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Energy Systems

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NSD-NRC-96-4829  
DCP/NRC0611  
Docket No.: STN-52-003

September 30, 1996

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

ATTENTION: T. R. QUAY

SUBJECT: AP600 PROBABILISTIC RISK ASSESSMENT, REVISION 8

Dear Mr. Quay:

Enclosed is Revision 8 of the AP600 Probabilistic Risk Assessment (PRA) Report. A list of the sections included A Revision 8 is provided in Enclosure 1. Revision 8 of the PRA is provided as Enclosure 2. RA sections have been revised primarily to incorporate commitments Westinghouse made in responses to numerous RAIs, especially on the Level 2 and 3 PRA topic.

Enclosure 2 is in the form of replacement pages and chapters to be added to the existing PRA report. Included with each set are the change page instructions. Thirty-seven sets of Revision 8 to the PRA have been sent to Ms. Diane Jackson for distribution within NRC, to NRC subcontractors, and to the ACRS.

Westinghouse considers the AP600 PRA report to be final, except for the following chapters: Chapter 55 - Seismic Margins Analysis, Chapter 59 - Results, and Appendices A and B. These chapters and appendices will be provided in the near future. For Revision 8, Chapter 59 has been updated to include the final PRA quantification results; this chapter will be updated once more to include a final table listing the PRA insights. Westinghouse is currently discussing the contents of the PRA insights table with the NRC PSA branch.

This revision completes the Level 1, 2 and 3 PRA. In addition, it addresses external events, hydrogen control, low power and shutdown events as well as the focused PRA that is necessary to resolve the issue of regulatory treatment of nonsafety systems.

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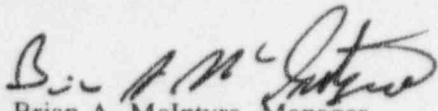
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September 30, 1996

This revision to the PRA is sufficient to allow the NRC to write Chapter 19 of the Final Safety Evaluation Report with the exception of the seismic margins section. Cindy Haag will contact Mr. Joe Sebrosky of the NRC to arrange meetings to discuss several PRA topics including in-vessel retention (IVR) of molten core debris, and hydrogen diffusion flames.

Please contact Cynthia L. Haag on (412) 374-4277 if you have any questions concerning this transmittal.



Brian A. McIntyre, Manager  
Advanced Plant Safety and Licensing

/nja

Enclosures

cc: D. Jackson, NRC (1 copy Enclosure 1; 37 copies Enclosure 2)  
N. J. Liparulo, Westinghouse (w/o Enclosures)

**List of chapters revised in Revision 8 of the AP600 PRA**

<u>Chapter</u>	<u>Title</u>
1	INTRODUCTION
2	INTERNAL INITIATING EVENTS
9	PASSIVE CORE COOLING SYSTEM - CORE MAKEUP TANK
12	PASSIVE CORE COOLING SYSTEM - IN-CONTAINMENT REFUELING WATER STORAGE TANK
23	NON-CLASS 1E DC POWER SYSTEM
33	FAULT TREE AND CORE MELT QUANTIFICATION
34	SEVERE ACCIDENT PHENOMENA TREATMENT
35	CONTAINMENT EVENT TREE ANALYSIS
36	RCS DEPRESSURIZATION
37	CONTAINMENT ISOLATION
38	REACTOR VESSEL REFLOODING
39	IN-VESSEL RETENTION OF MOLTEN CORE DEBRIS
40	PASSIVE CONTAINMENT COOLING
41	HYDROGEN CONTROL AND COMBUSTION
42	CONDITIONAL CONTAINMENT FAILURE PROBABILITY DISTRIBUTION
43	RELEASE FREQUENCY QUANTIFICATION
44	MAAP 4.0 CODE DESCRIPTION AND AP600 MODELING
45	FISSION PRODUCT SOURCE TERMS
46	DELETED (*)
47	DELETED (*)
48	DELETED (*)
49	OFFSITE DOSE EVALUATION
50	SENSITIVITY ANALYSES
51	UNCERTAINTY ANALYSIS
52	RTNSS - FOCUSED PRA SENSITIVITY STUDY
53	DELETED (**)
54	LOW POWER AND SHUTDOWN PRA ASSESSMENT
56	INTERNAL FLOODING ANALYSIS
57	INTERNAL FIRE ANALYSIS
59	RESULTS

(\*) = These chapters have been removed from the AP600 PRA report. Pertinent information from Chapters 46 and 47 have been incorporated into Chapter 41. Pertinent information from Chapter 48 will be placed within the AP600 Standard Safety Analysis Report (SSAR).

(\*\*) = Chapter 53 was never used.

Enclosure 2 to Westinghouse  
Letter NSD-NRC-96-4829  
September 30, 1996

**AP600 PRA Revision 8**  
**Page Change Instructions**  
(Sheet 1 of 4)

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<b>Chapter</b>	<b>Remove Previous Revisions PRA Pages:</b>	<b>Replace with Rev. 8 PRA Pages:</b>
<i>VOLUME 1</i>		
AP600 Document Cover Sheet	Remove from front of Volume 1	Place new cover sheet in front of Volume 1 of AP600 PRA
Table of Contents	Remove from front of Volume 1	Replace with revised Table of Contents
List of Tables	Remove from front of Volume 1	Replace with revised List of Tables
List of Figures	Remove from front of Volume 1	Replace with revised List of Figures
1	Remove entire chapter	Replace with entire chapter
2	Remove pages 2-5 through 2-10 Remove pages 2-19 and 2-20 Remove pages 2-53 and 2-54 Remove pages 2A-23 and 2A-24	Replace with pages 2-5 through 2-10 Replace with pages 2-19 and 2-20 Replace with pages 2-53 and 2-54 Replace with pages 2A-23 and 2A-24
9	Remove pages 9-7 through 9-10 Remove pages 9-17 through 9-25	Replace with pages 9-7 through 9-10 Replace with pages 9-17 through 9-27
12	Remove pages 12-21 through 12-24	Replace with pages 12-21 through 12-24
23	Remove pages 23-3 and 23-4	Replace with 23-3 and 23-4
<i>VOLUME 2</i>		
Table of Contents	Remove from front of Volume 2	Replace with revised Table of Contents
List of Tables	Remove from front of Volume 2	Replace with revised List of Tables
List of Figures	Remove from front of Volume 2	Replace with revised List of Figures
33	Remove page 33-17 and 33-18	Replace with pages 33-17 and 33-18
34	Remove entire chapter	Replace with entire chapter
35	Remove entire chapter	Replace with entire chapter
36	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 36 Replace with entire chapter

**AP600 PRA Revision 8**  
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(Sheet 2 of 4)

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<b>Chapter</b>	<b>Remove Previous Revisions PRA Pages:</b>	<b>Replace with Rev. 8 PRA Pages:</b>
<i>VOLUME 3</i>		
Table of Contents	Remove from front of Volume 3	Replace with revised Table of Contents
List of Tables	Remove from front of Volume 3	Replace with revised List of Tables
List of Figures	Remove from front of Volume 3	Replace with revised List of Figures
37	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 37 Replace with entire chapter
38	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 38 Replace with entire chapter
39	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 39 Replace with entire chapter
40	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 40 Replace with entire chapter
41	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 41 Replace with entire chapter
42	Remove entire chapter	Replace with entire chapter
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45	Remove entire chapter	Replace with entire chapter
46	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 46 Replace with page 46-1
47	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 47 Replace with page 47-1



**AP600 PRA Revision 8**  
**Page Change Instructions**  
(Sheet 3 of 4)

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<b>Chapter</b>	<b>Remove Previous Revisions PRA Pages:</b>	<b>Replace with Rev. 8 PRA Pages:</b>
<i>VOLUME 3 (Continued)</i>		
48	Remove old tab for this chapter Remove entire chapter	Replace with new tab for Chapter 48 Replace with page 48-1
49	Remove entire chapter	Replace with entire chapter
<i>VOLUME 4</i>		
Table of Contents	Remove from front of Volume 4	Replace with revised Table of Contents
List of Tables	Remove from front of Volume 4	Replace with revised List of Tables
List of Figures	Remove from front of Volume 4	Replace with revised List of Figures
50	Remove entire chapter	Replace with entire chapter
51	N/A	New Chapter and tab for Chapter 51
52	Remove entire chapter	Replace with entire chapter
53	N/A	Add new tab for Chapter 53. Insert page 53-1.
54	Remove entire chapter	Replace with entire chapter
56	Remove pages 56-1 through 56-12 Remove pages 56-71 and 56-72	Replace with pages 56-1 through 56-12 Replace with pages 56-71 and 56-72
57	Remove entire chapter	Replace with entire chapter
59	Remove entire chapter	Replace with entire chapter

AP600 PRA Revision 8  
Page Change Instructions  
(Sheet 4 of 4)

*Proprietary*

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Chapter	Remove Previous Revisions PRA Pages:	Replace with Rev. 8 PRA Pages:
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AP600 DOCUMENT NO. GWGL022	REVISION NO. 8	Page 1 of 1	ASSIGNED TO
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ALTERNATE DOCUMENT NUMBER:

WORK BREAKDOWN #: 3.1.2

DESIGN AGENT ORGANIZATION: Westinghouse

TITLE: AP300 Probabilistic Risk Assessment

ATTACHMENTS:	DCP #/REV. INCORPORATED IN THIS DOCUMENT REVISION:
CALCULATION/ANALYSIS REFERENCE:	

ELECTRONIC FILENAME	ELECTRONIC FILE FORMAT	ELECTRONIC FILE DESCRIPTION

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AP600 RESPONSIBLE MANAGER B. A. McIntyre	SIGNATURE <i>B. A. McIntyre</i>	APPROVAL DATE 9-27-96

\*Approval of the responsible manager signifies that document is complete, all required reviews are complete, electronic file is attached and document is released for use.

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