

1.6 Material Referenced

The AP1000 Design Control Document references various Westinghouse technical support documents; these documents are listed by DCD section in Table 1.6-1 (Sheets 1 through 20).

Table 1.6-1 (Sheet 1 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
1.5	WCAP-14217 (P) WCAP-14218	Core Makeup Tank Final Data Report, November 1994
	WCAP-13286 (P) WCAP-13287	AP600 Passive Core Cooling System Check Valve Test Final Report, April 1992
	WCAP-13891 (P) WCAP-14095	AP600 Automatic Depressurization System Phase A Test Data Report, May 1994
	WCAP-14324 (P) WCAP-14325	Final Data Report for ADS Phase B1 Tests, April 1995
	WCAP-14134 (P) WCAP-14137	AP600 Passive Containment Cooling System Integral Small-Scale Tests Final Report, August 1994
	WCAP-13566 (P) WCAP-13567	AP600 1/8th Large Scale Passive Containment Cooling System Heat Transfer Baseline Data Report, Revision 1, December 1992
	WCAP-14135 (P) WCAP-14138	Final Test Report for PCS Large Scale Phase 2 and Phase 3 Tests, Revision 3, September 1998
	WCAP-13353 (P) WCAP-13354	Passive Containment Cooling System Water Distribution Phase 1 Test Data Report, April 1992
	WCAP-13296 (P) WCAP-13297	PCS Water Distribution Test Phase II Test Data Report, March 1992
	WCAP-13960 (P) WCAP-13961	PCS Water Distribution Phase 3 Test Data Report, December 1993
	WCAP-13294 (P) WCAP-13295	Phase I Wind Tunnel Testing for the Westinghouse AP600 Reactor, April 1992
	WCAP-13323 (P) WCAP-13324	Phase II Wind Tunnel Testing for the Westinghouse AP600 Reactor, August 1992
	WCAP-14068 (P) WCAP-14084	Phase IVa Wind Tunnel Testing for the Westinghouse AP600 Reactor, May 1994

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Table 1.6-1 (Sheet 2 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
1.5	WCAP-14169 (P) WCAP-14170	Phase IVa Wind Tunnel Testing for the Westinghouse AP600 Reactor, Supplemental Report, September 1994
	WCAP-14091 (P) WCAP-14092	Phase IVb Wind Tunnel Testing for the Westinghouse AP600 Reactor, July 1994
	WCAP-12980 (P) WCAP-13573	AP600 Passive Residual Heat Removal Heat Exchanger Test Final Report, Revision 3, April 1997
	WCAP-14371 (P) WCAP-14372	AP600 Low Flow Critical Heat Flux (CHF) Test Data Analysis, May 1995
	WCAP-14252 (P) WCAP-14253	AP600 Low Pressure 1/4 Height Integral Systems Tests - Final Data Report, Revision 1, November 1998
	WCAP-14309 (P) WCAP-14310	AP600 Design Certification Program, SPES-2 Tests Final Data Report, Revision 2, May 1997
	WCAP-12648 (P) WCAP-13322	AP600 Incore Instrumentation System Electromagnetic Interference Test Report, Revision 1, April 1992
	WCAP-13298 (P) WCAP-13299	RCP Air Model Test Report, August 1991
	WCAP-12668 (P) WCAP-13321	AP600 High Inertia Rotor Testing - Phase I, Test Report, March 1990
	WCAP-13319 (P) WCAP-13320	AP600 High Inertia Rotor Testing - Phase 2 Report, August 1991
	WCAP-13758 (P) WCAP-13759	High Inertia Rotor Test - Phase 3 Report, June 1993
	WCAP-15613 (P) WCAP-15706	AP1000 PIRT and Scaling Assessment Report, March 2001
1.9	WCAP-15993	Evaluation of the AP1000 Conformance to Inter-System Loss-of-Coolant Accident Acceptance Criteria, Revision 1, March 2003

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Table 1.6-1 (Sheet 3 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
1.9	WCAP-15799	AP1000 Compliance with SRP Acceptance Criteria, Revision 1, August 2003
	WCAP-15800	Operational Assessment for AP1000, Revision 3, July 2004
	WCAP-15992	AP1000 Adverse Systems Interactions Evaluation Report, Revision 1, February 2003
	WCAP-15776	Safety Criteria for the AP1000 Instrumentation and Control Systems
1A	WCAP-8577	The Application of Pre-Heat Temperature After Welding of Pressure Vessel Steels, September 1975
	WCAP-16650-P (P) WCAP-16650-NP	Analysis of the Probability of the Generation of Missiles from Fully Integral Nuclear Low Pressure Turbines, Revision 0, February 2007
3.3	WCAP-13323 (P) WCAP-13324	Phase II Wind Tunnel Testing for the Westinghouse AP600 Reactor, August 1992
	WCAP-14068 (P) WCAP-14084	Phase IVA Wind Tunnel Testing for the Westinghouse AP600 Reactor, May 1994
	WCAP-14169 (P) WCAP-14170	Phase IVA Wind Tunnel Testing for the Westinghouse AP600 Reactor, Supplemental Report, September 1994
	WCAP-13294-P (P) WCAP-13295-NP	Phase I Wind Tunnel Testing for the Westinghouse AP600 Reactor, April 1992
3.6	WCAP-8077 (P) WCAP-8078	Ice Condenser Containment Pressure Transient Analysis Methods, March 1973
	WCAP-8708 (P) WCAP-8709-A	MULTIFLEX A FORTRAN-IV Computer Program for Analyzing Thermal-Hydraulic-Structure System Dynamics, February 1976
	WCAP-8252	Documentation of Selected Westinghouse Structural Analysis Computer Codes, Revision 1, May 1977
3.7	WCAP 7921-AR	Damping Values of Nuclear Power Plant Components, May 1974
	WCAP-9903 (P)	Justification of the Westinghouse Equivalent Static Analysis Method for Seismic Qualification of Nuclear Power Plant Auxiliary Mechanical Equipment, August 1980

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Table 1.6-1 (Sheet 4 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
3.8	WCAP-13891 (P) WCAP-14095	AP600 Automatic Depressurization System Phase A Test Data Report, May 1994
	WCAP-14324 (P) WCAP-14325	Final Data Report for ADS Phase B1 Tests, April 1995
	WCAP-15613 (P) WCAP-15706	AP1000 PIRT and Scaling Assessment, March 2001
3.9	WCAP-7765-AR	Westinghouse PWR Internals Vibrations Summary Three-Loop Internals Assurance, November 1973
	WCAP-8766 (P) WCAP-8780	Verification of Neutron Pad and 17x17 Guide Tube Designs by Preoperational Tests on the Trojan 1 Power Plant, May 1976
	WCAP-8516-P (P) WCAP-8517	UHI Plant Internals Vibrations Measurement Program and Pre- and Post-Hot Functional Examinations, March 1975
	WCAP-10846 (P)	Doel 4 Reactor Internals Flow-Induced Vibration Measurement Program, March 1985
	WCAP-10865 (P) WCAP-10866	South Texas Plant (TGX) Reactor Internals Flow-Induced Vibration Assessment, February 1985
	WCAP-8708-P-A (P) Volumes 1 and 2 WCAP-8709-A Volumes 1 and 2	MULTIFLEX A FORTRAN-IV Computer Program for Analyzing Thermal-Hydraulic-Structure System Dynamics, February 1976
	WCAP-8446 (P) WCAP-8449	17x17 Drive Line Components Tests – Phase 1B 11, 111 D-Loop Drop and Deflection, December 1974
	WCAP-9693 (P)	Investigation of Feedwater Line Cracking in Pressurized Water Reactor Plants, June 1980
	WCAP-15949-P (P) WCAP-15949-NP	AP1000 Reactor Internals Flow-Induced Vibration Assessment Program, Revision 1, July 2003
	WCAP-16687-P (P)	AP1000 Reactor Internals Expected and Acceptable Responses During Preoperational Vibration Measurement Program, March 2007

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Table 1.6-1 (Sheet 5 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
4.1	WCAP-10444-P-A (P) WCAP-10445-NP-A	Reference Core Report VANTAGE 5 Fuel Assembly, September 1985, and VANTAGE 5H Fuel Assembly, Addendum 2A, February 1989
	WCAP-12610-P-A (P) WCAP-14342-A	VANTAGE+ Fuel Assembly Reference Core Report, April 1995
	[WCAP-12488-A (P) [WCAP-14204-A]*	<i>Fuel Criteria Evaluation Process, October 1994]*</i>
4.2	[WCAP-12488-A (P) [WCAP-14204-A]*	<i>Fuel Criteria Evaluation Process, October 1994]*</i>
	WCAP-10125-P-A (P) WCAP-10126-NP-A	Extended Burnup Evaluation of Westinghouse Fuel, December 1985
	WCAP-8183	Operational Experience with Westinghouse Cores (Revised Annually)
	WCAP-9179 (P) WCAP-9224	Properties of Fuel and Core Component Materials, July 1978
	WCAP-12610-P-A (P) WCAP-14342-A	VANTAGE+ Fuel Assembly Reference Core Report, June 1990/April 1995
	WCAP-8218-P-A (P) WCAP-8219-A	Fuel Densification Experimental Results and Model for Reactor Application, March 1975
	WCAP-10851-P-A (P) WCAP-11873-A	Improved Fuel Performance Models for Westinghouse Fuel Rod Design and Safety Evaluations, August 1988
	WCAP-13589-A (P) WCAP-14297-A	Assessment of Clad Flattening and Densification Power Spike Factor Elimination in Westinghouse Nuclear Fuel, March 1995
	WCAP-8963-P-A (P) WCAP-8964-A	Safety Analysis for the Revised Fuel Rod Internal Pressure Design Basis, August 1977
	WCAP-10021-P-A (P) WCAP-10377-NP-A	Westinghouse Wet Annular Burnable Absorber Evaluation Report, Revision 1, October 1983
	WCAP-10444-P-A (P) WCAP-10445-NP-A	Reference Core Report VANTAGE 5 Fuel Assembly, September 1985

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*NRC Staff approval is required prior to implementing a change in this information; see DCD Introduction Section 3.5.

Table 1.6-1 (Sheet 6 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
4.2	WCAP-8278 (P) WCAP-8279	Hydraulic Flow Test of the 17x17 Fuel Assembly, February 1974
	WCAP-8691 (P) WCAP-8692	Fuel Rod Bow Evaluation, Revision 1, July 1979
	WCAP-9500-P-A (P) WCAP-9500-A	Reference Core Report 17x17 Optimized Fuel Assembly, May 1982
	WCAP-8236 (P) WCAP-8288	Safety Analysis of the 17x17 Fuel Assembly for Combined Seismic and Loss-of-Coolant Accident, December 1973
	WCAP-9401-P-A (P) WCAP-9402-A	Verification, Testing, and Analysis of the 17x17 Optimized Fuel Assembly, August 1981
	WCAP-9283	Integrity of Primary Piping Systems of Westinghouse Nuclear Power Plants During Postulated Seismic Events, March 1978
	WCAP-15063-P-A (P) WCAP-15064-NP-A	Westinghouse Improved Performance Analysis and Design Model (PAD 4.0), Revision 1, July 2000
	WCAP-8377 (P)	Revised Clad Flattening Model, July 1974
	WCAP-7113	Use of Burnable Poison Rods in Westinghouse Pressurized Water Reactors, October 1967
	WCAP-16652-P	AP1000 Core & Fuel Design Technical Report, Revision 0
4.3	WCAP-9272-P-A (P) WCAP-9273-NP-A	Westinghouse Reload Safety Evaluation Methodology, July 1985
	[<i>WCAP-12488-P-A (P)</i>] [<i>WCAP-14204-A</i>]*	<i>Fuel Criteria Evaluation Process, October 1994</i>]*
	WCAP-12472-P-A (P) WCAP-12473-A	BEACON: Core Monitoring and Operations Support System, August 1994; Addendum 1, May 1996; Addendum 2, March 2001
	WCAP-8330	Westinghouse Anticipated Transients Without Reactor Trip Analysis, August 1974
	WCAP-7308-L-P-A (P) WCAP-7308-L-A	Evaluation of Nuclear Hot Channel Factor Uncertainties, June 1988
	WCAP-8218-P-A (P) WCAP-8219-A	Fuel Densification Experimental Results and Model for Reactor Application, March 1975

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Table 1.6-1 (Sheet 7 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
4.3	WCAP-8359	Effects of Fuel Densification Power Spikes on Clad Thermal Transients, July 1974
	WCAP-7811	Power Distribution Control of Westinghouse Pressurized Water Reactors, December 1971
	WCAP-8385 (P) WCAP-8403	Power Distribution Control and Load Following Procedures, September 1974
	WCAP-10216-P-A (P) WCAP-10217-A	Relaxation of Constant Axial Offset Control, F _Q Surveillance Technical Specification, Revision 1A, February 1994
	WCAP-7912-P-A (P) WCAP-7912-A	Power Peaking Factors, January 1975
	WCAP-8498	Incore Power Distribution Determination in Westinghouse Pressurized Water Reactors, July 1975
	WCAP-9217 (P) WCAP-9218	Results of Control Rod Worth Program, October 1977
	WCAP-3696-8 (P)	Pressurized Water Reactor pH – Reactivity Effect Final Report, October 1968
	WCAP-3680-20 (P)	Xenon-Induced Spatial Instabilities in Large Pressurized Water Reactors, March 1968
	WCAP-3680-21 (P)	Control Procedures for Xenon-Induced X-Y Instabilities in Large Pressurized Water Reactors, February 1969
	WCAP-3680-22 (P)	Xenon-Induced Spatial Instabilities in Three Dimensions, September 1969
	WCAP-7964	Axial Xenon Transient Tests at the Rochester Gas and Electric Reactor, June 1971
	WCAP-7048-P-A (P) WCAP-7757-A	The PANDA Code, February 1975
	WCAP-7213-A (P) WCAP-7758-A	The TURTLE 24.0 Diffusion Depletion Code, February 1975
WCAP-8768	Safety-Related Research and Development for Westinghouse Pressurized Water Reactors, Program Summaries – Winter 1977 – Summer 1978, Revision 2, October 1978	

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Table 1.6-1 (Sheet 8 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
4.3	WCAP-6073 (P)	LASER – A Depletion Program for Lattice Calculations Based on MUFT and THERMOS, April 1966
	WCAP-2048 (P)	The Doppler Effect for a Non-Uniform Temperature Distribution in Reactor Fuel Elements, July 1962
	WCAP-11596-P-A (P) WCAP-11597-A	Qualification of the PHOENIX-P/ANC Nuclear Design System for Pressurized Water Reactor Cores, June 1988
	WCAP-10841 (P) WCAP-10842	Qualification of the PHOENIX/POLCA Nuclear Design and Analysis Program for Boiling Water Reactors, June 1985
	WCAP-7806	Nuclear Design of Westinghouse Pressurized Water Reactors with Burnable Poison Rods, December 1971
	WCAP-3385-56 Part II	Saxton Core II Fuel Performance Evaluation Part II: Evaluation of Mass Spectrometric and Radiochemical Analysis of Irradiated Saxton Plutonium Fuel, July 1973
	WCAP-3385-56 Part I	Saxton Core II - Fuel Performance Evaluation Part I: Materials, September 1971
	WCAP-3385-36	Saxton Plutonium Project - Quarterly Progress Report for the Period Ending June 20, 1973, July 1973
	WCAP-3385-37	Saxton Plutonium Project - Quarterly Progress Report for the Period Ending September 30, 1973, December 1973
	WCAP-3017-6094	Yankee Core Evaluation Program Final Report, January 1971
	WCAP-10965-P-A (P) WCAP-10966-A	ANC: A Westinghouse Advanced Nodal Computer Code, September 1986
	WCAP-3726-1	PuO ₂ -UO ₂ Fueled Critical Experiments, July 1967
	WCAP-13589-A (P) WCAP-14297-A	Assessment of Clad Flattening and Densification Power Spike Factor Elimination in Westinghouse Nuclear Fuel, March 1995
	WCAP-13524 (P) WCAP-14952-NP-A	APOLLO - A One Dimensional Neutron Theory Program, Revision 1, August 1994
WCAP-16652-P	AP1000 Core & Fuel Design Technical Report, Revision 0	

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Table 1.6-1 (Sheet 9 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
4.3	WCAP-3385-54	Saxton Plutonium Program Critical Experiments for the Saxton Partial Plutonium Core, Westinghouse Electric Corp., Atomic Power Division, December 1965
4.4	WCAP-11397-P-A (P) WCAP-11397-A	Revised Thermal Design Procedure, April 1989
	WCAP-6065 (P)	Melting Point of Irradiated UO ₂ , February 1965
	WCAP-10444-P-A (P) WCAP-10445-NP-A	Reference Core Report VANTAGE 5 Fuel Assembly, September 1985
	WCAP-9226-P (P) WCAP-9227-NP	Reactor Core Response to Excessive Secondary Steam Releases, January 1989
	WCAP-7695-L (P)	DNB Test Results for R-Grid Thimble Cold Wall Cells, Addendum 1, October 1972
	[<i>WCAP-12488-A (P)</i>]	<i>Westinghouse Fuel Criteria Evaluation Process, October 1994</i>]*
	WCAP-7941-P-A (P) WCAP-7959-A	Effect of Axial Spacing on Interchannel Thermal Mixing with the R Mixing Vane Grid, January 1975
	WCAP-8298-P-A (P) WCAP-8290-A	The Effect of 17x17 Fuel Assembly Geometry on Interchannel Thermal Mixing, January 1975
	WCAP-8174 (P) WCAP-8202-A	Effect of Local Heat Flux Spikes on DNB in Non Uniform Heated Rod Bundles, August 1973
	WCAP-7667-P-A (P) WCAP-7755-A	Interchannel Thermal Mixing with Mixing Vane Grids, January 1975
	WCAP-8691 (P) WCAP-8692	Fuel Rod Bow Evaluation, Revision 1, July 1979
	WCAP-8054-P-A (P) WCAP-8195-A	Applications of THINC-IV Program to PWR Design, October 1973
	WCAP-7956-P-A (P)	THINC-IV, An Improved Program for Thermal-Hydraulic Analysis of Rod Bundle Cores, February 1989
WCAP-2923	In-Pile Measurement of UO ₂ Thermal Conductivity, March 1966	

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Table 1.6-1 (Sheet 10 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
4.4	WCAP-10851-P-A (P) WCAP-11873-A	Improved Fuel Performance Models for Westinghouse Fuel Rod Design and Safety Evaluations, August 1988
	WCAP-8720 Addendum 2	Revised PAD Code Thermal Safety Model, October 1982
	WCAP-6069	Burnup Physics of Heterogeneous Reactor Lattices, June 1965
	WCAP-3385-56 Part II	Saxton Core II Fuel Performance Evaluation: Evaluation of Mass Spectrometric and Radiochemical Analyses of Irradiated Saxton Plutonium Fuel, July 1970
	WCAP-7912-P-A (P) WCAP-7912-A	Power Peaking Factors, January 1975
	WCAP-8453-A	Analysis of Data from the Zion (Unit 1) THINC Verification Test, May 1976
	WCAP-12610-P-A (P) WCAP-14342-A	VANTAGE+ Fuel Assembly Reference Core Report, April 1995
	WCAP-15025-P-A (P) WCAP-15026-NP-A	Modified WRB-2 Correlation, WRB-2M, for Predicting Critical Heat Flux in 17x17 Rod Bundles with Modified LPD Mixing Vane Grids, April 1999
	WCAP-14565-P-A (P) WCAP-15306-NP-A	VIPRE-01 Modeling and Qualification for Pressurized Water Reactor Non-LOCA Thermal-Hydraulic Safety Analysis, October 1999
	WCAP-15063-P-A (P) WCAP-15064-NP-A	Westinghouse Improved Performance Analysis and Design Model (PAD 4.0), Revision 1, July 2000
	WCAP-16652-NP	AP1000 Core & Fuel Design Technical Report, Revision 0
5.2	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-9292	Dynamic Fracture Toughness of ASME SA-508 Class 2a and ASME SA-533 Grade A Class 2 Base and Heat-Affected Zone Material and Applicable Weld Metals, March 1978
	WCAP-7477-L (P) WCAP-7735	Sensitized Stainless Steel in Westinghouse PWR Nuclear Steam Supply Systems, March 1970 (P), August 1971 (Non-P)

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Table 1.6-1 (Sheet 11 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
5.2	WCAP-8324-A	Control of Delta Ferrite in Austenitic Stainless Steel Weldments, June 1975
	WCAP-8693	Delta Ferrite in Production Austenitic Stainless Steel Weldments, January 1976
5.3	WCAP-15557	Qualification of the Westinghouse Pressure Vessel Neutron Fluence Evaluation Methodology, August 2000
	WCAP-14040-NP-A	Methodology Used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves, Revision 2, January 1996
5.4	WCAP-15994-P (P) WCAP-15994-NP	Structural Analysis Summary for the AP1000 Reactor Coolant Pump High Inertia Flywheel, March 2003
6.2	WCAP-8077 (P) WCAP-8078	Ice Condenser Containment Pressure Transient Analysis Methods, March 1973
	WCAP-8264-P-A (P) WCAP-8312-A	Westinghouse Mass and Energy Release Data for Containment Design, June 1975 (P), August 1975 (Non-P)
	WCAP-10325-P-A (P) WCAP-10326-A	Westinghouse LOCA Mass and Energy Release Model for Containment Design - March 1979 Version, May 1983
	WCAP-8822 (P) WCAP-8860 WCAP-8822-P-S1 (P) WCAP-8822-S2-P-A (P)	Mass and Energy Releases Following A Steam Line Rupture, September 1976 Supplement 1 - Calculations of Steam Superheat in Mass/Energy Releases Following a Steamline Rupture, January 1985 Supplement 2 - Impact of Steam Superheat in Mass/Energy Releases Following a Steamline Rupture for Dry and Subatmospheric Containment Designs, September 1986
	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-15846 (P) WCAP-15862	WGOTHIC Application to AP600 and AP1000, Revision 1, March 2004
	WCAP-15965-P (P) WCAP-15965-NP	AP1000 Subcompartment Models, November 2002
	WCAP-14234 (P) WCAP-14235	LOFTRAN and LOFTTR2 AP600 Code Applicability Document, Revision 1, August 1997

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
6.2	WCAP-15644-P (P) WCAP-15644-NP	AP1000 Code Applicability Report, Revision 2, March 2004
6.3	WCAP-8966 (P)	Evaluation of Mispositioned ECCS Valves, September 1977
	WCAP-13594 (P) WCAP-13662 (NP)	FMEA of Advanced Passive Plant Protection System, Revision 1, June 1998
	WCAP-16438-P WCAP-16438-NP	FMEA of AP1000 Protection and Safety Monitoring System, Revision 1, June 2006
6A	WCAP-15846 (P) WCAP-15862	WGOthic Application to AP600 and AP1000, Revision 1, March 2004
	WCAP-14135 (P) WCAP-14138	Final Data Report for Passive Containment Cooling System Large Scale Test, Phase 2 and Phase 3, Revision 3, November 1998
	WCAP-15613 (P) WCAP-15706	AP1000 PIRT and Scaling Assessment Report, March 2001
7.1	[WCAP-14605 (P) WCAP-14606 (NP)]	Westinghouse Setpoint Methodology for Protection Systems – AP600, April 1996]*
	WCAP-16361-P WCAP-16361-NP	Westinghouse Setpoint Methodology for Protection Systems - AP1000, May 2006
	WCAP-15775	AP1000 Instrumentation and Control Defense-in-Depth and Diversity Report
	[WCAP-16096-NP-A	Software Program Manual for Common Q Systems, Revision 01A, January 2004]*
	[WCAP-16097-P-A WCAP-16097-NP-A	Common Qualified Platform, Revision 01, May 2003]*
	WCAP-15776	Safety Criteria for the AP1000 Instrumentation and Control Systems, April 2002
	WCAP-16675-P WCAP-16675-NP	AP1000 Protection and Safety Monitoring System Architecture Technical Report, Revision 5
	APP-GW-GLR-017	AP1000 Standard Combined License Technical Report, Resolution of Common Q NRC Items
	WCAP-17179-P WCAP-17179-NP	AP1000 Component Interface Module Technical Report

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
7.1	[WCAP-15927 (NP)]	<i>Design Process for AP1000 Common Q Safety Systems, Revision 2, November 2008</i>]*
		Westinghouse Electric Company Quality Management System (QMS), (Non-Proprietary), Revision 5, October 2002
	APP-GW-J0R-012	AP1000 Protection and Safety Monitoring System Computer Security Plan
	[WCAP-17201-P]	<i>AC160 High Speed Link Communication Compliance to DI&C-ISG-04 Staff Positions 9, 12, 13 and 15, Revision 0, February 2010</i>]*
	WCAP-17184-P (P)	AP1000™ Diverse Actuation System Planning and Functional Design Summary Technical Report
7.2	WCAP-16438-P WCAP-16438-NP	FMEA of AP1000 Protection and Safety Monitoring System, Revision 2
	WCAP-16592-P WCAP-16592-NP	Software Hazards Analysis of AP1000 Protection and Safety Monitoring System, Revision 2
	WCAP-15776	Safety Criteria for the AP1000 Instrumentation and Control Systems, April 2002
	WCAP-16097-P-A WCAP-16097-NP-A	Common Qualified Platform, Digital Plant Protection System, Appendix 3, May 2003
7.3	WCAP-15776	Safety Criteria for the AP1000 Instrumentation and Control Systems, April 2002
7.7	WCAP-17184-P	AP1000™ Diverse Actuation System Planning and Functional Design Summary Technical Report
9.5	WCAP-15871	AP1000 Assessment Against NFPA 804, Revision 1, December 2002
10.2	WCAP-16650-P (P) WCAP-16650-NP	Analysis of the Probability of the Generation of Missiles for AP1000 Fully Integral Low Pressure Turbines, Revision 0, February 2007.
	WCAP-16651-P (P) WCAP-16651-NP	Probabilistic Evaluation of Toshiba Turbine Valve Test Frequency, Revision 0, February 2007.
13	WCAP-14690	Designer's Input to Procedure Development for the AP600, Revision 1, June 1997

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
13	WCAP-13864	Rod Control System Evaluation Program, Revision 1-A, November 1994
15.0	WCAP-11397-P-A (P) WCAP-11397-A	Revised Thermal Design Procedure, April 1989
	WCAP-10054-P-A (P) WCAP-10081	Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code, August 1985
	WCAP-12945-P-A (P) WCAP-14747	Code Qualification Document for Best Estimate LOCA Analysis, Revision 1, March 1998
	WCAP-7908-A	FACTRAN – A FORTRAN-IV Code for Thermal Transients in a UO ₂ Fuel Rod, December 1989
	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-7979-P-A (P) WCAP-8028-A	TWINKLE – A Multi-Dimensional Neutron Kinetics Computer Code, January 1975
	WCAP-10698-P-A (P) WCAP-10750-A	SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill, August 1987
	WCAP-14234 (P) WCAP-14235	LOFTRAN and LOFTTR2 AP600 Code Applicability Document, Revision 1, August 1997
	WCAP-15644-P (P) WCAP-15644-NP	AP1000 Code Applicability Report, Revision 2, March 2004
15.1	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-11397-P-A (P) WCAP-11397-A	Revised Thermal Design Procedure, April 1989
	WCAP-9226 (P) WCAP-9227	Reactor Core Response to Excessive Secondary Steam Releases, January 1978
	WCAP-7908-A	FACTRAN – A FORTRAN-IV Code for Thermal Transients in a UO ₂ Fuel Rod, December 1989
	WCAP-15644-P (P) WCAP-15644-NP	AP1000 Code Applicability Report, Revision 2, March 2004

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
15.2	WCAP-7769	Overpressure Protection for Westinghouse Pressurized Water Reactors, Revision 1, June 1972
	WCAP-16779-NP	Overpressure Protection Report for AP1000 Nuclear Power Plant
	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-9230 (P) WCAP-9231	Report on the Consequences of a Postulated Main Feedline Rupture, January 1978
	WCAP-11397-P-A (P) WCAP-11397-A	Revised Thermal Design Procedure, April 1989
	WCAP-15644-P (P) WCAP-15644-NP	AP1000 Code Applicability Report, Revision 2, March 2004
	WCAP-7908-A	FACTRAN - A FORTRAN-IV Code for Thermal Transients in a UO ₂ Fuel Rod, December 1989
15.3	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-7908-A	FACTRAN - A FORTRAN-IV Code for Thermal Transients in a UO ₂ Fuel Rod, December 1989
	WCAP-8424	An Evaluation of Loss of Flow Accidents Caused by Power System Frequency Transients in Westinghouse PWRs, Revision 1, May 1975
	WCAP-11397-P-A (P) WCAP-11397-A	Revised Thermal Design Procedure, April 1989
15.4	WCAP-7979-P-A (P) WCAP-8028-A	TWINKLE - A Multi-Dimensional Neutron Kinetics Computer Code, January 1975
	WCAP-7908-A	FACTRAN - A FORTRAN-IV Code for Thermal Transients in a UO ₂ Fuel Rod, December 1989
	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-7588	An Evaluation of the Rod Ejection Accident in Westinghouse Pressurized Water Reactors Using Spatial Kinetics Methods, Revision 1A, January 1975

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Table 1.6-1 (Sheet 16 of 21)

MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
15.4	WCAP-10965-P-A (P) WCAP-10966-A	ANC: A Westinghouse Advanced Nodal Computer Code, September 1986
	WCAP-11397-P-A (P) WCAP-11397-A	Revised Thermal Design Procedure, April 1989
	WCAP-15644-P (P) WCAP-15644-NP	AP1000 Code Applicability Report, Revision 2, March 2004
15.5	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
15.6		Letter from R. C. Jones, Jr. (USNRC), to N. J. Liparulo (W), Subject: Acceptance for Referencing of the Topical Report, WCAP-12945 (P), Westinghouse CQD for Best Estimate LOCA Analysis, June 28, 1996
	WCAP-12945-P-A (P) WCAP-14747	Code Qualification Document for Best Estimate Analysis, Revision 2, March 1998
	WCAP-10079-P-A (P) WCAP-10080-A	NOTRUMP – A Nodal Transient Small Break and General Network Code, August 1985
	WCAP-10054-P-A (P) WCAP-10081-A	Westinghouse Small Break ECCS Evaluation Model Using the NOTRUMP Code, August 1985
	WCAP-7907-P-A (P) WCAP-7907-A	LOFTRAN Code Description, April 1984
	WCAP-7908-A	FACTRAN – A FORTRAN-IV Code for Thermal Transients in a UO ₂ Fuel Rod, December 1989
	WCAP-11397-P-A (P) WCAP-11397-A	Revised Thermal Design Procedure, April 1989
	WCAP-10698-P-A (P) WCAP-10750-A	SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill, August 1987
	WCAP-14206 (P) WCAP-14207	Applicability of the NOTRUMP Computer Code to AP600 SSAR Small-Break LOCA Analyses, November 1994
	WCAP-14601 (P) WCAP-15062	AP600 Accident Analyses – Evaluation Models, Revision 2, May 1998
WCAP-14234 (P) WCAP-14235	LOFTRAN and LOFTTR2 AP600 Code Applicability Document, Revision 1, August 1997	

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
15.6	WCAP-14171 (P) WCAP-14172	WCOBRA/TRAC Applicability to AP600 Large-Break Loss-of-Coolant Accident, Revision 2, March 1998
	WCAP-14807 (P) WCAP-14808	NOTRUMP Final Validation Report for AP600, Revision 5, August 1998
	WCAP-14776 (P) WCAP-14777	WCOBRA/TRAC OSU Long-Term Cooling Final Validation Report, Revision 4, April 1998
	WCAP-15644-P (P) WCAP-15644-NP	AP1000 Code Applicability Report, Revision 2, March 2004
	WCAP-15613 (P) WCAP-15706	AP1000 PIRT and Scaling Assessment, March 2001
	WCAP-16009-P-A (P) WCAP-16009-NP-A	Realistic Large Break LOCA Evaluation Methodology Using the Automated Statistical Treatment of Uncertainty Method (ASTRUM)
	WCAP-14449-P-A (P) WCAP-14450	Application of Best Estimate Large Break LOCA Methodology to Westinghouse PWRs with Upper Plenum Injection, Revision 1
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	WCAP-11618	Methodically Engineered, Restructured and Improved, Technical Specifications, Merits Program – Phase II Task 5 Criteria Application, November 1987, including Addendum 1, April 1989
	WCAP-8385 (P) WCAP-8403	Power Distribution Control and Load Following Procedures, September 1974
	WCAP-10216-P-A (P) WCAP-10217-A	Relaxation of Constant Axial Offset Control F_Q Surveillance Technical Specifications, Revision 1A, February 1994
	WCAP-12945-P-A (P) WCAP-14747	Code Qualification Document for Best Estimate Loss of Coolant Accident Analysis, Revision 1, March 1998
	WCAP-12472-P-A (P) WCAP-12473-A	BEACON Core Monitoring and Operations Support System, August 1994, and Addendum 1, May 1996
	WCAP-7308-L-P-A (P) WCAP-7308-L-A	Evaluation of Nuclear Hot Channel Factor Uncertainties, June 1988
	WCAP-9273-NP-A	Westinghouse Reload Safety Evaluation Methodology, July 1985

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
16.1	WCAP-14606	Westinghouse Setpoint Methodology for Protection Systems, April 1996
	WCAP-10271-P-A (P) WCAP-10272-A	Evaluation of Surveillance Frequencies and Out of Service Times for the Reactor Protection Instrumentation System, June 1996
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	WCAP-16361-P (P)	Westinghouse Setpoint Methodology for Protection Systems – AP1000, May 2006
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	WCAP-7769	Topical Report on Overpressure Protection, October 1971
	WCAP-15985	AP1000 Implementation of the Regulatory Treatment of Nonsafety-Related Systems Process, Revision 2, August 2003
	WCAP-16779	AP1000 Overpressure Protection Report, April 2007
17.6	WCAP-8370	Energy Systems Business Unit – Power Generation Business Unit Quality Assurance Plan, Revision 12a
	WCAP-8370/7800	Energy Systems Business Unit – Nuclear Fuel Business Unit Quality Assurance Plan, Revision 11A/7A
	WCAP-12600	AP600 Advanced Light Water Reactor Design Quality Assurance Program Plan, Revision 4, January 1998
18.1	WCAP-14645	Human Factors Engineering Operating Experience Review Report for the AP1000 Nuclear Power Plant, Revision 3
	WCAP-14644	AP600/AP1000 Functional Requirements Analysis and Function Allocation, Revision 1
	WCAP-14694	Designer’s Input to Determination of the AP600 Main Control Room Staffing Level, July 1996
	[WCAP-14651	<i>Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan, Revision 2, May 1997</i>]*
	WCAP-14690	Designer’s Input to Procedure Development for the AP600, Revision 1, June 1997

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*NRC Staff approval is required prior to implementing a change in this information; see DCD Introduction Section 3.5.

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
18.1	WCAP-14655	Designer's Input to the Training of the Human Factors Engineering Verification and Validation Personnel, Revision 1, August 1996
	[WCAP-15860	<i>Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan, Revision 2, October 2003]*</i>
18.2	WCAP-14645	Human Factors Engineering Operating Experience Review Report for the AP1000 Nuclear Power Plant, Revision 3
	WCAP-14694	Designer's Input to Determination of the AP600 Main Control Room Staffing Level, July 1996
	[WCAP-15847	<i>AP1000 Quality Assurance Procedures Supporting NRC Review of AP1000 DCD Sections 18.2 and 18.8, Rev. 1, December 2002]*</i>
	WCAP-14644	AP600/AP1000 Functional Requirements Analysis and Function Allocation, Revision 1
18.3	WCAP-14645	Human Factors Engineering Operating Experience Review Report for the AP1000 Nuclear Power Plant, Revision 3
18.4	WCAP-14644	AP600/AP1000 Functional Requirements Analysis and Function Allocation, Revision 1
18.5	WCAP-10170	Emergency Response Facilities Design and V&V Process, April 1982
	[WCAP-14695	<i>Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology, July 1996]*</i>
	[WCAP-14651	<i>Integration of Human Reliability Analysis and Human Factors Engineering Design Implementation Plan, Revision 2, May 1997]*</i>
18.6	WCAP-14694	Designer's Input to Determination of the AP600 Main Control Room Staffing Level, July 1996
18.7	[WCAP-14651	<i>Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan, Revision 2, May 1997]*</i>
	WCAP-16555	AP1000 Identification of Critical Human Actions and Risk Important Tasks, Revision 1
18.8	[WCAP-14651	<i>Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan, Revision 2, May 1997]*</i>
	[WCAP-15860	<i>Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan, Revision 2, October 2003]*</i>

*NRC Staff approval is required prior to implementing a change in this information; see DCD Introduction Section 3.5.

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
18.8	[WCAP-14695	<i>Description of the Westinghouse Operator Decision Making Model and Function Based Task Analysis Methodology, July 1996]</i> *
	WCAP-14655	Designer's Input to the Training of the Human Factors Engineering Verification and Validation Personnel, Revision 1, August 1996
	WCAP-14690	Designer's Input to Procedure Development for the AP600, Revision 1, June 1997
	WCAP-10170	Emergency Response Facilities Design and V&V Process, April 1982
	WCAP-14694	Designer's Input to Determination of the AP600 Main Control Room Staffing Level, July 1996
	[WCAP-14396	<i>Man-in-the-Loop Test Plan Description, Revision 3, November 2002]</i> *
18.9	WCAP-14690	Designer's Input to Procedure Development for the AP600, Revision 1, June 1997
18.10	WCAP-14655	Designer's Input to the Training of the Human Factors Engineering Verification and Validation Personnel, Revision 1, August 1996
18.11	[WCAP-15860	<i>Programmatic Level Description of the AP1000 Human Factors Verification and Validation Plan, Revision 2, October 2003]</i> *
	[APP-OCS-GEH-120	<i>AP1000 Human Factors Engineering Design Verification Plan, Revision B, Westinghouse Electric Company LLC]</i> *
	[APP-OCS-GEH-220	<i>AP1000 Human Factors Engineering Task Support Verification Plan, Revision B, Westinghouse Electric Company LLC]</i> *
	[APP-OCS-GEH-320	<i>AP1000 Human Factors Engineering Integrated System Validation Plan, Revision D, Westinghouse Electric Company LLC]</i> *
	[APP-OCS-GEH-420	<i>AP1000 Human Factors Engineering Discrepancy Resolution Process, Revision B, Westinghouse Electric Company LLC]</i> *
	[APP-OCS-GEH-520	<i>AP1000 Plant Startup Human Factors Engineering Verification Plan, Revision B, Westinghouse Electric Company LLC]</i> *
18.12	[WCAP-14651	<i>Integration of Human Reliability Analysis with Human Factors Engineering Design Implementation Plan, Revision 2, May 1997]</i> *
	WCAP-13793	The AP600 System/Event Matrix, June 1994

*NRC Staff approval is required prior to implementing a change in this information; see DCD Introduction Section 3.5.

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MATERIAL REFERENCED

DCD Section Number	Westinghouse Topical Report Number	Title
19.41.13	WCAP-13388 (P) WCAP-13389	AP600 Phenomenological Evaluation Summaries, (Prop – Revision 0, June 1992, Non-Prop - Revision 1, 1994)
19.59	APP-GW-GJR-400 (NT)	Framework for AP1000 Severe Accident Management Guidance, Revision 0, January 2007
19B	WCAP-13388 (P) WCAP-13389	AP600 Phenomenological Evaluation Summaries (Prop - Revision 0, June 1992, Non-Prop - Revision 1, 1994)
19D	APP-GW-GJR-400 (NT)	Framework for AP1000 Severe Accident Management Guidance, Revision 0, January 2007
19E	WCAP-10698-P-A (P) WCAP-10750-A	SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill, August 1987
	WCAP-14171 (P) WCAP-14172	WCOBRA/TRAC Applicability to AP600 Large-Break Loss-of- Coolant Accident, Revision 2, March 1998

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