

ENCLOSURE 4

Westinghouse Non-Proprietary Class 3

AP1000 DCD Revision 18 - Closure of Recent Design Changes
July 15, 2010 Presentation - (Non-Proprietary)

AP1000 DCD Revision 18 - Closure of Recent Design Changes

July 15, 2010



WESTINGHOUSE NON-PROPRIETARY CLASS 3



Today's Objectives

- Discuss closure of RAIs on design changes submitted recently
- Discuss and establish a “line of sight” on resolving design changes:
 - Three transmitted last week
 - Four pending



ISG-11 Design Changes Submitted Recently

- Letter dated April 26, 2010 – ISG-11 changes from Jan 20th letter:
 - CN 1– PWS valve and piping materials
 - CN 5 – Containment girder and polar crane
 - CN 6 – CCS relief valve sizing
 - CN 8 – Squib valve actuation time adjustments
 - CN 9 – CCS relief valve discharge headers
 - CN 14 – Fuel transfer tube code change
 - CN 55 – SFS valve position indications



ISG-11 Design Changes Submitted Recently...

- Design changes necessary to support AP1000 Licensing Finalization Schedule - Letter dated May 10
 - CN 58 – SG thermal hydraulic data
 - CN 59 – Ancillary DG starting current
 - CN 60 – Reactor trip for PRHR transient
 - CN 61 – Automatic rod withdrawal prohibit
 - CN 62 – RV Support System
 - CN 63 – DAS PRHR reactor/turbine trips
 - CN 65 – FWS/CVS isolation for SGTR event



ISG-11 Design Changes Submitted Recently...

- Letter dated May 25
 - CN 64 – Post-DBA transmitter requirements
 - CN 66 – Gas intrusion (Generic Letter 2008-01)
- Letter dated June 14
 - CN 67 – Changes to Blind Flange Closures
- Letter dated June 18
 - CN 68 – Changes on RCP and CVS pressure relief
- Letter dated July 6
 - CN 69 – DVI nozzle interior shaping
 - CN 70 – PCS recirculation pumps – pipe & valve size increases, ...
- Letter dated July 8
 - CN 71 – Change in SG instrument lines to stainless steel



Recent and Pending Design Changes

- Pending change submittals
 - CN 72 – Modifications to CCS containment isolation logic and piping
 - CN 73 – Increase VES tank minimum air pressure
 - CN 74 – Containment vacuum relief design change
 - CN 75 – MSIV sub-compartment pressurization
 - CN 76 – PCS cooling and venting

SUMMARY OF RECENT AND PENDING DESIGN CHANGES



CN 70 – PCS Recirculation Pump Efficiency

- CHANGE DESCRIPTION

- Increase the PCS recirculation pump suction and discharge piping from 2" pipe to 4" pipe.
- Add a 4" bypass line with a 4" isolation gate valve and an orifice to restrict flow.
- Move instrumentation upstream of throttle valve and bypass.
- Reduce the range between the Max/Min pump curves provided to vendor via datasheet.
- Change 2" ball valves to 4" gate valves.
- Change 2" check valves to 4" check valves.
- Increase the chemical addition tank design pressure to 290 psig.



CN 70 – PCS Recirculation Pump Efficiency...

- REASON FOR DESIGN CHANGE

a,c

CN 70 – PCS Recirculation Pump Efficiency

- DCD Impacts
 - Tier 2: Figure 6.2.2-1, Figure 6.2.2-2

- ACTION NEEDED FOR CLOSURE
 - WEC Submittal 07/06/2010
 - NRC Review by xx/xx/10?
 - WEC Response by xx/xx/10?

CN 72 – CCS containment isolation logic and piping



- CHANGE DESCRIPTION

- Add a requirement to close on generation of the RCP bearing water high temperature pump trip signal;
- Install a safety-class relief valve on each of the 10 inch CCS supply and return lines just inside the innermost containment isolation valves;
- Change the safety class of the section of line between the innermost containment isolation valves and the Appendix J test valves from Class D to Class C.

- REASON FOR DESIGN CHANGE



a,c



CN 72 – CCS containment isolation logic and piping



- DCD Impacts
 - Tier 2 Sections: 5.2.5.2.2, 5.2.5.6, 5.2.4.1.2.1, 7.3.1.2, 9.2.2.1.3, 9.2.2.2, 9.2.2.3.4, 9.2.2.4.5.2, 9.2.2.7, 16
 - Tier 2 Figures: 7.2-1, 9.2.2-2
 - Tier 2 Tables: 3.2-3, 3.9-12, 3.9-16, 3.11-1, 3I.6-3, 3.3.2-1, 7.3-1
- ACTION NEEDED FOR CLOSURE
 - WEC submittal by 07/28/2010
 - NRC Review by xx/xx/10?
 - WEC Response by xx/xx/10?



CN 73 – VES Tank Minimum Air Pressure



- CHANGE DESCRIPTION

- Changing minimum stored mass of breathable air.
 - Revised the stored breathable air mass design calculation to use a standard temperature of 60°F instead of 70°F and a pressure regulator minimum inlet pressure of 200 psig instead of 100 psig based on vendor feedback.
- Adding a storage temperature requirement to existing pressure requirement to ensure sufficient mass of breathable air.
- Clarified instrumentation on P&ID.

- REASON FOR DESIGN CHANGE

a,c



CN 73 – VES Tank Minimum Air Pressure...



- DCD Impacts
 - Tier 1:
 - ITAAC, Table 2.2.5-5, Item 7a
 - Tier 2:
 - 6.4.2.3 and 6.4.5.1
 - Figure 6.4-2 (2 of 3)
 - Technical Specifications:
 - TS 3.7.6 and TS Bases 3.7.6
- ACTION NEEDED FOR CLOSURE
 - WEC Submittal by 07/30/2010
 - NRC Review by xx/xx/10?
 - WEC Response by xx/xx/10?



CN 74 – Containment External Pressure

- CHANGE DESCRIPTION

- To address the need to preclude pressurization below unacceptable levels, Westinghouse will be incorporating a vacuum relief system into the VFS.
 - System will include a series of valves connected to the current VFS penetration.
 - System will be single failure tolerant, will automatically actuate to prevent containment negative pressure from reaching an unacceptable value.

- REASON FOR DESIGN CHANGE

a,c



CN 74 – Containment External Pressure...



- DCD Impacts
 - Tier 1
 - Section 2 (details TBD)
 - Tier 2
 - Chapters 3, 6, 7, 9, and 16 (details TBD)

- ACTION NEEDED FOR CLOSURE
 - WEC Submittal of draft DCD markups by 07/20/2010
 - Follow-up meeting 07/23/2010
 - NRC Review by xx/xx/10?
 - WEC Response by xx/xx/10?



CN 75 – Sub-compartment Pressurization



- CHANGE DESCRIPTION

- Potential design changes to the walls and/or vent area of the Main Steam Isolation Valve room.

- REASON FOR DESIGN CHANGE

a,c



CN 75 – Sub-compartment Pressurization

- DCD Impacts
 - Chapter 3 (details TBD)
 - Chapter 6 (details TBD)

- ACTION NEEDED FOR CLOSURE
 - WEC Submittal TBD after 07/23/2010 meeting with NRC

CN 76 – PCS Cooling and Venting

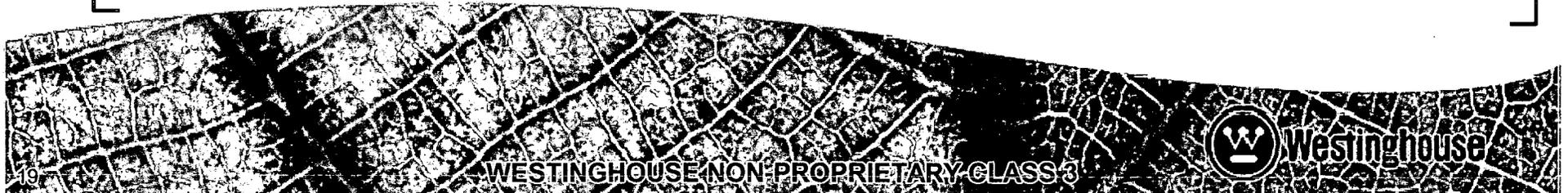


- CHANGE DESCRIPTION

- The PCS air-only cooling limit of 9 MWt is being decreased to 6 MWt to ensure PCS can maintain containment pressure less than design pressure in the event of a DBA.
- The Cask Loading Pit (CLP) is being added as a safety-related source of makeup water to the SFP. This increases the decay heat capacity of the SFP from 5.6 MWt to 7.2 MWt.
- The PCS and SFP post-72 hour flowrate requirements will be adjusted if necessary to accommodate the additional heat load that can be contained within the SFP.

- REASON FOR DESIGN CHANGE

a,c

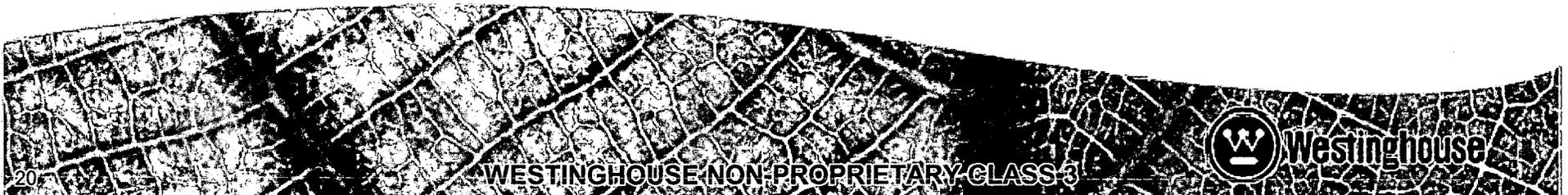


CN 76 – PCS Cooling and Venting...



- DCD Impacts
 - Tier 1 Chapter 2.2.2 - ITAAC
 - Chapter 6 (details TBD), Section 6.2.2 , different post-72 hour flowrates
 - Chapter 9 (details TBD), include the CLP as a safety-related source of makeup to the SFP

- ACTION NEEDED FOR CLOSURE
 - WEC Submittal by 07/30/2010
 - NRC Review by xx/xx/10?
 - WEC Response by xx/xx/10?



QUESTIONS?

