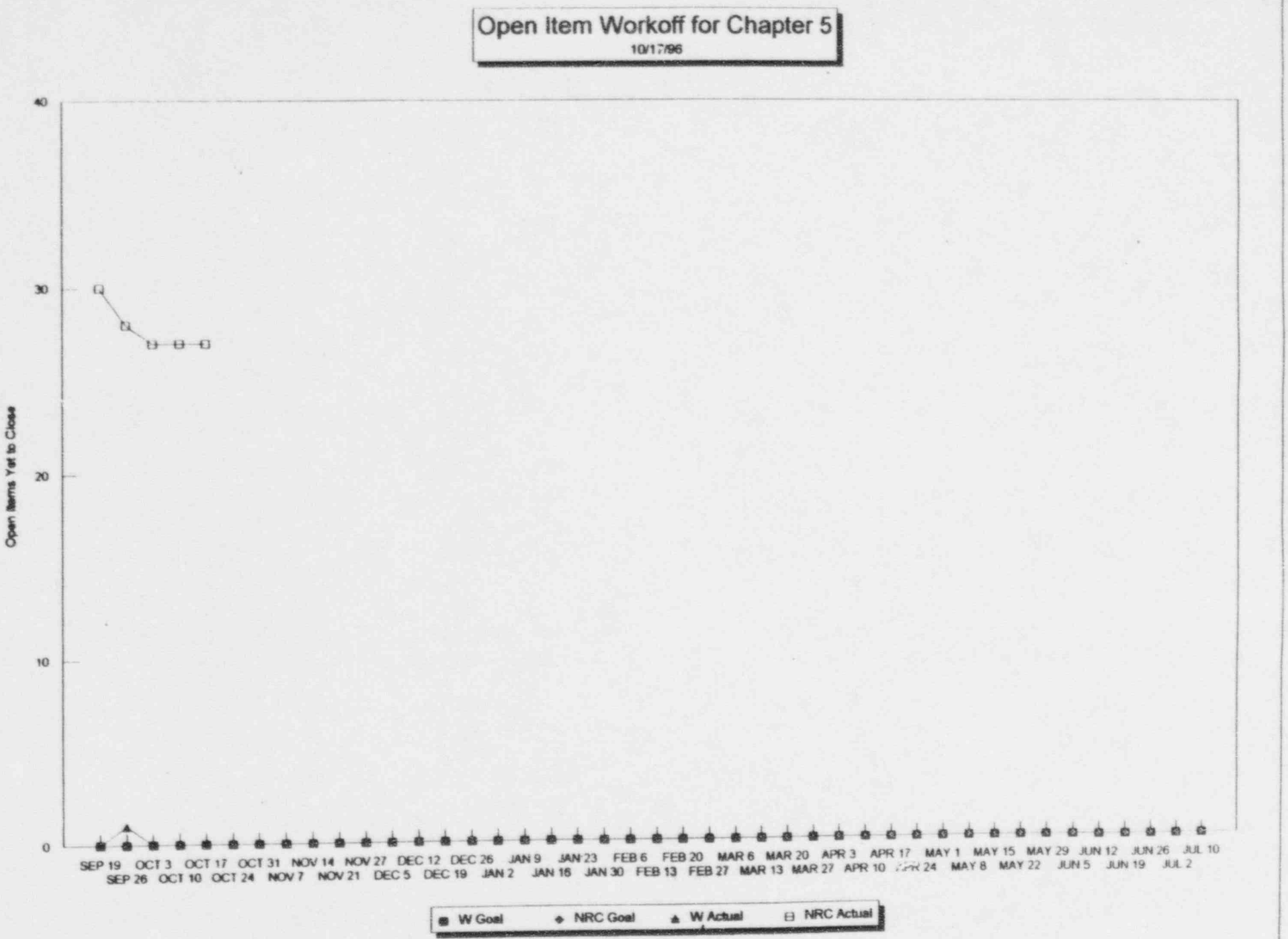
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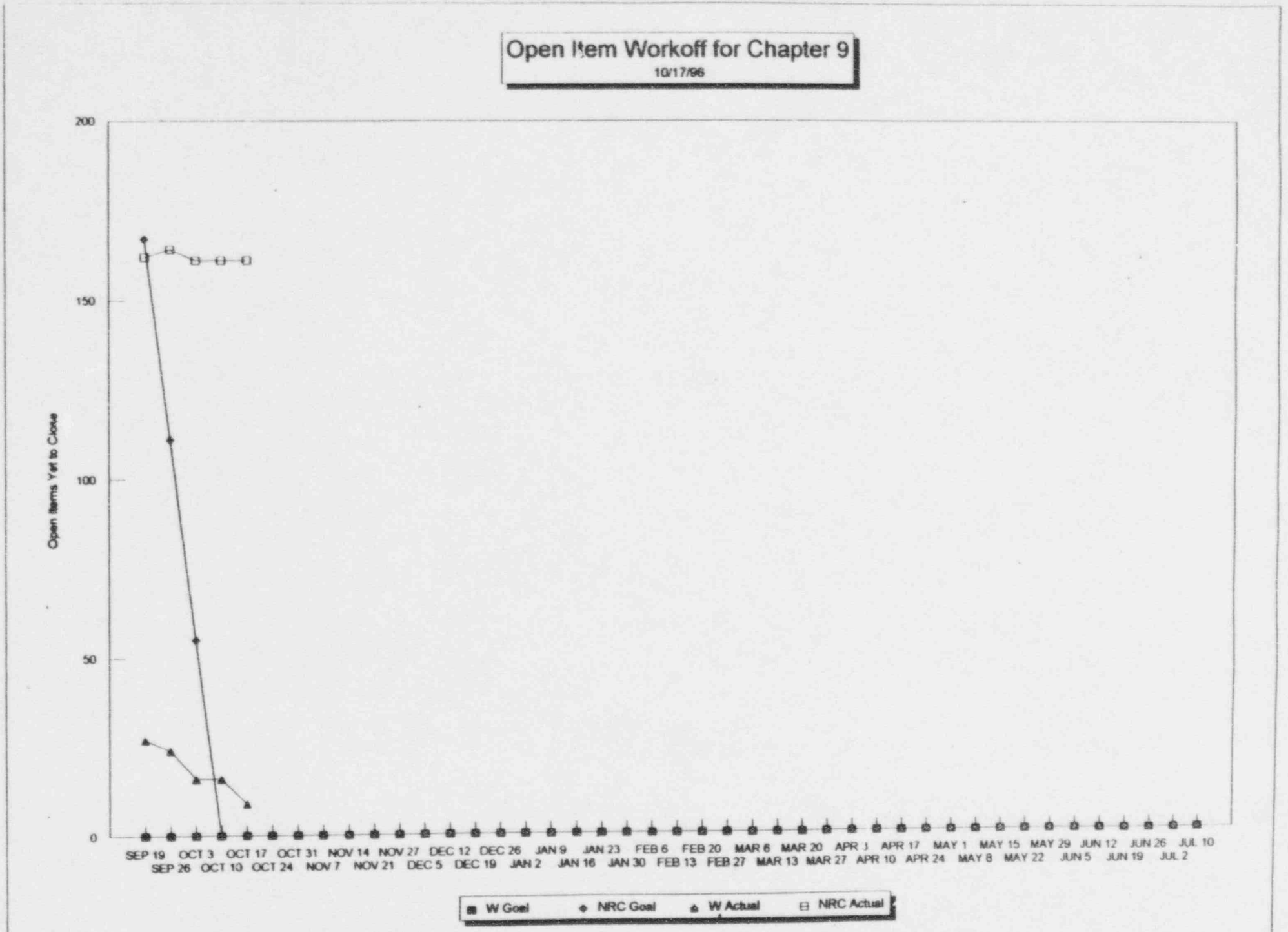
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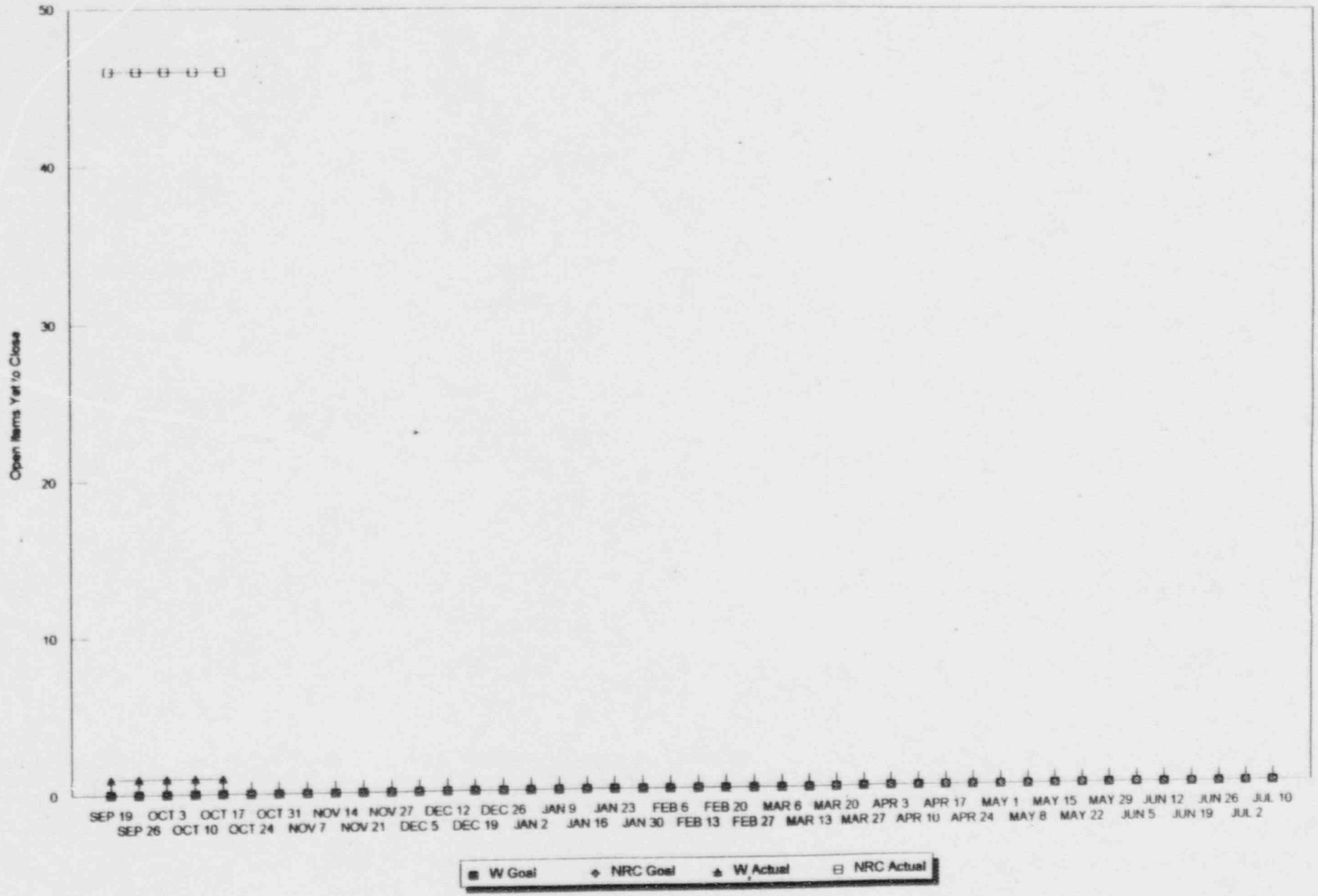
Open Item Workoff for Chapter 11

10/17/96



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COMMENTS:

Diane

Here is writeup to justify Class E for Open Item 368 from our 9/23 Telecon. This writeup will be put into "Status Detail" for OI's Item 368 and this Fax will be docketed with our weekly letter.

Jim Winters

This provides additional justification of classification of the main condenser evacuation system as a Class E system. NRC has questioned this classification in light of the Standard Review Plan and Regulatory Guide 1.26 in this area. Regulatory Guide 1.26 indicates that Class D standards should be applied to water- or steam-containing components not classified in a higher class that contain or may contain radioactive material. The main condenser evacuation system and the gland seal system in AP600 do not contain radioactive material. They may contain radioactive material if there is a steam generator tube leak that allows radioactive material to be introduced into the systems without appropriate steam system isolation. In such an event, the evacuation and gland seal systems may draw in radioactive material from the steam spaces in the condenser or turbine.

AP600 SSAR section 3.2.2.7 contains the conditions for which "may contain radioactive material" do not require classification of components in Class D:

> The system is only potentially radioactive and does not normally contain radioactive material. This is true for the evacuation and gland seal systems in a pressurized water reactor like AP600 where the steam generator provides and effective barrier to the primary coolant.
>
> The system has shown in plant operations that the operation with the system containing radioactive material meets or can meet unrestricted area release limits. Studies have shown that once a small steam generator leak is detectable it is still small enough to meet unrestricted area release limits. Automatic and techspec limits are exceeded well before unrestricted area release limits. For very large steam generator leaks, other operating parameters provide trip and isolation actions before exceeding unrestricted area release limits.
>
> An evaluation of the system confirms that the system contains features and components that keep the consequences of failure as low as reasonably achievable. This portion of AP600 is very similar to many operating pressurized water reactor plants. There is a low probability of leakage and there are radiation monitors and radiation limits on the main steam system and evacuation exhausts. This has resulted in good performance record of no release from this source greater that unrestricted area release limits.

As a result of meeting these three conditions for not being Class D, the evacuation and gland seal systems are Class E.

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COMMENTS: Diane

In response to our 9/2 discussion of Open Item 229, the attached revision to 410.115 is in review. It should be out officially by end of next week. This should satisfy your concerns. Let me know if it doesn't.

Jim Winters

Revision 1

AP600

Question 410.115-R1

Describe how AP600 SWS is designed to minimize the potential for water hammer.

Response:

Prior to system startup, the service water system (SWS) is filled with water and vented ~~as described in SSAR Subsection 9.2.1.3.1~~. During normal operation, the SWS pumps water from the basin at the SWS cooling tower, through piping and equipment, to a high point located at the SWS cooling tower riser; the cooling water is then discharged to atmosphere in a spray fashion above the cooling tower basin. The system arrangement is such that there are no high points in the system piping that can lead to formation of vapor pressure voids upon loss of system pumping.

When the pumps are stopped, check valves located at the discharge of each pump minimize reverse flow of system fluid through the pumps and into the basin; also, ~~cooling tower blowdown is isolated when the pumps are stopped.~~ if both pumps stop due to loss of normal ac power, cooling tower blowdown is isolated. Therefore, drain down of system fluid is minimized when the system is shut down. Drainage that might occur, ~~such as through the small SWS motor cooling lines,~~ is replaced by air. No vapor cavities will form. Therefore, the potential for water hammer due to water column rejoining upon pump restart is minimized.

Motor operated valves at the discharge of each SWS pump are interlocked to close prior to pump start. These valves then open at a controlled rate following pump start to slowly admit water to the system. This feature results in reduced fluid velocities during system start and minimizes transient effects that may occur as the system sweeps out ~~any~~ air and obtains a water solid condition. Temperatures in the system are moderate and the pressure of the SWS fluid is kept above its saturation pressure at all locations. Therefore, the potential for water hammer due to thermodynamic voiding and subsequent vapor collapse is minimized. There are no fast acting power-operated valves in the system, and the only check valves in the normal process flow path are in a standard configuration at the discharge of each SWS pump. Therefore, the design of the system minimizes water hammer potential due to rapid valve actuation.

SSAR Revision:

Section 9.2.1.2.1, General Description, add new fifth paragraph:

... heat exchanger to discharge to either cooling tower cell.

Temperatures in the system are moderate and the pressure of the service water system fluid is kept above saturation at all locations. This along with other design features of the system arrangement and control of valves minimizes the potential for thermodynamic or transient water hammer.

Service water materials ...

Section 9.2.1.2.3.6, Loss of Normal AC Power Operation, revise as follows:

In the event of loss of normal ac power, the service water pumps and cooling tower fans, along with the associated motor operated valves are automatically loaded onto their associated diesel bus. This includes isolation of cooling tower blowdown, which minimizes drain down of the system while both pumps are off. What drainage that does occur is replaced by air without vapor cavities. The potential for water hammer on pump restart is minimized. Both pumps and both cooling tower cells automatically start after power from the diesel generator is available. Following automatic start, the operator may return the system to the appropriate configuration.

FAX to Joe Sebrosky at NRC

This is to amplify our "doneness" for Chapter 14 of the SSAR and DSER. Revision 9 (August, 1996) of the SSAR provided our last planned revision of Chapter 14. This chapter will be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 82 of the 84 items associated with Chapter 14 show "(W) Status" of "Closed". The remaining 2 items are associated with the ITAACs and are being tracked with other ITAAC related open items. The "(NRC) Status" for the 82 items associated with Chapter 14 shows none that are "Resolved" or "Closed." Westinghouse knows of no further submittal requirements for Chapter 14. Westinghouse recognizes that NRC has linked review of Chapter 14 with review of the ITAACs. It is our intent to supply NRC with all information necessary for it to write the Chapter 14 portion of the FSER by December 2, 1996. Since the 2 items associated with the ITAACs will be closed upon the submittal of the ITAACs in early November and is not associated with Chapter 14, itself, we request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for Chapter 14. We should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
October 9, 1996

Westinghouse

FAX COVER SHEET

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

COMMENTS: DIANE,

Here is a revision for OITS item 366. We discussed it on 9/23. I hope this revision addresses Chuck's concern. We will issue final revision after internal review.

Jim Winters

DRAFT

Revision 1

AP600

Question 410.255r1

Section 10.4.1.2.1 of the SSAR states "refer to Table 10.3.5-1 for permissible cooling water inleakage and time of operation for maintaining the required condensate/feedwater quality." Describe how the information in this table provides the above information. Where is the permissible cooling water leakage? Where is the information of length of time that the condenser may operate with degraded conditions without affecting the condensate/feedwater quality for safe operation? What are the definition of the action levels (1, 2, and 3) listed in Table 10.3.5-1? Also, provide information in the SSAR regarding the procedure to repair condensate leaks in accordance with Section 10.4.1 of RG 1.70.

Response:

SSAR subsection 10.4.1.2.1 is intended to convey that there is no absolute value of cooling water inleakage nor specific time of operation for maintaining the required condensate or feedwater quality. The measured parameters that affect plant performance and operator actions are the water quality values in SSAR Table 10.3.5-1. As a basis for design of the condensate polishing system, cooling water inleakage of .001 gpm "continuous" and .1 gpm "faulted" are used. These values are identified in SSAR subsection 10.4.6.1.2. Note that the circulating water system described in the SSAR is for reference only. Any certified AP600 may have another type or source of circulating water. As a result, the effect of .001 gpm inleakage of cooling water on condensate or feedwater will vary from plant to plant. Thus the real limit on inleakage is on the resultant quality of condensate and feedwater and not on the amount of time of cooling water inleakage. Once condensate or feedwater quality are degraded to outside the limits contained in Table 10.3.5-1, the operator should take actions consistent with the EPRI NP-2701, PWR Secondary Water Chemistry Guidelines. This EPRI document defines action levels 1, 2 and 3 and the actions required for each. SSAR subsection 10.4.1, Revision 6, provides a description of the procedure for repairing condensate tube leaks.

SSAR Revision: None

DRAFT
10/7/96

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	SEPT. 27, 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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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 MARKUP TO RESOLVE OPEN ITEM 362. IT WILL GO INTO THE NEXT REVISION OF THE SSAR UNLESS WE HEAR FROM YOU. IF THIS IS MODIFIED BY INTERNAL WESTINGHOUSE REVIEW, I WILL LET YOU KNOW.

Jim W Winters

cc: CUMMINS
RON VIJUK
MCINTYRE
LINDGREN
BUTLER
HUTCHINGS
ISRAELSON
WINTERS

CHAPTER 10

STEAM AND POWER CONVERSION SYSTEM

10.1 Summary Description

The steam and power conversion system is designed to remove heat energy from the reactor coolant system via the two steam generators and to convert it to electrical power in the turbine-generator. The main condenser deaerates the condensate and transfers heat that is unusable in the cycle to the circulating water system. The regenerative turbine cycle heats the feedwater, and the main feedwater system returns it to the steam generators.

Table 10.1-1 gives the significant design and performance data for the major system components. Figure 10.1-1 shows the heat balance for the turbine cycle process.

10.1.1 General Description

The steam generated in the two steam generators is supplied to the high-pressure turbine by the main steam system. After expansion through the high-pressure turbine, the steam passes through the moisture separator/reheater (MSR) and is then admitted to the two low-pressure turbines. A portion of the steam is extracted from the high- and low-pressure turbines for seven stages of feedwater heating.

Exhaust steam from the low-pressure turbines is condensed and deaerated in the main condenser. The heat rejected in the main condenser is removed by the circulating water system (CWS). The condensate pumps take suction from the condenser hotwell and deliver the condensate through four stages of low-pressure closed feedwater heaters to the fifth stage, open deaerating heater. Condensate then flows to the suction of the steam generator feedwater booster pump and is discharged to the suction of the main feedwater pump. The steam generator feedwater pumps discharge the feedwater through two stages of high-pressure feedwater heaters to the two steam generators.

The moisture separator drain is pumped to the deaerator. The reheater drains and high-pressure feedwater heater drains cascade into the deaerator. Drains from the low-pressure feedwater heaters are cascaded through successively lower pressure feedwater heaters to the main condenser.

The Westinghouse turbine-generator has ~~a nominal rating of~~ an output of about 675,000 kW for the Westinghouse nuclear steam supply system (NSSS) thermal output of 1,940 MWt. The principal turbine-generator conditions for the turbine rating are listed in Table 10.1-1. The rated system conditions for the NSSS are listed in Table 10.1-1. The systems of the turbine cycle have been designed to meet the maximum expected turbine generator conditions.

Instrumentation systems are designed for the normal operating conditions of the steam and condensate systems. The systems are designed for safe and reliable control and incorporate

Table 10.1-1

SIGNIFICANT DESIGN FEATURES AND PERFORMANCE CHARACTERISTICS FOR MAJOR STEAM AND POWER CONVERSION SYSTEM COMPONENTS

Nuclear Steam Supply System, Full Power Operation

Rated NSSS power (MWt)	1940
Steam generator outlet pressure (psig)	833
Steam generator inlet feedwater temperature (°F)	435
Steam generator outlet steam moisture (%)	0.25
Steam generator outlet steam temperature (°F)	523
Quantity of steam generators	2
Flow rate per steam generator (lb/hr)	4.22×10^6

Turbine

Output (kW)	675,000 kW (~~nominal~~)
Turbine type	Tandem-compound, 4-flow, 47-in. last-stage blade
Turbine elements	1 high pressure 2 low pressure
Operating speed (rpm)	1800

heat balance value

FAX to Bill Huffman at NRC

This is to amplify our "doneness" for section 16.2 of the SSAR and DSER. Revision 7 (April, 1996) of the SSAR provided our last planned revision of section 16.2. However, this section will be revised to reflect agreements reached at an NRC/W meeting on August 16, 1996. Otherwise, it will be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 7 of the 14 items associated with section 16.2 show "(W) Status" of "Closed". Of the remaining 7 items, 6 reflect the agreements of the August 16 meeting and 1 is associated with the Technical Specifications. This 1 item is being tracked as a TechSpec Open Item. The "(NRC) Status" for the 13 items associated with section 16.2, itself, includes 7 that are "Closed" and 6 that are "Resolved." Westinghouse knows of no submittal requirements other than the resubmittal of section 16.2 resulting from the August 16 meeting. It is our intent to supply NRC with all information necessary for it to write the section 16.2 portion of the FSER by October 31, 1996. Since the 1 item associated with TechSpecs above is not associated with section 16.2, itself, we request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for section 16.2, other than for the August 16 meeting. We should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
September 26, 1996

FAX to Tom Kenyon at NRC

This is to amplify our "doneness" for Chapter 13 of the SSAR and DSER. Revision 9 (August, 1996) of the SSAR provided our last planned revision of Chapter 13. This chapter will otherwise be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 41 of the 45 items associated with Chapter 13 show "(W) Status" of "Closed". Of the remaining 4 items, 3 will be "closed" upon resubmittal of our at-power ERGs, and are being tracked as ERG Open Items. The other is associated with habitability of the Technical Support Center (TSC) and will be resolved with other items associated with the TSC. It is being tracked as an MMIS Open Item. The "(NRC) Status" for the 41 shown by "(W) Status" as "Closed" includes 5 that are "Closed" and 5 that are "Resolved." Westinghouse knows of no submittal requirements for the other 31. It is our intent to supply NRC with all information necessary for it to write the Chapter 13 portion of the FSER by October 18, 1996. Since the 4 items discussed above are not associated with Chapter 13, itself, we request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for Chapter 13. We should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
September 26, 1996

Westinghouse

FAX COVER SHEET

RECIPIENT INFORMATION		SENDER INFORMATION	
DATE:	SEPT 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:			

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

COMMENTS:

DIANE

HERE IS A MARKUP TO RESOLVE OPEN ITEM 226. IT WILL GO INTO THE NEXT REVISION OF THE SSAR UNLESS WE HEAR FROM YOU. IF THIS IS MODIFIED BY INTERNAL WESTINGHOUSE REVIEW, I WILL TELL YOU.

CC: CUMMINS
RON VISUIC
MCINTYRE
LINDGREN
BUTLER
HUTCHINGS
ISRAELSON
WINTERS

Jim Winters

9.2.1.4 Tests and Inspections

Preoperational testing is described in Chapter 14. The performance, structural, and leaktight integrity of system components is demonstrated by operation of the system.

9.2.1.5 Instrument Applications

Pressure indication, with low and high alarms, is provided for the discharge of each service water pump. A low pressure signal automatically starts the standby pump. Flow indication, with low and high alarms, is also provided for each service water pump. Due to the system configuration, pump flow indication can also normally be used to monitor flow through the heat exchanger or heat exchangers in service.

Temperature indication is provided for the service water supply to each component cooling water heat exchanger and for the discharge from each heat exchanger to determine the temperature differential across the heat exchanger. Heat exchanger inlet temperature indication also is used for performance monitoring of the service water cooling tower. Low and high heat exchanger inlet temperature alarms are provided. A high alarm is provided for the outlet temperature from each heat exchanger. Temperature instrumentation is provided for the service water return to each cooling tower cell to automatically control the operation of the associated cell fan.

Differential pressure measurement across each service water strainer is provided and will initiate backwash of the strainer on high differential. A high-high differential pressure alarm across the strainer is provided.

Power actuated valves in the SWS are provided with valve position indication instrumentation. In addition, the tower bypass valves are provided with position indication instrumentation.

Level indication is provided for the cooling tower basin along with high and low level alarms. The basin level signal is also used to control the normal makeup water supply valve to maintain the proper level in the cooling tower basin. Flow indication of cooling tower basin normal makeup is provided using instrumentation internal to the makeup valve.

Provisions are also available for taking local fluid samples.

A radiation monitor with a high alarm is provided to monitor the service water blowdown flow for detection of potentially radioactive leakage into the SWS from the component cooling water heat exchangers. Flow indication of the blowdown flow is provided using instrumentation internal to the blowdown control valve.

9.2.2 Component Cooling Water System

The component cooling water system is a non-safety-related, closed loop cooling system that transfers heat from various plant components to the service water system during normal phases of operation. It removes heat from various components needed for plant operation and removes core decay heat and sensible heat for normal reactor shutdown and cooldown.

9.2.1.2.3.3 Power Operation

The service water system, during normal power operation, provides cooling water at a maximum temperature of 89°F to the component cooling water heat exchanger in service. One service water pump and one cooling tower cell are in service. The flow rate and heat load are shown in Table 9.2.1-1.

The standby service water pump is automatically started if the operating pump should fail, thereby providing a reliable source of cooling water. The system is designed so either pump can serve as the operating or standby pump.

9.2.1.2.3.4 Plant Cooldown/Shutdown

During the plant cooldown phase in which the normal residual heat removal system has been placed in service and is providing shutdown cooling, the service water cooling tower provides cooling water at a temperature of 88.5°F or less when operating at design heat load and at an ambient wet bulb temperature of no greater than 80°F (1 percent exceedance). Two service water pumps and two cooling tower cells are normally used for plant cooldown, and the cross-connection valves between trains are normally closed. The service water system heat load and flow rate are shown in Table 9.2.1-1. During these modes of operation the normal residual heat removal system and the component cooling water system remove sensible and decay heat from the reactor coolant system. In the event of failure of a service water system pump or cooling tower fan, the cooldown time is extended.

9.2.1.2.3.5 Refueling

During refueling, the service water system normally provides cooling water flow to both component cooling water system heat exchangers. Two service water pumps normally provide flow through the system for refueling modes.

9.2.1.2.3.6 Loss of Normal AC Power Operation

In the event of loss of normal ac power, the service water pumps and cooling tower fans, along with the associated motor operated valves, are automatically loaded onto their associated diesel bus. Both pumps and both cooling tower cells automatically start after power from the diesel generator is available. Following automatic start, the operator may return the system to the appropriate configuration.

9.2.1.3 Safety Evaluation

The service water system has no safety-related functions and therefore requires no nuclear safety evaluation. If radioactive fluid is detected in the service water system, tower blowdown flow can be isolated by remote manual control. The tower blowdown valve fails closed upon loss of electrical power or instrument air.

FAX to Tom Kenyon at NRC

This is to amplify our "doneness" for Chapter 7 of the SSAR and DSER. Revision 8 (June, 1996) of the SSAR provided our last planned revision of Chapter 7. This chapter will otherwise be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 27 of the 28 items associated with Chapter 7 show "(W) Status" of "Closed". The remaining item will be "closed" upon submittal of our ITAACs, and has been identified as an ITAAC Open Item. The "(NRC) Status" for the 27 shown by "(W) Status" as "Closed" includes 9 that are "Resolved." Westinghouse knows of no submittal requirements for the other 18. It is our intent to supply NRC with all information necessary for it to write the Chapter 7 portion of the FSER by October 4, 1996, except for the ITAAC item. We therefore request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for Chapter 7 itself (except for the ITAAC item identified above) and we should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
September 23, 1996

FAX to Diane Jackson at NRC

This is to amplify our "doneness" for SSAR subsection 3.11 of the SSAR and DSER. Revision 8 (June, 1996) of the SSAR provided our last planned revision of SSAR subsection 3.11. This chapter will otherwise be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 17 of the 23 items associated with SSAR subsection 3.11 show "(W) Status" of "Closed". We received 6 new RAIs in a letter dated August 8. These remaining 6 items will be "closed" upon submittal of our RAI responses. The "(NRC) Status" for the 17 shown by "(W) Status" as "Closed" includes none that are "Closed" or "Resolved." Westinghouse knows of no submittal requirements for these 17. It is our intent to supply NRC with all information necessary for it to write the SSAR subsection 3.11 portion of the FSER by October 10, 1996. We therefore request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for SSAR subsection 3.11 itself (except for the 6 new RAIs identified above) and we should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
September 23, 1996

FAX to Bill Huffman at NRC

This is to amplify our "doneness" for Chapter 4 of the SSAR and DSER. Revision 8 (June, 1996) of the SSAR provided our last planned revision of Chapter 4. This chapter will otherwise be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 29 of the 29 items associated with Chapter 4 show "(W) Status" of "Closed". The "(NRC) Status" for the 29 shown by "(W) Status" as "Closed" includes 7 that are "Closed" and 20 that are "Resolved." Westinghouse knows of no submittal requirements for the other 2. It is our intent to supply NRC with all information necessary for it to write the Chapter 4 portion of the FSER by October 10, 1996. We therefore request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for Chapter 4 and we should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
September 23, 1996

FAX to Diane Jackson at NRC

This is to amplify our "doneness" for SSAR subsection 3.7 of the SSAR and DSER. Revision 9 (August, 1996) of the SSAR provided our last planned revision of SSAR subsection 3.7. This chapter will otherwise be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 69 of the 75 items associated with SSAR subsection 3.7 show "(W) Status" of "Closed". The remaining items will be discussed at our next meeting with NRC on seismic items. We hope this next meeting can be held in October. The "(NRC) Status" for the 75 items includes 4 that are "Closed" and 56 that are "Resolved." Westinghouse knows of no submittal requirements for the other 15,except for our meeting on seismic items. It is our intent to supply NRC with all information necessary for it to write the SSAR subsection 3.7 portion of the FSER by October 4, 1996, except for the 6 meeting items. We therefore request that the NRC understand that Westinghouse is not expecting to submit any additional revisions or information for SSAR subsection 3.7 itself (except for the seismic meeting identified above) and we should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
September 23, 1996

FAX to Diane Jackson at NRC

This is to amplify our "doneness" for Chapter 2 of the SSAR and DSER. Revision 9 (August, 1996) of the SSAR provided our last planned revision of Chapter 2. This chapter will otherwise be changed only if an error is found or if required by NRC. The Open Item tracking system indicates that 103 of the 103 items associated with Chapter 2 show "(W) Status" of "Closed". The "(NRC) Status" for the 103 shown by "(W) Status" as "Closed" includes 1 that is "Dropped" and 92 that are "Resolved." Westinghouse is in the process of determining submittal requirements for the other 10. It is our intent to supply NRC with all information necessary for it to write the Chapter 2 portion of the FSER by October 11, 1996. We therefore request that the NRC understand that Westinghouse is finalizing any additional revisions or information for Chapter 2 itself and we should have a teleconference definitely scheduled to resolve any remaining NRC concern.

Jim

Jim Winters
September 23, 1996

FAX to Diane Jackson at NRC

This is to request your assistance to maximize our "doneness" for subsection 3.2 of the SSAR and DSER. The Open Item tracking system indicates that only 8 of the 20 items associated with SSAR subsection 3.2 show "(W) Status" of "Closed". The "(NRC) Status" for the 20 items includes only 7 that are "Resolved." It is our intent to supply NRC with all information necessary for it to write the SSAR subsection 3.2 portion of the FSER by October 10, 1996. We therefore requests that we have a teleconference or meeting definitely scheduled to resolve any remaining NRC concerns.

Jim

Jim Winters
September 23, 1996