UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

December 18, 2007

MEMORANDUM TO: ACRS Members

FROM: David C. Fischer, Senior Staff Engineer
Technical Support Staff
ACRS

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS AP1000 SUBCOMMITTEE MEETING ON THE AP1000 DESIGN AND AP1000 COMBINED LICENSE APPLICATIONS, OCTOBER 31, 2007, ROCKVILLE, MARYLAND

The minutes of the subject meeting were certified on December 18,2007 as the official record of the proceedings of that meeting. A copy of the certified minutes is attached.

Attachment: As stated

cc w/o Attachment:
C. Santos
S. Duraiswamy

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

December 18, 2007

MEMORANDUM TO: David C. Fischer, Senior Staff Engineer
Technical Support Staff, ACRS

FROM: Mario V. Bonaca, Chairman
AP1000 Subcommittee

SUBJECT: CERTIFICATION OF THE MINUTES OF THE ACRS AP1000 SUBCOMMITTEE MEETING ON THE AP1000 DESIGN AND AP1000 COMBINED LICENSE APPLICATIONS, OCTOBER 31, 2007, ROCKVILLE, MARYLAND

I hereby certify, to the best of my knowledge and belief, that the minutes of the subject meeting on October 31, 2007, are an accurate record of the proceedings for that meeting.

Mario V. Bonaca 12/18/07

Mario V. Bonaca, Chairman Date
AP1000 Subcommittee

UNITED STATES
NUCLEAR REGULATORY COMMISSION
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
WASHINGTON, DC 20555 - 0001

December 13, 2007

MEMORANDUM TO: Mario V. Bonaca, Chairman
AP1000 Subcommittee

FROM: David C. Fischer, Senior Staff Engineer
Technical Support Staff
ACRS

SUBJECT: WORKING COPY OF THE MINUTES OF THE ACRS AP1000 SUBCOMMITTEE MEETING ON THE AP1000 DESIGN AND AP1000 COMBINED LICENSE APPLICATIONS, OCTOBER 31, 2007, ROCKVILLE, MARYLAND

A working copy of the minutes of the subject meeting is attached for your review. Please review and comment on them at your earliest convenience. If you are satisfied with these minutes please sign, date and return the attached certification letter.

Attachment: Certification Letter
Minutes (Working Copy)

cc w/o Attachment:
C. Santos
S. Duraiswamy

Certified Copy

Issued: 12/18/07

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS
AP1000 SUBCOMMITTEE MEETING MINUTES
October 31, 2007
ROCKVILLE, MARYLAND

INTRODUCTION

The ACRS Subcommittee on AP1000 met on October 31, 2007, at 11545 Rockville Pike, Rockville, Maryland, in Room T-2B3. The purpose of this meeting was to discuss the AP1000 design, proposed revisions to 10 CFR Part 52 Appendix D, issues to be resolved collectively for Combined License (COL) applicants referencing the AP1000 certified design by the AP1000 Design-Centered Working Group (DCWG), and issues that will be resolved on a plant-specific basis by COL applicants. The Subcommittee planned to gather information, analyze relevant issues and facts to formulate proposed positions, as appropriate, for deliberation by the full Committee. The entire meeting was open to public attendance. Mr. David C. Fischer was the cognizant staff engineer and the Designated Federal Official for this meeting. The Subcommittee received no written comments, or requests for time to make oral statements from any members of the public regarding this meeting. The meeting was convened at 8:00 am and adjourned at 1:28 pm.

ATTENDEES

ACRS

M. Bonaca, Chairman
S. Abdel-Khalik, Member
J. Sam Armijo, Member
M. Corradini, Member
D. Fischer, ACRS Staff
O. Maynard, Member
W. Shack, Member
J. Sieber, Member
J. Stetkar, Member

ACNW&M

J. Clarke, Member
M. Ryan, Chairman

NRC

Y. Chung, NRO/DLR
E. Coffman, NRO/DNRL
D. Dube, NRO/DSRA
B. Gleaves, NRO/DNRL
D. Jaffee, NRO/DNRL
M. Lee, ACNW&M
E. McKenna, NRO/DNRL
M. Melnicoff, NRO/DSRA
M. Mernicki, NRO/DNRL
L. Mrowca, NRO/DSRA
L. Patterson, NRO/DSRA
S. Sanders, NRO/DNRL
J. Sebrosky, NRO/DNRL
T. Simms, NRO/DNRL
W. Wang, NRO/DSER
J. Wilson, NRO/DNRL

ATTENDEES (CONT'D)

OTHERS

E. Cummins, Westinghouse
A. Sterdis, Westinghouse
T. Schulz, Westinghouse
J. Winters, Westinghouse
C. Brinkman, Westinghouse
P. Hastings, NuStart
E. Grant, NuStart
N. Haggerty, NuStart
P. Ray, TVA
R. Beatin, ISL
R. Bell, NEI
J. Bowie, GE/Hitachi
R. Grumbir, NuStart
L. Kass, NEI
A. Levin, AREVA
J. Mihalcik, UniStar Nuclear Energy
D. Raleigh, US Scientech

A complete list of attendees is in the ACRS Office file and will be made available upon request. The presentation slides and handouts used during the meeting are attached.

OPENING REMARKS BY THE SUBCOMMITTEE CHAIRMAN

Dr. Mario Bonaca, Chairman of the AP1000 Subcommittee, stated that the purpose of this meeting was to discuss the AP1000 design, proposed revisions to 10 CFR Part 52 Appendix D, issues to be resolved collectively for Combined License (COL) applicants referencing the AP1000 certified design by the AP1000 Design-Centered Working Group (DCWG), and issues that will be resolved on a plant-specific basis by COL applicants.

DESIGN CERTIFICATION OVERVIEW

Mr. W. Ed Cummins, Westinghouse's Vice President for Regulatory Affairs and Standardization, offered some introductory comments for Westinghouse.

Ms. Andrea Sterdis, Westinghouse's Manager for AP1000 Licensing and Customer Interface, provided the subcommittee with an overview of the AP1000 design certification amendment (i.e., Revision 16 to the AP1000 Design Certification Document (DCD)). Information in approximately 141 Westinghouse technical reports, currently under NRC staff review, will form the technical basis for the changes proposed in Revision 16 to the AP1000 DCD. Ms. Sterdis said that 63 of the technical reports address COL information items. Forty seven of the technical reports justify design changes that impact DCD content (in even the slightest way). Two technical reports address standardization for COL application content. Technical Report 135 provides severe accident management design alternative (SAMDA) confirmation for the design certification amendment. Revision 16 to the AP1000 DCD will include changes to both Tier 1 and Tier 2 documentation. While Westinghouse's application to amend the AP1000 design certification rule was submitted on May 29, 2007, the staff have not yet accepted that application for review. Ms. Sterdis said that Westinghouse anticipates that the NRC staff's acceptance review will begin on November 5, 2007. Some of the more significant DCD changes mentioned include: extension of the seismic spectra to soil conditions, revision of buildings for enhanced protection, update of the fuel design approach, update of the protection system instrumentation and control, update of the electrical system, completion of the human factors engineering activities, and a change in turbine manufacturer (Mitsubishi Heavy

Industries to Toshiba). (See Westinghouse slides 6 through 18 attached)

TECHNOLOGY OVERVIEW

Mr. Jim Winters provided the subcommittee with an overview of the AP1000 technology (Westinghouse slides 19 through 33 attached). When asked by Dr. Shack, Mr. Winters indicated that there is only one source for the two AP1000 ultra-big forgings. Mr. Terry Schulz described the AP1000 passive safety systems and defense-in-depth systems (Westinghouse slides 34 through 57 attached). Dr. Corradini asked if the AP1000 containment could be vented. Mr. Schulz said that while there is not a containment vent in the AP1000 design, the AP1000 containment can be vented through the shutdown cooling system and spent fuel pit. He also explained that the AP1000 design has active systems to mitigate the more probable events, but not necessarily all of the traditional design basis accidents (e.g., large break loss of coolant accidents, main feedwater line break). Mr. Schulz showed the core damage frequency and large release frequency with all AP1000 systems (order of 10^{-7} to 10^{-8}) and compared it to the core damage frequency and large release frequency without non-safety (active) systems (order of 10^{-6} to 10^{-7}). Ms. Sterdis summarized the AP1000 instrumentation and control systems (e.g., protection and safety monitoring system, diverse actuation system, plant control system, data display and processing system). She said that a detailed I&C design is being developed based on the functional requirements in the DCD, using the certified design process, and which will meet the certified acceptance criteria. Mr. Maynard asked about shift staffing in the AP1000 compact control room and Mr. Sieber asked about the number of local control stations. (Westinghouse slides 58 through 64 attached) Finally, Mr. Winters described the AP1000 structures, secondary systems, electrical systems, and fire protection features. (See Westinghouse slides 65 through 76 attached) The AP1000 design has three electrical systems: a four-train 1E DC electrical system, a non-1E DC electrical system, and a non-1E AC electrical system.

DESIGN CERTIFICATION AMENDMENT PROCESS

Mr. Jerry Wilson, NRO/DNRL, summarized the amendment process for certified designs. He mentioned the seven criteria that can form the basis for amending the rulmaking (e.g., Appendix D to 10 CFR Part 52). He noted that any modification the NRC imposes on a design certification rule will be applied to all plants referencing the certified design. (See Staff slides 1 and 2 attached)

DESIGN-CENTERED WORKING GROUP (DCWG) AND R-COL ISSUES

Mr. Peter Hastings, NuStart Energy described the design-centered review approach, identified the AP1000 design-centered working group (DCWG) members, and discussed DCWG coordination. He identified and described the various parts of a combined license (COL) application. He said that the COL applications will, as much as practicable, be based on "incorporation-by-reference" of DCD Revision 16 plus Technical Report TR-134. [TR-134 provides DCD post-Revision 16 impacts to support COL standardization.] He described how the Final Safety Analysis Report (FSAR) portion of the COL applications will contain left margin annotations to indicate where that information originally came from. Mr. Hastings explained that of the 175 COL information items (DCD Rev 16 Table 1.8-2), 48 will be closed in revision 16 to

the AP1000 DCD. Eighteen COL items will transition to COL holders. He said the remainder would be closed in the COL application (including three covered by operational program technical reports). Finally, Mr. Hastings described, going chapter-by-chapter through the FSAR, what material would be incorporated-by-referencing portions of the AP1000 DCD or resolved by the reference COL plant. He said that COL applications that incorporated information by reference from the AP1000 DCD would contain "hot-links" back to the applicable portion of the AP1000 DCD. However, subsequent COL applications would not have "hot links" to the reference COL application. (See NuStart Energy slides 1 through 35 attached)

SUBSEQUENT COL ISSUES

Mr. Hastings summarized issues that will need to be resolved by COL applicants on a plant-specific basis. He said that to the extent practicable COL applicants will resolve these issues using a common format, content, and level-of-detail. Some of the plant-specific features to be addressed by COL applicants include: circulating water pumps and pump intake structure, raw water pumps and pump intake structure, training facilities, administrative building, maintenance facilities, switch yards and rights-of-ways. (See NuStart Energy slides 36 through 41 attached)

Subcommittee's Action

None.

Documents Provided to the Subcommittee

1. New Reactor Licensing Applications (Site and Technology Selected), September 13, 2007
2. AP1000 COLA and DCD Review Schedule
3. The Westinghouse AP1000 Advanced Nuclear Plant, Plant Description
4. AP1000 Design Control Document (Revision 16) Presentation, June 19, 2007
5. AP1000 R-COLA FSAR Standardization DCWG Meeting Presentation, July 25, 2007

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NOTE : Additional details of this meeting can be obtained from a transcript of this meeting available for downloading or viewing on the Internet at http://www.nrc.gov/reading-rm/adams.html or http://www.nrc.gov/reading-rm/doc-collections/ can be purchased from Neal R. Gross and Co., 1323 Rhode Island Ave., N.W., Washington, DC 20005 (202) 234-4433.

jurisdiction should be served on Administrative Judge Bollwerk as follows: Administrative Judge G. Paul Bollwerk, Atomic Safety and Licensing Board Panel, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

Dated: Issued at Rockville, Maryland, this 9th day of October 2007.

E. Roy Hawkens,

Chief Administrative Judge, Atomic Safety and Licensing Board Panel.

[FR Doc. E7–20415 Filed 10–15–07; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[Docket No. IA–05–021–EA; ASLBP No. 05–839–02–EA]

Andrew Siemaszko (Enforcement Action); Notice of Reconstitution

Pursuant to 10 CFR 2.321, the Atomic Safety and Licensing Board in the above captioned *Andrew Siemaszko* proceeding is hereby reconstituted by appointing Administrative Judge Nicholas Trikouris in place of Administrative Judge Peter Lam, whose retirement from the Panel has rendered him unavailable to participate in this proceeding (10 CFR 2.313(c)).

In accordance with 10 CFR 2.302, henceforth all correspondence, documents, and other material relating to any matter in this proceeding over which this Licensing Board has jurisdiction should be served on Administrative Judge Trikouris as follows: Administrative Judge Nicholas G. Trikouris, Atomic Safety and Licensing Board Panel, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001.

Issued at Rockville, Maryland this 9th day of October 2007.

E. Roy Hawkens,

Chief Administrative Judge, Atomic Safety and Licensing Board Panel.

[FR Doc. E7–20419 Filed 10–15–07; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards (ACRS) Subcommittee Meeting on Planning and Procedures; Notice of Meeting

The ACRS Subcommittee on Planning and Procedures will hold a meeting on October 31, 2007, Room T–2B1, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance, with the exception of a portion that may be closed pursuant to 5 U.S.C. 552b(c)(2) and (6) to discuss organizational and personnel matters that relate solely to the internal personnel rules and practices of the ACRS, and information the release of which would constitute a clearly unwarranted invasion of personal privacy.

The agenda for the subject meeting shall be as follows:

Wednesday, October 31, 2007, 2:30 p.m. Until the Conclusion of Business

The Subcommittee will discuss proposed ACRS activities and related matters. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Officer, Mr. Sam Duraiswamy (telephone: 301–415–7364) between 7:30 a.m. and 4 p.m. (ET) five days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted only during those portions of the meeting that are open to the public. Detailed procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on September 26, 2007 (72 FR 54695).

Further information regarding this meeting can be obtained by contacting the Designated Federal Officer between 7:30 a.m. and 4 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes in the agenda.

Dated: October 10, 2007.

Cayetano Santos,

Chief, Reactor Safety Branch.

[FR Doc. E7–20416 Filed 10–15–07; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Advisory Committee on Reactor Safeguards (ACRS) Meeting of the Subcommittee on AP1000; Notice of Meeting

The ACRS Subcommittee on AP1000 will hold a meeting on October 31, 2007, Room T–2B3, 11545 Rockville Pike, Rockville, Maryland.

The entire meeting will be open to public attendance.

The agenda for the subject meeting shall be as follows:

Wednesday, October 31, 2007—8 a.m. Until the Conclusion of Business

The Subcommittee will meet with representatives of the NRC Staff, Westinghouse Electric Corporation (*W*), and the AP1000 Design Centered Working Group (DCWG) to discuss the AP1000 design, proposed revisions to 10 CFR Part 52 Appendix D, issues to be resolved collectively for Combined License (COL) applicants referencing the AP1000 certified design by the AP1000 DCWG, and issues that will be resolved on a plant-specific basis by COL applicants. The Subcommittee will hear presentations by and hold discussions with representatives of the NRC staff, *W*, the AP1000 DCWG, and other interested persons regarding this matter. The Subcommittee will gather information, analyze relevant issues and facts, and formulate proposed positions and actions, as appropriate, for deliberation by the full Committee.

Members of the public desiring to provide oral statements and/or written comments should notify the Designated Federal Officer, David C. Fischer (telephone 301/415–6889) 5 days prior to the meeting, if possible, so that appropriate arrangements can be made. Electronic recordings will be permitted. Detailed procedures for the conduct of and participation in ACRS meetings were published in the **Federal Register** on September 26, 2007 (72 FR 54695).

Further information regarding this meeting can be obtained by contacting the Designated Federal Officer between 7:15 a.m. and 4 p.m. (ET). Persons planning to attend this meeting are urged to contact the above named individual at least two working days prior to the meeting to be advised of any potential changes to the agenda.

Dated: *October 10, 2007.*

Cayetano Santos,

Chief, Reactor Safety Branch.

[FR Doc. E7–20432 Filed 10–15–07; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

Sunshine Federal Register Notice

DATES: Weeks of October 15, 22, 29, November 5, 12, 19, 2007.

PLACE: Commissioners' Conference Room, 11555 Rockville Pike, Rockville, Maryland.

STATUS: Public and Closed.

MATTERS TO BE CONSIDERED:

Week of October 15, 2007

There are no meetings scheduled for the Week of October 15, 2007.

FINAL AGENDA WITH MARKUPS

Advisory Committee on Reactor Safeguards
AP1000 Subcommittee
AP1000 Design and AP1000 Combined License Applications
October 31, 2007
Rockville, Maryland
T-2 B3

-PROPOSED AGENDA-

Cognizant ACRS Staff Engineer: David C. Fischer DCF@NRC.GOV (301) 415-6889

	Topics	Lead	Presentation Time
I	Introduction	Dr. Mario Bonaca, ACRS Mr. E. Cummins, W	8:00 am - 8:05 am
II	AP1000 ~~Technology~~ Certification Overview	Andrea Sterdis, W	8:~~05~~ 10 am - 8:~~35~~ 45 am
III	AP1000 Technology Overview Passive Systems Defense-in-Depth Systems Instrumentation and Controls Secondary Systems ← Structures Electrical Systems Fire Protection	Jim Winters, W Terry Schultz, W Andrea Sterdis, W	8:~~35~~ 45 am - 10:15 am 10:30 am - 11:20 am
	BREAK		10:15 am - 10:30 am
IV	Proposed Revisions to the AP1000 Certified Design	Andrea Sterdis, W	~~10:30 am - 11:15 am~~ DCF Incorporated into AP1000 DC Overview
V	Part 52 Amendment Process	Jerry Wilson, NRO	11:~~15~~ 20 am - 11:~~30~~ 32 pm
	LUNCH		11:~~30~~ 32 pm - 12:~~15~~ 21 pm
VI	Issues being collectively addressed by the AP 1000 Design-Centered Working Group	Peter Hastings, NuStart Energy	12:~~15~~ 21 pm - 1:~~45~~ 25 pm
VII	Plant specific issues to be addressed by individual COL applicants	P. Hastings ~~Amy Aughtman~~, DCF SICK Southern Nuclear	1:~~45~~ 18 pm - ~~2:15~~ 1:25 pm
VIII	Closing Comments/Adjourn	~~Andrea Sterdis, W~~ DCF Dr. Mario Bonaca, ACRS	~~2:15~~ 1:25 pm - ~~2:20~~ 1:28 pm

NOTE:

- 100 copies of the presentation materials to be provided to the Subcommittee.

Revised: October 3, 2007

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON ESBWR

October 31, 2007
Date

NRC STAFF SIGN IN FOR ACRS MEETING

PLEASE PRINT

	NAME	NRC ORGANIZATION
1	Billy Gleaves	NRO/DNRL
2	Ellery Coffman	NRO/DNRL
3	Joe Sebrosky	NRO/DNRL
4	Eileen McKenna	NRO/DNRL
5	JERRY WILSON	NRO/DNRC
6	Mark Maxin	NRO/DSRA
7	MALCOLM PATTERSON	NRO/DSRA
8	DON DUBE	NRO/DSRA
9	Yeon-Ki Chung	NRR/DLR
10	David H. Jaffe	NRO/DNRL
11	Serita Sanders	NRO/DNRL
12	Mike Lee	ACNW+M
13	Tanya Simms	DNRL
14	Lynn Mrowca	NRO/DSRA
15	MICHAEL NIERODICKI	NRO/DNRL
16	WEIJUN WANG WEI~~BONG~~ JUN	NRO/DSER
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ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SUBCOMMITTEE MEETING ON AP1000

October 31, 2007
Date

PLEASE PRINT

	NAME	AFFILIATION
1	ED CUMMINS	WESTINGHOUSE
2	NEIL HAGGERTY	NUSTART
3	Peter Hastings	NuStart
4	TERRY SCHULZ	WESTINGHOUSE
5	Bruce Beacham	ISL
6	~~Tanya Simms~~	~~Life~~
7	Adam Levin	AREVA
8	Jim Winters	Westinghouse
9	Jennifer Bowie	GEH
10	Joseph H Mihalcik	Uni Stan Nuclear Energy
11	Eddie R Grant	NuStart / EXCEL
12	Phillip Ray	TVA
13	Leslie Kass	NEI
14	Charles Brinkman	Westinghouse
15	Deann Raleigh	US Scientech
16	RICHARD GRUMBIR	NUSTART /Excel
17	Russ Bell	NEI
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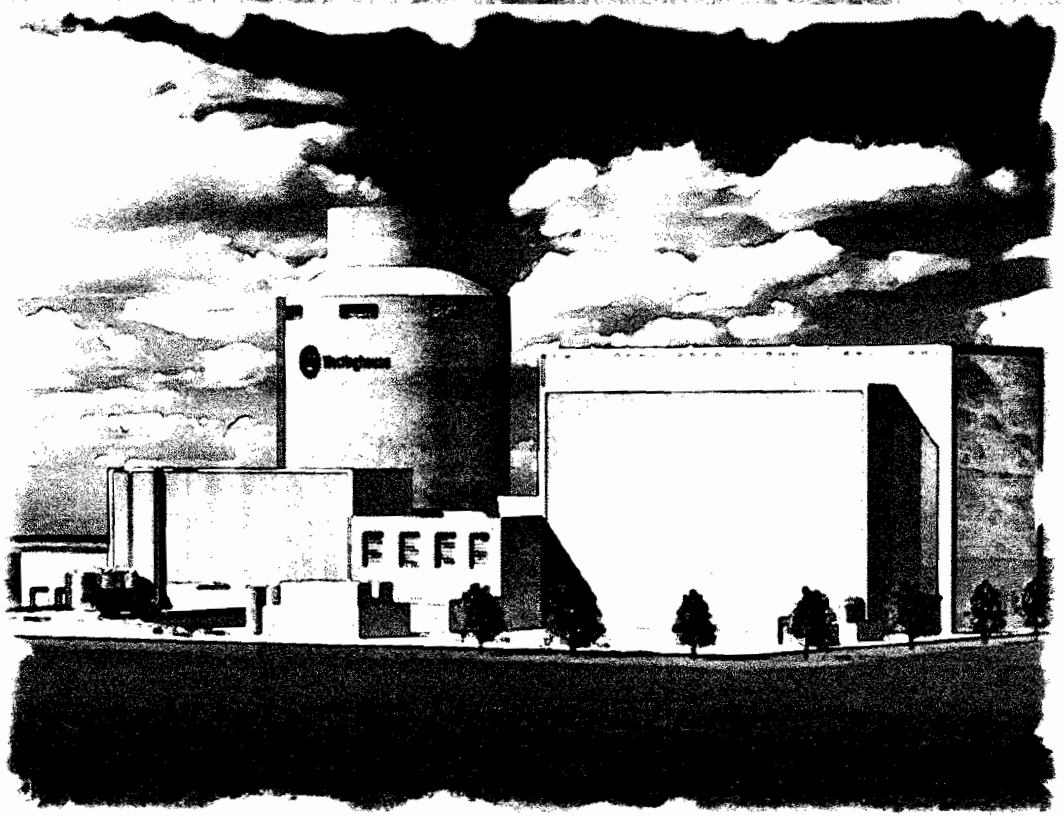
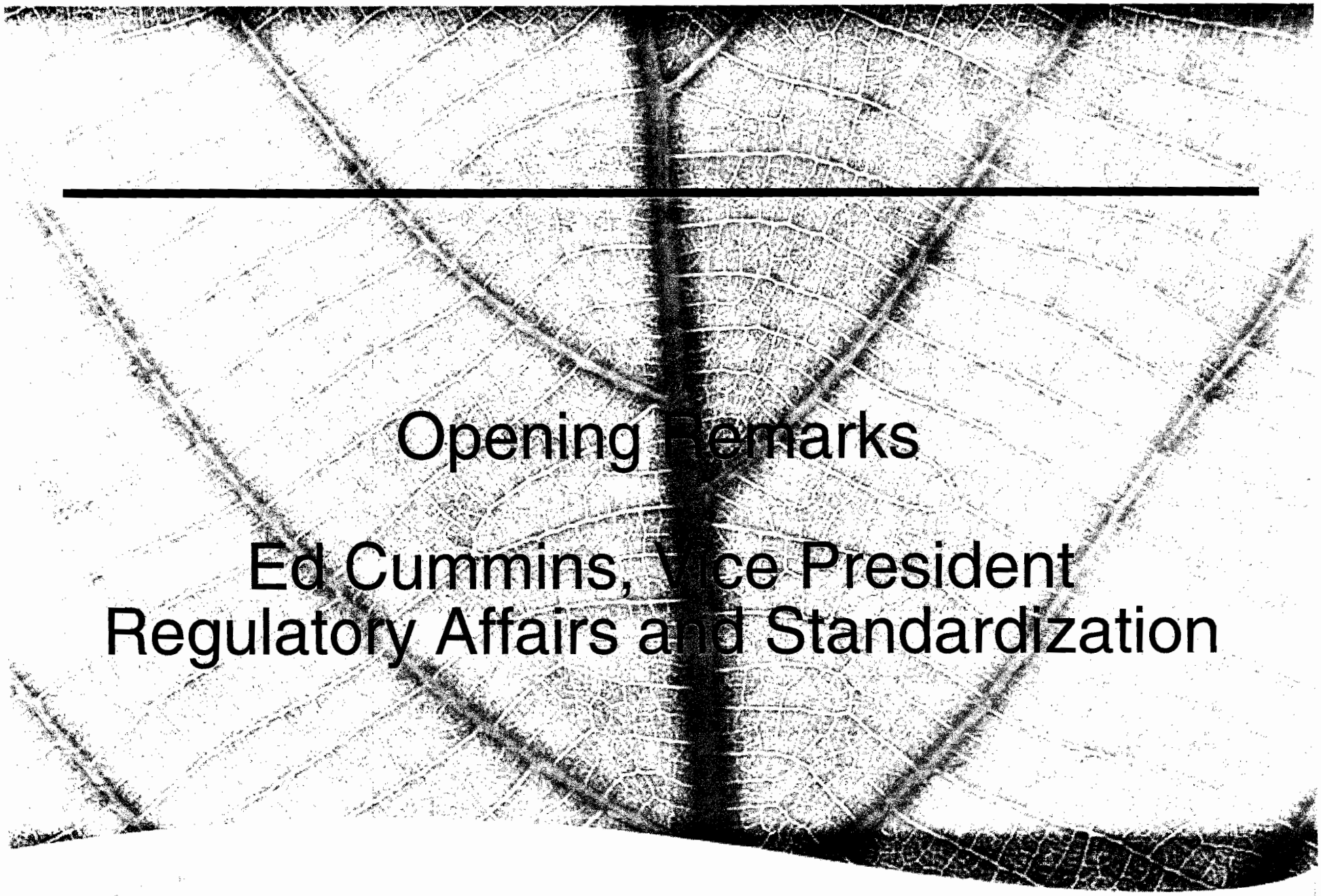
AP1000
Presentation to the ACRS

October 31, 2007



AP1000

Westinghouse



Opening Remarks

Ed Cummins, Vice President
Regulatory Affairs and Standardization

Introduction

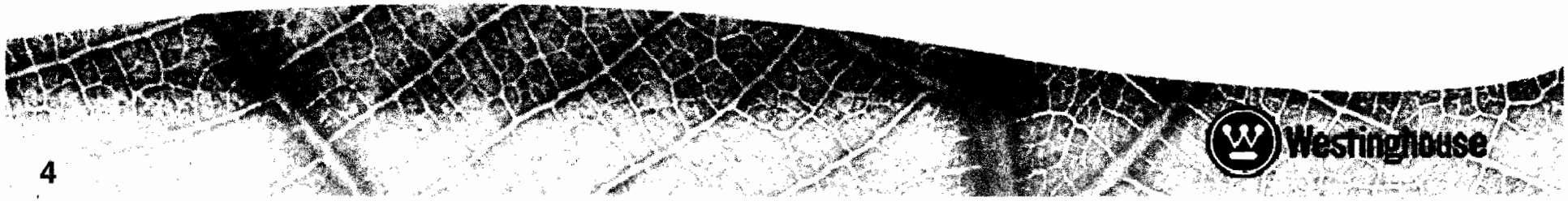
Andrea Sterdis, Manager
AP1000 Licensing and Customer Interface

October 31, 2007

Agenda

AP1000

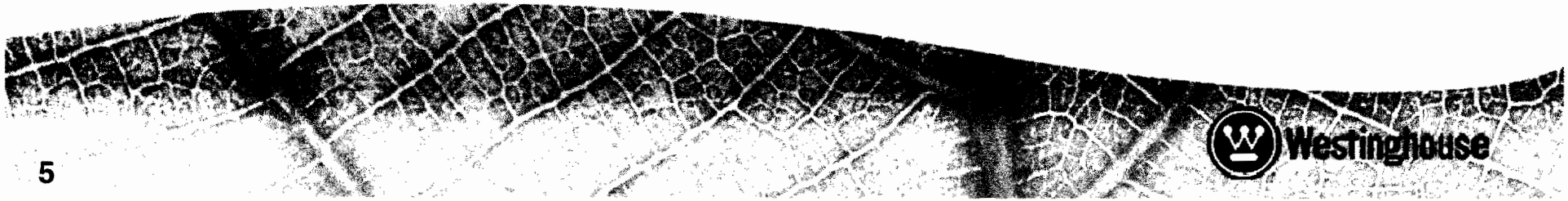
- 8:15 Design Certification Overview — Andrea Sterdis
- 8:45 Technology Overview — Jim Winters
- 9:10 Passive Safety Systems — Terry Schulz
- 9:40 Defense-In-Depth — Terry Schulz
- 9:55 I&C — Andrea Sterdis
- 10:15-10:30 BREAK
- 10:30 Structures — Jim Winters
  - Secondary Systems
  - Electrical Systems
  - Fire Protection



Agenda (continued)

AP1000

- 11:15 Design Certification Amendment Process — Jerry Wilson
- 11:30-12:15 LUNCH
- 12:15 DCWG and R-COLA Issues — Peter Hastings
- 1:45 Subsequent COLA — Amy Aughtman
- 2:15 Wrap-up



Design Certification Overview

Andrea Sterdis

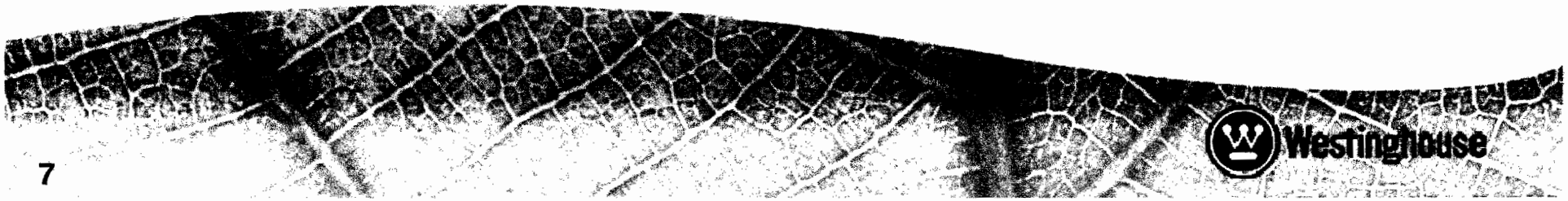
October 3[illegible] 2007

AP1000

Westinghouse

AP1000 Design Certification Application AP1000

- Submitted DCD and PRA March 28, 2002
  - AP1000 Design Control Document (DCD) – 7000 pages
    - Tier 1 Information
      - Inspections, Tests, Analysis and Acceptance Criteria (ITAAC)
    - Tier 2 - Information
      - Standard Safety Analysis Report
      - Technical Specifications
      - PRA Insights
  - AP1000 PRA Report submitted – 4500 pages
    - Detailed Level 1, 2, 3 including shutdown, fires, floods
    - Addresses severe accident phenomenum



Design Certification Rulemaking

The United States
Nuclear Regulatory Commission

hereby certifies the

AP1000 Standard Plant Design

as set forth in Appendix D of 10 CFR Part 52
Dated the 23rd day of January 2006.

Director
Office of Nuclear Reactor Regulation

Chairman
U.S. Nuclear Regulatory Commission

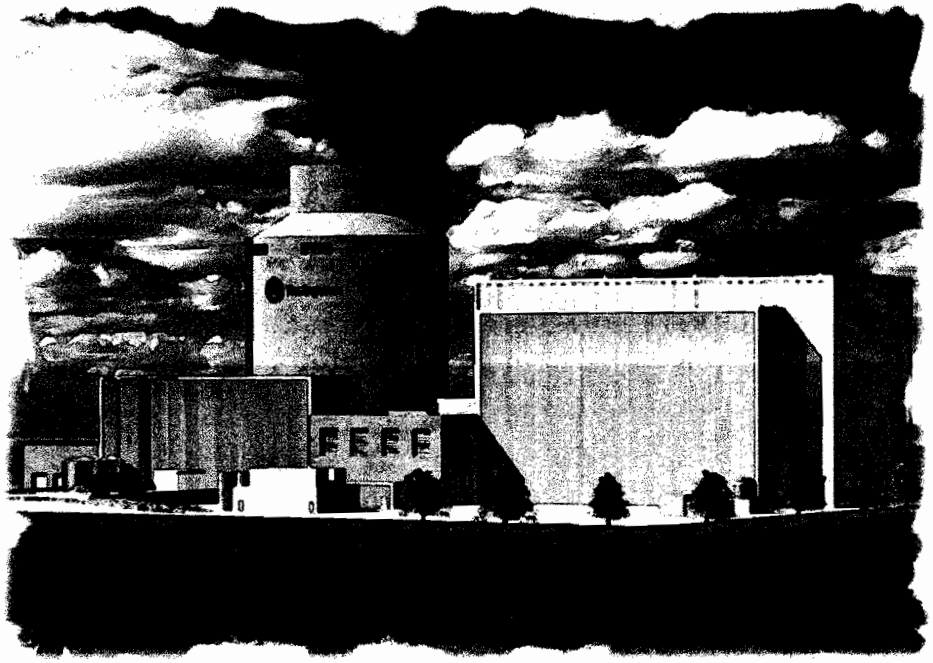
Design Certification Approved December 30, 2005

Westinghouse

Design Certification

AP1000

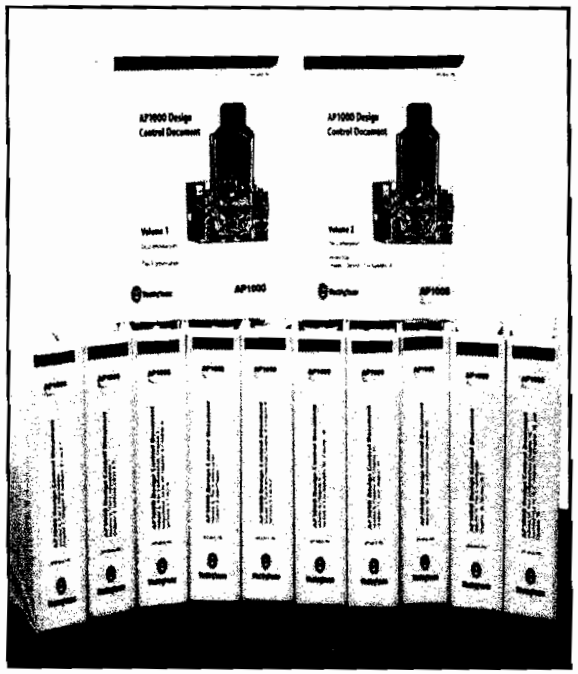
- Provides Licensing Finality for Design
- Establishes Regulatory Bases
- Identifies COL Information Items

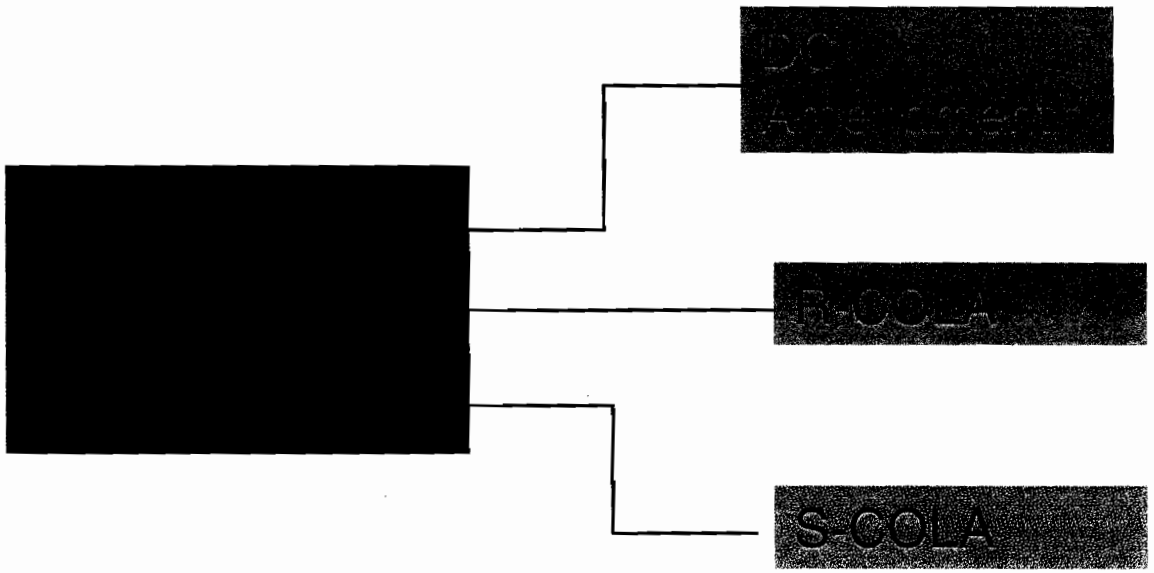


Westinghouse

COLA Content Defined by DC Rule

AP1000





Westinghouse

Technical Report Generation

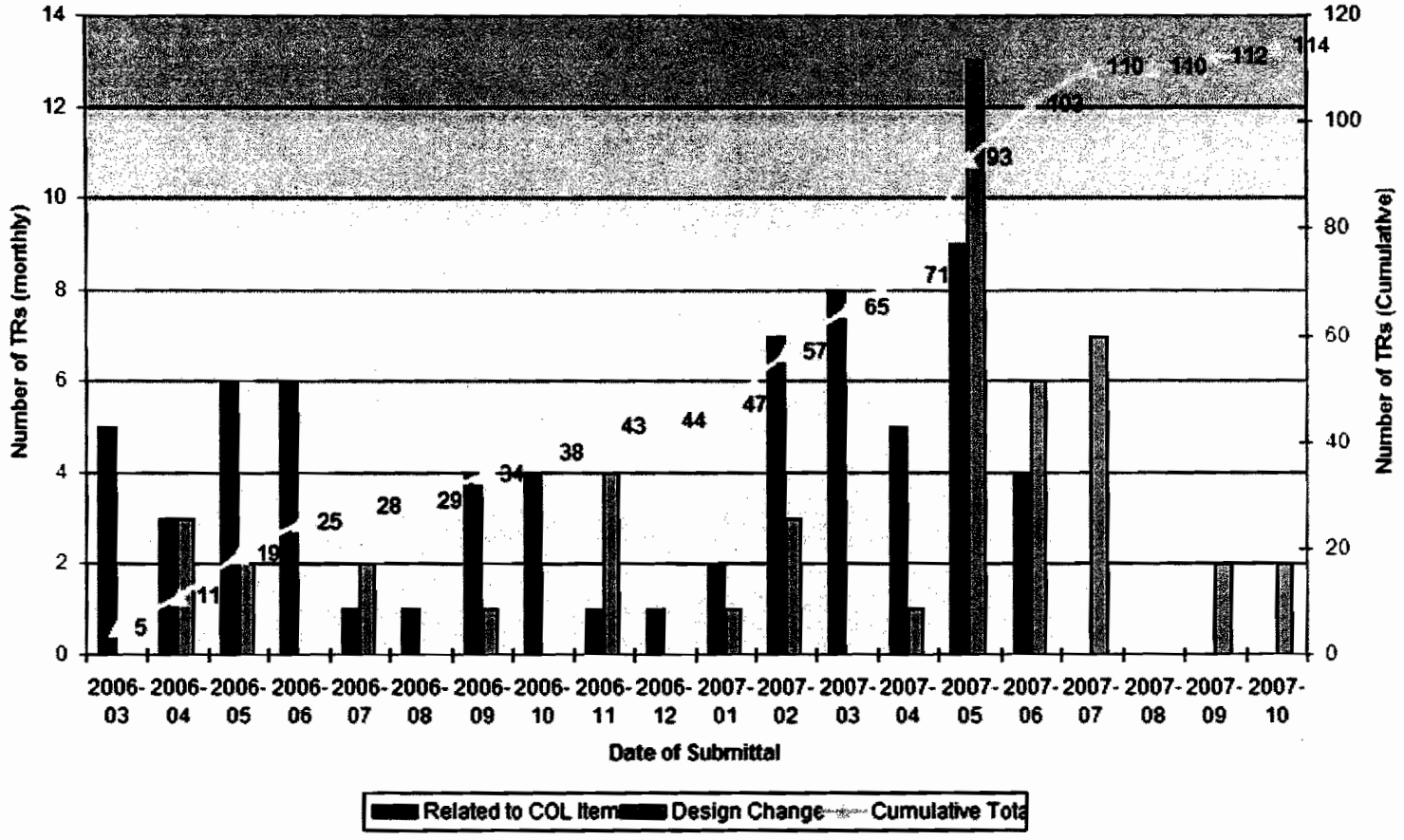
AP1000

- Standard Design COL Information Items
- Design ITAAC areas
  - Piping
  - I&C (PMS Design)
  - Main Control Room/Human Factors Engineering
- Limited number of design changes
  - Design Finalization
  - Customer Input—Standard Plant

Technical Report Submittals

AP1000

AP1000 TRs Submitted to NRC (excluding Revisions)

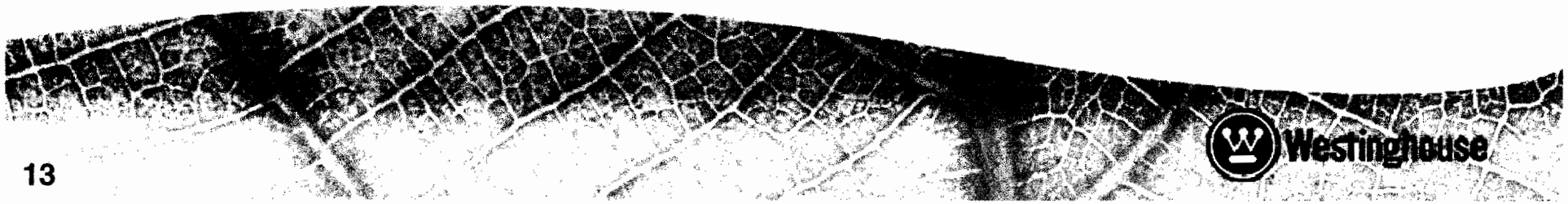


Westinghouse

Technical Report Subjects

AP1000

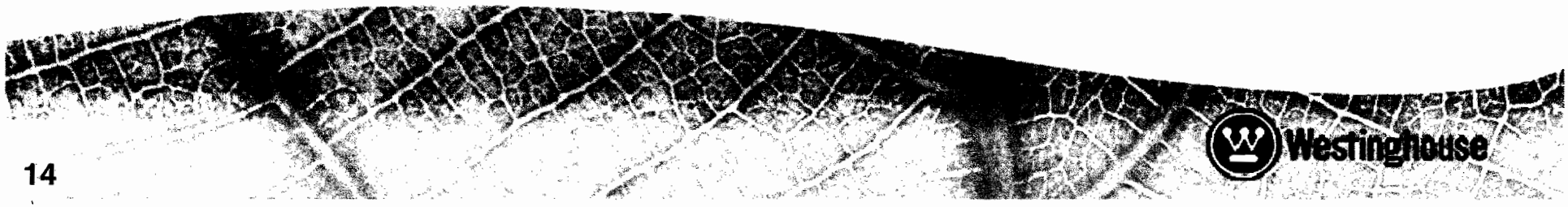
- 63 to address COL Information Items
- 47 to justify design changes that impact DCD content
- 2 to address standardization for COLA content
- TR 135 provides SAMDA confirmation for design certification amendment
- TR 134 provides DCD Post-Revision 16 impacts to support COLA standardization



NRC Status of TR Reviews

AP1000

- Approximately 500 RAIs received
  - Varying levels of safety/regulatory significance
  - 460 responses provided
  - Less than 40 still outstanding
  - Approximately 120 resulting in TR revisions
  - Approximately 60 resulting in DCD revisions



Design Certification Amendment

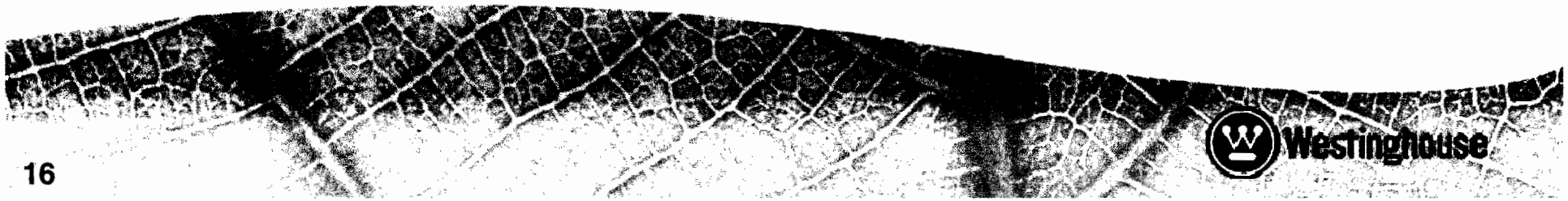
AP1000

- Application submitted May 29, 2007 (DCD Revision 16)
- 10 CFR 52 Revision Effective September 27, 2007
- Transition from Technical Report Review to Integrated DCD Revision Review
- Acceptance Review Issues
  - Technical
  - Process
- Acceptance Review to Begin November 5, 2007

Design Certification Amendment

AP1000

- Extension of seismic spectra to soil conditions
- Revision of buildings for enhanced protection
- Update of fuel design approach
- Protection system I&C update
- Update of electrical system
- Progress on HFE
- Turbine manufacturer change



Post-Revision 16 Configuration Control

AP1000

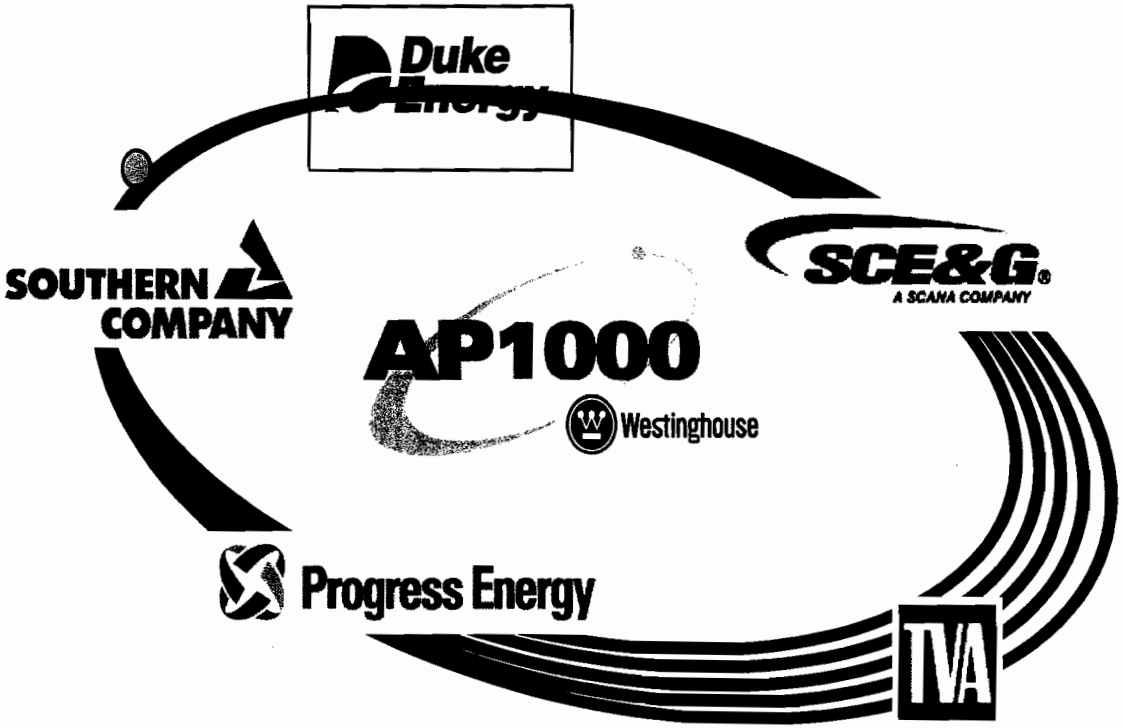
- AP1000 COL Applications Reference DCD Revision 16 + Post-Revision 16 Changes
  - Editorial/Consistency Impacts
  - Subsequent RAIs and Technical Report Impacts
  - COLA Standardization Impacts
- TR 134 Identifies Post-Revision 16 Changes

Results: COLA Standardization Minimal Departures

AP1000 DCWG Teamwork

AP1000

- Licensing Issues
- Design Certification Amendment
- R-COLA
- S-COLA



Result is Licensing Standardization

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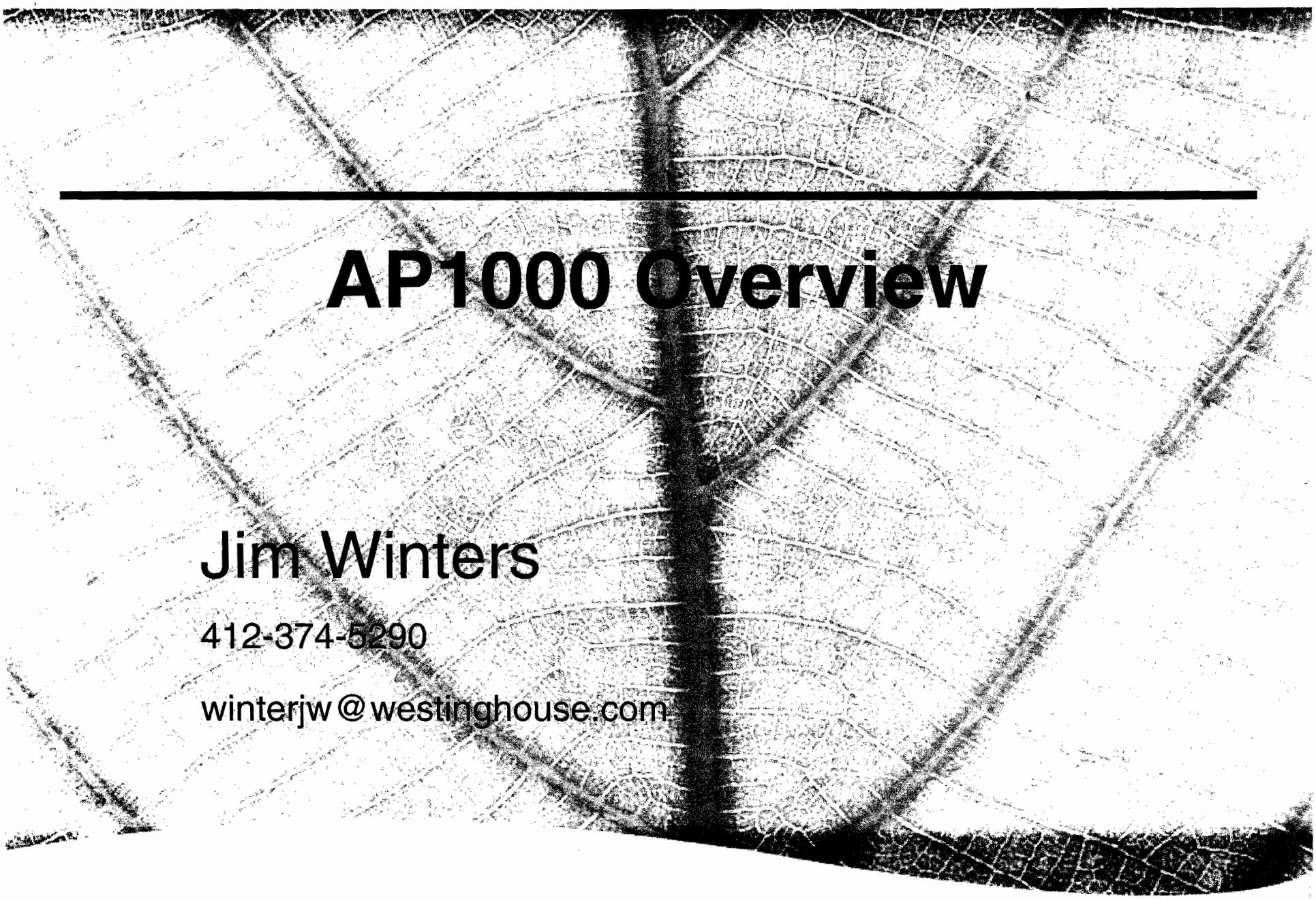

AP1000 Overview

Jim Winters

412-374-5290

winterjw@westinghouse.com

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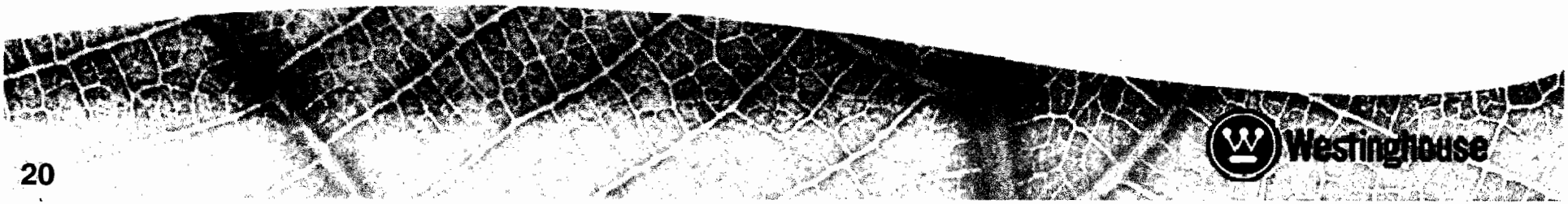
AP1000 is Different



AP1000 is Different

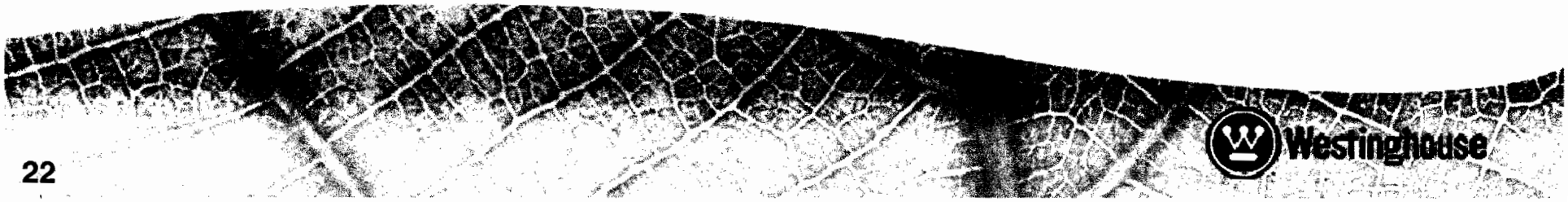
AP1000

- Plant
  - Entire plant
  - Passive design
- Philosophy
  - One design
  - No changes

The Plant

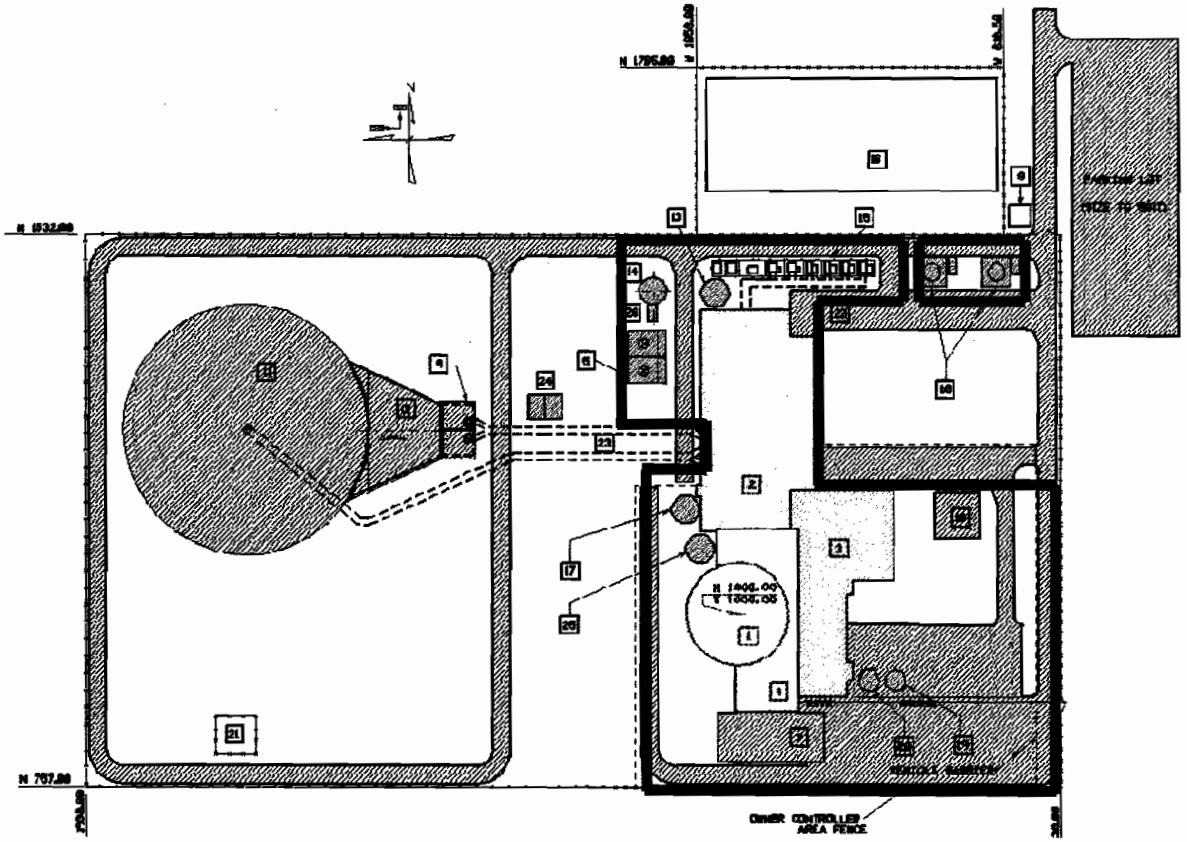
AP1000

- Our Design Certification includes:
  - Containment
  - Auxiliary Building
  - Annex Building
  - Turbine Building
  - Radwaste Building
  - Diesel Generator Building
  - Everything in buildings
  - Associated yard structures
- It is based upon:
  - Passive Design
  - Passive Core Cooling
  - Passive Control Room Habitability
  - Passive Containment Cooling
  - Passive Seismic Fire Protection
  - Passive Security Features



Entire Plant

AP1000



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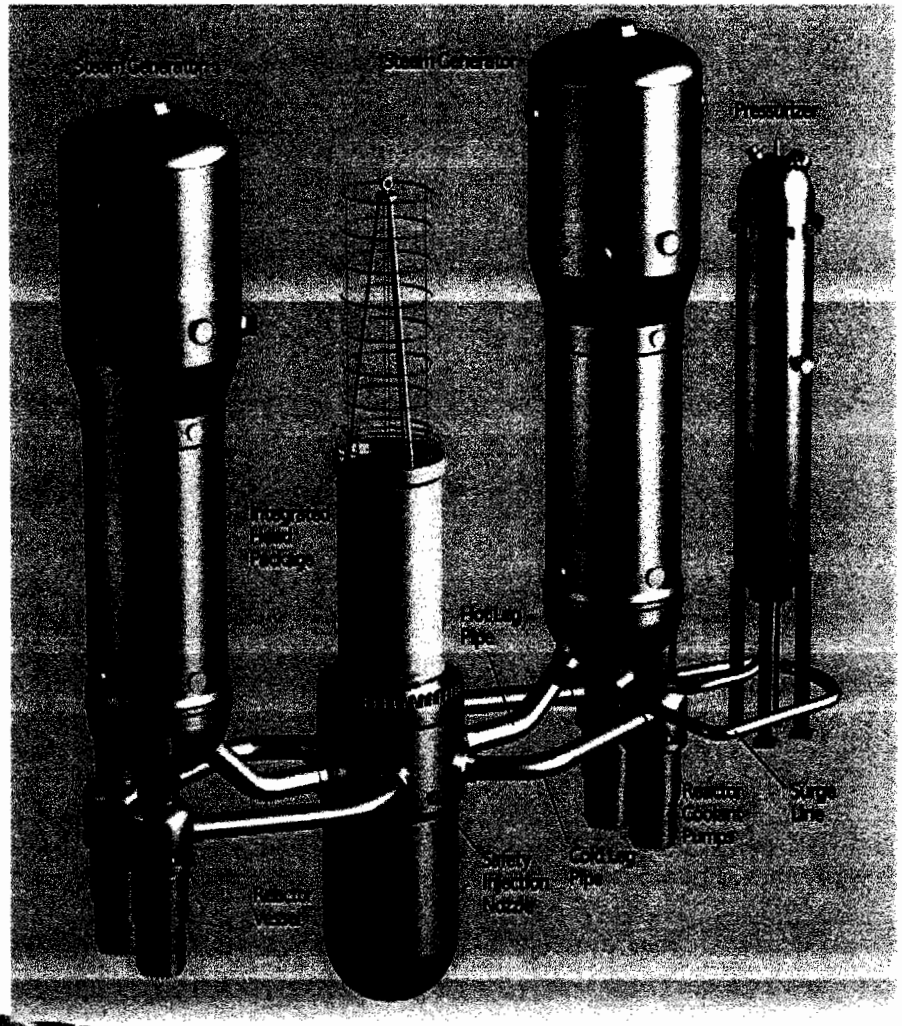
Reactor Coolant System

AP1000

- Reactor Vessel
  - W 3XL Vessel
  - No bottom-mounted instrumentation
  - Improved materials - 60 yr life
- Δ125 Steam Generators
  - ANO RSG
- Reactor Coolant Pump
  - Canned motor pumps
    - AP600, early commercial reactors
- Simplified Main Loop
  - Same as AP600
  - Reduced welds / supports



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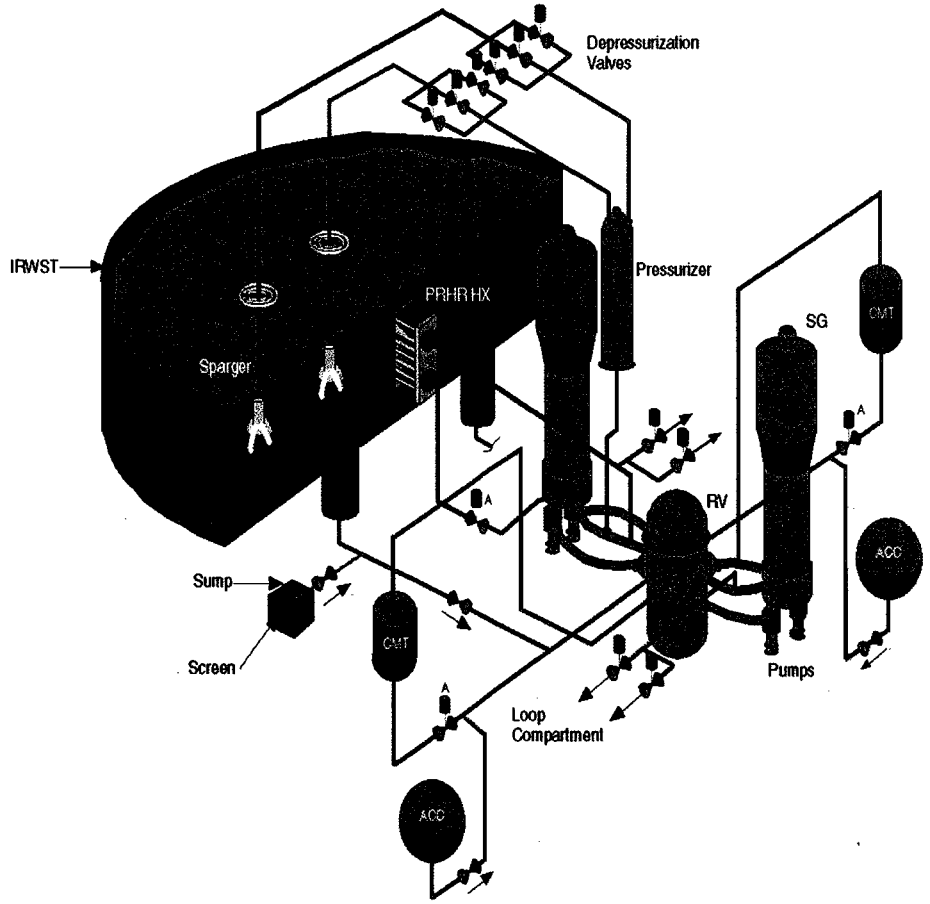
AP1000 Passive Core Cooling System

AP1000



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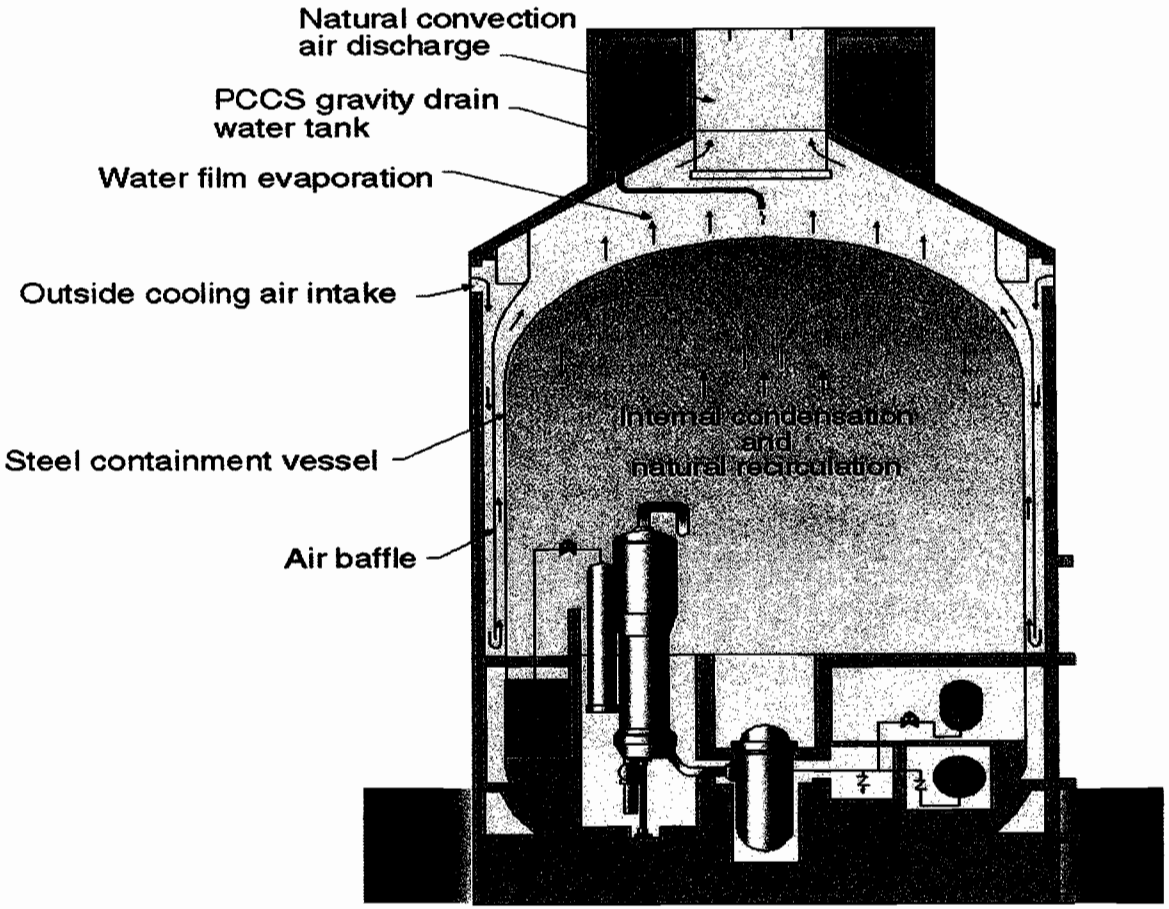
Passive Containment Cooling System

AP1000



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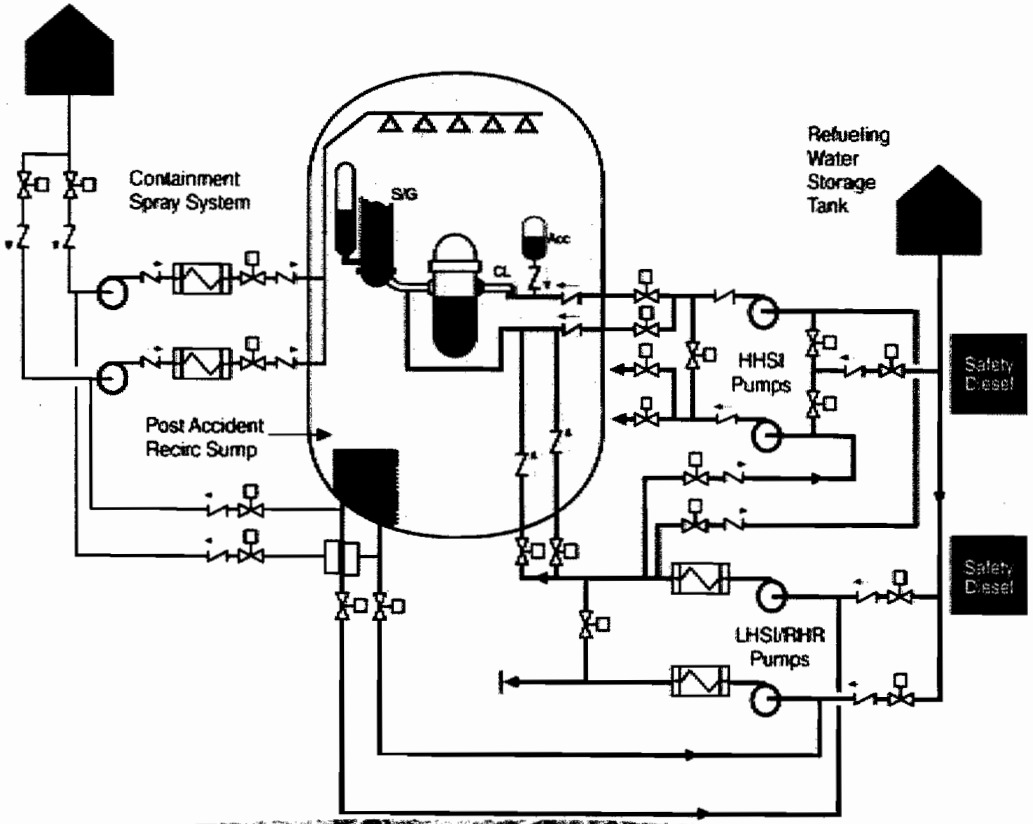
Simplification of Safety Systems Dramatically Reduces Building Volumes

AP1000

Standard PWR



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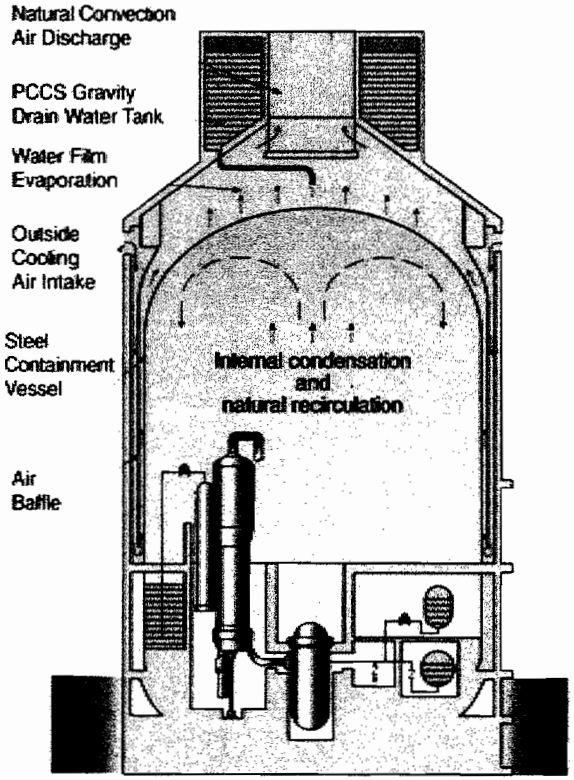

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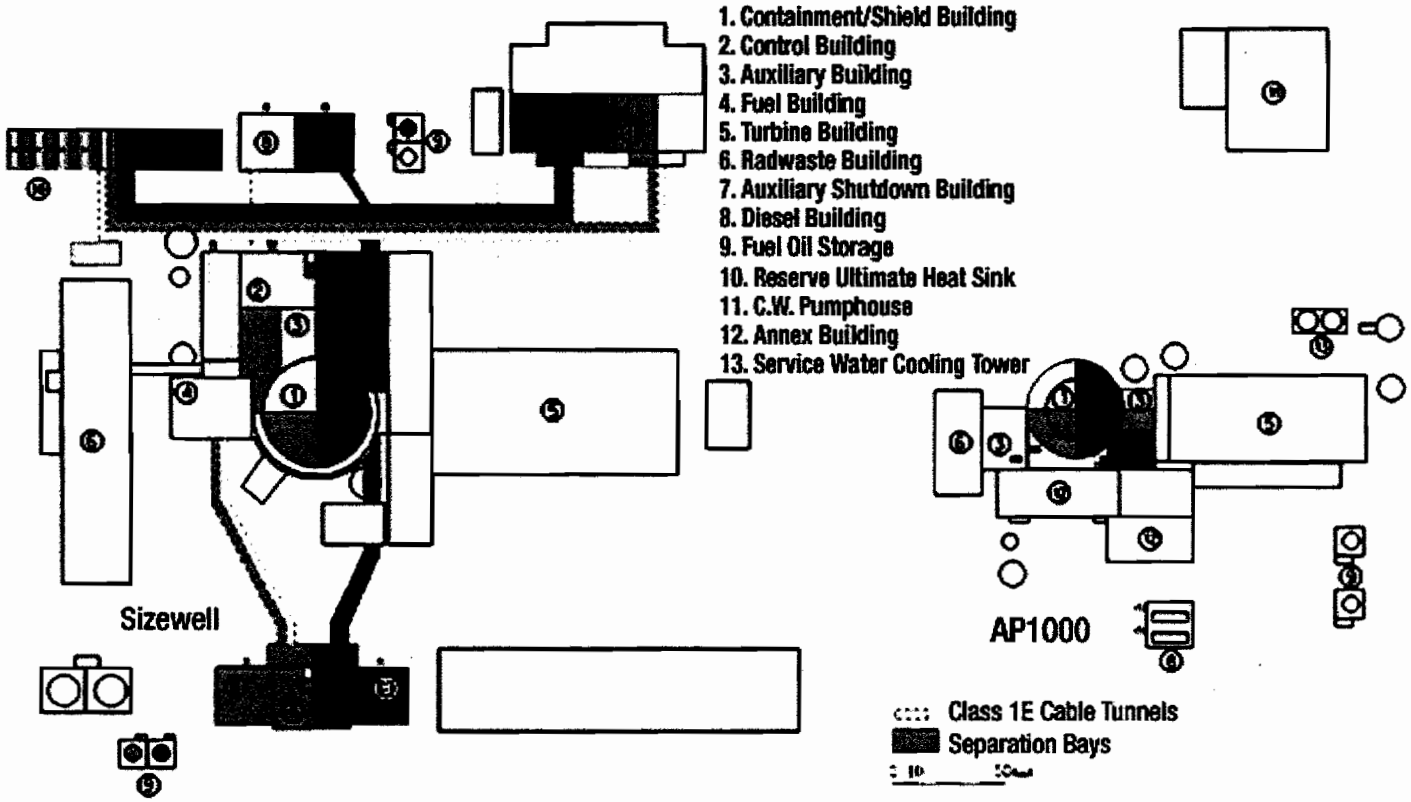
AP1000 Smaller and Dramatically Simpler than Evolutionary Plants

AP1000



Sizewell B **AP1000**

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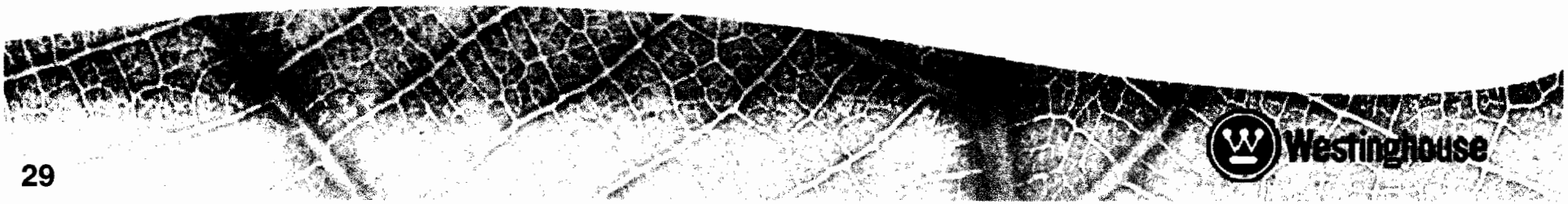
The Philosophy

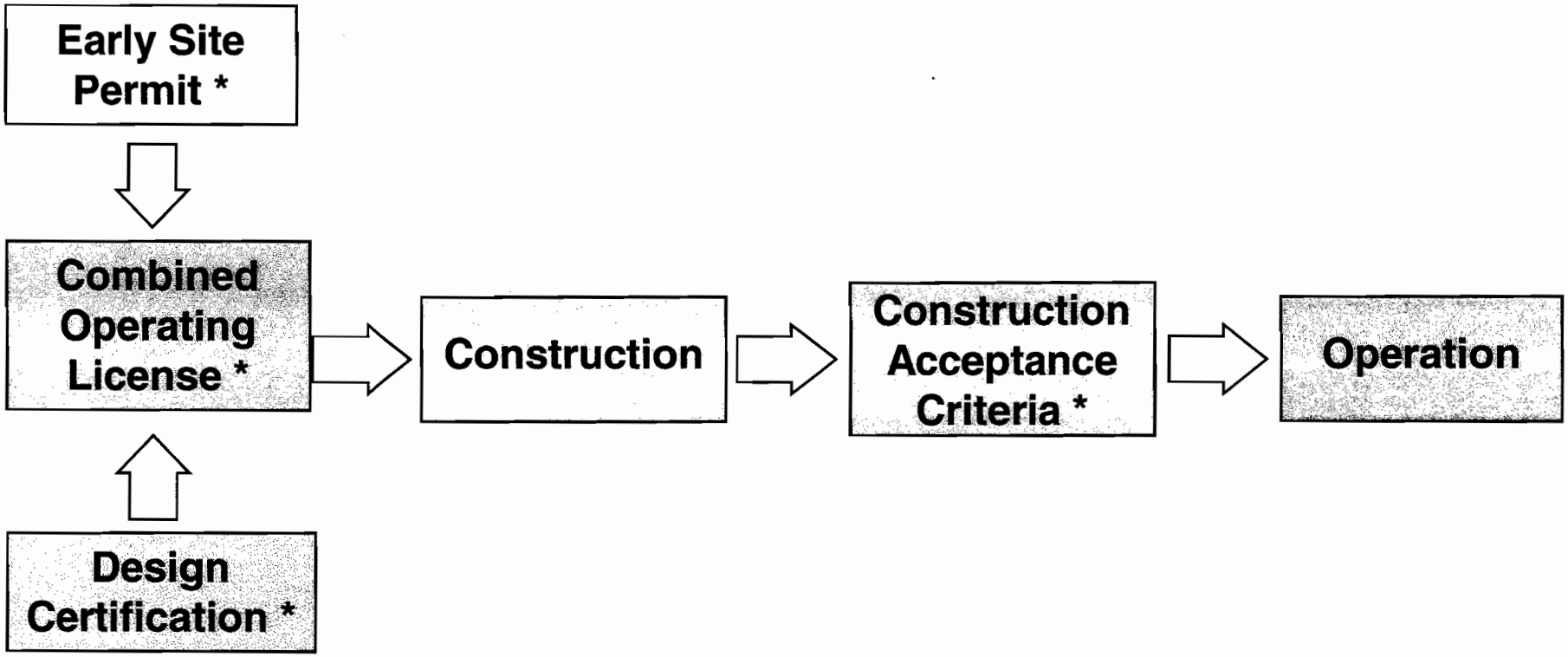
AP1000

- One Design (Class Mentality)
  - One Design Certification
  - 24 potential plants today (12 in the U.S.)
  - Buyers Group in the U.S.
  - Single, active, multi-COLA Design Centered Working Group
  - Design meets URD



Regulatory Process

AP1000



* Public Comment Opportunity

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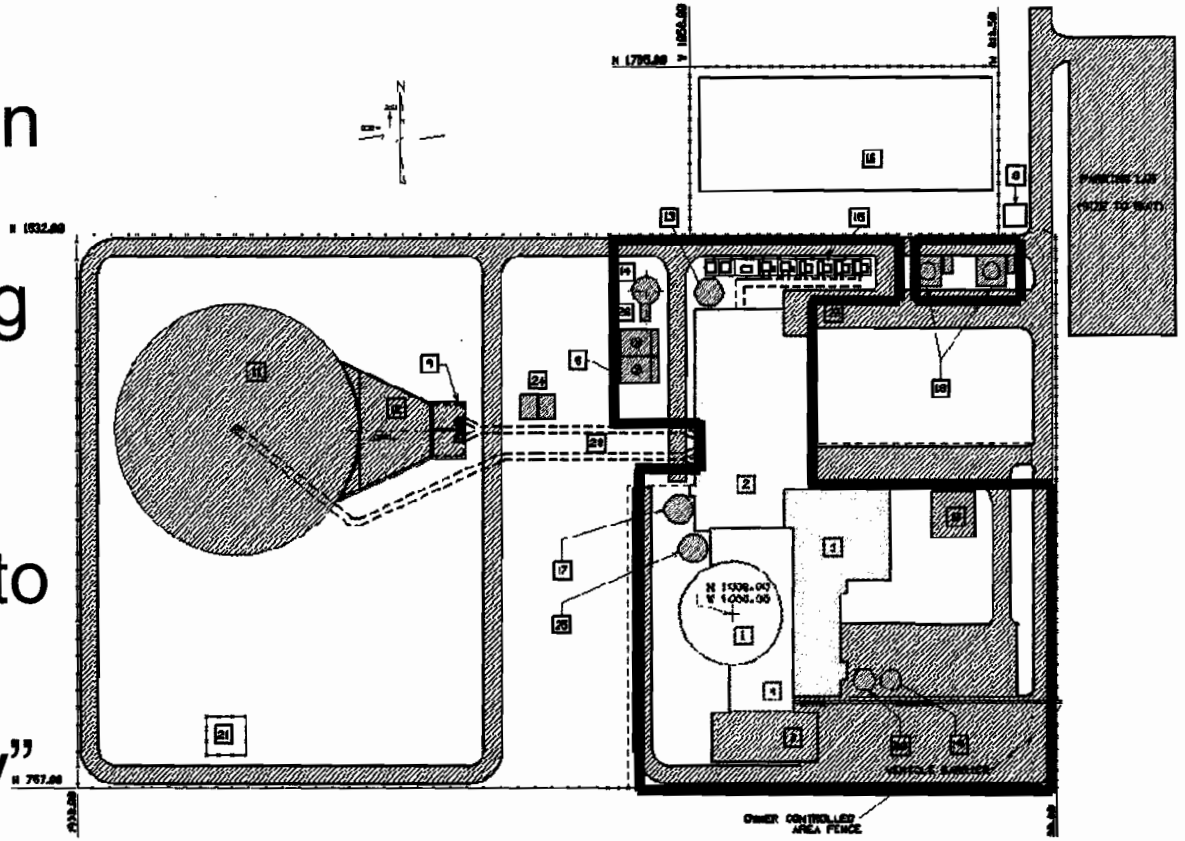
AP1000 Design Certification

AP1000

- Goal of AP1000 Design Certification was to achieve maximum licensing basis closure for design aspects
- Scope not limited to NSSS
- Outside "boundary" is site specific and non safety



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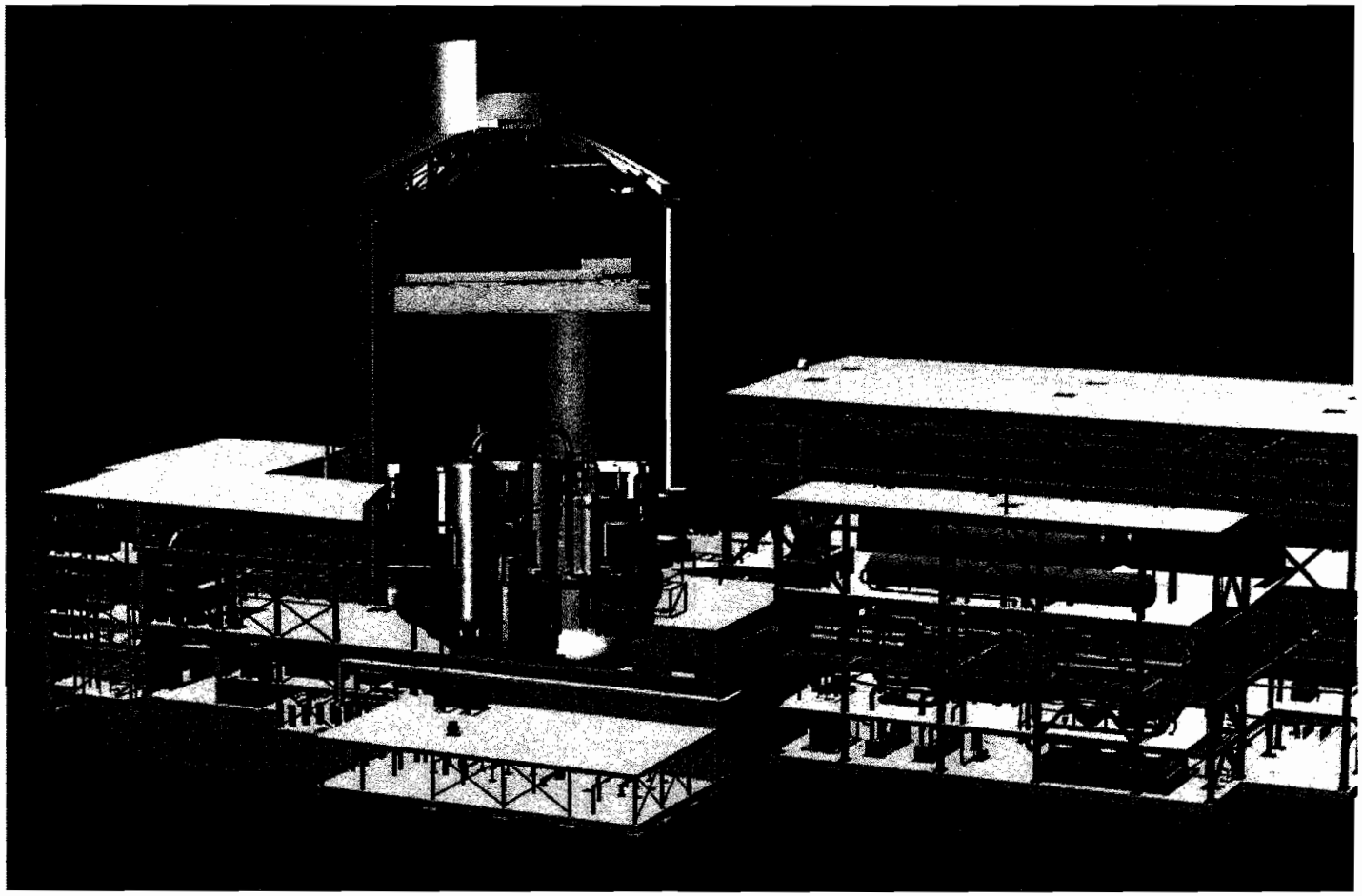
The Philosophy (cont.)

- "No" changes
  - Design must be safe and correct
  - Design Certification is for entire plant
  - Each difference from Design Certification must be identified in each COL (added NRC and public review)
  - Additions and additional details are not changes
  - We have a graded approach to design change "burden"

AP1000 3D Model

AP1000



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AP1000 Passive Systems

Terry Schulz

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AP1000 Approach to Safety

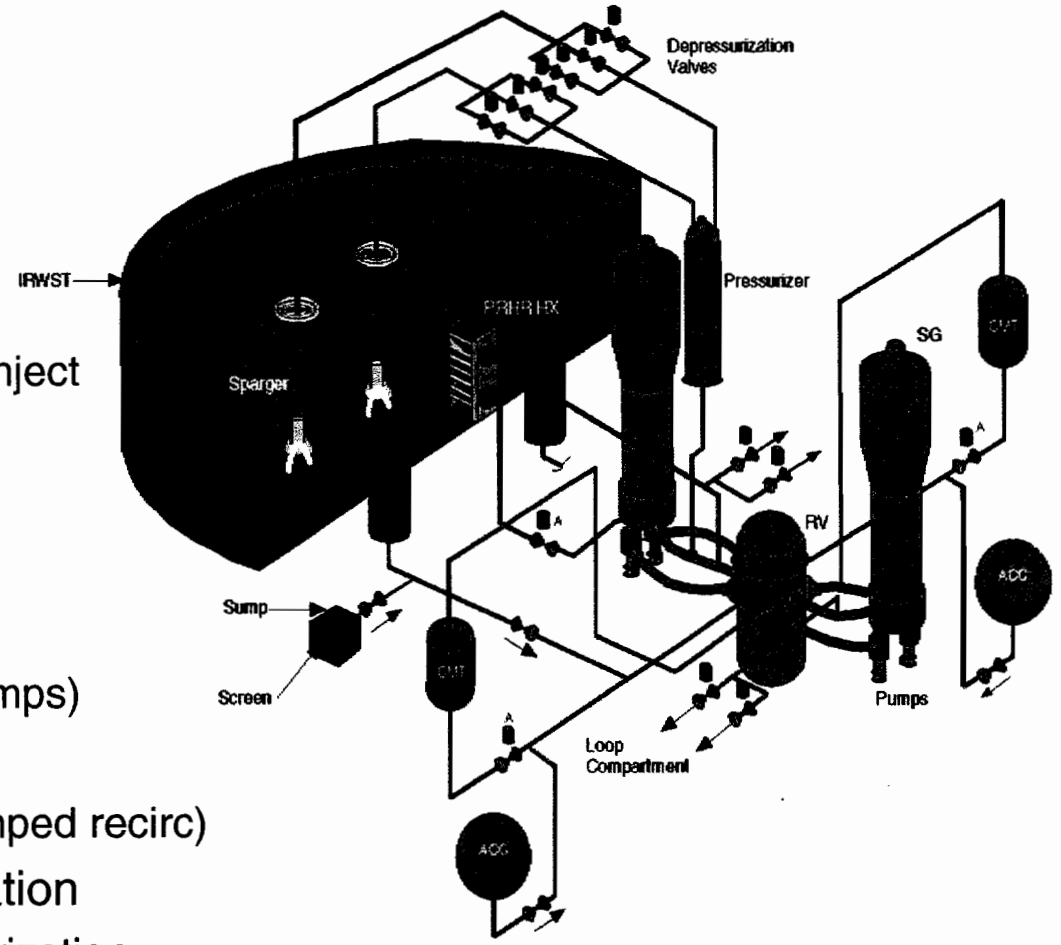
AP1000

- Passive Safety-Related Systems
  - Use "passive" process only, no active pumps, diesels, ...
    - One time alignment of valves
    - No support systems required after actuation
      - No AC power, cooling water, HVAC, I&C
  - Greatly reduced dependency on operator actions
  - Mitigate design basis accidents without nonsafety systems
  - Meet NRC PRA safety goals without use of nonsafety systems
- Active Nonsafety-Related Systems
  - Reliably support normal operation
    - Redundant equipment powered by onsite diesels
  - Minimize challenges to passive safety systems
  - Not required to mitigate design basis accidents

AP1000 Passive Core Cooling System

AP1000

- PRHR HX
  - Natural circ. heat removal
    - Replaces AFWS pumps
- Passive Safety Injection
  - Core Makeup Tanks
    - Full RCS pres, natural circ. inject
    - Replaces HHSI pumps
  - Accumulators
    - Similar to current plants
  - IRWST Injection
    - Low pres (replaces LHSI pumps)
  - Containment Recirculation
    - Gravity recirc. (replaces pumped recirc)
  - Automatic RCS Depressurization
    - Staged, controlled depressurization



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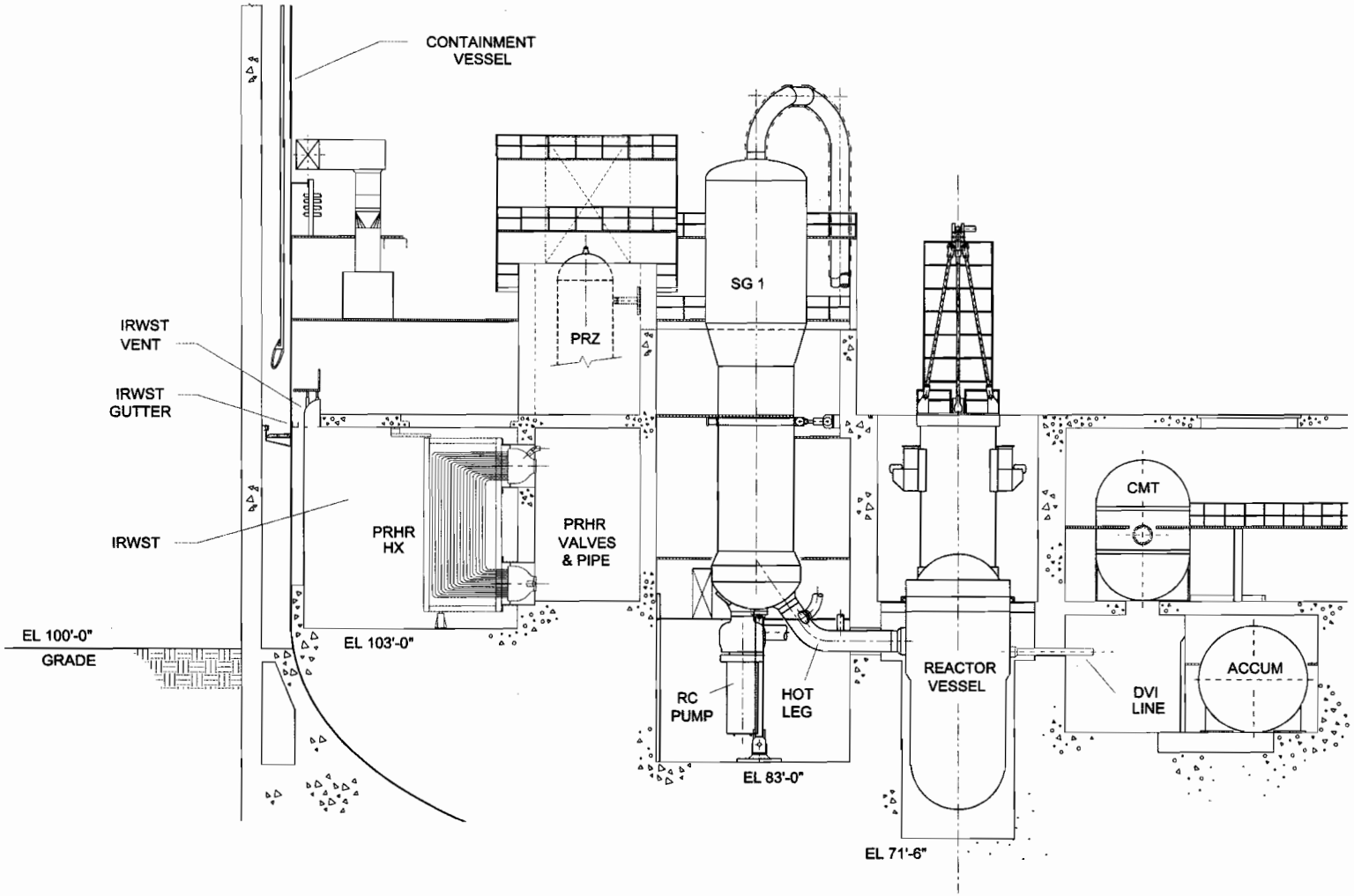
PXS Equipment Layout

AP1000



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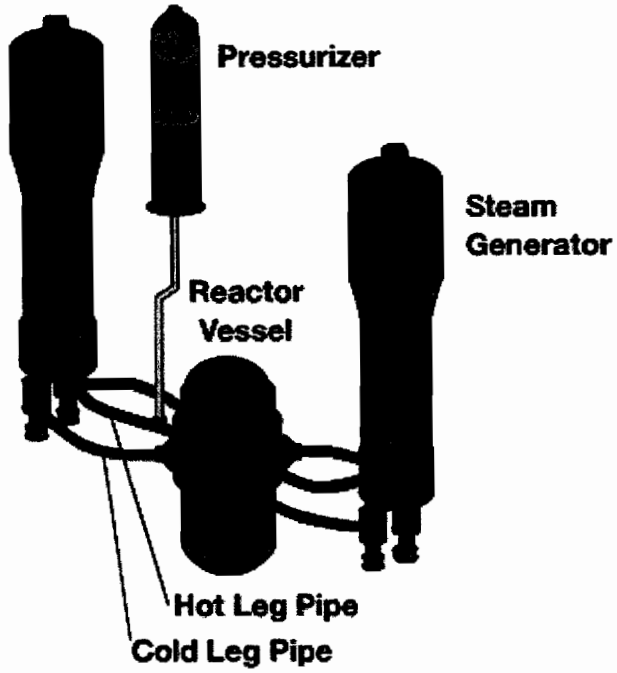
Passive Safety Injection Operation During a LOCA

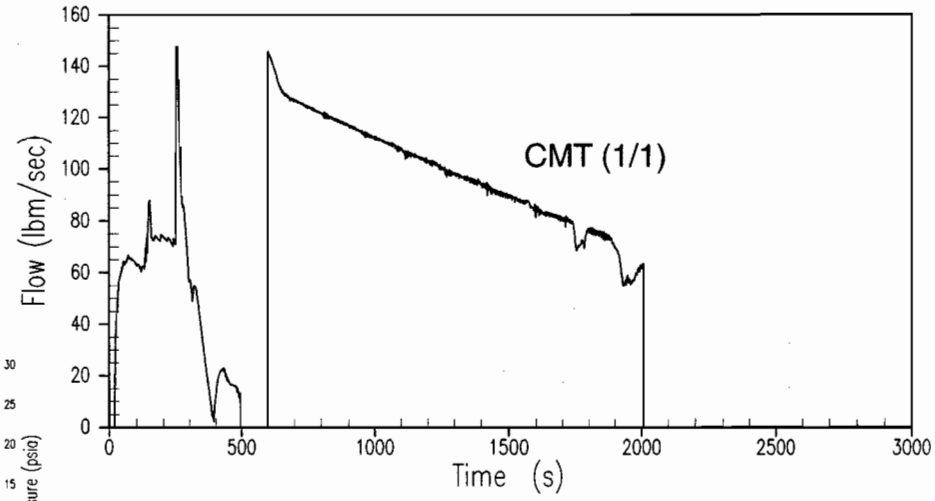
AP1000

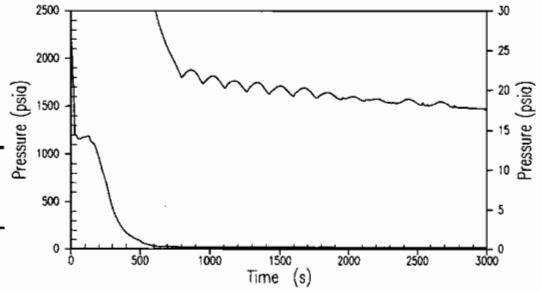


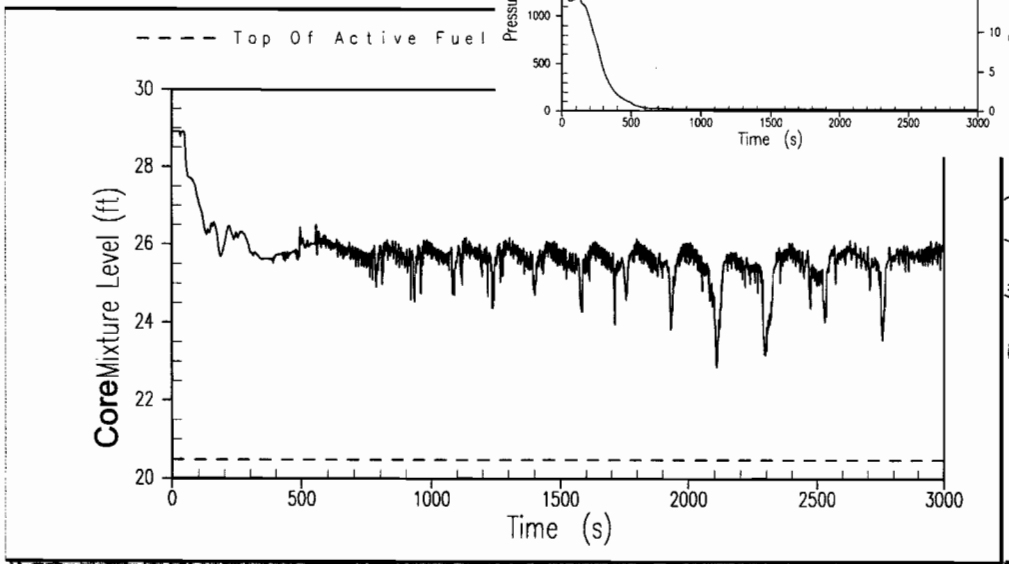
PXS Provides Improved Margin DVI LOCA Case (Limiting)

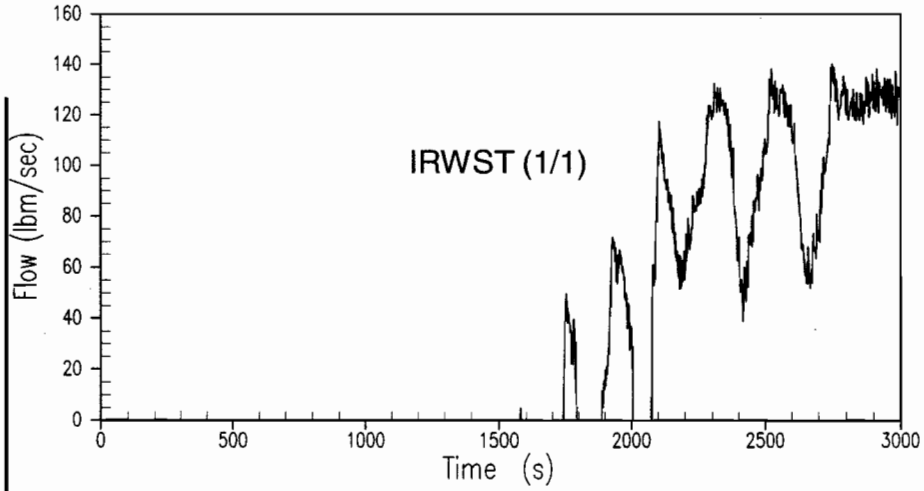
AP1000

- PXS Provides Effective Core Cooling
  - CMTs, Accum and IRWST provide injection
    - 1/2 CMT, Accum, IRWST line spill to contain.
  - ADS effectively reduces the RCS pressure
  - Core remains covered with significant margin









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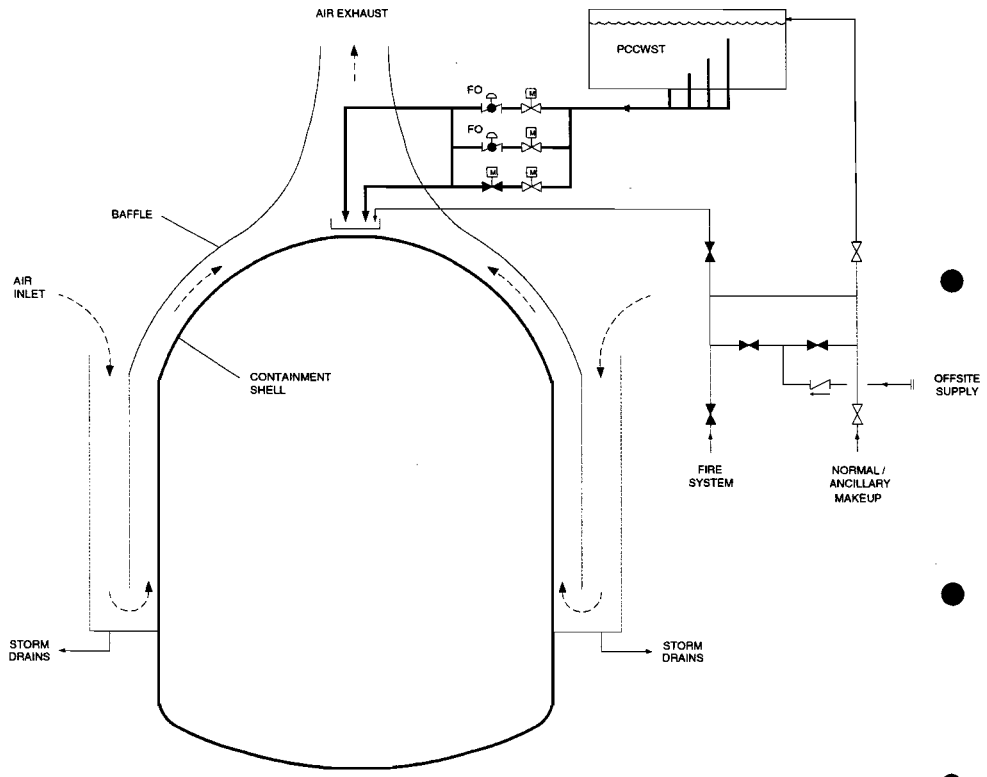
Passive Containment Cooling System

AP1000



- PCS Water Storage Tank
  - Provides 72 hr drain
    - Afterwards use on/offsite water
    - Air only cooling prevents failure
  - Flow decreases with time
    - 4 standpipes control flow
- PCS Flow Rates
  - High initial flow
    - Rapidly forms water film
    - Effectively reduces cont pressure
  - Later flows match decay heat
- 3 Redundant Drain Paths
  - 2 AOV, 1 MOV
  - Improves PRA reliability
- DCD Rev 16, Increase Wet Bulb Temp
  - Needed for Florida
  - No impact on containment pressure

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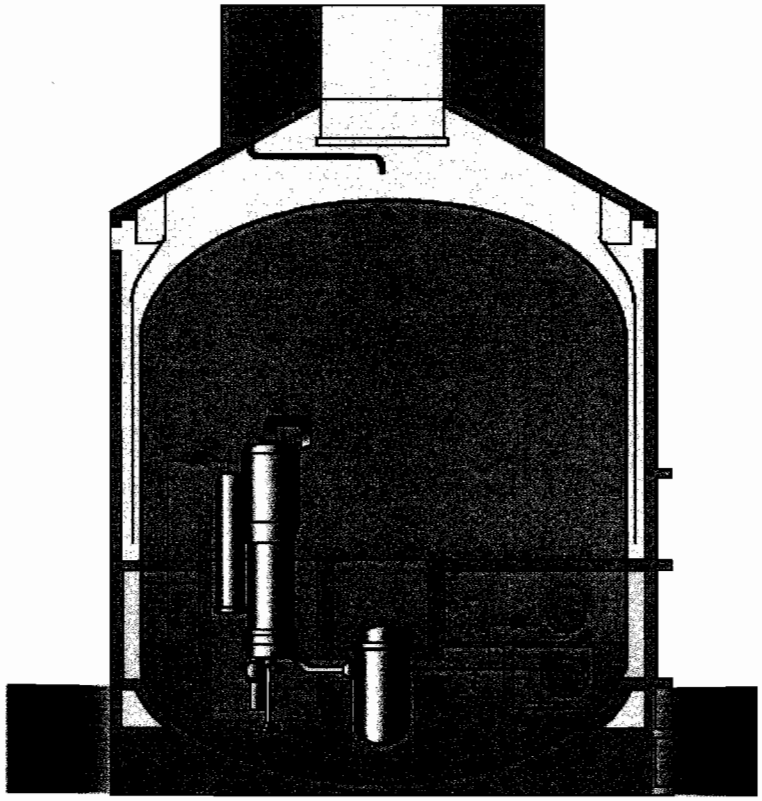
Passive Containment Cooling Operation During a LOCA

AP1000



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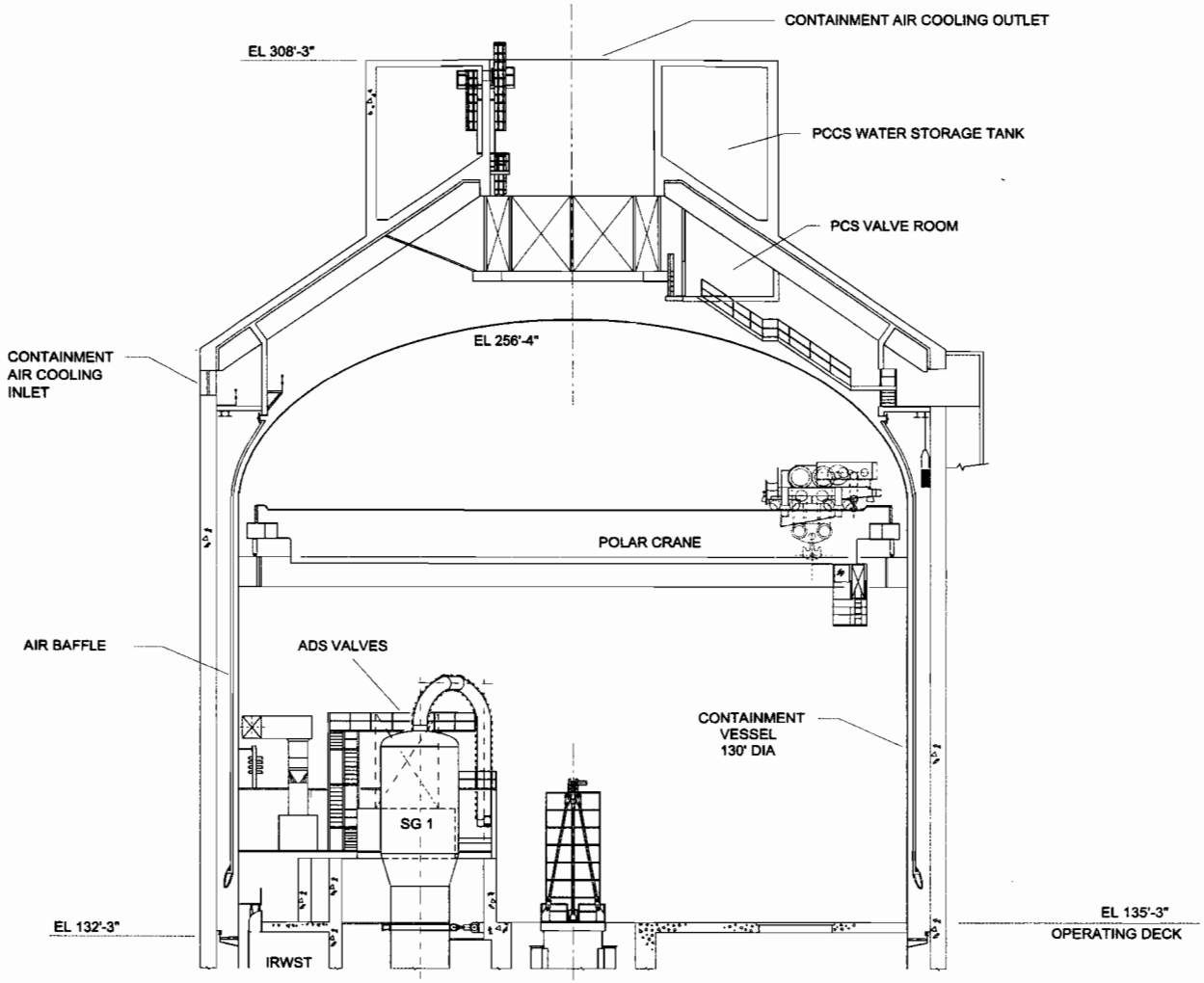
PCS Equipment Layout

AP1000



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PCS Provides Effective Cooling LB LOCA and Steam Line Breaks

AP1000

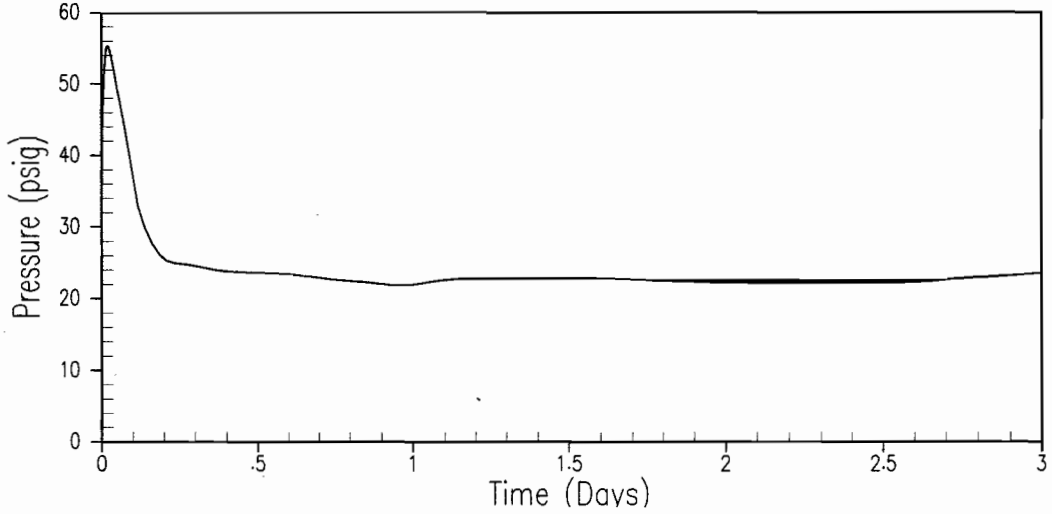
- **AP1000 Containment**

  Provides Increased Margins

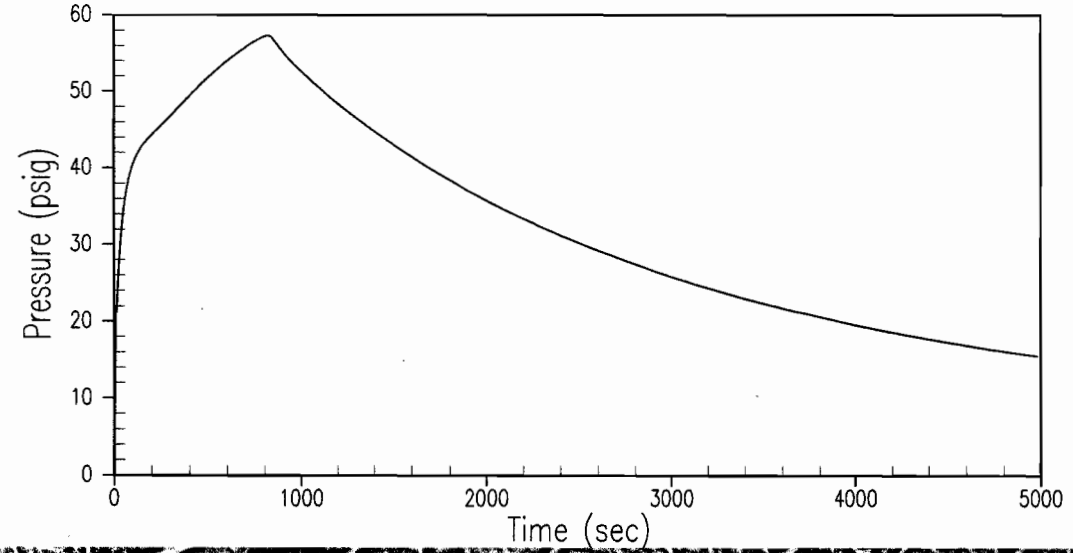
	AP600	AP1000
– LB LOCA	1.6	3.6
– MSLB	0.9	1.7

(Design - Peak pres (psi))

AP1000 DECL LOCA Containment Pressure



Main Steam Line Break Pressure



- **Main Steam Line Break is Limiting**
  - Not sensitive to passive containment cooling performance

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AP1000 Increases Safety Margins

AP1000

	Typical Plant	AP1000
• Loss Flow Margin to DNBR Limit	~ 10-14%	~15%
• Feedline Break (°F) Subcooling Margin	>0°F	~140°F
• SG Tube Rupture	Operator actions required in 10 min	Operator actions **NOT** required
• Small LOCA	3" LOCA core uncovers PCT <1500°F	< 8" LOCA **NO** core uncovery
• Large LOCA PCT (°F) with uncertainty	1700 - 2200°F	2124°F (1)
• ATWS, Pres (psig) (% core life)	3200 psig 90%	2800 psig 100%

Note (1) ASTRUM analysis shows AP1000 Large LOCA PCT is actually < 1600°F

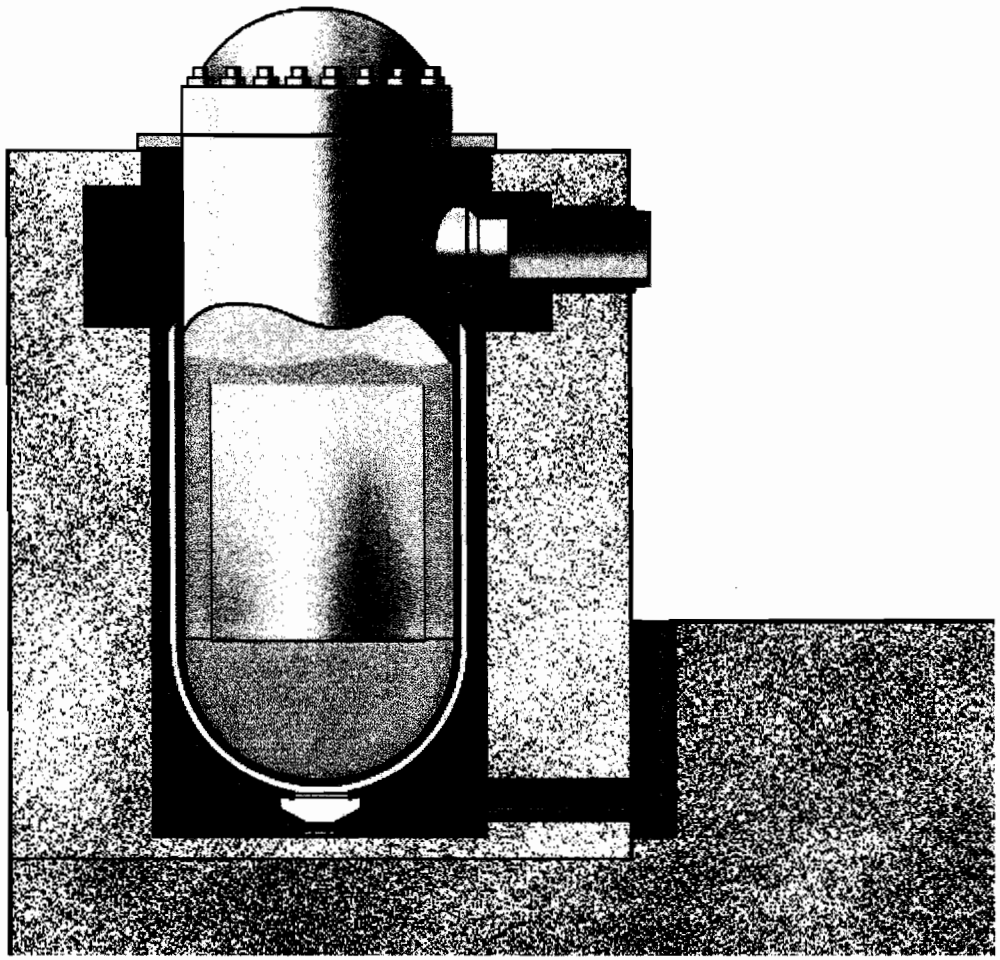
AP1000 Addresses Contain. Recirculation Debris Issue

AP1000

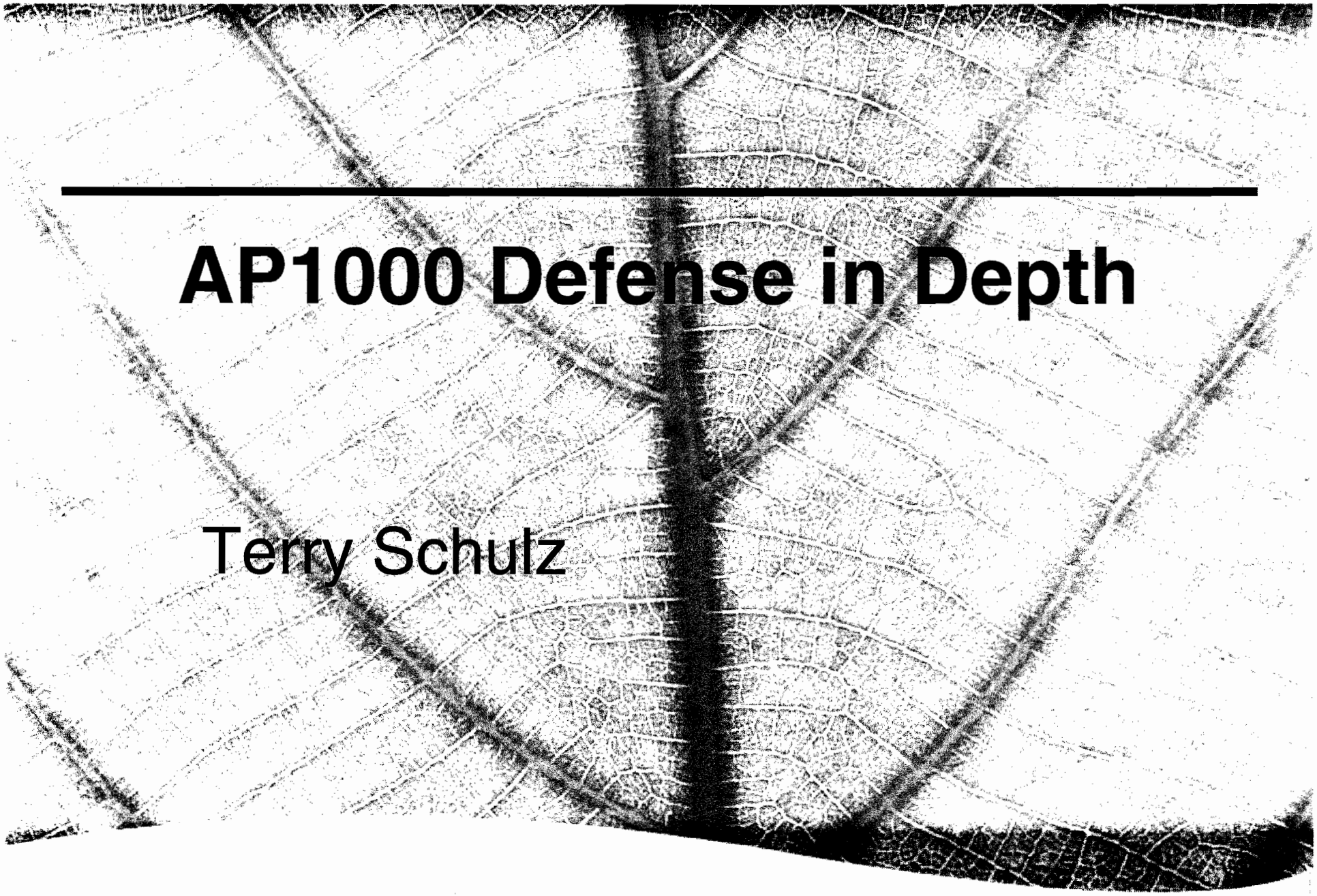
- No Fiberous Debris Generated by LOCA
  - Most operating plants use fiberglass insulation; significant fiber generated
  - In AP1000 all insulation in LOCA jet zone is RMI; no fiber generated
- Enhanced Debris Settling
  - Deep floodup levels with low flows / velocities
  - Long delays before initiation of recirculation
- Protective Plates Above Screens
  - Prevents particles (coating debris, etc) from being transported to screens
- Large Screens Provided
  - Increased in DCD Rev 16; 280 ft^2 to 5000 ft^2
- Coatings Inside Containment
  - Non-safety related - if detached, will settle before reaching screens
  - Reduced use of coatings inside containment (stairs, cabinets, etc)

Severe Accidents Addressed

AP1000



- Core-Concrete Interaction
  - Ex-vessel cooling retains damaged core
  - Tests and analysis of IVR reviewed by U.S. NRC
  - Prevents core-concrete interaction
- High Pressure Core Melt
  - Eliminated by redundant, diverse ADS
- Hydrogen Detonation
  - Prevented by redundant igniters and plant layout features
- Steam Explosions
  - Prevented by IVR
- DCD Rev 16 resolved COL item includes changes to RV insulation design



AP1000 Defense in Depth

Terry Schulz

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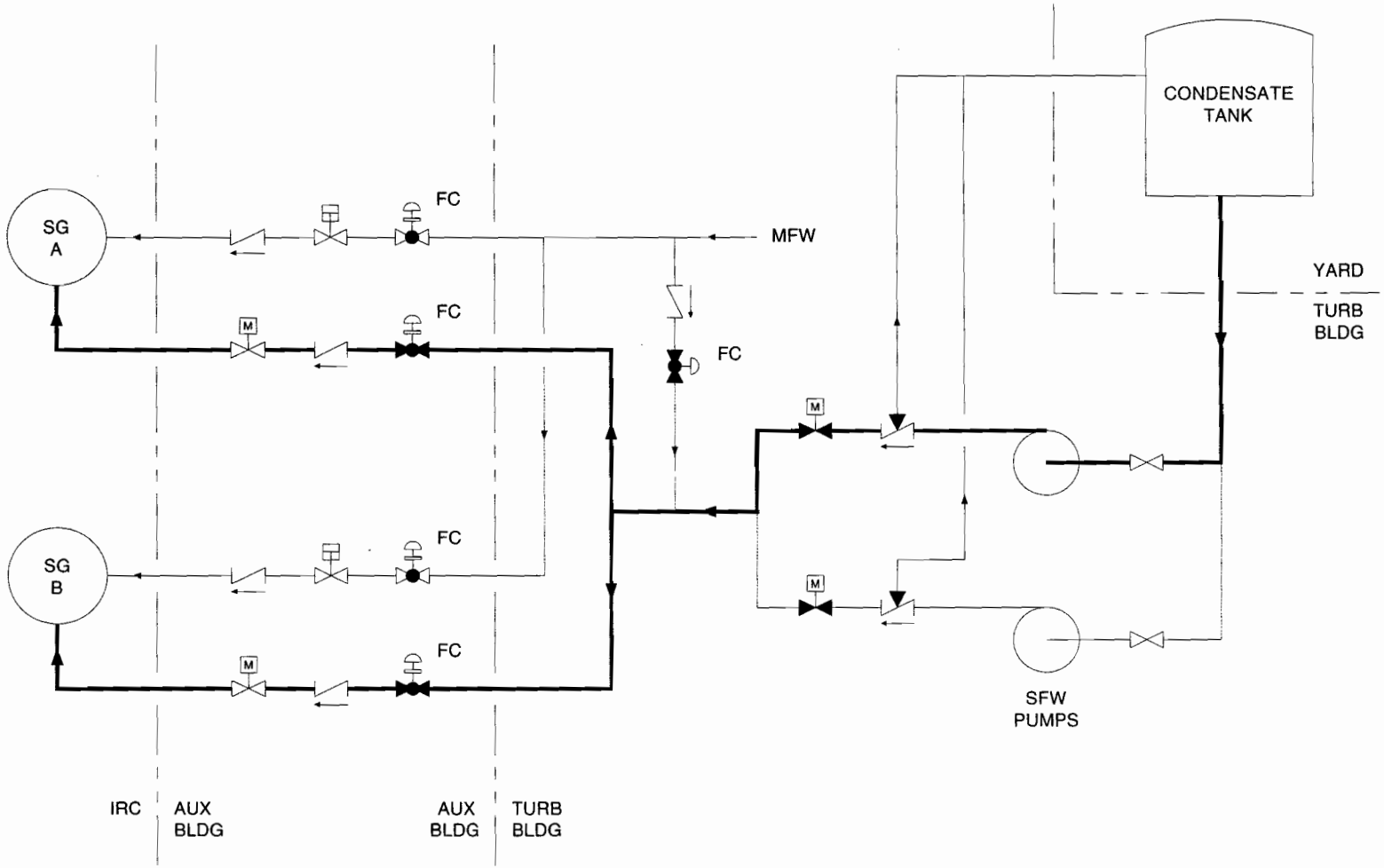
AP1000 Active Nonsafety Features

AP1000

- Active Nonsafety Functions
  - Reliably support normal operation
  - Minimize challenge to passive safety systems
  - Not required to mitigate design basis accidents
  - Not required to meet NRC safety goals
- Active Nonsafety Design Features
  - Simplified designs (fewer components, separation not required)
  - Redundancy for more probable failures
  - Automatic actuation with power from onsite diesels
- Active Nonsafety Equipment Design
  - Reliable, experienced based, industrial grade equipment
  - Non-ASME, non-seismic, limited fire / flood / wind protection
  - Availability controlled by procedures, no shutdown requirements
  - Reliability controlled by maintenance program

AP1000 Startup Feedwater System

AP1000



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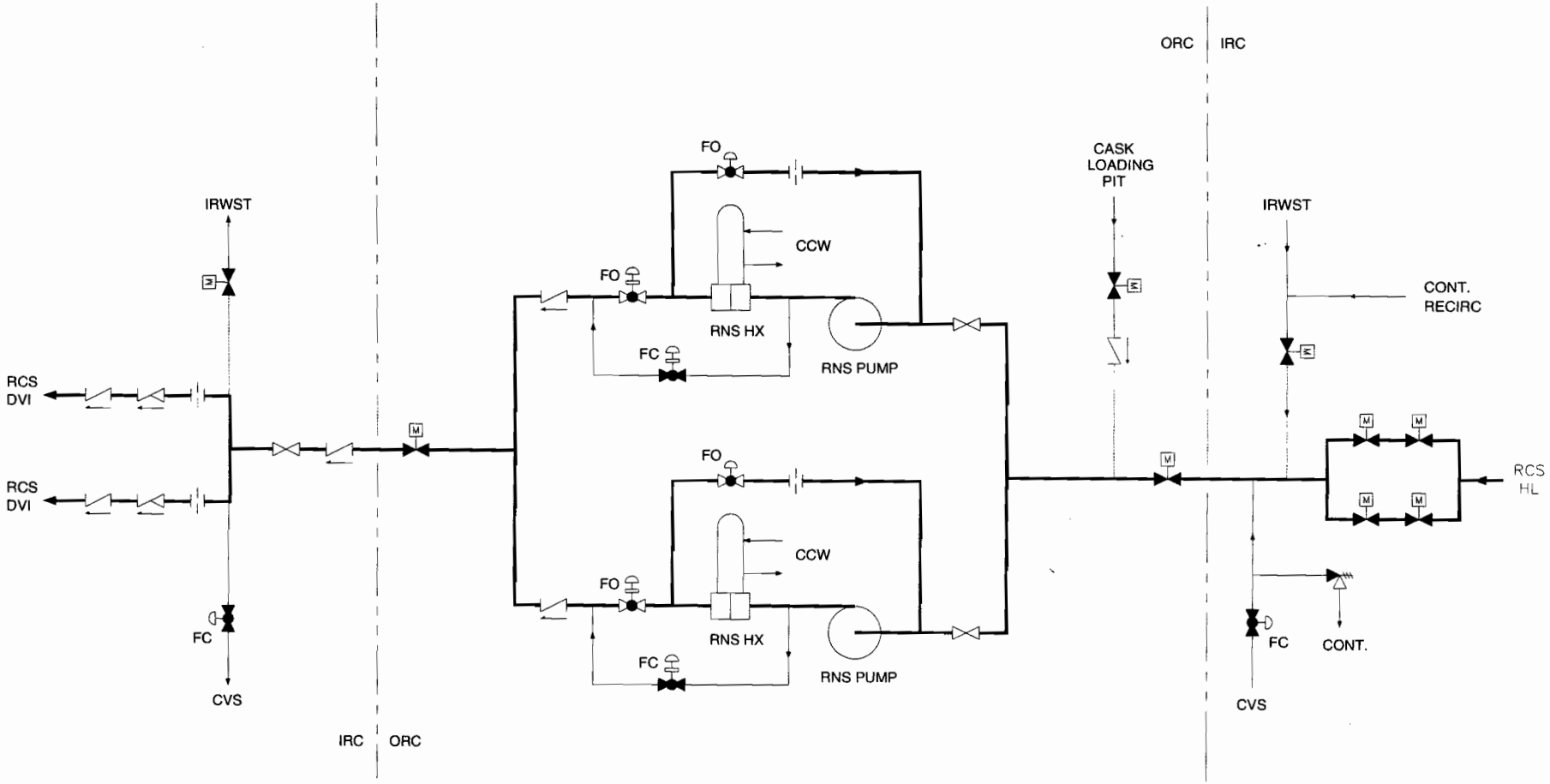
AP1000 Normal RHR System

AP1000



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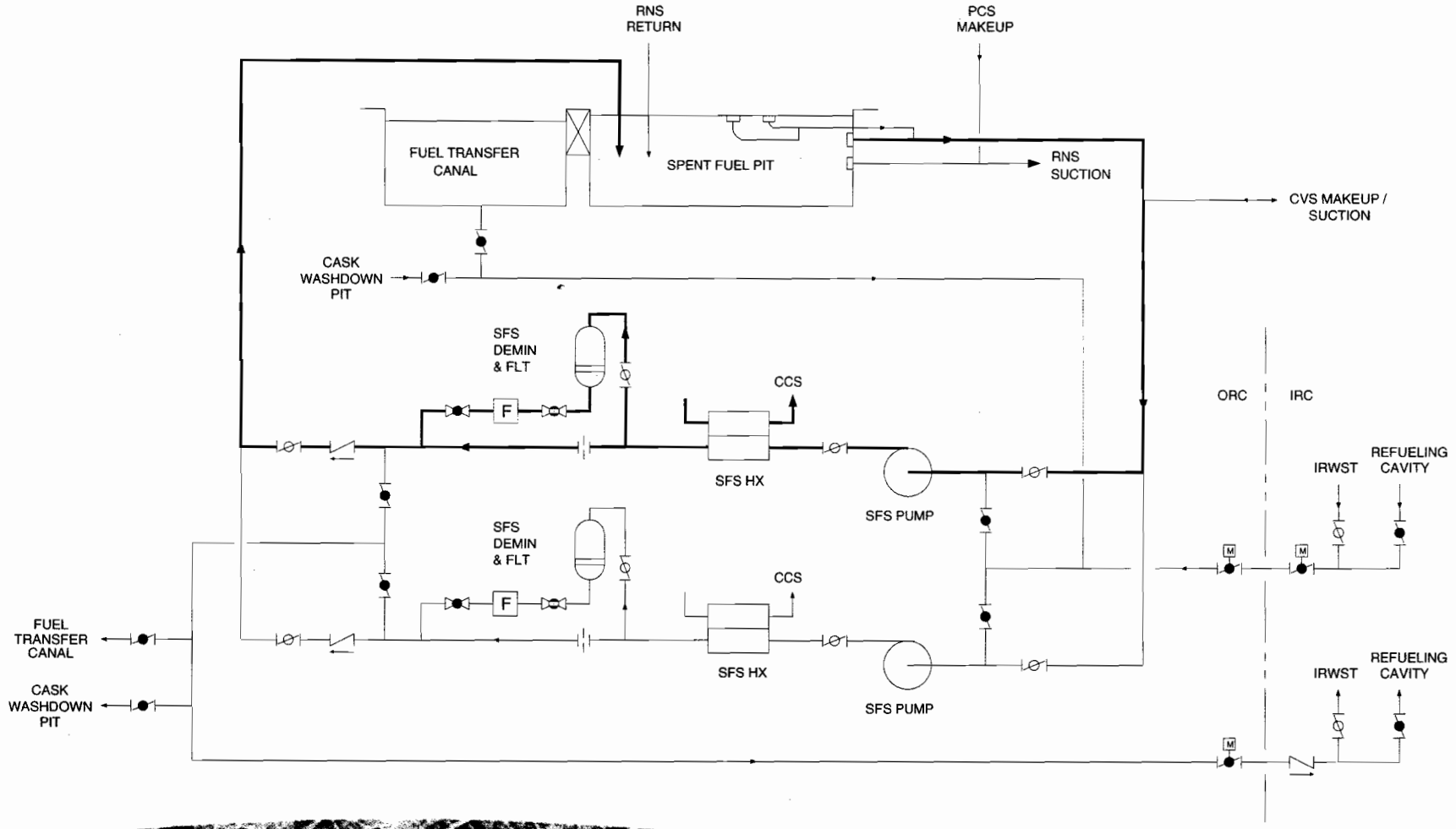
AP1000 Spent Fuel Cooling

AP1000



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Safety Spent Fuel Cooling Provided by Water Heatup, Boiloff

AP1000

Event	Time to Saturation(1) (hours)	Height of Water Above Fuel at 72 Hours(4) (feet)	Height of Water Above Fuel at 7 Days(4) (feet)
Seismic Event(2) – Power Operation Immediately Following a Refueling(7)	6.5	1.6	1.6
Seismic Event(8) – Refueling, Immediately Following Spent Fuel Region Offload(3)(7)	4.68	8.3	8.3
Seismic Event(8) – Refueling, Emergency Full Core Off-Load(3) Immediately Following Refueling(7)	1.37	8.3	8.3

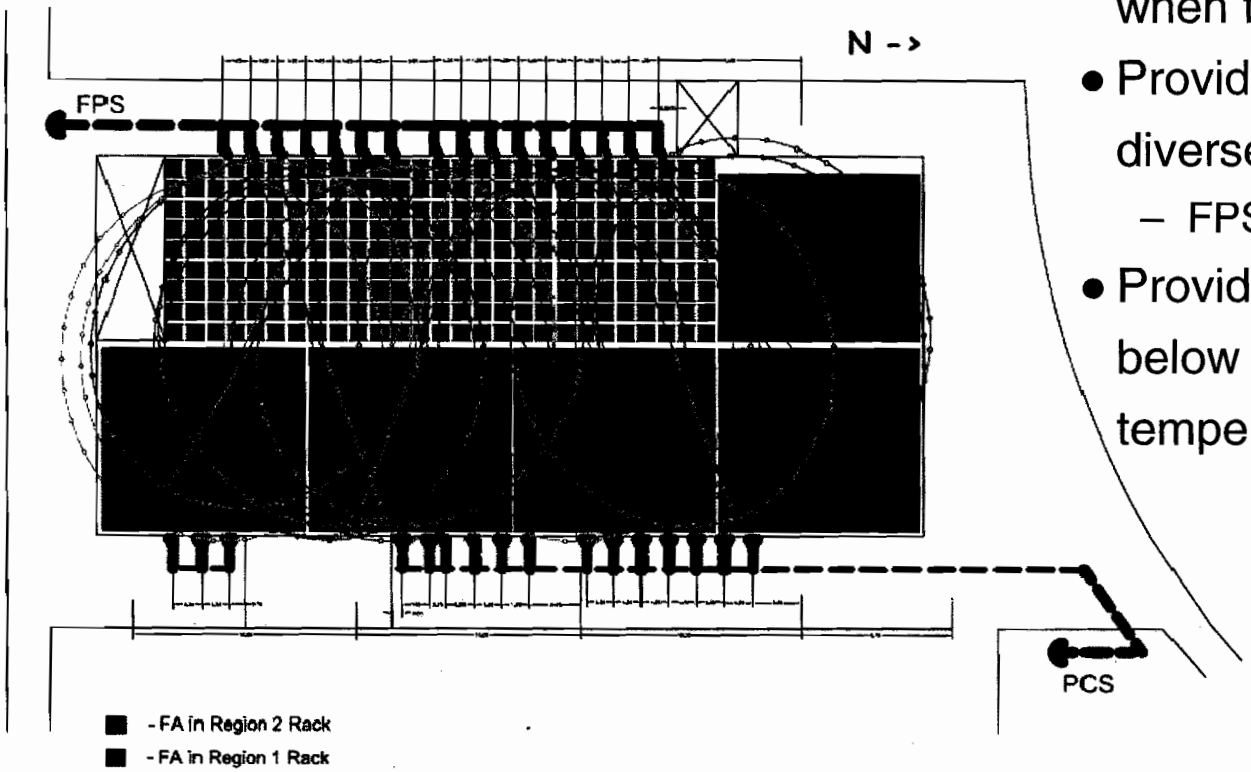
- In DCD Rev 16, the spent fuel pool capacity has increased from 619 to 889 fuel assemblies.

Notes:

1. Times calculated neglect heat losses to the passive heat sinks in the fuel area of the auxiliary building.
2. Seismic event assumes water in the pool is initially drained to the level of the spent fuel pool cooling system connection simultaneous with a station blackout. Fuel cooling water sources are spent fuel pool, fuel transfer canal (including gate), and cask washdown pit for 72 hours. Between 72 hours and 7 days fuel cooling water provided from passive containment cooling system ancillary water storage tank.
3. Fuel movement complete, 150 hours after shutdown.
4. See subsection 9.1.3.5 for minimum water level.
5. Alignment of PCS water storage for supply of makeup water permits maintaining pool level at this elevation. Decay heat in reactor vessel is less that 9 MW, thus no PCS water is required for containment cooling.
6. Alignment of the PCS ancillary water storage tank and initiation of PCS recirculation pumps provide a makeup water supply to maintain this pool level or higher above the top of the fuel.
7. Seismic event assumes water in the pool is initially drained to the level of the spent fuel pool cooling system connection simultaneous with a station blackout. Fuel cooling water sources are spent fuel pool, fuel transfer canal (including gate), cask washdown pit, and passive containment cooling system water storage tank for 72 hours. Between 72 hours and 7 days fuel cooling water provided from passive containment cooling system water storage tank and passive containment cooling system ancillary water storage tank. The number of fuel assemblies refueled has been conservatively established to include the worst case between an 18-month fuel cycle plus 5 defective fuel assemblies (69 total assemblies or 44% of the core) and a 24-month fuel cycle plus 5 defective fuel assemblies (77 total assemblies or 49% of the core).
8. Seismic event assumes water in the pool is initially drained to the level of the spent fuel pool cooling system connection simultaneous with a station blackout. Fuel cooling water sources are spent fuel pool, fuel transfer canal (including gate), cask washdown pit, and passive containment cooling system water storage tank for 7 days.

SFP Cooling Assuming Complete Pool Drain, Incorporated in DCD Rev 16

AP1000



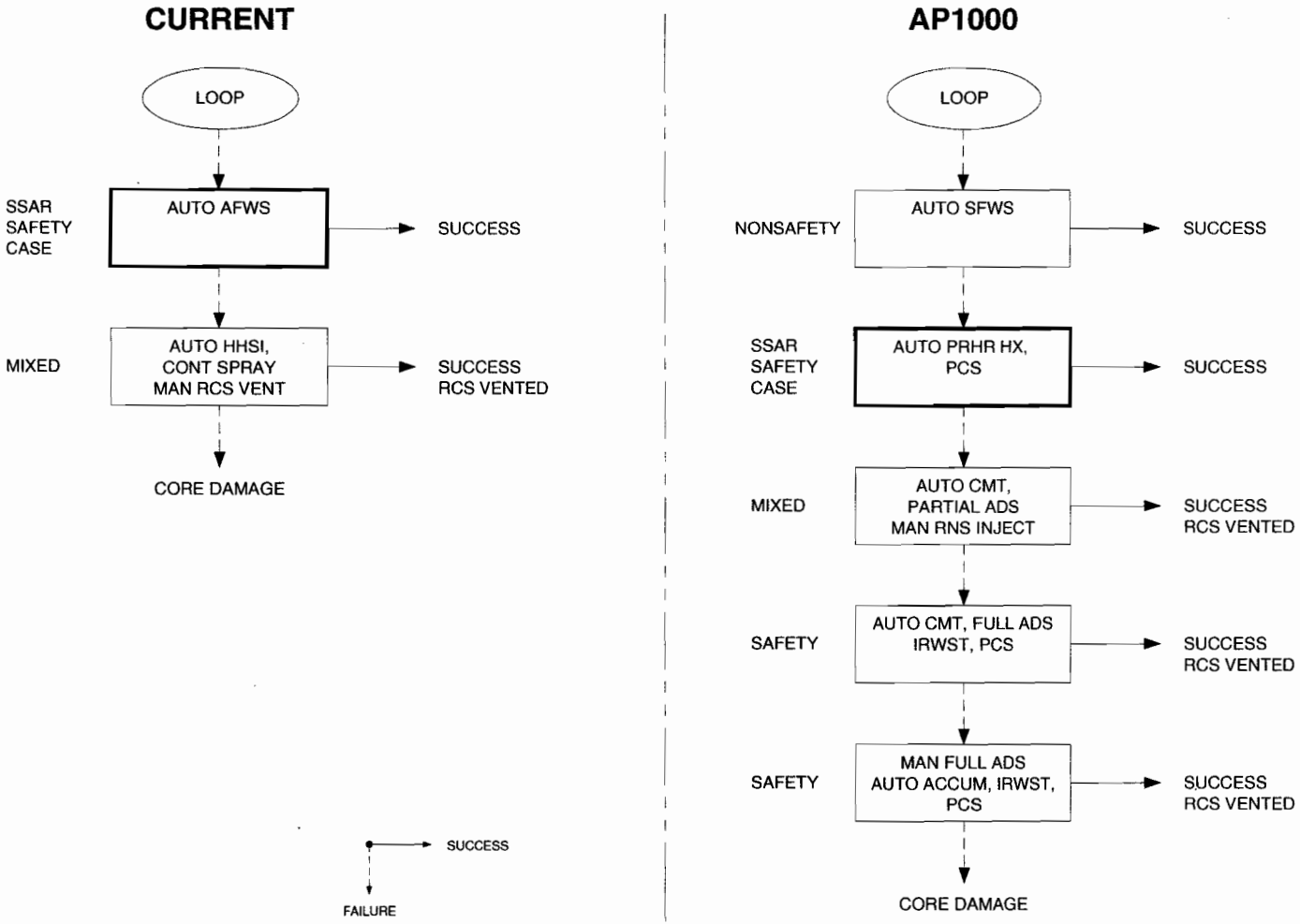
- Beyond design basis event B5B
  - Pool assumed to completely drain
- Event assumed to occur just when full core is placed in SFP
- Provide redundant sprays with diverse water supplies
  - FPS and PCS used for water
- Provide sufficient spray to keep below zirconium ignition temperature

AP1000 Provides More Levels of Defense

- First Level is Usually Nonsafety Active Features
  - Automatically actuated before passive features
  - High quality industrial grade equipment
- Another Level is Safety Passive Features
  - Provides safety case for licensing
  - Highest quality nuclear grade equipment
- Other Passive Features Provide Additional Levels
  - Example; passive feed/bleed backs up PRHR HX
- Available for All Shutdown and At-Power Conditions
  - More likely events have more levels of defense

Loss of Offsite Power
Levels of Defense

AP1000



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AP1000 Importance of Non-Safety Systems

- Determined Safety Importance of Non-Safety Systems
  - Part of the resolution of Regulatory Treatment of Non-Safety Systems (RTNSS) Policy Issue
  - Included PRA sensitivity studies / evaluations
    - Initiating event frequency evaluations
    - Mitigation importance evaluations, calc CMF/LRF without NNS
      - CDF and LRF less than NRC safety goals
  - Also included deterministic evaluations
    - ATWS rule, long term shutdown (> 72 hr), seismic
  - DCD contains availability controls for selected NSS features
    - Similar to Tech Spec, but without plant shutdown requirements

Importance on Nonsafety Systems

AP1000

	Base AP1000	w/o NNS Systems (1)	NRC Safety Goal
Core Damage Frequency			
Internal Events at Power	2.40E-07	2.10E-06	
Internal Events at Shutdown	1.20E-07	9.70E-07	
Total	**3.60E-07**	**3.07E-06**	**1.0E-04** /yr
Large Activity Release Frequency			
Internal Events at Power	1.90E-08	4.30E-07	
Internal Events at Shutdown	2.00E-08	3.80E-07	
Total	**3.90E-08**	**8.10E-07**	**1.0E-06** /yr

Notes:

(1) Sensitivity study with same IE frequencies but no mitigation credit for nonsafety systems (CVS, SFW, RNS, onsite / offsite AC power, DAS).

AP1000 Instrumentation & Control

Andrea Sterdis

Westinghouse

I&C Systems

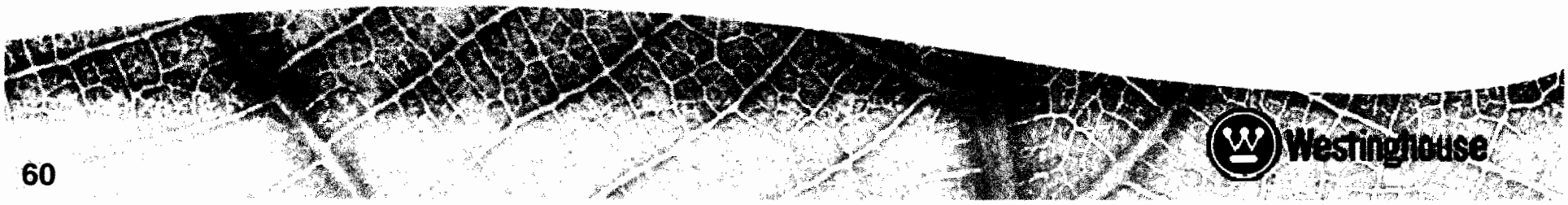
AP1000

- **I&C systems are included in the Certified Design**
  - —Functional requirements
  - —The design process
  - —Test and acceptance criteria
  - —A conceptual design

A detailed I&C design is being developed based on the functional requirements, using the certified design process, and meeting the certified acceptance requirements.

AP1000 I&C

- Control System
  - Plant wide non-1E system for all normal displays & controls
  - Microprocessor / software based, multiplexed communications
- Safety System
  - Plant wide 1E system for all safety displays & controls
  - Microprocessor / software based, multiplexed communications
- Diverse System
  - Limited scope non-1E system, PRA based displays & controls
    - Backs up Safety I&C where common mode failure a risk
  - Different microprocessor & software than Safety I&C
    - No multiplexing



AP1000 Major I&C Systems

AP1000

- **Protection and Safety Monitoring System (PMS)**
  - RT, ESF, NI, QDPS, and component control (Westinghouse Common Q)
- **Diverse Actuation System (DAS)**
  - Backs up PMS (Platform/Vendor Selection in Progress)
  - Different architecture, hardware & software from PMS
- **Plant Control System (PLS)**
  - BOP, NSSS, rod control, rod position indication (Emerson Ovation)
- **Data Display and Processing System (DDS)**
  - Non-Class 1E displays, alarms, analysis, logging, archiving (Emerson Ovation)

Class 1E Communications Network

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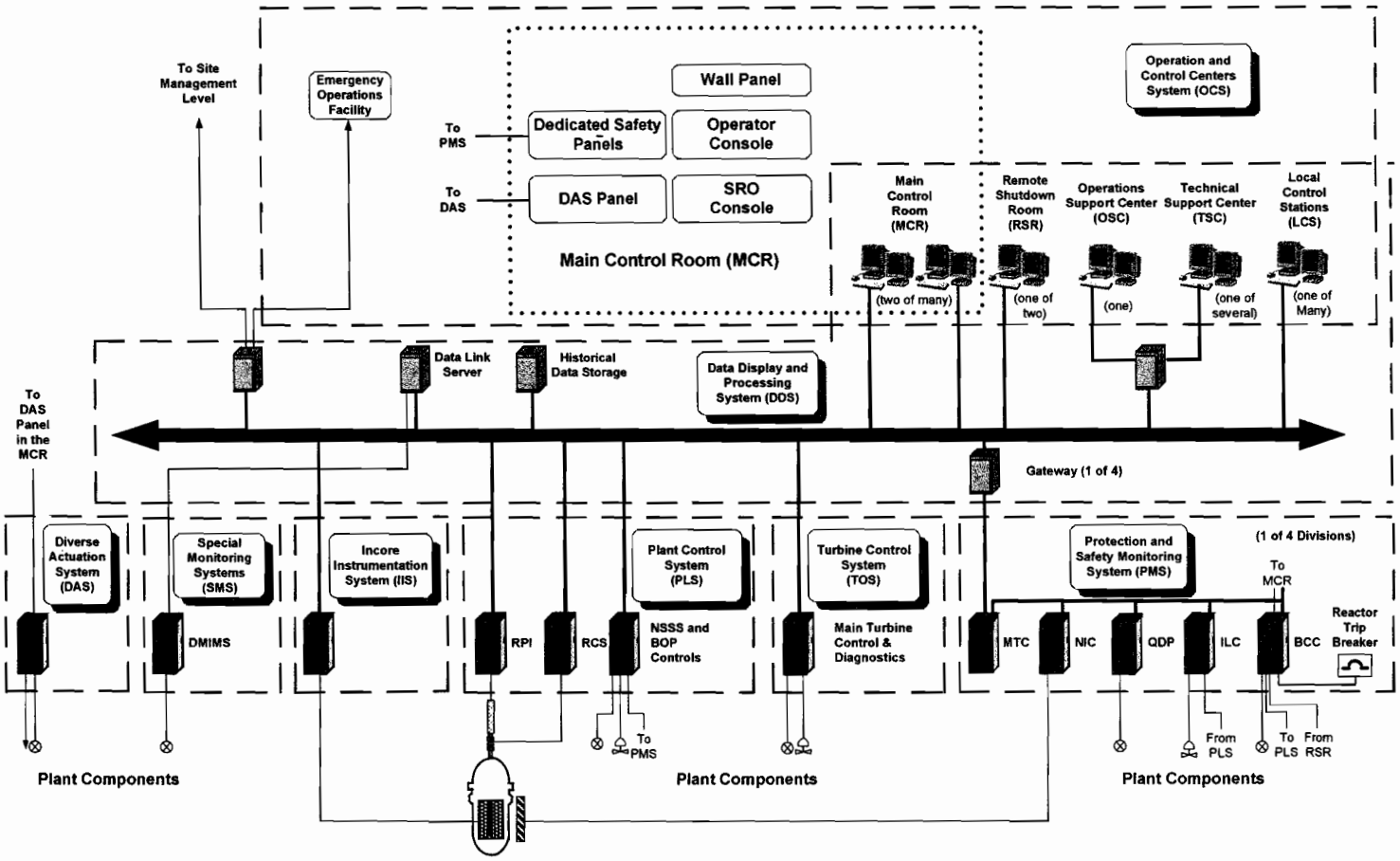
Architecture



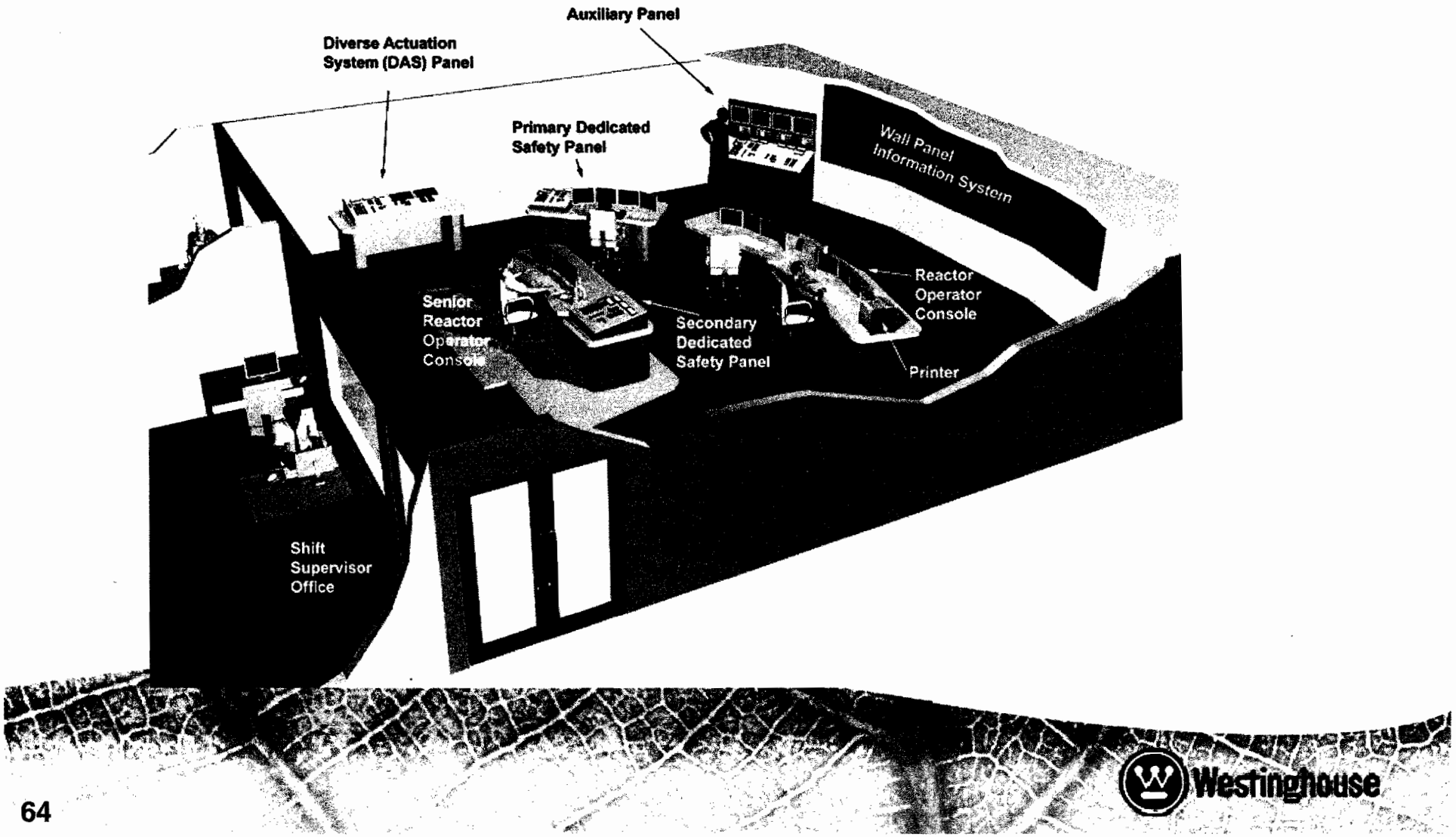
Human Factors Engineering

AP1000

- Compact Control Room
  - Designed for 1 Reactor Operator and 1 Supervisor
- Displays
  - Plant status / overview via wall panel (non 1E)
  - Detail display via workstation video displays (non 1E)
  - Small number dedicated displays; safety (1E) & diverse (non 1E)
- Controls
  - Soft controls (non 1E) for normal operation
  - Small number dedicated switches; safety (1E) & diverse (non 1E)
- Advanced Alarm Management
- Computerized Procedures

AP1000 Compact Control Room

AP1000



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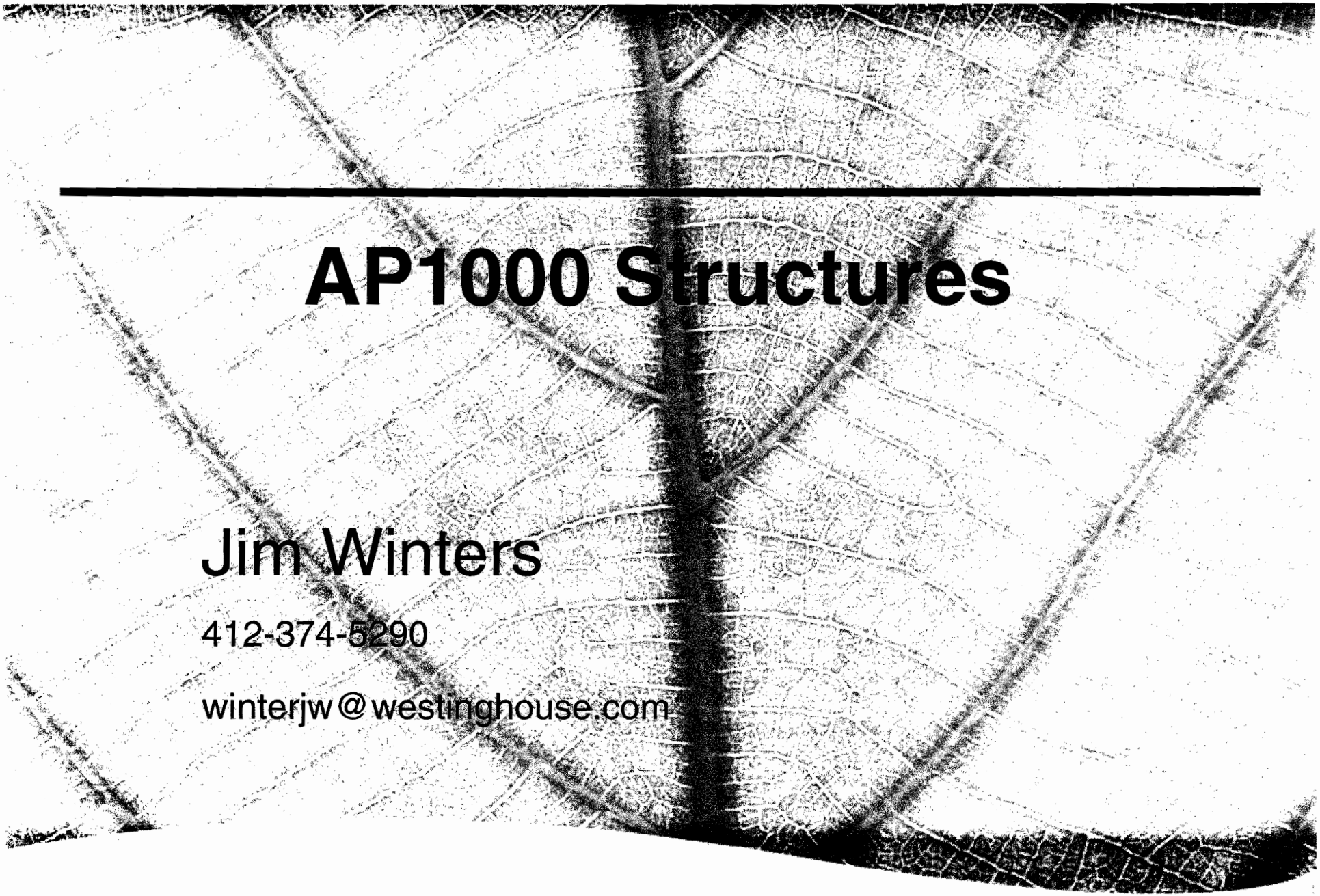


AP1000 Structures

Jim Winters

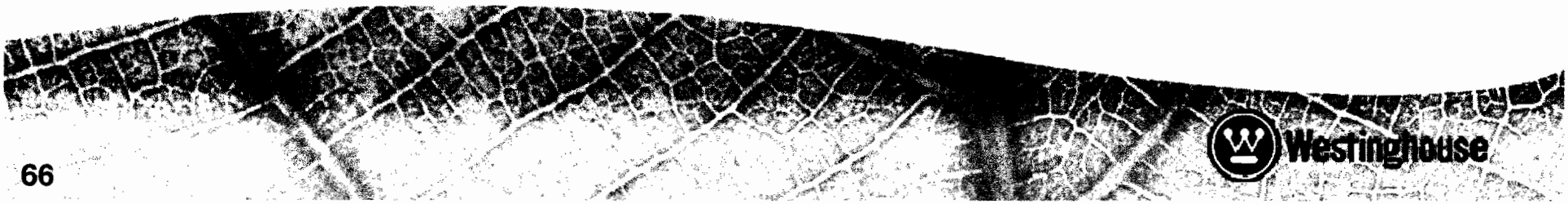
412-374-5290

winterjw@westinghouse.com

Westinghouse

AP1000 Structures

- All safety related and seismically qualified equipment is on a single basemat for Auxiliary and Shield Buildings
- Current Design Certification is for conditions consistent with a rock site
- Current Design Certification is for external hazards as required by current regulations



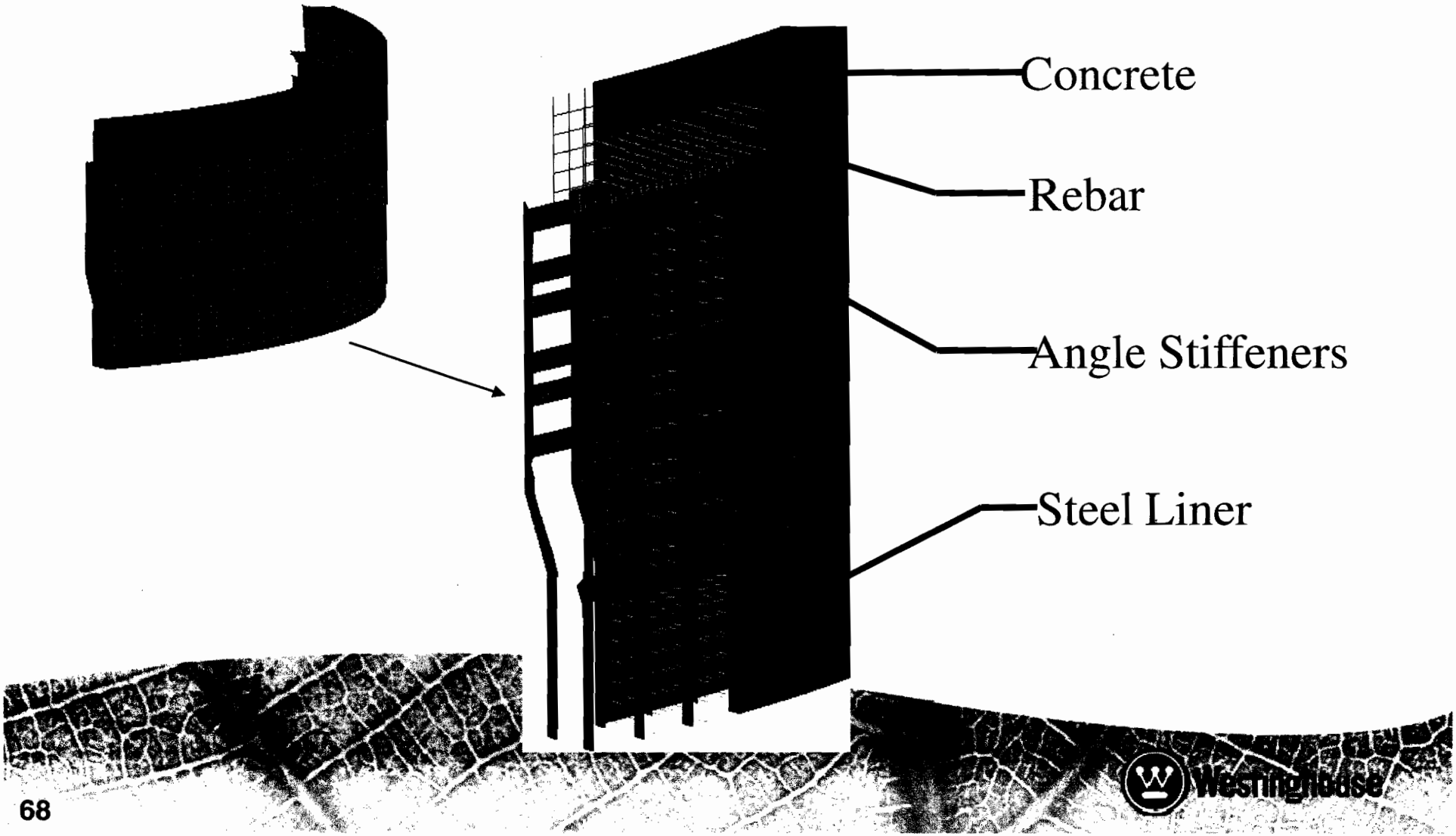
AP1000 Structures Changes

AP1000

- Pressurizer changed to allow valves to meet seismic accelerations
- Seismic input envelop changed to encompass soil sites
- Seismic analysis redone to reflect new seismic input (no design changes)
- Shield building changed to reflect new external hazards concerns
- NRC staff is currently reviewing our submittals

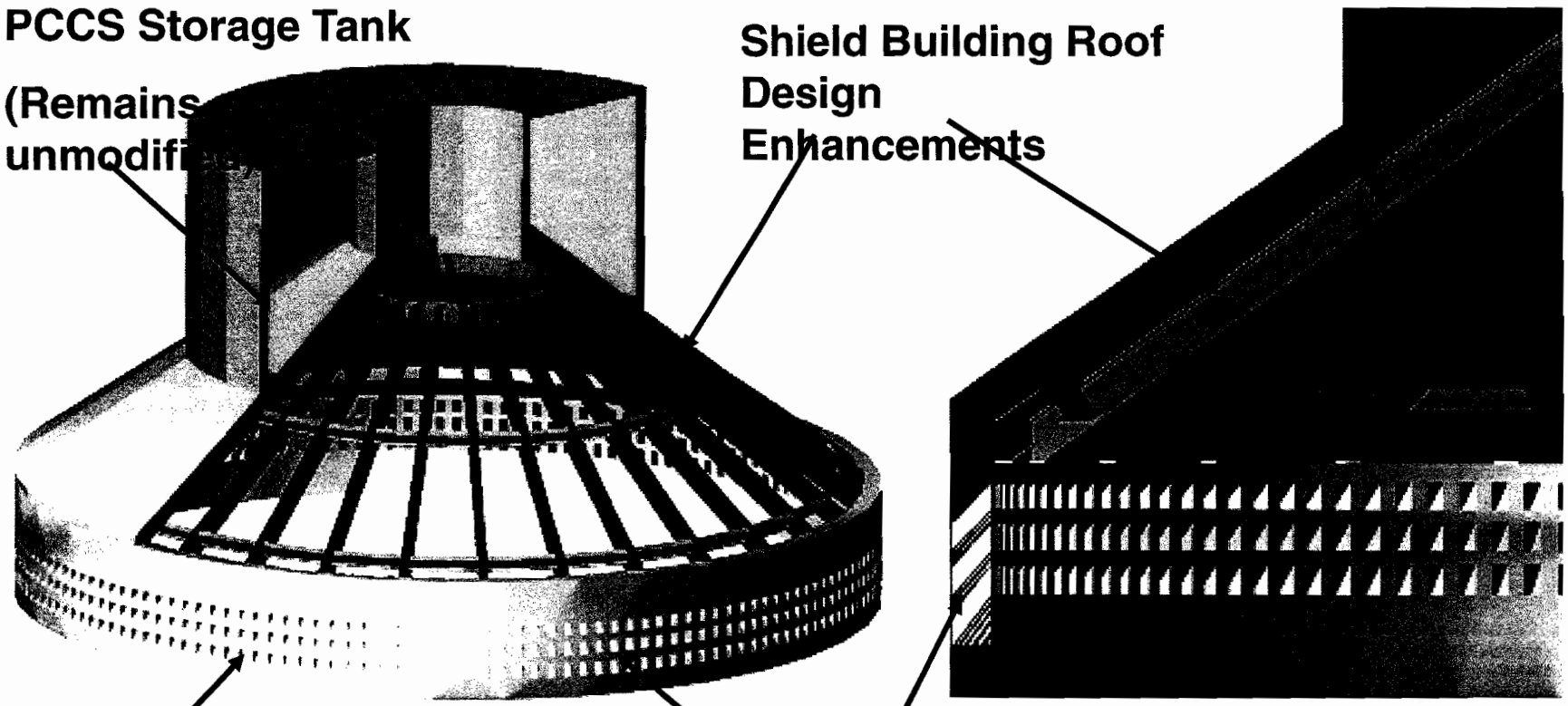
Shield Building Enhancements

AP1000



Shield Building Roof Enhancements

AP1000



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AP1000 Secondary Systems

Jim Winters

412-374-5290

winterjw@westinghouse.com

Westinghouse

AP1000 Secondary Systems

AP1000

- AP1000 secondary systems are non safety related
- Current Design Certification is based upon an MHI turbine
- Change is to a Toshiba turbine with attendant information changes to Chapter 10
- Items with potential impact on safety were investigated and found acceptable:
  - post trip behavior
  - overspeed trip initiator
  - blade attachments

AP1000 Electrical Systems

Jim Winters

412-374-5290

winterjw@westinghouse.com

Westinghouse

AP1000 Electrical Systems

AP1000

- AP1000 has only 3 electrical systems
  - 1E DC
  - Non-1E DC
  - Non-1E AC
- Only changes were to incorporate Operating Experience to increase unit availability
  - Add a Reserve Auxiliary Transformer
  - Add Fast Bus Transfer

AP1000 Fire Protection

Jim Winters

412-374-5290

winterjw@westinghouse.com

Westinghouse

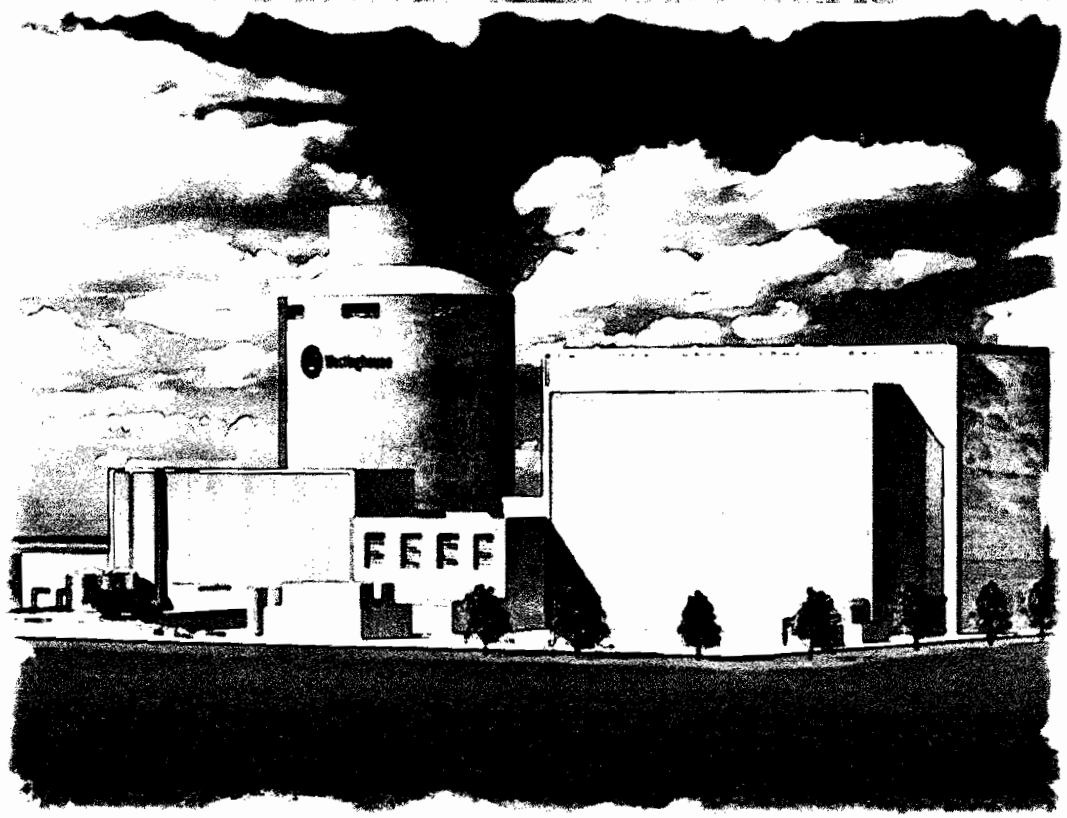
AP1000 Fire Protection

AP1000

- Same as Certified AP1000 design
  - Division separation designed in
    - Firewalls outside containment
    - Separation inside containment
- No changes
- Adequate protection from externally induced fires

AP1000
Presentation to the ACRS

October 31, 2007



AP1000

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U.S.NRC
UNITED STATES NUCLEAR REGULATORY COMMISSION
Protecting People and the Environment

Amendment Process for certified designs

Jerry N. Wilson, PE
Division of New Reactor Licensing
Office of New Reactors

§ 52.63 Finality of standard design certifications

(a)(1) Amendment via rulemaking:

- (i) Compliance exception
- (ii) Adequate Protection Back-fit
- (iii) Reduce unnecessary regulatory burden
- (iv) Complete design acceptance criteria
- (v) Correct material errors
- (vi) Substantial Increase Back-fit
- (vii) Contributes to increased standardization

(a)(2) Cost/benefit consideration for plants licensed or under review

(a)(3) Any modification the NRC imposes on a design certification rule under paragraph (a)(1) of this section will be applied to all plants referencing the certified design, . . .

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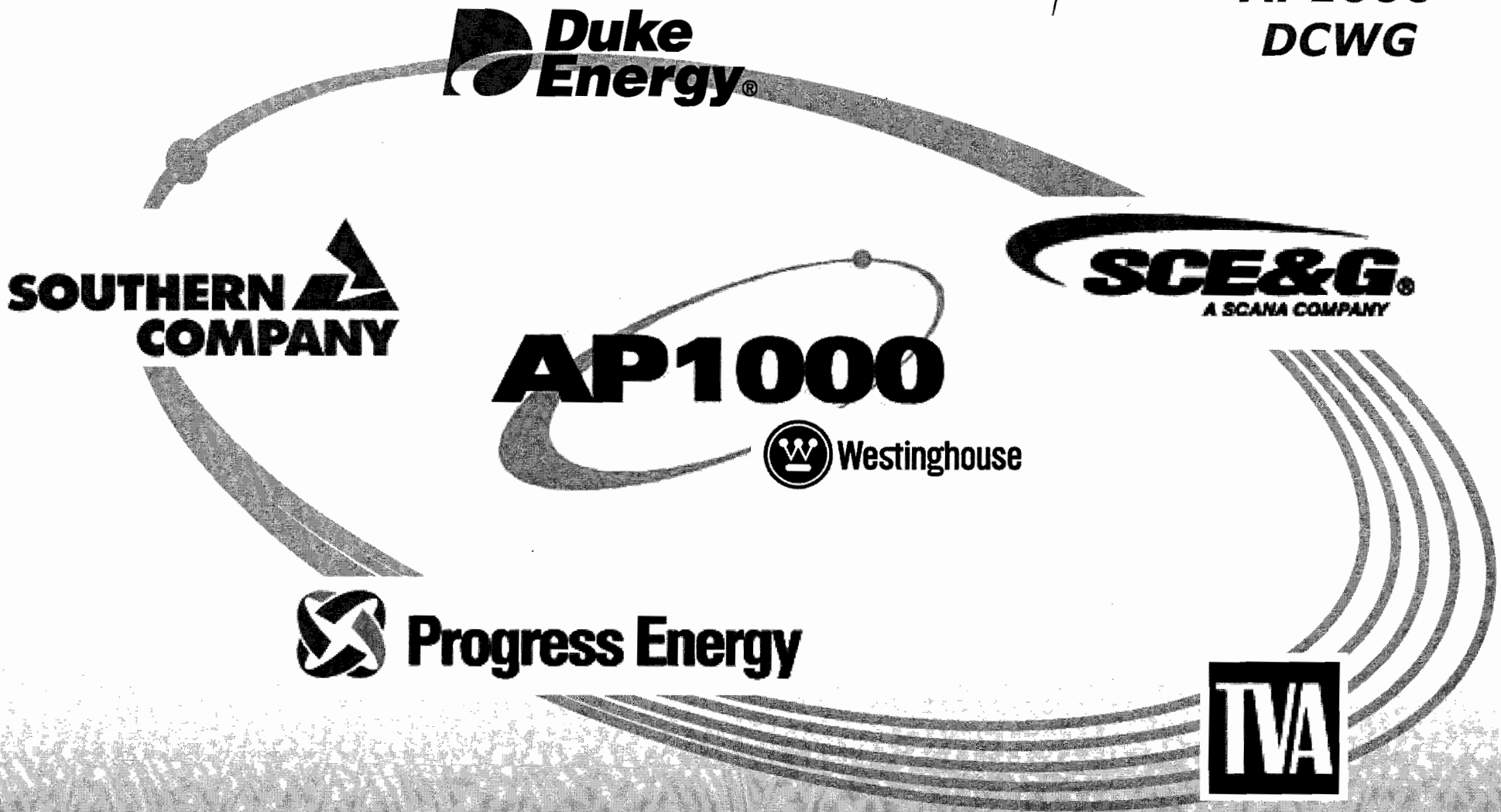
AP1000 Design-Centered Work Group Presentation to ACRS

Peter Hastings
AP1000 DCWG Lead

October 31, 2007

NuStart Energy℠

AP1000 DCWG



Bellefonte 3&4 | Lee Nuclear 1&2 | Summer 2&3 | Vogtle 3&4 | Harris 2&3 | Levy 1&2

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Introduction

- **Design Centered Review Approach**
  - "One issue, one review, one position"
  - Maximum benefit achieved with higher degree of standardization
  - Site specific issues coordinated
- **AP1000 DCWG Members**
  - R-COLA – Tennessee Valley Authority, Bellefonte
  - S-COLAs
    - South Carolina Electric & Gas, Summer
    - Duke Energy, Lee Nuclear
    - Progress Energy, Shearon Harris & Levy County, FL
    - Southern Nuclear, Vogtle
- **DCWG Coordination**
  - With AP1000 applicants
  - With ESBWR DCWG
  - With NEI
  - With NRC Staff: prioritized pre-application discussion topics

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COL Application

- Cover Letter, Affidavits, etc. ("Part 0")
- Part 1 – General & Administrative Info
- Part 2 – Final Safety Analysis Report
- Part 3 – Environmental Report
- Part 4 – Technical Specifications
- Part 5 – Emergency Plan
- Part 6 – Limited Work Authorization Information
- Part 7 – Departures & Exemption Requests
- Part 8 – Safeguards Information
- Part 9 – Other Withheld Information
- Part 10 – License Conditions & ITAAC
- Part 11 – Other IBR Documents

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BLN COLA Highlights

- **Part 1 – General and Financial Information**
  - Addresses 52.77 requirement to include 50.33 information
  - Includes some proprietary information (moved to Part 9)

- **Part 2 – Final Safety Analysis Report**
  - Incorporates by reference the DC rule – section 1.1
  - Each FSAR section references appropriate DCD section(s)
  - Format and outline follow that of the DCD
  - More detail later

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BLN COLA Highlights

- **Part 3 – Environmental Report**
  - Based on NUREG-1555
- **Part 4 – Technical Specifications**
  - IBR of DCD GTS (including Bases) – no departures/exemptions
  - COL item – Fill in brackets – most filled in
  - Some brackets remain – proposed License Condition in Part 10
  - Section A includes information on brackets
  - Section B includes a full set of PSTS and Bases

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BLN COLA Highlights

- **Part 5 – Emergency Planning Information**
  - Site specific licensee Emergency Plan
  - Includes Certifications and Cross-references
  - State and local plans
  - Evacuation Time Estimate
  - EP ITAAC in Part 10
- **Part 6 – LWA (not requested for Bellefonte)**

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BLN COLA Highlights

- **Part 7 – Departures and Exemptions**
  - Exemptions (2)
    - Fitness for duty program description per expected rule
    - COLA organization and numbering per guidance
  - Departures (3)
    - STD DEP 1.1-1
      - Administrative departure for organization and numbering for the FSAR sections
    - BLN DEP 9.2-1
      - Service Water System (SWS) blowdown flow path
    - BLN DEP 18.8-1
      - TSC & OSC relocations

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BLN COLA Highlights

- **Part 8 – Safeguards Information (separate submittal)**
  - Security Plans
  - Not discussed in this public meeting
- **Part 9 – Withheld Information**
  - Proprietary, SUNSI (no personal identification information)
  - Some information from Part 1, Part 2, Part 3

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BLN COLA Highlights

- **Part 10 – Proposed License Conditions with ITAAC**
  - Proposed License Conditions to:
    - Incorporate ITAAC into COL
    - Complete Holder items prior to initial fuel load
    - Implement Operational Programs by specific milestones in 13.4
    - Provide Fire Protection Program revision criteria
    - Provide Security Program revision criteria
    - Provide operational readiness schedule
    - Provide Vendor AE Constructor qualifications
    - Provide Startup Program revision criteria
    - Complete bracketed items in Tech Specs
    - Incorporate Environmental Protection Plan
  - Draft Environmental Protection Plan
  - ITAAC – Security, Plant Specific, Emergency Planning

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BLN COLA Highlights

- **Part 11 – Incorporated by Reference Information**
  - Quality Assurance Program Description

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FSAR

- **COL applications based on incorporation by reference of DCD Rev 16 plus TR-134 (DCD errata and other minor changes)**
- **"IBR" = Incorporation By Reference**
  - DCD Rev 16
  - TR-134
  - Various templates
- **Standardization of COL Applications (FSAR)**
  - "Entirely IBR" – DCD incorporation (no COL Info Items)
  - "Essentially IBR" – DCD incorporation, some additional information required to address COL Info Item(s)
  - "IBR plus" – DCD incorporation with significant amount of additional information
  - Does not necessarily reflect minor supplemental information

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FSAR Standardization

Sect.	IBR	STD	PS
1.1	IBR	X	X
1.2	IBR		X
1.3	IBR		
1.4	IBR		X
1.5	IBR		
1.6	IBR	X	
1.7	IBR		X
1.8	IBR	X	X
1.9	IBR	X	X
1.10	new	X	X
1A	IBR	X	

Excerpted from AP1000 Standardization Matrix

- **Extent of standardization:**
  - ~80% by section
  - Most of FSAR Ch 2 is site specific
- **From AP1000 Standardization Matrix**
  - IBR: virtually all chapters/sections incorporate DCD
  - Standard or partially standard: 182 of 193 (includes "all IBR")
  - Plant-specific or partially plant-specific: 36 of 193
- **Limited DCD departures**

Bellefonte 3&4 Lee Nuclear 1&2 Summer 2&3 Vogtle 3&4 Harris 2&3 Levy 1&2

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Left Margin Annotations (FSAR)

MARGIN NOTATION	DEFINITION AND USE
STD DEP X.Y.Z-#	FSAR information that departs from the generic DCD and is common for parallel applicants. Each Standard Departure is numbered separately at an appropriate level, e.g., STD DEP 9.2-1, or STD DEP 9.2.1-1
NPP DEP X.Y.Z-#	FSAR information that departs from the generic DCD and is plant specific. NPP is replaced with a plant specific identifier. Each Departure item is numbered separately at an appropriate subsection level, e.g., NPP DEP 9.2-2, or NPP DEP 9.2.1-2
STD COL X.Y-#	FSAR information that addresses a DCD Combined License Information item and is common to other COL applicants. Each COL item is numbered as identified in DCD Table 1.8-2 and FSAR Table 1.8-202, e.g., STD COL 4.4-1, or STD COL 19.59.10.5-1
NPP COL X.Y-#	FSAR information that addresses a DCD Combined License Information item and is plant specific. NPP is replaced with a plant specific identifier. Each COL item is numbered as identified in DCD Table 1.8-2 and FSAR Table 1.8-202, e.g., NPP COL 4.4-1, or NPP COL 19.59.10.5-1
NPP CDI or STD CDI	FSAR information that addresses DCD Conceptual Design Information (CDI). Replacement design information is generally plant specific; however, some may be common to other applicants. NPP is replaced with a plant specific identifier. STD is used if it is common. CDI information replacements are not numbered.
STD SUP X.Y-#	FSAR information that supplements the material in the DCD and is common to other COL applicants. Each SUP item is numbered separately at an appropriate subsection level, e.g., STD SUP 1.10-1, or STD SUP 9.5.1-1
NPP SUP X.Y-#	FSAR information that supplements the material in the DCD and is plant specific. NPP is replaced with a plant specific identifier. Each SUP item is numbered separately at an appropriate subsection level, e.g., NPP SUP 3.10-1, or NPP SUP 9.2.5-1
DCD	FSAR information that duplicates material in the DCD. Such information from the DCD is repeated in the FSAR only in instances determined necessary to provide contextual clarity.

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Summary of COL Information Items

- **175 COL Information Items (DCD Rev 16 Table 1.8-2)**
- **48 closed in DCD Rev 16**
  - Includes seven deleted because of redundancy to ITAAC
- **18 COL Items transition to COL Holder Items (proposed license condition in Part 10)**
- **Remainder closed via COL application**
  - Includes three covered by operational program TRs

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COL Holder Items (Examples)

3.7-3 Seismic Interaction Review

- *The seismic interaction review will be updated by the Combined License holder for as-built information. This review is performed in parallel with the seismic margin evaluation. The review is based on as-procured data, as well as the as-constructed condition. The as-built seismic interaction review is not provided with the COL application, but is completed prior to fuel load.*

5.3-4 Reactor Vessel Materials Verification

- *The Combined License holder will complete prior to fuel load verification of plant-specific belt line material properties consistent with the requirements in subsection 5.3.3.1 and Tables 5.3-1and 5.3-3. The verification will include a pressurized thermal shock evaluation based on as procured reactor vessel material data and the projected neutron fluencies for the plant design objective of 60 years. This evaluation report will be submitted for NRC staff review.*

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FSAR Chapter 1
Introduction and General Description

- **Mostly IBR of DCD, IBR of Part 52 Appendix D, STD DEP 1.1-1**
- **Discussion of format, e.g., LMAs and numbering of Figures, Tables, & References**
- **Lists - acronyms, RG usage, SRP conformance, RG conformance**
- **Complete list of material incorporated by reference**
- **Summary of Departures as Table 1.8-201, e.g., STD DEP 1.1-1**
- **STD COL 1.9-1, 2*, 3* (RGs, BLs & GLs, and USI/GSIs)**
- **COL Item tabulation as Table 1.8-202**
- **New Section 1.10 on multi-unit site construction considerations**

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FSAR Chapter 2
Site Characteristics

- **Mostly site specific material, STD DEP 1.1-1**
- **Comparison of BLN Site Characteristics to DCD Site Parameters**
  - Combined listing of DCD Tier 1 Table 5.0-1 and Tier 2 Table 2-1
- **SUP material and COL items**

FSAR Chapter 3
Design of SSCs

- **Mostly IBR of DCD**
- **Dual unit information (DCD is for single unit)**
- **Inservice testing program description**
  - Snubbers
  - Valves (no pumps)
- **SUP material and COL items**

FSAR Chapter 4 Reactor

- **Mostly IBR of DCD**
- **COL items**

FSAR Chapter 5
Reactor Coolant System

- **Mostly IBR of DCD**
- **Inservice inspection program (Class 1)**
- **SUP material and COL items**

FSAR Chapter 6
Engineered Safety Features

- **Mostly IBR of DCD**
- **Containment leak rate testing program**
  - (per approved NuStart TR)
- **Inservice inspection program (Class 2 & 3)**
- **SUP material and COL items**

FSAR Chapter 7
Instrumentation and Controls

- **All IBR of DCD**

FSAR Chapter 8
Power Systems

- **Mostly IBR of DCD**
- **Conceptual design information (CDI) replacement**
- **Switchyard and grid information**
- **SUP material and COL items**

FSAR Chapter 9
Auxiliary Systems

- **Mostly IBR of DCD; STD DEP 1.1-1**
- **BLN DEP 9.2-1 – service water cooling tower blowdown**
- **Full-text incorporation in 9.2.8 – Turbine building closed cooling water (CDI replacement)**
- **SUP material and COL items**

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FSAR Chapter 10
Steam and Power Conversion

- **Mostly IBR of DCD**
- **Full-text incorporation for 10.4.5 – Circulating water (CDI replacement)**
- **Inservice inspection program (Class 2 & 3)**
- **SUP material and COL items**

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FSAR Chapter 11
Radioactive Waste Management

- **Mostly IBR of DCD**
- **Radiation and effluent monitoring program**
- **SUP material and COL items**

FSAR Chapter 12
Radiation Protection

- Mostly IBR of DCD
- 12.1 – ALARA
- 12.4 – Dose to construction workers
- 12.5 - Radiation protection program (Appendix 12AA)
- SUP material and COL items

FSAR Chapter 13
Conduct of Operations

- Mostly IBR of DCD; STD SUP 1.1-1
- 13.1 - Organization – generic terms
- 13.2 - Training
- EP (13.3) and SGI (13.6) are separate documents
- 13.4 – Operational Programs
- 13.5 – Procedures
- 13.7 – Fitness for duty (not in DCD)
- SUP material and COL items

FSAR Chapter 14
Initial Test Program

- **Mostly IBR of DCD**
- **ITAAC criteria**
- **ITAAC screening**
- **SUP material and COL items**

FSAR Chapter 15 Accident Analysis

- **Mostly IBR of DCD**
- **Tank failure analysis moved to Chapter 2**
- **SUP material and COL items**

FSAR Chapter 16
Technical Specifications

- **Mostly IBR of DCD**
- **16.1 – Plant specific TS in Part 4**
- **SUP material and COL items**

FSAR Chapter 17
Quality Assurance

- **Mostly IBR of DCD; STD DEP 1.1-1**
- **Quality assurance program description (QAPD) in Part 11**
- **17.5 & 17.6 not in DCD**
- **SUP material and COL items**

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FSAR Chapter 18
Human Factors Engineering

- **Mostly IBR of DCD**
- **BLN DEP 18.8-1 – Moved TSC & OSC**
- **SUP material and COL items**

FSAR Chapter 19
Engineered Safety Features

- **Mostly IBR of DCD**
- **SUP material and COL items**

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DCWG Issues

- **Finality (certified design)**
- **Threshold for changes (level of detail)**
- **Configuration management for standard content**
- **NEI Level (COL Task Force)**
  - Evolving regulation and guidance
  - Construction inspection
  - Electronic submittal guidance
  - Templates (RP/ALARA, QAPD, Training)
- **Technical issues**
  - Operational programs
  - Seismic
  - DAC

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AP1000 Plant Specific Issues Summary to ACRS

Amy Aughtman
Southern Nuclear, Vogtle 3&4 COL Lead
October 31, 2007

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Plant Specific Issues

- **Combination of site specific challenges**
  - Sites with partially constructed plants
  - Sites with existing operating units
  - Greenfield site
- **Site-specific issues, common approach where feasible**
- **High level of coordination within DCWG**
- **AP1000 Builders Group standardization efforts**

Bellefonte 3&4 *Lee Nuclear 1&2* *Summer 2&3* *Vogtle 3&4* *Harris 2&3* *Levy 1&2*

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Standardization of Site Specific Features

- **Benefits**
  - Supports COLA preparation and review
  - Supports URD conformance
  - Supports Design Finalization
  - Supports AP1000 fleet standardization philosophy and goals of making the plant design as standard as possible
  - Potential savings to utilities through efficiencies gained in design, procurement, construction and operation

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Standardization of Site Specific Features

- Circulating Water pumps and pump intake structure
- Raw Water pumps and pump intake structure
- Training facilities
- Admin. Building
- Maintenance facilities
- Stand alone TSC
- Natural draft cooling tower and Mechanical draft cooling tower

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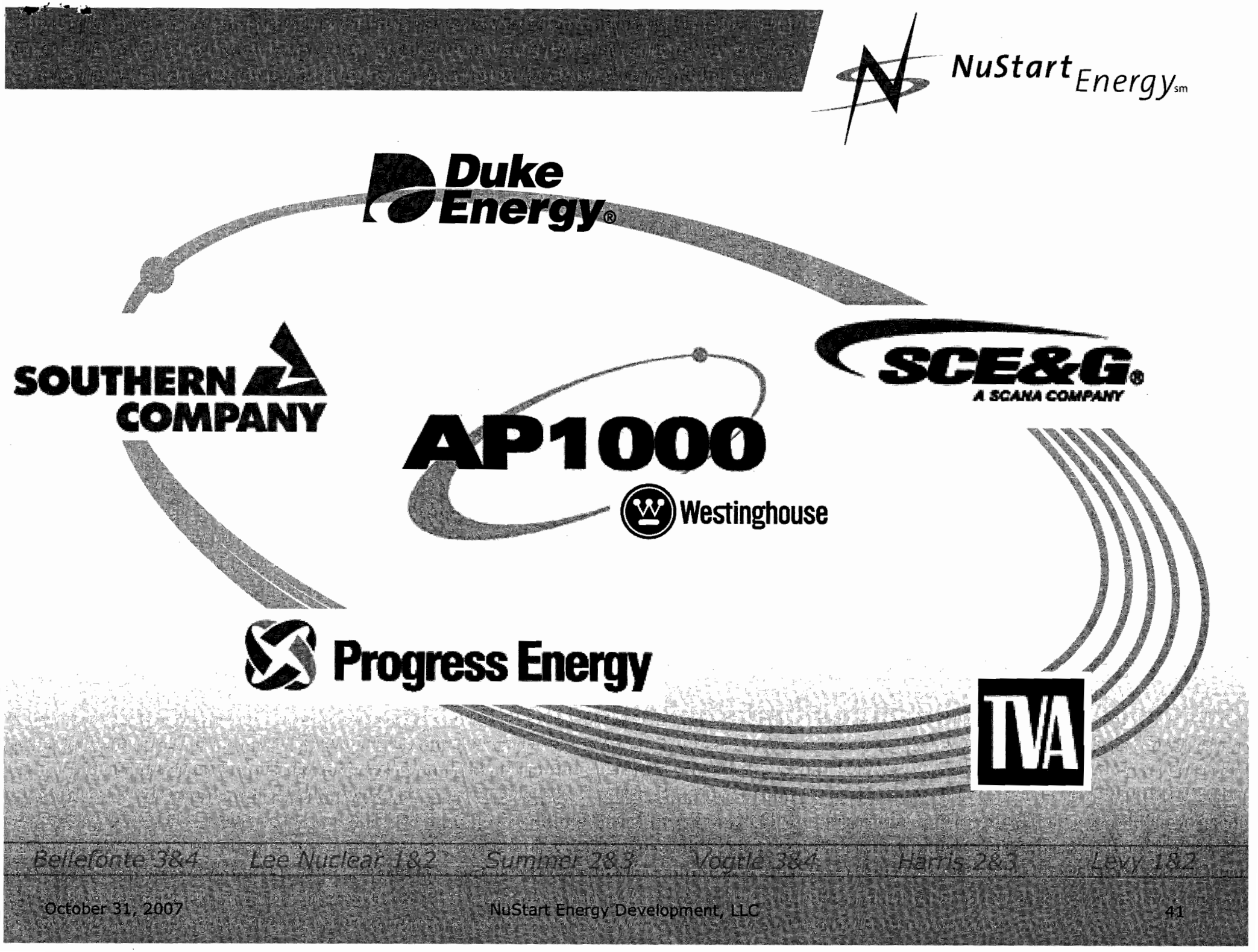
Plant Specific Issues for Vogtle 3&4

- **Examples**
  - IBR ESP
  - LWA requested
  - Raw Water provided from combination of river water and groundwater
  - Consideration of hazards from existing co-located combustion turbine plant
  - Soil site
  - Switchyard design
  - Emergency Plan (Vogtle ESP)
    - Common Technical Support Center for four units
  - Organization description
  - Security Plan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Duke Energy®
SOUTHERN COMPANY
SCE&G®
A SCANA COMPANY
AP1000
Westinghouse
Progress Energy
TVA
Bellefonte 3&4
Lee Nuclear 1&2
Summer 2&3
Vogtle 3&4
Harris 2&3
Levy 1&2

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AP1000 R-COLA
FSAR Standardization
DCWG Meeting
July 25, 2007

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AP1000 R-COLA FSAR Standardization

- **Last meeting discussions**
  - COL items
  - Departures
- **NRC Feedback / Questions?**
- **Update on departures**
- **Update standardization matrix**
- **Identify supplemental material**
- **Other Parts of COL in next discussion**

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AP1000 R-COLA FSAR Chapter 1 Introduction and General Description

RIS Response Update

Sect.	IBR	STD	PS
1.1	IBR	X	X
1.2	IBR		X
1.3	IBR		
1.4	IBR		X
1.5	IBR		
1.6	IBR	X	
1.7	IBR		X
1.8	IBR	X	X
1.9	IBR	X	X
1.10	new	X	X
1A	IBR	X	

- **DEP 1.1-1 – numbering and organization difference – new subsection 1.4.2.8**
- **COL items**
- **SUP material to address COLA rather than design certification, for example…**
  - Applicant
  - Plant location
  - Acronyms
  - Contractors

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AP1000 R-COLA FSAR Chapter 2 Site Characteristics

RIS Response Update

Sect.	IBR	STD	PS
2.0	IBR	X	X
2.1	IBR		X
2.2	IBR		X
2.3	IBR		X
2.4	IBR		X
2.5	IBR		X

- **DEP 1.1-1 – numbering and organization difference**
  – new subsections in 2.1 through 2.5
- **COL material to address site characteristics**
- **SUP material to address…**
  - Site characteristic conformance to DCD site parameters

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AP1000 R-COLA FSAR Chapter 3 Design of SSCs

RIS Response Update

Sect.	IBR	STD	PS
3.1	IBR		
3.2	IBR	X	
3.3	IBR	X	X
3.4	IBR	X	X
3.5	IBR	X	X
3.6	IBR	X	
3.7	IBR	X	X
3.8	IBR	X	
3.9	IBR	X	
3.10	IBR		
3.11	IBR	X	
3A-3J	IBR		

- **COL items**
- **SUP material to address…**
  - No other SR'd SSCs
  - No other structures next to NI
  - External flooding sources
  - No permanent dewatering
  - Requested cross references
  - Dual unit considerations
  - Procedures
  - Seismic instrumentation
  - Overburden, embedment
  - Waterproofing

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AP1000 R-COLA FSAR Chapter 4 Reactor

RIS Response Update

Sect.	IBR	STD	PS
4.1	IBR		
4.2	IBR		
4.3	IBR		
4.4	IBR		
4.5	IBR		
4.6	IBR		

- All IBR

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AP1000 R-COLA FSAR Chapter 5 Reactor Coolant System

RIS Response Update

Sect.	IBR	STD	PS
5.1	IBR		
5.2	IBR	X	
5.3	IBR	X	
5.4	IBR	X	

- **COL items**
- **SUP material to address…**
  - LTOP
  - Water chemistry
  - Boric acid inspection
  - P-T limits procedures

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AP1000 R-COLA FSAR Chapter 6 Engineered Safety Features

RIS Response Update

Sect.	IBR	STD	PS
6.1	IBR	X	
6.2	IBR	X	
6.3	IBR	X	
6.4	IBR	X	X
6.5	IBR		
6.6	IBR	X	
6A	IBR		

- **COL items**
- **SUP material to address…**
  - Dual units dose analysis

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AP1000 R-COLA FSAR Chapter 7 Instrumentation and Controls

RIS Response Update

Sect.	IBR	STD	PS
7.1	IBR		
7.2	IBR		
7.3	IBR		
7.4	IBR		
7.5	IBR		
7.6	IBR		
7.7	IBR		

- All IBR

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AP1000 R-COLA FSAR Chapter 8 Electric Power

RIS Response Update

Sect.	IBR	STD	PS
8.1	IBR		X
8.2	IBR		X
8.3	IBR	X	X

- **COL items**
- **CDI replacement**
- **SUP material to address…**
  - Grid information
  - Switchyard information
  - TSP agreement
  - PS Non-class 1E loads
  - PS Site conditions

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AP1000 R-COLA FSAR Chapter 9 Auxiliary Systems

RIS Response Update

Sect.	IBR	STD	PS
9.1	IBR	X	
9.2	IBR		X
9.3	IBR	X	
9.4	IBR		X
9.5	IBR	X	X
9A	IBR	X	X

- **DEP 1.1-1 – numbering and organization difference – new subsections in 9.5**
- **COL items**
- **SUP material to address…**
  - Heavy loads
  - Sanitary waste
  - Raw water
  - Thread compatibility

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AP1000 R-COLA FSAR Chapter 10 Steam and Power Conversion

RIS Response Update

Sect.	IBR	STD	PS
10.1	IBR	X	
10.2	IBR	X	
10.3	IBR	X	
10.4	IBR	X	X

- **COL items**
- **CDI replacement**
- **SUP material to address…**
  - Turbine missiles
  - Valve testing frequency
  - Steam/water hammer prevention
  - Chemistry
  - IGSCC susceptibility

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AP1000 R-COLA FSAR Chapter 11 Radioactive Waste Management

RIS Response Update

Sect.	IBR	STD	PS
11.1	IBR		
11.2	IBR	X	X
11.3	IBR		X
11.4	IBR	X	
11.5	IBR	X	X

- **COL items**
- **SUP material to address…**
  - Procedures

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AP1000 R-COLA FSAR Chapter 12 Radiation Protection

RIS Response Update

Sect.	IBR	STD	PS
12.1	IBR	X	
12.2	IBR	X	
12.3	IBR	X	
12.4	IBR	X	
12.5	IBR	X	
12AA	new	X	X

- **DEP 1.1-1 – numbering and organization difference – new Appendix 12AA**
- **COL items**
- **SUP material to address…**
  - ALARA for mods
  - Construction dose
  - Procedures

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AP1000 R-COLA FSAR Chapter 13 Conduct of Operations

RIS Response Update

Sect.	IBR	STD	PS
13.1	IBR	x	X
13.2	IBR	X	
13.3	IBR	X	
13.4	IBR	X	
13.5	IBR	X	
13.6	IBR	X	
13.7	new	X	
13AA	new		X

- **DEP 1.1-1 – numbering and organization difference – new subsections throughout**
- **COL items**

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AP1000 R-COLA FSAR Chapter 14 Initial Test Program

RIS Response Update

Sect.	IBR	STD	PS
14.1	IBR		
14.2	IBR	X	X
14.3	IBR	X	X
14.4	IBR	X	X

- **DEP 1.1-1 – numbering and organization difference**
  – new subsections in 14.2.9 and 14.2.10
- **COL items**
- **SUP material to address…**
  - Site specific ITAAC criteria
  - Site specific ITAAC screening

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AP1000 R-COLA FSAR Chapter 15 Accident Analysis

RIS Response Update

Sect.	IBR	STD	PS
15.0	IBR		
15.1	IBR		
15.2	IBR		
15.3	IBR		
15.4	IBR		
15.5	IBR		
15.6	IBR		X
15.7	IBR		X
15.8	IBR		
15A	IBR		X
15B	IBR		

- **COL items**
- **SUP material to address…**
  - Cross reference to dispersion coefficient information

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AP1000 R-COLA FSAR Chapter 16 Technical Specifications

RIS Response Update

Sect.	IBR	STD	PS
16.1	IBR*	X	
16.2	IBR		
16.3	IBR	X	

- COL items
- *16.1 only IBR through 16.1.2
- PS TS in COLA Part 4

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AP1000 R-COLA FSAR Chapter 17 Quality Assurance

RIS Response Update

Sect.	IBR	STD	PS
17.1	IBR		X
17.2	IBR		
17.3	IBR		
17.4	IBR		
17.5	New	X	
17.6	New	X	
17.7	IBR	X	X
17.8	IBR	X	X

- **DEP 1.1-1 – numbering and organization difference – new sections 17.5 & 17.6**
- **COL items**
- **SUP material to address…**
  - Maintenance rule

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AP1000 R-COLA FSAR Chapter 18 Human Factors Engineering

RIS Response Update

Sect.	IBR	STD	PS
18.1	IBR		
18.2	IBR		X
18.3	IBR		
18.4	IBR		
18.5	IBR		
18.6	IBR	X	
18.7	IBR	X	

- **COL items**
- **SUP material to address…**
  - TSC reference to EP

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AP1000 R-COLA FSAR Chapter 18 (cont'd)

RIS Response Update

Sect.	IBR	STD	PS
18.8	IBR		
18.9	IBR	X	
18.10	IBR	X	
18.11	IBR		
18.12	IBR		
18.13	IBR		
18.14	IBR	X	

- **COL items**
- **SUP material to address…**
  - Procedure development
  - Training program amended per findings

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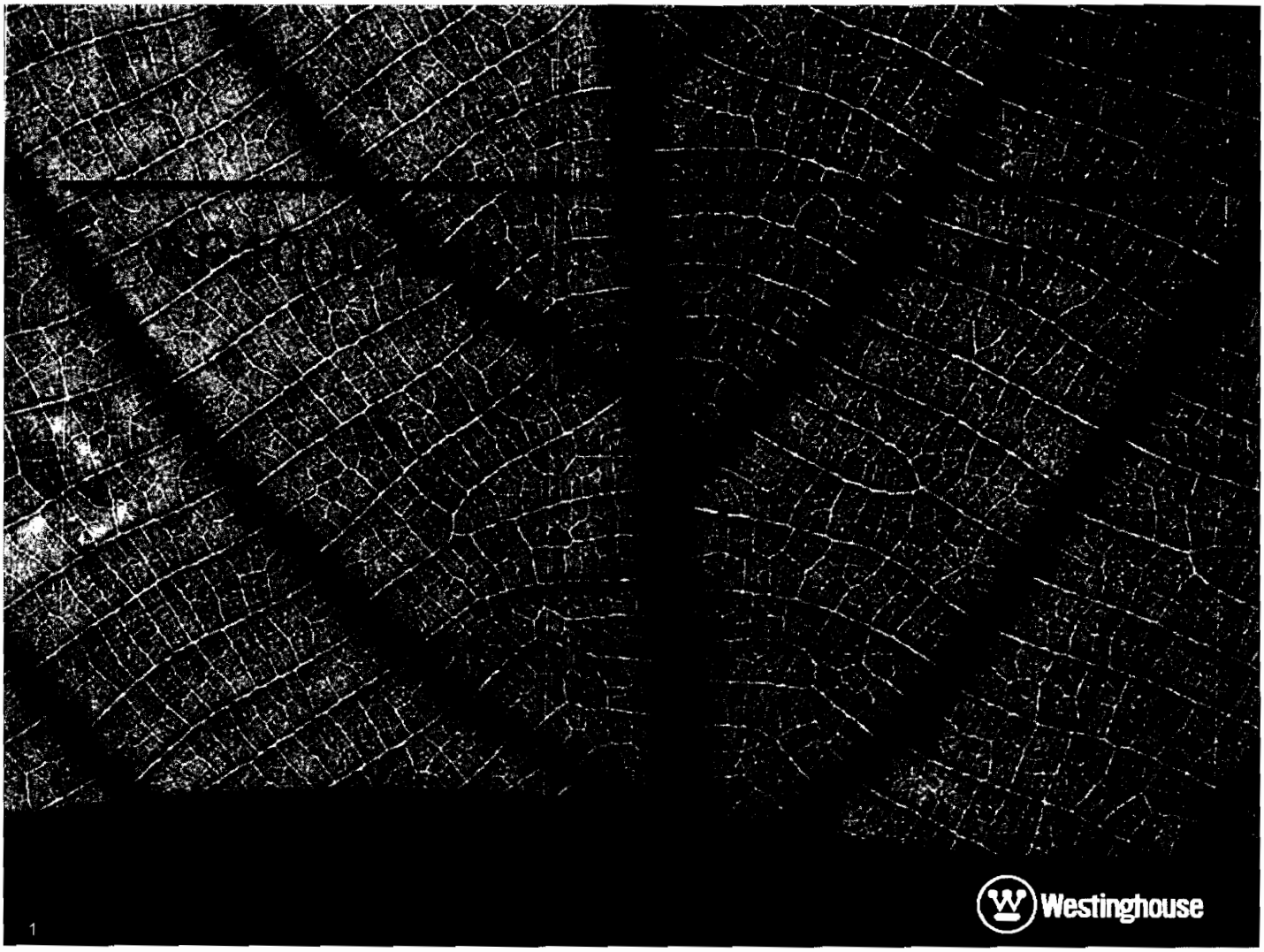
AP1000 R-COLA FSAR Chapter 19 Probabilistic Risk Assessment

RIS Response Update

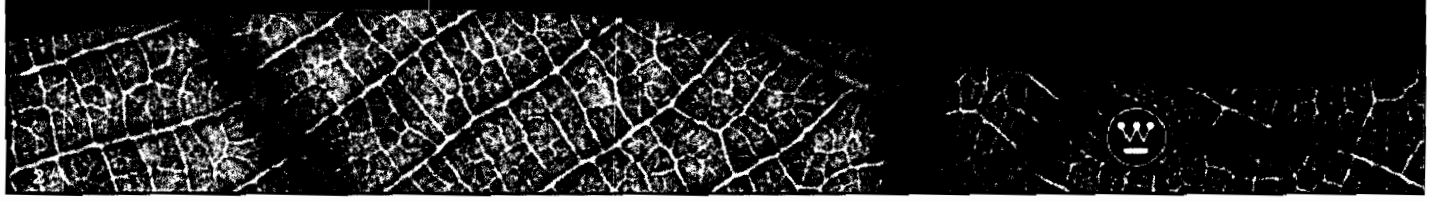
Sect.	IBR	STD	PS
19.1	IBR		
To	IBR		
19.58	IBR		
19.59	IBR	X	
19A-E	IBR		

- **COL items**
- **SUP material to address…**
  - PRA configuration control


Westinghouse

Meeting Objectives

- Outline Objectives of Revision 16 Changes
- Outline Changes to AP1000 Design Certification Document
- Discuss Licensing basis for NRC Review of Revision16
- Discuss Plan for Review of Revision 16.
- Discuss Significant Changes to DCD.
- Discuss Plan going forwards and action items



Integrated Preparation and Review Process

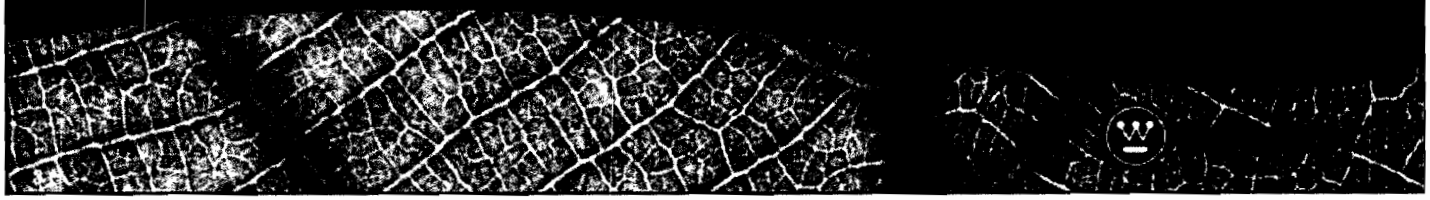
Existing Design Certification Rule

+ Amendment (DCD Rev. 16)

+R-COLA

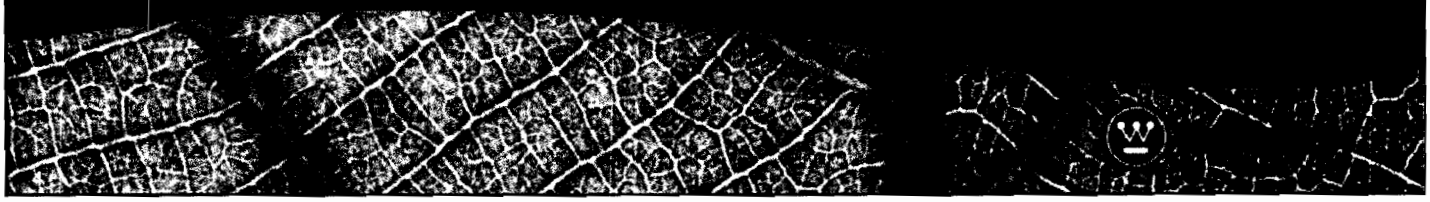
= Substantial Standardization

This leads to efficiency in preparation and NRC review and supports Design Centered Review approach



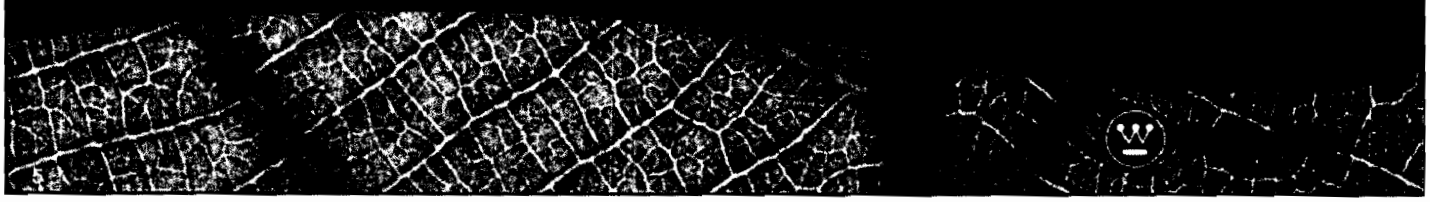
Integrated Preparation Effort

- Industry Team (NuStart) Involvement – Preparation and review
  - Technical Reports (AP1000, NEI)
  - Design Certification amendment (DCD Rev. 16)
  - R-COLA
- AP1000 S-COLA preparers are involved through NuStart



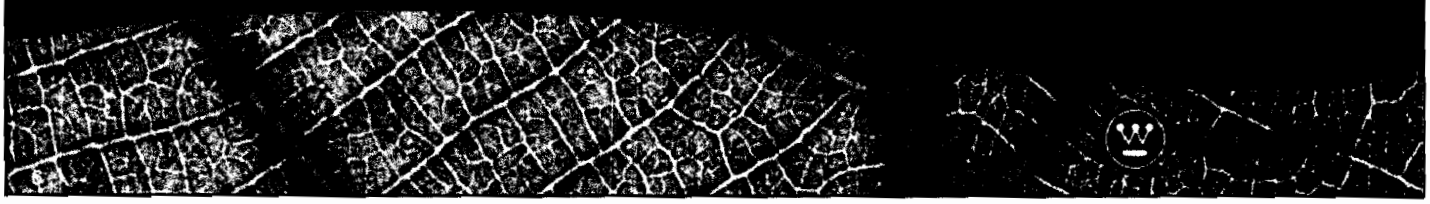
Chronology

- AP1000 Design Certification Approved December 30, 2005
- AP1000 Technical Reports transmitted to NRC Starting in April, 2006
- NRC Approved Changes to 10 CFR Part 52 April 11, 2007
- Electronic version of DCD Revision 15 submitted April 25 2007
- DCD Revision 16 Delivered on May 29, 2007



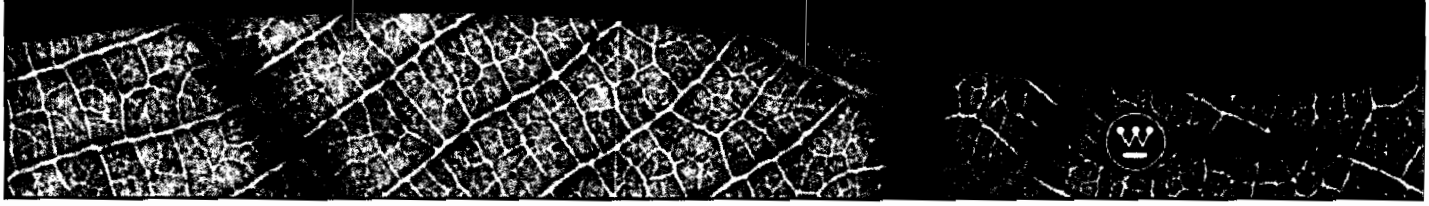
Objectives of Revision 16 Changes

- Resolve Design Related COL Information Items
- Complete Design Acceptance Criteria Activities
- Include Design Finalization Design Changes
- Include DCWG requested Design Changes.



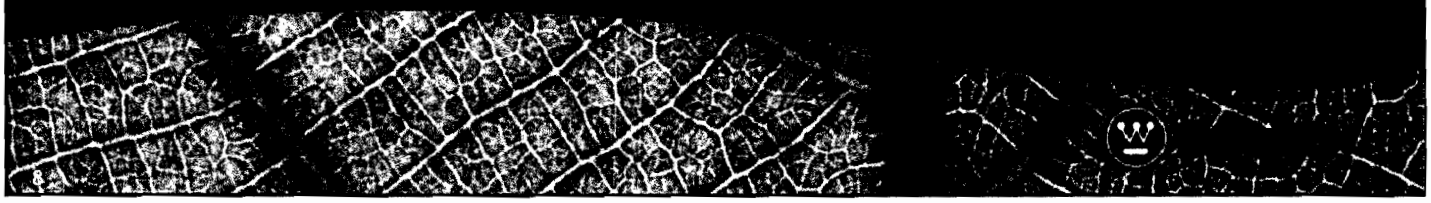
Types of DCD Revisions

- Information added to address COL Information Item closures described in technical reports.
- Design Information Added to Resolve Design Acceptance Criteria Described in Technical Reports.
- Design Changes described in Technical Reports
- Changes to clarify COL Applicant activities
- Editorial changes



Identifying Changes

- Changes are marked with bar marks in margins
- DCD Revision 16 Roadmap identifies source of changes
  - The roadmap identifies a technical report as the source of most technical changes.
  - RAIs are identified for a few changes.
  - Consistency with values elsewhere in the DCD.
  - Editorial.



Roadmap Example

TIER 2 REVISION 16 CHANGE ROADMAP

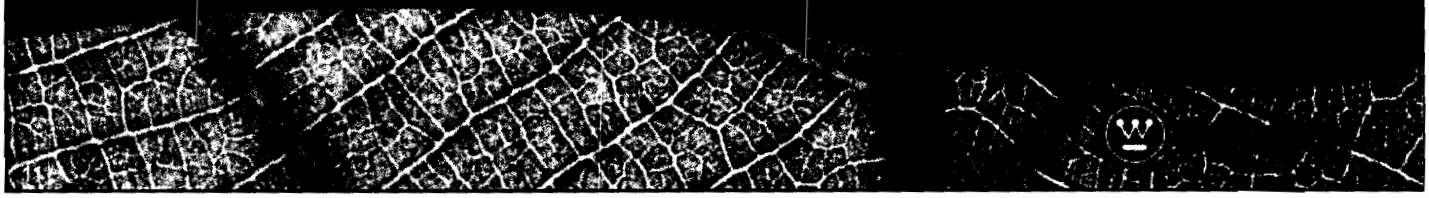
Section	Page No.	Type of Change
3.4	3.4-1	APP-GW-GLR-130 APP-GW-GLN-105
3.4	3.4-3	APP-GW-S2R-010 APP-GW-GLN-105 Editorial
3.4	3.4-7	APP-GW-GLN-105
3.4	3.4-8	To be consistent with subsection 6.3.7.4.4
3.4	3.4-11	Editorial
3.4	3.4-19	APP-GW-GLN-124
3.4	3.4-20	APP-GW-GLN-105 Consistency with Table 6.2.2-1
3.4	3.4-21 and 3.4-22	APP-GW-GLN-105
3.4	3.4-23	APP-GW-GLR-130 Editorial
3.4	3.4-24 and 3.4-25	APP-GW-S2R-010
3.4	3.4-26	Editorial

Revision 16 Ground Rules

- Technical Changes are defined and explained in Technical Reports.
- AP1000 Design Certification regulatory basis of the existing Design Certification remains valid.
- COL applicant activities are defined in COL Information Items and "imbedded requirements" are removed from text.
- AP1000 COL Applicant design changes agreed to by all in the DCWG.

Technical Reports

- Submittal of technical reports by Westinghouse provide standard AP1000 Design information and basis for DCD Rev. 16
- NuStart review and oversight of technical report preparation provides utility input and support of standardization of AP1000 COL applications.



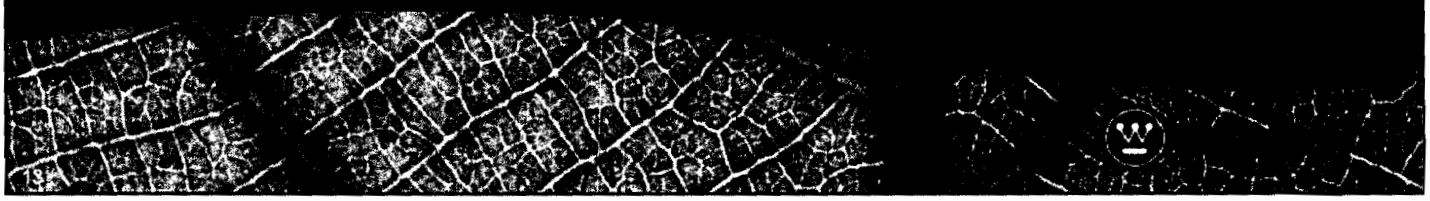
Technical Reports - Review

- NRC Staff Review
  - Requests for Additional Information
  - Interaction as necessary
- NRC SER Preparation
  - Open Item Identification
  - Open Item Resolution

NRC Staff Review and SER Preparation for Technical Reports are expected to drive the content of the Design Certification Amendment FSER

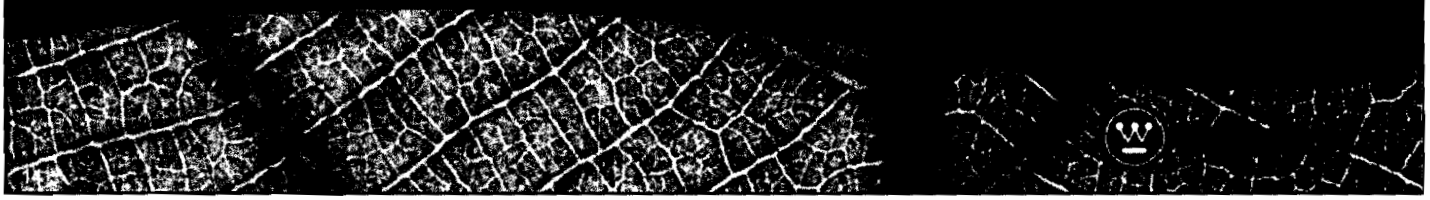
COL Information Item Changes

- COL information item descriptions at the end of DCD sections were rewritten to reflect completion or partial completion of the activities.
- Nonspecific COL activity requirements scattered through the text were rewritten to reference specific COL information items.
- Items requiring post application information were changed to COL holder activities



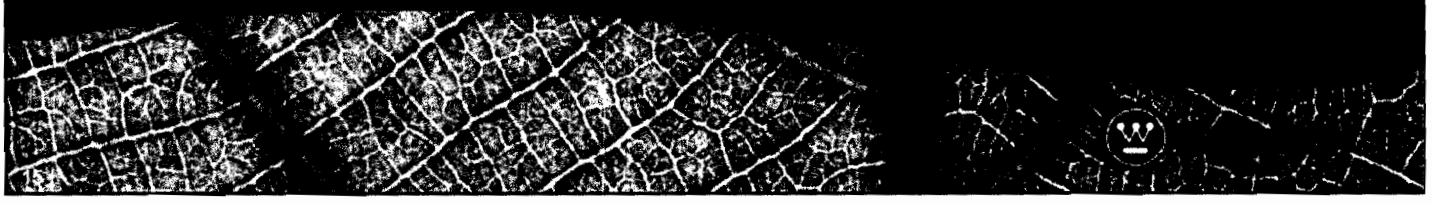
DCD changes

- Extension of seismic spectra to soil conditions
- Revision of buildings for enhanced protection
- Update of fuel design approach
- Protection system I&C update
- Update of electrical system
- Completion of HFE activities
- Piping DAC information
- Turbine manufacturer change
- X/Q and Dose Calculations



Chapter 1

- Changes to building configuration in General Arrangement drawings 1.2
- Rewording of COL applicant activities in discussion of guidance conformance.

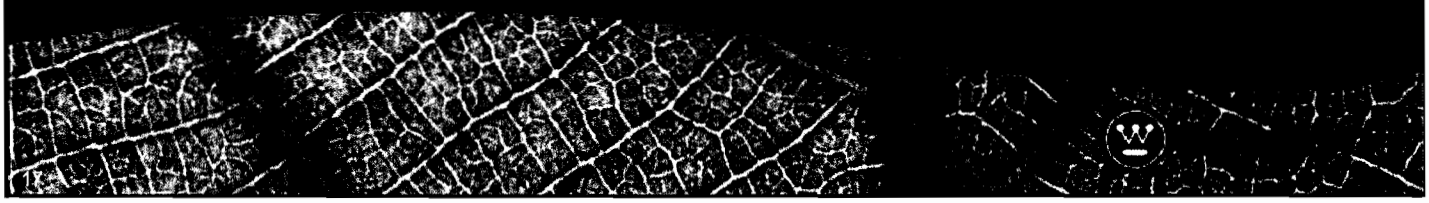


Chapter 2

- Update of site parameters for additional soil conditions
- Update of subsurface soil condition parameters
- Revision of X/Q parameters

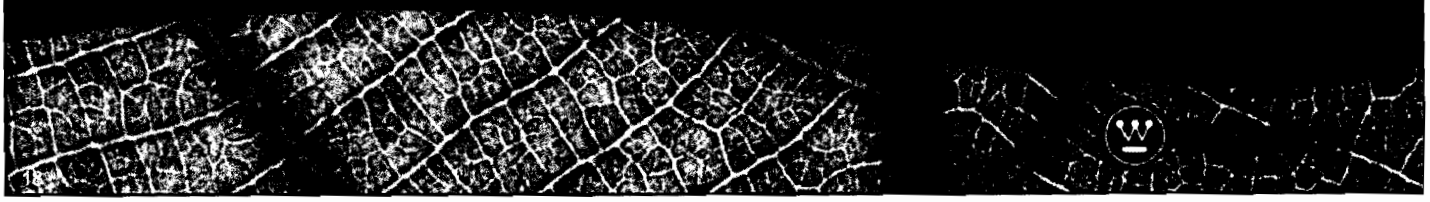
Chapter 3

- Update site soil parameters
- Update key structural dimension drawings
- Update containment design
- Update of reinforcement design
- Revision of design summary tables
- Addition of load follow transient



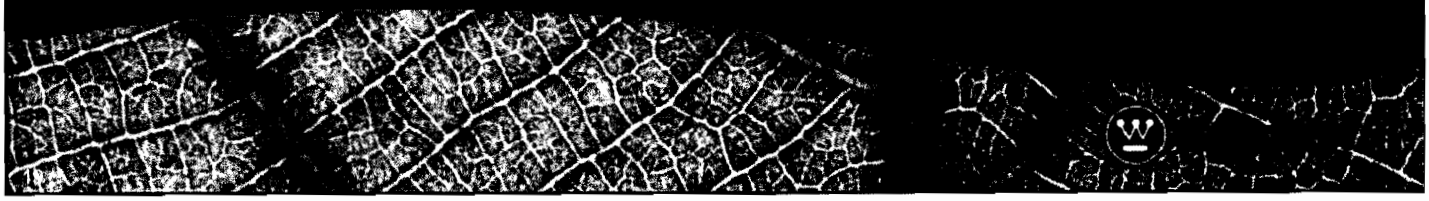
Chapter 3 Continued

- Reactor internals changes
- Update CRDM Design
- Update integrated head package design
- Update seismic qualification requirements
- Update LBB bounding analysis curves
- Add appendix on high frequency
- Update Environmental Qualification Methodology



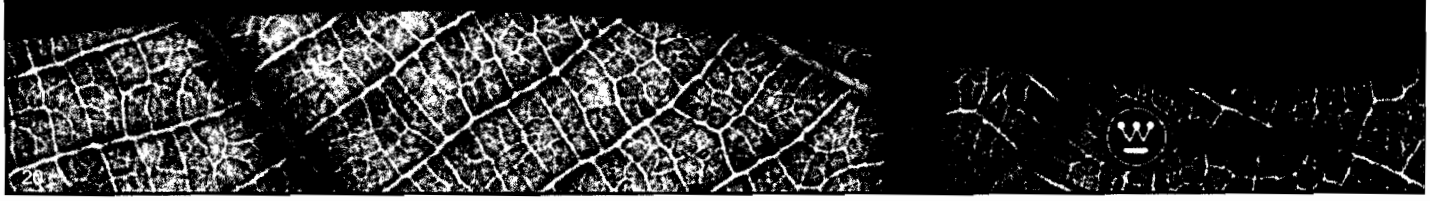
Chapter 4

- Update Gray Rod Design
- Define process for fuel updates
- Remove Tier 2* designation



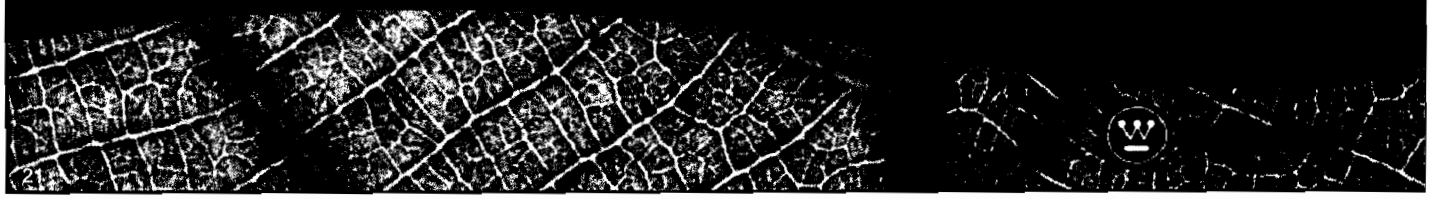
Chapter 5

- Minor updates to component designs including additional material specifications.



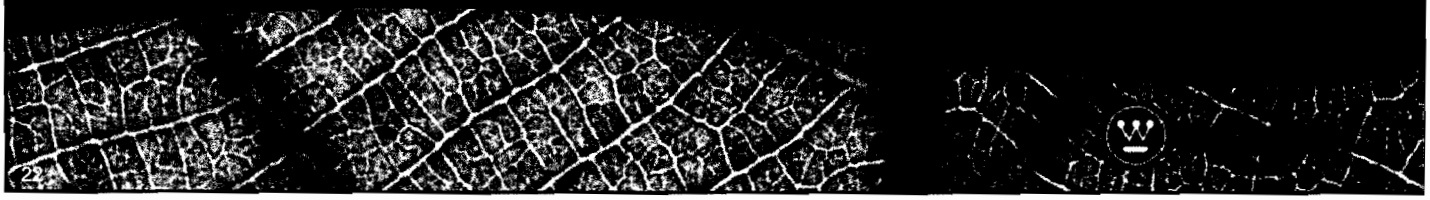
Chapter 6

- Updated requirements for and design of debris screens.
- Altered configuration of Control Room and support areas.



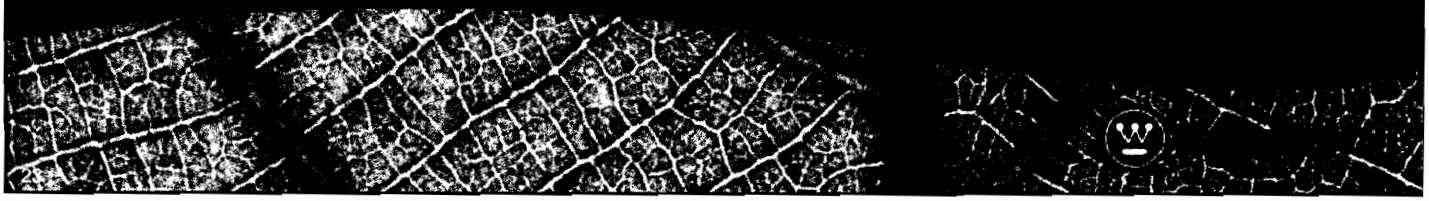
Chapter 7

- Selected one protection system hardware platform
- Updated the I & C design process
- Updated protection system instruments and logic diagrams
- Developed Architecture and Communication Design



Chapter 8

- Added provision for fast bus transfer.
- Added provisions for electrically powered auxiliary boiler.

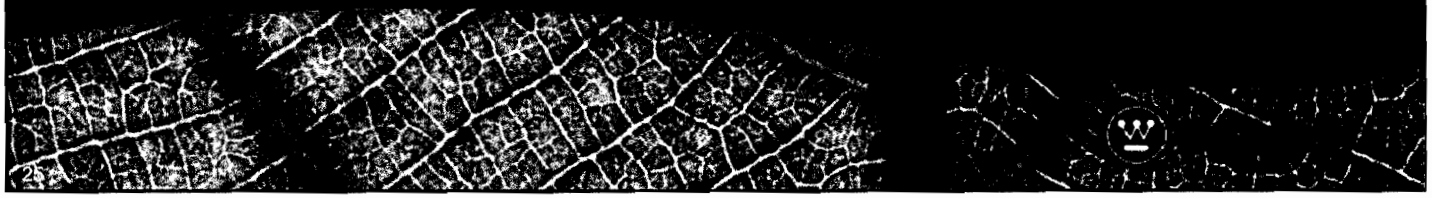


Chapter 9

- Updated design of new fuel racks and spent fuel racks.
- Updated write-up for spent fuel cooling.
- Updated handling systems.
- Added provision for nonmetallic pipe.
- Adjusted service water and component cooling water temperature parameters.
- Changed potable water system source to be site specific.

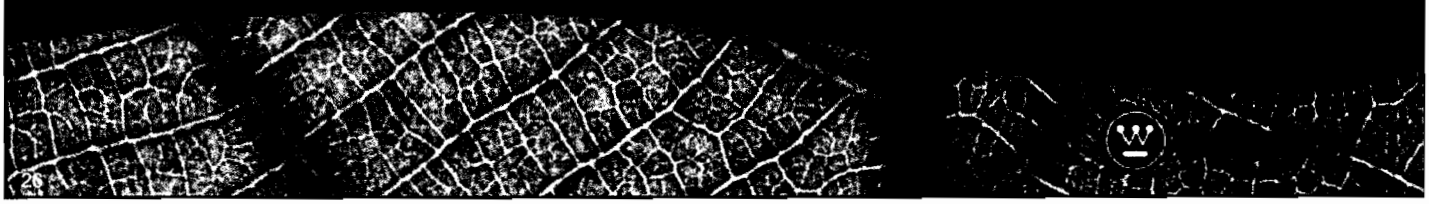
Chapter 9 Continued

- Changed waste water retention basins scope.
- Updated P&IDs for Service Water, Component Cooling Water, and central Chilled Water Systems
- Added provision for zinc addition.
- Updated P&IDs for Chemical and Volume Control System.
- Added control support area term.



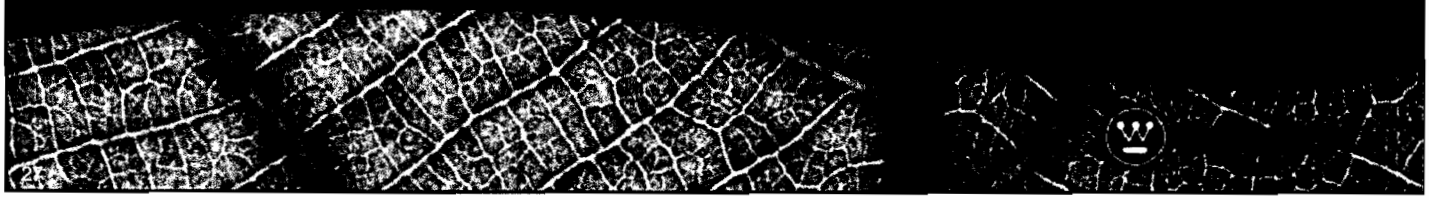
Chapter 9 Continued

- Updated ventilation system P&IDs and sketches.
- Removed fuel oil fired auxiliary boiler.
- Updated P&IDs for Fire Protection System Standby Diesel Fuel Oil System.
- Revised fire area numbers, descriptions, associated tables and drawings to be consistent with building arrangement changes.



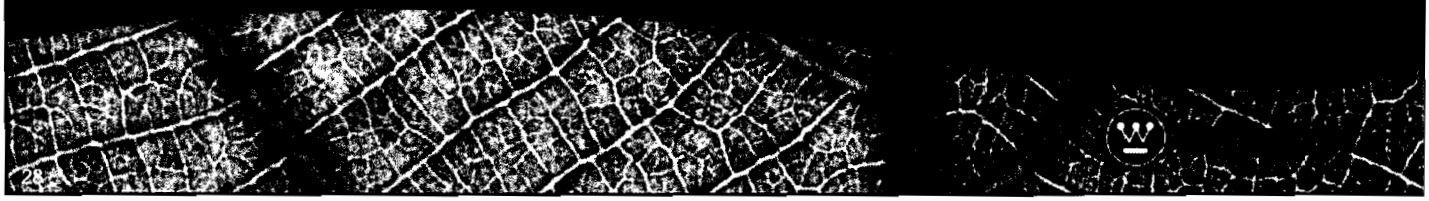
Chapter 10

- Revised turbine–generator description and figures and heat balance to be consistent with Toshiba design.
- Revised Turbine Overspeed Protection to replace mechanical overspeed device.
- Updated P&IDs for main steam system.
- Changed raw water scope.



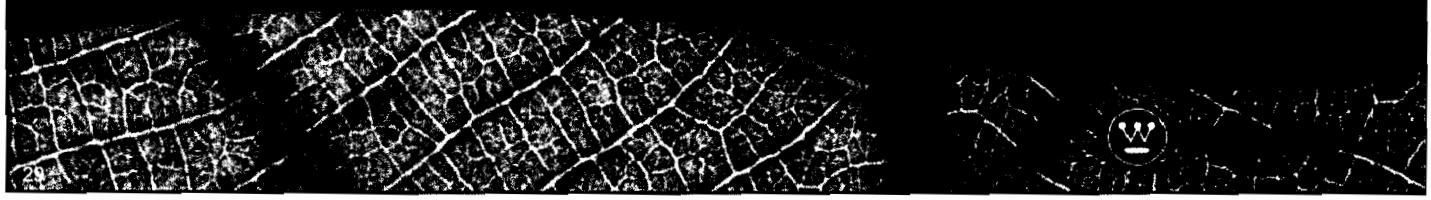
Chapter 11

- Added radwaste monitor tanks to the radwaste building.
- Added compliance with 10 CFR 20.1406
- Updated P&IDs for Liquid and Gaseous Radwaste Systems.



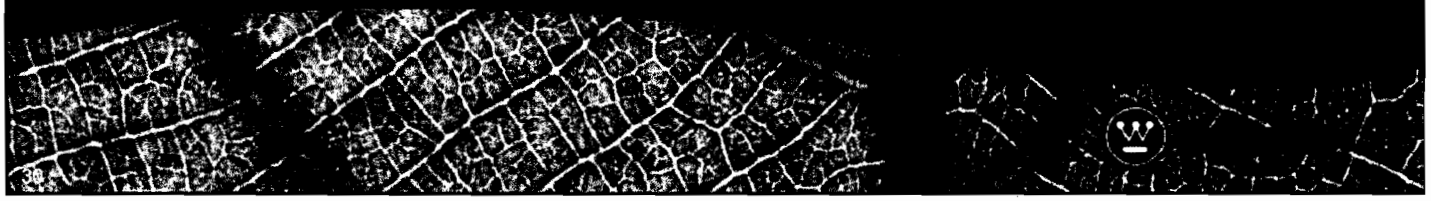
Chapter 12

- Added discussion for considerations for 10 CFR 20.1406
- Revised radiation zone drawings to reflect building arrangement changes.



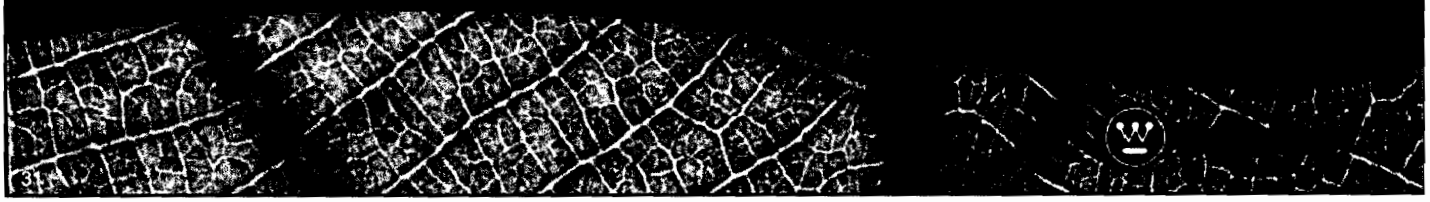
Chapter 13

- Revised write-ups to reflect completion of human factor engineering and procedure development activities.
- Removed security information to referenced documents.



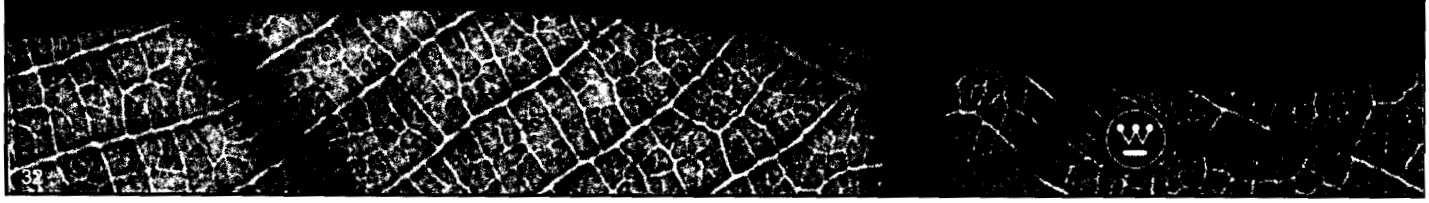
Chapter 14

- Clarifications in 14.3 for consistency with other Tier 2 sections and Tier 1 scope.



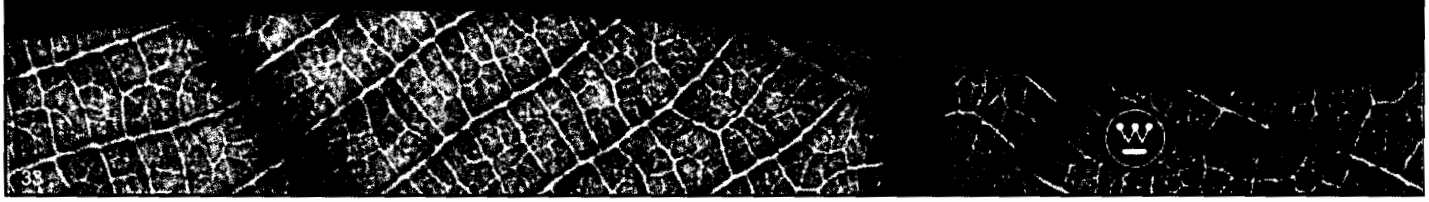
Chapter 15

- Revised dose results
- Included revised atmospheric dispersion factors



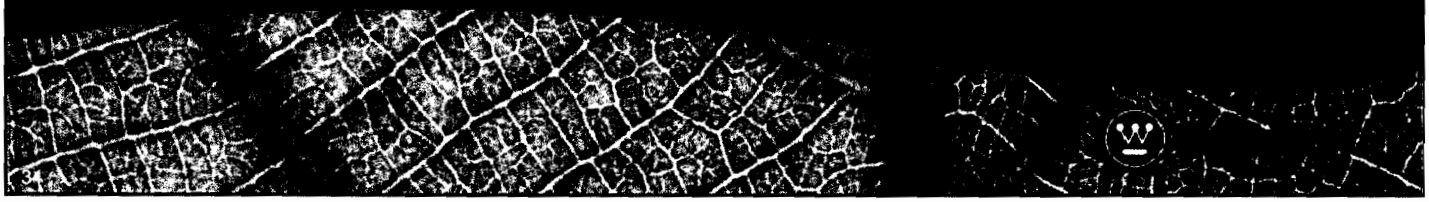
Chapter 16

- Finalized information previously shown in brackets.
- Revised values consistent with design changes.
- Steam generator TSTF only



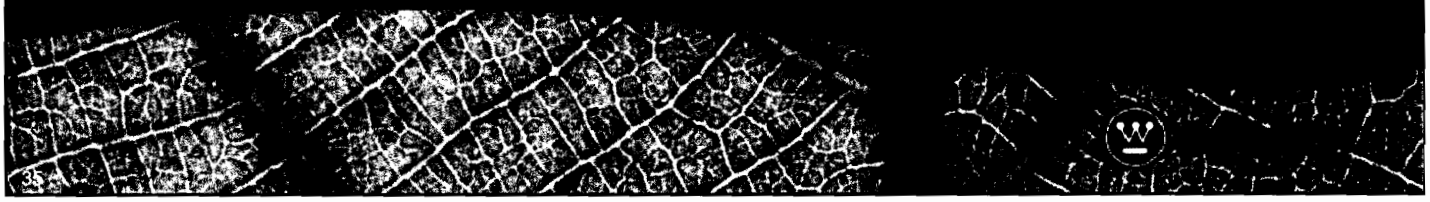
Chapter 17

- NQA-1 Revision update
- Update D-RAP description.



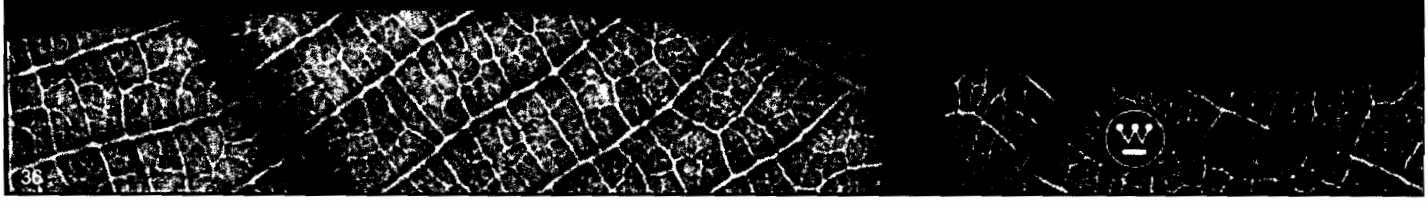
Chapter 18

- Updated to reflect completion of Human Factors Engineering activities



Chapter 19

- Addressed site-specific design and site-specific external hazards in a standard manner.
- Change to CAFTA with no change in results.

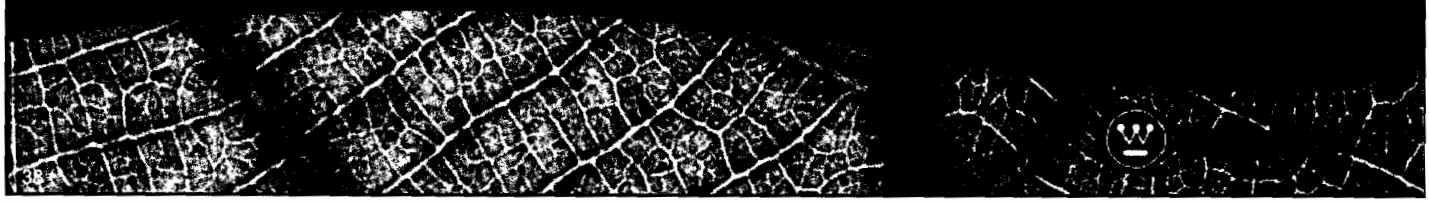


Basis for NRC Review

- It is expected that NRC review will focus on continued technical report review.
- The SER for Design Certification Amendment (DCD Rev. 16) can be based largely on SERs prepared for technical reports.
- The regulatory basis used for the current design certification is expected to remain valid.
- The DCD revision has generally not been updated to incorporate recent SRP and Reg. Guide revisions.

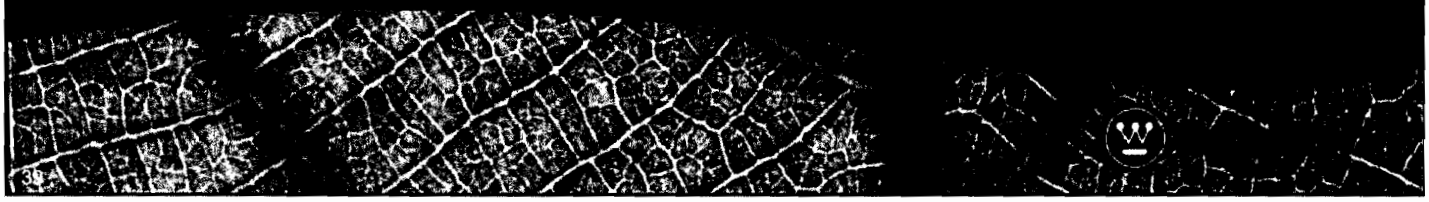
NRC Review Scheduling Considerations

- Most technical reports have been submitted. Remaining reports related to structural issues.
- COL Applications will reference DCD Revision 16.
- Westinghouse approval of design changes that require DCD changes will be limited.
- We anticipate few RAI responses will suggest DCD changes.



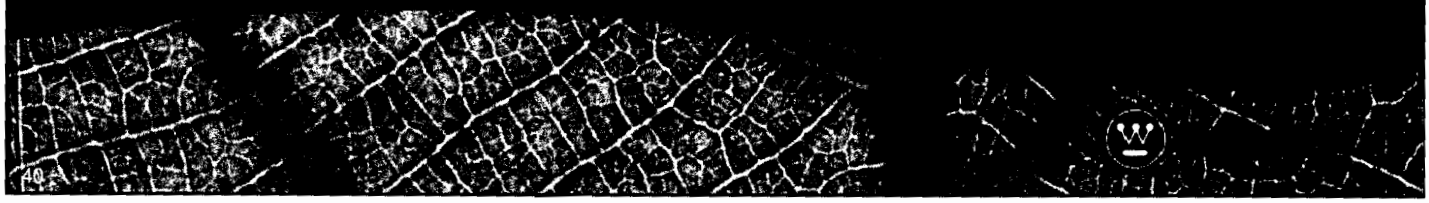
Westinghouse Actions

- Submit SAMDA valuation Letter for Amendment request
- Update Table 1.8-2 to correct inconsistencies
- Identify process for DCD impact control
- Establish priorities for NRC technical interactions
- Begin RAI status reports

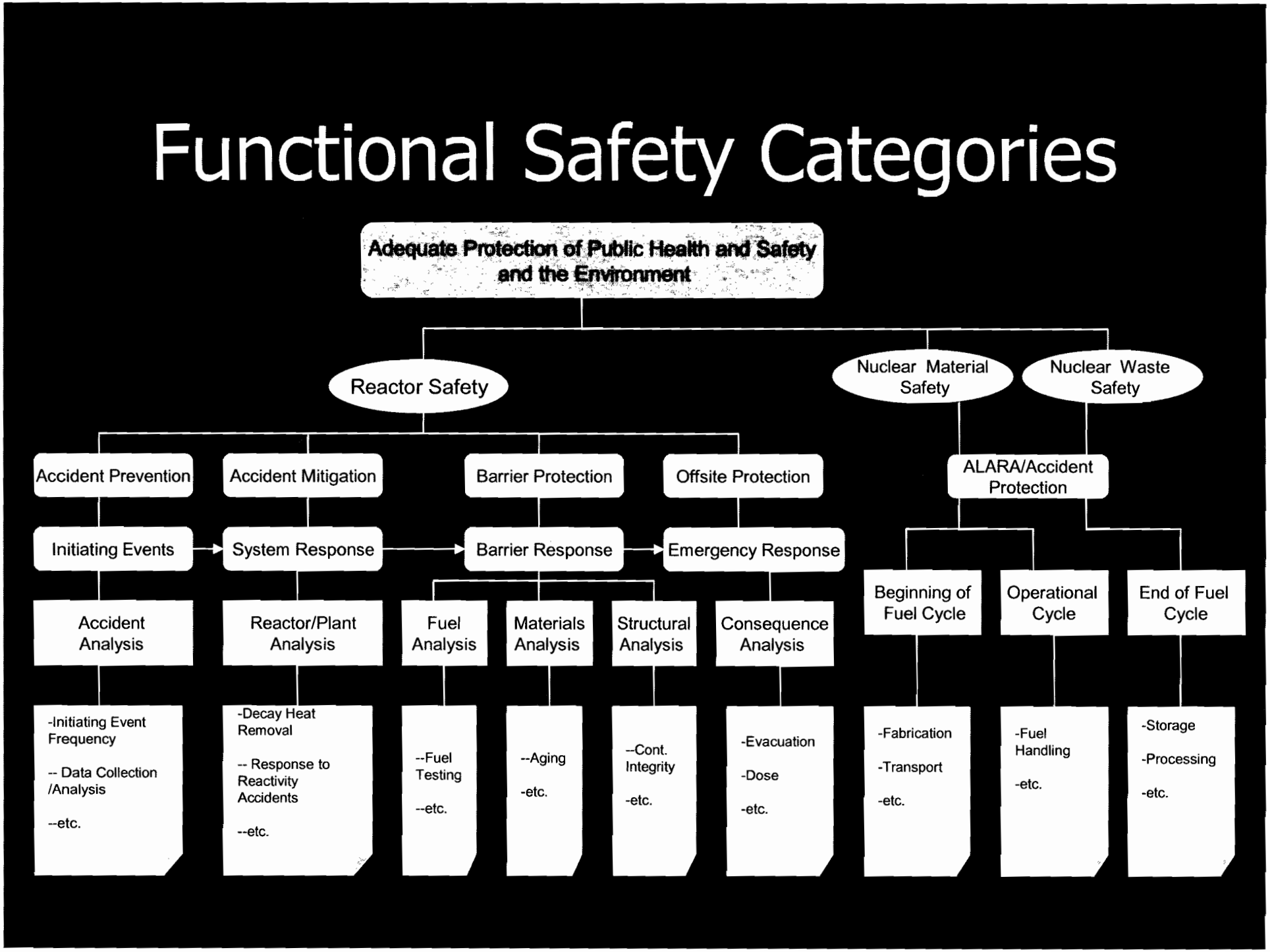


NRC Actions

- Establish schedule and budget
- Update technical report review status on a regular basis
- Provide open items
- Schedule technical meetings



Functional Safety Categories



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Generic COLA Parts Description
DCWG Meeting
July 25, 2007

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Part 0 – Cover Letter

- **Application Cover Letter(s), include:**
  - Oath or Affirmation
  - Listing of CD (or DVD) Contents (List of COLA Parts)
    - LWA Requests (if any)
    - Exemption requests (if any)
    - List of Documents Incorporated by Reference
  - Reference plant identification
  - Schedule considerations
    - Freeze date re: DCD rev and TRs
  - Contact for RAIs
  - Contact for procurement info
  - Reference other submittal letters (if not complete)
  - Address use of electronic links (if any)
  - Identification of Addressed ITAAC/DAC
  - Affidavits for Withheld Info in Part 9

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Part 1- General & Administrative Info

- **Decommissioning Report [Appendix]**
- **Withheld info – see Part 9**

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Part 2 – Final Safety Analysis Report

- Incorporate by reference the DC rule – 1.1
- References to appropriate DCD section(s) – each section
- COL Info Item cross-reference (DCD and ESP) – 1.8/1.10
- Confirm design within SCs and DPs of ESP - various
- Confirm site characteristics within SPs of DCD – 2.0
- Document compliance with ESP Conditions - various
- Operations programs table - 13.4
- Fitness for duty – 13.7
- Construction impacts Info – 1.10/1.12
- Construction related (other) info – end of subsection(s)
- Withheld info – see Part 9

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Part 3 – Environmental Report

- **If referencing ESP:**
  - Info not resolved at ESP
  - Info to show ESP terms and conditions met
  - Info to demonstrate facility falls within ESP SC & DP
  - New and significant info
  - New and significant process description
- **Withheld Info – See Part 9**

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Part 4 – Technical Specifications

- **GTS adoption**
  - IBR of DCD GTS (including Bases)
  - Completion of COL Information Item – provide bracketed material
  - Supporting justifications for bracketed material
  - Application of TS selection criteria for site-specific SSCs
  - Identification of any departures &/or supplements
  - Exemption requests, if any (referenced in Part 7)
- **Clean Copy**
  - Technical specifications – clean copy
  - Bases – clean copy

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Part 5 – Emergency Plans

- Site specific plan
- Differences from ESP approved plans
- State emergency plan information
- Local emergency plan information
- EP certifications
- Guidance cross-references
- Evacuation time estimate
- Withheld info – See Part 9

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Part 6 – Limited Work Authorization Info

- Specific LWA request
- Site Redress Plan
- Portions of Environmental Report
- Portions of Final Safety Analysis Report
- Reference to QA Plan
- Withheld info – see Part 9

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Part 7 – Other Reports & Requests

- **Generic DCD Departures Report**
  - Rev 16 Departures (discussion and justification)
- **ESP Variance Report**
- **Exemption Requests (if any)**
  - Numbering and organization (DCR IV.A.2.b)

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Part 8 – Safeguards Information

- **Plant Specific PSP (based on TR95 & NEI 03-12)**
  - Security Plan
  - Safeguards Contingency Plan
  - Guard Force Training Plan
- **DCD Safeguards Info?**
  - "Physically include, in the plant-specific DCD, the proprietary and safeguards information referenced in the AP1000 DCD"

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Part 9 – Other Withheld Information

- **OPTION**
- **Business-sensitive or proprietary information**
- **Security-related information (SRI, but not SGI)**
- **Personally identifiable information (PII)**
- **Presented by various Parts**

  e.g., Part 9-2 would include FSAR material;

  Part 9-3 would include ER material;

  Part 9-5 would include EP material;

  Part 9-11B would include DCD material, etc.

- **Required affidavits from document owner**

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Part 10 – License Conditions

- **Inspections, Tests, Analyses, and Acceptance Criteria**
  - IBR DCD Tier 1 ITAAC
  - IBR ESP ITAAC
  - New Emergency Planning ITAAC
  - New Security Hardware ITAAC
  - Other plant- or site-specific ITAAC (if any)
- **ITAAC design description information**
- **ITAAC completion notifications**
- **Other proposed License Conditions**

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Part 11 – Other IBR Documents

- **COLA Enclosures (IBR documents)**
  [or electronic "Reference Documents"]
- **QAPD Topical Report**
- **NEI Templates (ADAMS version) (?)**
- **Other Technical Reports (ADAMS version) (?)**
  - e.g., Westinghouse or NuStart
- **DCD (ADAMS version) (?)**
- **ESP, ESP application and EIS (ADAMS version) (?)**
- **Any other IBR'd document(s)**

CONTENTS OF OFFICIAL RECORDS FOLDERS
OCTOBER 31, 2007 AP 1000 SUBCOMMITTEE MEETING

Title: AP 1000 Subcommittee Date: October 31, 2007

The Federal Advisory Committee Act requires retention of certain documents related to every advisory committee meeting. The ACRS has applied this requirement to all ACRS subcommittee meetings. The cognizant engineer is responsible for assembling an official record folder for each subcommittee meeting. The folder is retained on file by the Operations Support Branch (Michele Kelton). The following is a list of the document that should be included in the official record folder.

10/16/07	☑	Federal Register Notice announcing the date and location of the meeting
9/27/07	☑	Conflict of Interest Memorandum
12/13/07	☑	Memorandum forwarding the draft minutes to the members
12/18/07	☑	The original copy of the certified meeting minutes
	☐	ACRS Committee or Sub-committee Chairman certification sheet w/signature
12/13/07	☑	Final agenda or schedule w/markups
	☑	List of meeting attendees
	☑	Slides and/or handouts presented at the meeting
NA	☐	Final Committee Report (if any)
NA	☐	Agency Response to the Final Report
NA	☐	Review Documents
	☑	Draft Agenda
	☑	Status Report
NA	☐	Consultant Report
NA	☐	Member Comments

Cognizant Staff Engineer: David C. Fischer (DCF)

From: David Fischer
To: ACRS Members
Date: 12/18/2007 10:53:12 AM
Subject: CERTIFIED COPY OF AP1000 SUBCOMMITTEE MEETING MINUTES

Mario, et. al.
The **certified copy** of the minutes of the October 31, 2007, AP1000 Subcommittee meeting on the AP100 design and the AP1000 COL applications is attached.
Best Regards,
Dave

CC: Cayetano Santos; Sam Duraiswamy

Mail Envelope Properties (4767ECE8.675 : 20 : 35654)

Subject: CERTIFIED COPY OF AP1000 SUBCOMMITTEE MEETING MINUTES
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From: David Fischer

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