

WCAP-14822
Revision 0 Draft

AP600 Quality Assurance Procedures
Supporting NRC Review of
AP600 SSAR Sections 18.2 and 18.8

AP600 DOCUMENT COVER SHEET

Form 58202G(5/94)

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TDC: _____ IDS: I _____ S _____

0058.FRM

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RFS ITEM #

AP600 DOCUMENT NO. GW-GAP-200	REVISION NO. 0 Draft	Page 1 of	ASSIGNED TO Robin K. Nydes
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ALTERNATE DOCUMENT NUMBER: WCAP-14822 Draft

WORK BREAKDOWN #: 3.3.2.9

DESIGN AGENT ORGANIZATION:

TITLE: AP600 Quality Assurance Procedures Supporting NRC Review of AP600 SSAR Sections 18.2 and 18.8

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

ELECTRONIC FILENAME n/a	ELECTRONIC FILE FORMAT n/a	ELECTRONIC FILE DESCRIPTION n/a
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	APPROVAL DATE 1/21/97

*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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CATEGORY "E" — Consists of computer programs developed prior to the Effective Date or after the Effective Date but outside the scope of the Work.

CATEGORY "F" — Consists of administrative plans and administrative reports.

WCAP-14822 Revision 0 Draft

AP600 Quality Assurance Procedures
Supporting NRC Review of
AP600 SSAR Sections 18.2 and 18.8

Revision 0

February 1997

AP600 Document Number: GW-GAP-200

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Table of Contents

1.0 Introduction

2.0 References

Appendices

AP600 Program Procedure Matrix, Revision 19

AP 3.1, Revision 2

AP 3.2, Revision 6

AP 3.5, Revision 1 (This will be Revision 2 in Revision 0 of this WCAP)

AP 3.6, Revision 2

AP 3.7, Revision 0

AP 3.12, Revision 0 (This will be Revision 1 in Revision 0 of this WCAP)

AP 3.14, Revision 0

AP 7.2, Revision 0

1.0 Introduction

Chapter 18 of the AP600 Standard Safety Analysis Report contains the AP600 Design Certification information for Human Factors Engineering. The NRC is reviewing this information against NUREG-0711 (Reference 1) and has provided comments on Element 1, the Human Factors Program Plan, and Element 7, the Human-System Interface Design, in References 2 and 3.

One comment common to both the Element 1 and Element 7 reviews is that information contained in the Westinghouse AP600 Program Operating Procedures Document (Reference 4) supports the AP600 design certification but has not been docketed. Per those references, until the pertinent information in that document is docketed, the staff is unable to reach a final safety conclusion related to the AP600 human factors engineering program.

To address this review comment, the pertinent procedures have been compiled into this WCAP for transmittal to the NRC (Reference 5).

2.0 References

1. NUREG-0711, Human Factors Engineering Program Review Model, July 1994.
2. Letter from NRC to Westinghouse (Huffman to Liparulo), Comments on AP600 Related Open Items Associated with Element 1 of the Human Factors Engineering Program Review Model (HFEPRM), dated December 20, 1996.
3. Letter from NRC to Westinghouse (Huffman to Liparulo), Comments on AP600 Related Open Items Associated with Element 7 of the Human Factors Engineering Program Review Model (HFEPRM), dated December 19, 1996.
4. WCAP-12601 Revision 19, Westinghouse AP600 Program Operating Procedures Document.
5. Letter NRC-DCP-97-4938 (DCP/NRC0704) from Westinghouse to NRC (McIntyre to Quay), Transmittal of Draft WCAP-14822, AP600 Quality Assurance Procedures Supporting NRC Review of AP600 SSAR Sections 18.2 and 18.8, dated January 13, 1997.



Westinghouse Electric Corporation
Advanced Technology Business Area

AP600

Program Procedure Matrix

Subject:

AP600 PROGRAM PROCEDURE MATRIX

Approved:

H. J. Bruschi, General Manager
Advanced Technology Business Area

Effective Date:

07-01-98

The Westinghouse commitments to the quality assurance requirements of NQA-1-1989 Edition through NQA-1b-1991 Addenda for the AP600 program are established in the US Nuclear Regulatory Commission accepted topical report, WCAP-8370, "Energy Systems Business Unit/Power Generation Business Unit Quality Assurance Plan." The application of THE QMS WCAP-8370 to the AP600 program is described in WCAP-12600, "AP600 Advanced Light Water Reactor Design Quality Assurance Program Plan," which has been accepted by the Department of Energy (DOE) for the Design Certification Project and by Advanced Reactor Corporation (ARC) for the First-of-a-kind Engineering (FOAKE) Project.

For AP600 quality-related activities performed by the Westinghouse Advanced Technology Business Area (ATBA) and the Nuclear Technology Division (NTD), these commitments are satisfied by implementing the applicable Level 2 Energy Systems Business Unit (ESBU) procedures of the ESBU Policy/Procedures Manual (PPM), the applicable Level 2 division procedures from Section 5 Appendix A of the ESBU PPM, and additional project-specific procedures that address unique program requirements and implementation methodology. The AP600 Program Operating Procedures Manual, WCAP-12601, controls these project-specific procedures. In accordance with the ESBU PPM, the procedures contained in WCAP-12601 are designated as Level 3. Existing Level 3 procedures from other manuals are also implemented where appropriate.

The attached AP600 Program Procedure Matrix is provided to show the relationship between the above described procedures and identify the procedures to be implemented on this program. The Matrix also shows the applicability of AP600 procedures to design organizations external to ATBA/NTD. This Matrix is updated as required to reflect changes in the body of implementing procedures.

NPD/NSD

ESBU QUALITY MANAGEMENT SYSTEM,
(QMS) DOCUMENT, WHICH HAS BEEN ACCEPTED
BY THE US NUCLEAR REGULATORY
COMMISSION.

QUALITY

QPPM

SERVICES (NSD) NUCLEAR PROJECTS DIVISION (NPD)

Quality Assurance Program Elements (Ref.: NQA-1)	Level 2 Implementing Procedures (1) ESBU Policy / Procedures Manual	Level 3 Implementing Procedures (2) (3) (4)
I. ORGANIZATION	The NQA-1 requirements for organization are addressed through organization charts. AP600 management responsibilities are described in WCAP-12600, AP600 QA Program Plan.	
II. QUALITY ASSURANCE PROGRAM	P/P 1.1 Management Review P/P 2.2 Project Quality Plan P/P 4.16 Design Planning and Project Development P/P 18.1 Training	AP-2.1 Indoctrination and Training
III. DESIGN CONTROL	P/P 4.4 Reactor Coolant System Configuration P/P 4.10 Design Specifications WP-4.5 Design Analysis WP-4.17 Design Verification by Independent Review or Alternate Calculations WP-4.18 Design Verification by Testing WP-4.19 Computer Software Development Process WP-4.19.1 Verification and Validation of Computer Software WP-4.19.2 Configuration Control of Computer Programs WP-4.19.3 Software Error Reporting & Resolution WP-4.19.4 Dedication and Installation of External Computer Software WP-4.19.5 Single Application and Small Internal Use Computer Programs WP-4.19.6 Maintenance of Configured Computer Programs	* AP-3.1 AP600 Systems Specification Documents # AP-3.2 Design Configuration Change Control for the AP600 Program * AP-3.4 Functional Specification + AP-3.5 Design Reviews * AP-3.6 AP600 Design Criteria Documents * AP-3.7 Interface Control Document * AP-3.8 Design Specification (Component/Software) * AP-3.9 Preparation and Control of Drawings AP-3.10 Fluid Systems Design AP-3.12 Engineering Database Access # AP-3.13 Safety/Seismic Classification AP-3.14 Plant & Instrument Control System AP-3.15 AP-3.15 System Piping & Instrument Control System # AP-3.16 Calculation Numbering & Filing # AP-3.17 AP600 Component Numbering AP-3.18 System Process Flow Diagram (PFD) Preparation AP-3.21 ASME Piping Design Specification
IV. PROCUREMENT DOCUMENT CONTROL	P/P 6.1 Control of Purchased Items and Services	

Quality Assurance Program Elements (Ref.: NQA-1)	Level 2 Implementing Procedures (1) ESBU Policy / Procedures Manual	Level 3 Implementing Procedures (2) (3) (4)
V. INSTRUCTIONS, PROCEDURES AND DRAWINGS	P/P 2.1 Policies and Procedures WP-5.3 Preparation and Control of Drawings and Engineering Sketches	AP-5.1 SSAR Preparation Procedure AP-5.2 PRA Preparation Procedure # AP-5.3 AP600 Tier 1 Document Development # AP-5.4 SSAR/PRA/ITAAC Procedure for Responding To A Request For Additional Information (RAI) # AP-5.5 Release of Documentation to NRC in Support of AP600 Design Certification
VI. DOCUMENT CONTROL	P/P 5.2 Document Control WP-5.3 Preparation and Control of Drawings and Engineering Sketches	AP-0.0 Preparation and Control of Procedures # AP-6.1 Document Numbering # AP-6.2 Technical Document Release & Control # AP-6.3 Preparation, Review & Approval of AP600 Documents
VII. CONTROL OF PURCHASED ITEMS AND SERVICES	P/P 6.1 Control of Purchased Items and Services	AP-7.1 Supplier Evaluation, Audit, and Approval # AP-7.2 Control of Subcontractor Submittals AP-7.3 Control of AP600 Contributed Labor AP-7.4 Auxiliary Equipment Design and Costing Process ESBU QA Procedures Manual: ESBU-QA-7.1 Evaluation and Qualification of ESBUs Suppliers ESBU-QA-7.2 Supplier Audits
XI. TEST CONTROL	WP-18.0 Test Control	AP-3.11 AP600 Testing
XII. CONTROL MEASURING AND TEST EQUIPMENT	WP-11.1 Control of Inspection, Measuring and Test Equipment	
XV. CONTROL OF NONCONFORMING ITEMS	WP-13.3 Deviation Notices	

Quality Assurance Program Elements (Ref.: NQA-1)	Level 2 Implementing Procedures (1) ESBU Policy / Procedures Manual	Level 3 Implementing Procedures (2) (3) (4)
XVI. CORRECTIVE ACTION	P/P 14.1 ESBU - Significant Quality Issues WP-13.2 Control of Nonconformances WP-14.2 Corrective and Preventive Action	AP-16.1 Customer Feedback
XVII. QUALITY ASSURANCE RECORDS	P/P 16.1 Records	WCAP-14530, ESBU Information and Records Management Program Manual: IRM-1.1 Organization and Responsibility IRM-3.2 Protection of Records on Optical Disk
XVIII. AUDITS	P/P 17.1 Assessments	AP-18.1 Self-Assessments
(5) SUPPLEMENTAL PROGRAM DOCUMENTS	P/P 21.0 Identification and Reporting of Conditions Adverse to Safety	

NOTES:

- (1) Level 2 ESBU procedures are identified in this matrix with a "P/P" prefix. Level 2 division procedures from Section 5 Matrix A of the ESBU Policy/Procedures Manual are identified with a "WP" prefix.
- (2) Level 3 procedures in WCAP-12601 are identified with an "AP" prefix. Other Level 3 procedures are as specified.
- (3) The prefix for Level 2 NPD procedures was changed from "DP" to "WP" with the phase-out of WCAP-9565 effective 8/14/95. Where Level 3 procedures refer to "DP" procedures, the reference shall be considered as shown in the "Procedure Cross References" per pages 5 and 6 of this matrix. Revisions to procedures are not required for the sole purpose of changing Level 2 references, however, the references shall be corrected when the Level 3 procedures are revised.

- (4) Procedures that apply to design organizations external to (W) ~~ATEA~~ ^{NPD} and ~~NPD~~ ^{NSD} are identified with a "*" or "#" as follows:

- * These procedures apply only with respect to document format and content requirements.
- # These procedures apply only with respect to definition of interface responsibilities.
- + This procedure applies only with respect to Human Factors requirements.

Procedures not marked with a "*" "#" or "+" do not apply to design organizations external to (W) NPD.

- (5) Not an NQA-1 criterion.

APC00 PROGRAM PROCEDURE MATRIX REV. 20 [mm/dd/yy]
 PROCEDURE CROSS-REFERENCES

The following table identifies the ESBU Quality Policy/Procedures Manual references to be used for the "DP" procedure references in WCAP-12601.

<u>PROCEDRURE</u>	<u>REFERS TO</u>	<u>CHANGE TO</u>
AP-0.0	WCAP-9948	WCAP-14530 IRM1.1
	WCAP-9565	ESBU Quality Policy/Procedures
AP-2.1	WCAP-9565	ESBU Quality Policy/Procedures
AP-2.2	DP-2.4	ESBU 3.1
	DP-4.0	ESBU 6.1
	WCAP-13740	ESBU Quality Management System
AP-3.1	DP-3.2.2	ESBU 4.10
AP-3.7	DP-3.2.6	WP-5.3
AP-3.8	DP-3.2.2	ESBU 4.10
	DP-3.7.1	WP-4.19
	DP-3.7.2	WP-4.19.1
	DP-3.7.3	WP-4.19.2
	DP-3.7.4	WP-4.19.3
	DP-3.7.5	WP-4.19.5
AP-3.9	DP-3.2.6	WP-5.3
AP-3.10	DP-3.2.8	WP-4.5
	DP-3.3.2	WP-4.17

AP600 PROGRAM PROCEDURE MATRIX REV. 20 [mm/dd/yy]
 PROCEDURE CROSS-REFERENCES

<u>PROCEDRURE</u>	<u>REFERS TO</u>	<u>CHANGE TO</u>
AP-3.11	WCAP-9565	ESBU Quality Policy/Procedures
	DP-4.0	ESBU 6.1
	DP-3.3.3	WP-4.18
	DP-11.0	WP-4.18
	DP-12.0	WP-11.1
AP-3.14	DP-3.2.2	WP-4.17
	DP-3.3.3	WP-4.18
	DP-7.0	ESBU 6.1
AP-3.15	DP-3.2.8	WP-4.5
AP-3.16	DP-3.2.8	WP-4.5
AP-3.21	WP-3.2.2	WP-4.17
AP-6.2	DP-6.0	ESBU 5.2
AP-7.1	ESBU-QA-2.2	ESBU-QA-18.2
	ESBU-QA-7.1	ESBU-QA-6.5
	ESBU-QA-7.2	ESBU-QA-6.6
	WCAP-9565	ESBU Quality Policy/Procedures
AP-7.2	DP-4.0	ESBU 6.1
	DP-7.0	ESBU 6.1
AP-18.1	DP18.1	Delete
	WCAP-8370 Part C	Delete