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Your ref: Project Number 740
Our ref: DCP/NRC1979

August 21, 2007

Subject: AP1000 Design Certification Amendment Piping Design Licensing Proposal

Dear Mr. Matthews:

Westinghouse has had several discussions with the NRC related to the AP1000 piping design, piping design acceptance criteria (DAC), and piping related COL Information Items. These discussions included a visit by the NRC staff to the Westinghouse office to assess the status of our current design deliverables. The NRC has summarized their position on piping as well as other issues in a letter from David Matthews to Andrea Sterdis dated August 20, 2007. This letter provides Westinghouse responses to the piping issues only (Piping DAC and COL Information Items related to the piping design). Westinghouse will address the other issues separately.

In lieu of resolving the piping DAC, Westinghouse proposes to utilize the revised 10CFR52 license amendment process by providing sufficient piping design information for the staff to make a reasonable assurance assessment on the piping design based on an intelligent sample of completed piping analysis packages. The intended result of the review is a favorable FSER with no need for a piping DAC. Therefore, Revision 16 of the AP1000 Design Control Document Westinghouse deleted the piping DAC included in Revision 15 of the DCD and applicable to the existing AP1000 Design Certification. Westinghouse recognizes that this result is contingent upon favorable NRC review of the selected sample.

Westinghouse believes that a consensus has developed that the NRC review of piping will be based on an intelligent sample of the total scope of piping design activities. The intelligent sample will include Class 1, 2, and 3 piping packages, LBB and non-LBB packages, large bore and small bore piping packages, packages with piping inside and outside of the containment, and packages requiring and not requiring fatigue analysis. For the selected sample, Westinghouse will provide a "complete" analysis package. In this letter Westinghouse has proposed an intelligent sample. Westinghouse has also identified what is included in a complete analysis package for the as-designed stage of completion. We understand than the NRC staff may wish to develop their own sample that is similar in size but include different lines than the Westinghouse proposed sample. Westinghouse will accept and work with an alternate NRC established sample if the sample is selected promptly. As in the case with the Westinghouse sample, the NRC sample should be selected from the list of safety-related packages identified in Table A.



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Westinghouse is proposing a selective sample of completed piping design and analysis packages for the NRC staff to complete its review in support of the AP1000 Design Certification amendment and COL applications referencing the AP1000 Design Certification. This letter summarizes the activities that Westinghouse has completed and is planning to complete for these sample packages. Upon the completion of these activities and the NRC review and inspection of the resulting documents, analyses, and calculations, NRC staff will have adequate information to determine the technical sufficiency for the ASME Code piping design and make a reasonable assurance determination on the AP1000 design for safety related piping.

The AP1000 Design Control Document (DCD) identifies the criteria, loading conditions, and methods used in the AP1000 design of safety related piping. Regulatory conformance for the piping design and analysis is provided in the DCD. Key commitments and descriptions in the DCD related to design and analysis of piping and components are designated as Tier 2* information. Tier 2* means that this information in the DCD may not be changed without NRC approval. In addition, ITAAC are provided in Tier 1 of the DCD to confirm as-built piping design for safety class piping on a system by system basis.

The NRC has approved the AP1000 DCD piping design methodology as part of the design certification. Remaining for the NRC is review of specifications, analyses, calculations and reports to verify that the criteria and commitments are being implemented in the AP1000 standard piping design. The activities that Westinghouse has completed and is planning to complete will provide verification that the design and analysis of the ASME piping are in compliance with DCD commitments. Review and inspection of design specifications, stress reports, design reports and supporting drawings, documents, and calculations provide assurance that the design and analysis of ASME Code piping is being performed in accordance with the DCD commitments.

The ASME Code piping in the AP1000 includes approximately 140 piping analysis packages. The ASME Code piping includes Code Class 1, 2, and 3 piping in small bore and large bore sizes. The piping packages are based on piping runs that, based on the design, will be subjected to common forces, that is, piping runs from anchor to anchor. This means that piping packages do not align, one-for-one with fluid system packages. For example, the Reactor Coolant System (RCS) fluid system is included in several piping packages. In addition, piping packages may include piping from more than one fluid system. Table A provides a listing of the AP1000 ASME Code piping analysis packages. Table A is split into three sections. Table A-1 contains Class 1 piping inside containment. Table A-2 contains Class 2 and Class 3 piping inside containment. Table A-3 contains Class 2 and Class 3 piping outside containment. Some piping analysis packages may be listed in more that one of these sections.

Table B defines the Westinghouse proposed sample of piping packages proposed for NRC design certification amendment review. The analysis packages selected represent a significant sample of the design packages. The packages include examples of ASME Code Class 1, 2, and 3 piping and both small bore and large bore lines. The packages are selected to demonstrate the implementation of the Tier 2* designated methods and criteria used in the AP1000 piping design. The selected sample concept is similar in size and in concept to the buildings and structures critical sections sample previously accepted and reviewed by the, structural branch of NRC during AP1000 Design Certification.

The information in the design packages will include design specifications, stress analyses, seismic analysis, support design, fatigue analysis, applicable thermal analyses, bounding equipment parameters, postulated pipe break locations, and pipe break protection features. The packages will be developed for the as-designed piping. The as-designed piping includes material selection, pipe sizing, final layout and equipment location, and support and hanger location and design. The spectra used in the seismic analysis will be an updated version that includes multiple soil conditions included in the extension to soil sites and the building enhancements described in Revision 16 of the AP1000 DCD. Table C provides a list of analyses and reports included in the design packages.

The design specifications include the requirements for methods, criteria, and codes from the design control document, design transients, material requirements, seismic requirements, and other requirements. The design specifications will be complete and include the information required for design, analysis and fabrication of the piping and include the appropriate professional engineer certification.

As part of the design packages Westinghouse will prepare design reports that summarize the analysis results that meet the various stress equations in the ASME Code and the piping design specification. The design report will provide results for the highest stress location. Results at other locations will be available in the back-up calculations. The design reports will include fatigue analysis results. The sample packages include a sufficient number of different geometries for a sufficient number of different transients to substantiate the methodology, which will yield similar results for additional analysis packages. As-procured information for items like valves will not be included in the design reports at this time. Bounding information will be used for valves. The P.E. stamp on the design reports generated in the near term ("as-designed" reports) will be a confirmation that the design meets the requirements of the design specification, except that the design does not include deviations due to construction or due to as procured equipment variations.

Westinghouse proposes to have an NRC audit of one completed analysis package selected from the sample list by Westinghouse by January 2008. This line is identified in the Westinghouse sample list in Table B. The audit will confirm our mutual understanding of the scope of review and the analysis process. Westinghouse plans to have the complete sample of analysis packages available for NRC audit by July 2008.

Westinghouse requests that the NRC confirm that this proposed process (assuming satisfactory audit results) will result in a reasonable assurance conclusion for the AP1000 piping design without the need for a piping DAC. Westinghouse recognizes that the ultimate piping acceptability by the NRC is achieved only when the as-built piping items in the system ITAAC are satisfied. Westinghouse would appreciate prompt comments, adjustments or revisions to our proposed intelligent sample of piping analysis packages.

Very truly yours,

W. E. Cummins
Vice President
Regulatory Affairs and Standardization

/Attachment

1. Table A, B, & C - ASME Pipe Inside Containment

cc: D. Jaffe - U.S. NRC 1A
E. McKenna - U.S. NRC 1A
M. Mayfield - U.S. NRC 1A

ATTACHMENT 1

"Tables A, B, & C – ASME Class Pipe Inside Containment"

**Table A**

| TABLE A-1 ASME CLASS 1 PIPE INSIDE CONTAINMENT | | |
|---|---|---|
| Pipe Stress Analysis Report | Description | Diameter (in) |
| APP-PXS-PLR-010 | Direct Vessel Injection, Core Makeup Tank Discharge, Normal Residual Heat Removal Discharge, In-Containment Refueling Water Storage Tank Gravity Injection, and Containment Recirculation Lines Train A | 8, 6, 1 |
| APP-PXS-PLR-020 | Direct Vessel Injection, Core Makeup Tank Discharge, Normal Residual Heat Removal Discharge, In-Containment Refueling Water Storage Tank Gravity Injection, and Containment Recirculation Lines Train B | 8, 6, 1 |
| APP-PXS-PLR-030 | ADS Stage 4 Loop 1 and PRHR HX Inlet Isolation | 18, 14, 12 |
| APP-PXS-PLR-040 | PRHR HX Return Loop 1 | 14 |
| APP-PXS-PLR-050 | Core Makeup Tank Supply Train A | 8 |
| APP-PXS-PLR-060 | Core Makeup Tank Supply Train B | 8 |
| APP-RCS-PLR-010 | ADS Stage 1, 2, and 3 and Pressurizer Safety Valve Inlets | 14, 8, 6, 4 |
| APP-RCS-PLR-020 | Pressurizer Spray, Auxiliary Spray, CVS Letdown, CVS Charging | 4, 3, 2 |
| APP-RCS-PLR-030 | ADS Stage 4 Loop 2 | 18, 14 |
| APP-RCS-PLR-040 | Pressurizer Surge line Loop 1 | 18 |
| APP-RCS-PLR-050 | Primary Loop | 22, 31 |
| APP-RNS-PLR-010 | Normal Residual Heat Removal Suction Loop 2 | 20, 12, 10 |
| APP-RCS-PLR-230 | Reactor Vessel Head Vent | 1 |

| TABLE A-2 ASME CLASS 2/3 PIPE INSIDE CONTAINMENT | | | |
|---|---|---|---|
| Pipe Stress Analysis Report | Description | Diameter (in) | Large Bore |
| APP-CAS-PLR-700 | Service Air from Penetration C03 IRC | 2, 1 | |
| APP-CAS-PLR-800 | Instrument Air from Penetration C02 IRC | 2, 1 | |
| APP-CCS-PLR-040 | Component Cooling from Penetration C01 IRC | 10 | * |
| APP-CCS-PLR-050 | Component Cooling from Penetration C02 IRC | 10, 1 | * |
| APP-CVS-PLR-090 | CVS Makeup from Penetration C03 IRC | 3, 1 | * |
| APP-CVS-PLR-100 | CVS Letdown from Penetration C02 IRC | 2 | |
| APP-CVS-PLR-110 | CVS Spent Resin from Penetration C01 IRC | 2 | |
| APP-CVS-PLR-280 | CVS Hydrogen Supply from Penetration C04 IRC | 1, 0.5 | |
| APP-CVS-PLR-290 | CVS Hydrogen Supply from Anchor IRC | 0.5 | |
| APP-DWS-PLR-700 | Demineralized Water from Penetration C01 IRC | 2 | |
| APP-FPS-PLR-500 | Supply from Penetration C01 | 6 | * |
| APP-PSS-PLR-610 | Primary Sample from Penetration C01 to Delay Coils | 0.25 | |
| APP-PSS-PLR-620 | Containment Atmosphere Sample To Penetration C02 | 0.375 | |
| APP-PSS-PLR-630 | Return to Containment From Penetration C03 | 1 | |
| APP-PSS-PLR-650 | Pressurizer/Hot Leg 1A Sample Lines from anchors to Delay Coil | 0.25 | |
| APP-PSS-PLR-660 | Hot Leg 1B Sample Lines from anchor to Delay Coil | 1, 0.25 | |
| APP-PXS-PLR-010 | DVI-A | 10, 8, 6, 3, 2, 1 | |
| APP-PXS-PLR-020 | DVI-B | 10, 8, 6, 3, 2, 1 | |
| APP-PXS-PLR-030 | ADS Stage 4 Loop 1 and PRHR HX Inlet Isolation | 1 | |
| APP-PXS-PLR-050 | Core Makeup Tank Supply Train A | 1 | |
| APP-PXS-PLR-060 | Core Makeup Tank Supply Train B | 1 | |
| APP-PXS-PLR-070 | Depressurization line to Sparger A/B | 16 | * |
| APP-PXS-PLR-290 | Containment Gutter Drain Areas 1 and 2 | 2 | |
| APP-PXS-PLR-500 | CMT-A/B Upper and Lower Sample Lines | 1, 0.25 | |
| APP-PXS-PLR-620 | ACC-A/B Makeup | 1 | |
| APP-PXS-PLR-660 | PXS Test Panel | 1 | |
| APP-PXS-PLR-670 | ACC-A/B Nitrogen Supply | 1 | |
| APP-PXS-PLR-690 | ACC-A/B Relief | 1 | |

| TABLE A-2 ASME CLASS 2/3 PIPE INSIDE CONTAINMENT | | | |
|---|---|---|---|
| Pipe Stress Analysis Report | Description | Diameter (in) | Large Bore |
| APP-PXS-PLR-720 | ACC-A/B Pressure Tap Lines | 1 | |
| APP-PXS-PLR-740 | ACC-A/B Sample | 1, 0.25 | |
| APP-PXS-PLR-900 | Nitrogen Makeup and Relief from Penetration C01 | 1 | |
| APP-PXS-PLR-*** | CMT A/B Level Instrument Lines | 1 | |
| APP-PXS-PLR-*** | PRHR Hx Vent and Drain - Upper/Lower Head | 1 | |
| APP-PXS-PLR-*** | Cross Connection for Containment Recirculation Screens A/B | 6 | * |
| APP-RCS-PLR-010 | ADS Stage 1, 2, and 3 and Pressurizer Safety Valve Inlets | 3, 1 | |
| APP-RCS-PLR-020 | Pressurizer Spray, Auxiliary Spray, CVS Letdown, CVS Charging | 3, 2, 0.5 | |
| APP-RCS-PLR-210 | I&C Lines to Hot Leg B | 1 | |
| APP-RCS-PLR-230 | Reactor Vessel Head Vent | 2, 1 | |
| APP-RCS-PLR-260 | I&C Lines to Hot Leg A | 1 | |
| APP-RCS-PLR-460 | Hot Leg 1A Sample Lines | 1, 0.25 | |
| APP-RCS-PLR-470 | Hot Leg 1B Sample Lines | 1 | |
| APP-RCS-PLR-480 | Pressurizer Sample Lines | 1, 0.25 | |
| APP-RCS-PLR-510 | I&C Lines to Pressurizer | 1 | |
| APP-RCS-PLR-*** | I&C Lines to Cold Legs | 1 | |
| APP-RNS-PLR-010 | Normal Residual Heat Removal Suction Loop 2 | 10, 3, 1 | |
| APP-SFS-PLR-600 | SFS from Penetration C01 | 4 | * |
| APP-SFS-PLR-790 | Spent Fuel Pool Drain | 2 | |
| APP-SGS-PLR-010 | Feedwater to SG 01 | 20 | * |
| APP-SGS-PLR-020 | Feedwater to SG 02 | 20 | * |
| APP-SGS-PLR-030 | Main Steam to SG 01 | 38, 1 | * |
| APP-SGS-PLR-040 | Main Steam to SG 02 | 38, 1 | * |
| APP-SGS-PLR-070 | SG 01 Blowdown to Penetration C03A | 4, 1 | * |
| APP-SGS-PLR-080 | SG 02 Blowdown to Penetration C03B | 4, 1 | * |
| APP-SGS-PLR-170 | SG 02 Test Lines | 1 | |
| APP-SGS-PLR-270 | SG 01 Test Lines | 1 | |

| TABLE A-2 ASME CLASS 2/3 PIPE INSIDE CONTAINMENT | | | |
|---|---|---|---|
| Pipe Stress Analysis Report | Description | Diameter (in) | Large Bore |
| APP-SGS-PLR-310 | SG 01 Startup Feed Water from Penetration C05A | 6 | * |
| APP-SGS-PLR-320 | SG 02 Startup Feed Water from Penetration C05B | 6 | * |
| APP-SGS-PLR-*** | SG 01 Shell Line | 2 | |
| APP-SGS-PLR-*** | SG 02 Shell Line | 2 | |
| APP-VFS-PLR-020 | VFS Supply from Containment Penetration C01 | 36, 16, 1 | * |
| APP-VFS-PLR-040 | VFS Return to Containment Penetration C02 | 36, 16, 1 | * |
| APP-VWS-PLR-500 | VWS Supply from Containment Penetration C02 | 8, 1 | * |
| APP-VWS-PLR-530 | VWS Return to Containment Penetration C01 | 8 | * |
| APP-WLS- PLR-010 | WLS from Containment Sump from Penetration C03, IRC | 2 | |
| APP-WLS- PLR-020 | WLS from RCDT from Penetration C02, IRC | 1 | |
| APP-WLS- PLR-730 | DVI-A Floor Drain | 4, 1 | * |
| APP-WLS- PLR-740 | DVI-B Floor Drain | 4, 1 | * |
| APP-WLS- PLR-750 | CVS Compartment Floor Drain | 4, 1 | * |

Note: *** indicates that the analysis package number has not been assigned

| TABLE A-3 ASME CLASS 2/3 PIPE OUTSIDE CONTAINMENT | | | |
|---|---|---|---|
| Pipe Stress Analysis Report | Description | Diameter (in) | Large Bore |
| APP-CAS-PLR-810 | Service Air from Penetration C03 ORC | 3, 2 | * |
| APP-CAS-PLR-820 | Instrument Air from Penetration C02 ORC | 3, 2 | * |
| APP-CCS-PLR-810 | Component Cooling from Penetration C01 ORC | 10, 1 | * |
| APP-CCS-PLR-820 | Component Cooling from Penetration C02 ORC | 10 | * |
| APP-CVS- PLR-520 | CVS Letdown from Penetration C02, WLS from Containment Sump from Penetration C03, CVS Spent Resin from Penetration C01– ORC | 2, 1 | |
| APP-CVS-PLR-530 | CVS Makeup from Penetration C03 ORC | 3 | * |
| APP-CVS-PLR-580 | CVS from Demineralizer ORC | 3 | * |
| APP-CVS-PLR-700 | CVS Hydrogen Supply from Penetration C04 ORC | 1 | |
| APP-DWS-PLR-510 | Demineralized Water from Penetration C01 ORC | 3, 2, 1 | * |
| APP-PCS-PLR-010 | From PCCWST to Distribution Bucket and Embedded Pipe | 6, 4, 2, 1 | * |
| APP-PCS-PLR-030 | Recirculation Line Middle Annulus | 4 | * |
| APP-PCS-PLR-050 | Recirculation Heater Supply to Distribution Bucket Embedded Pipe | 3 | * |
| APP-PCS-PLR-060 | Recirculation Line Makeup Inside Tank | 4 | * |
| APP-PCS-PLR-070 | Recirculation Line Suction Inside Tank | 2 | |
| APP-PCS-PLR-100 | PCS Recirculation, DWS Supply, and FPS Supply | 6, 4, 3, 2, 1 | * |
| APP-PCS-PLR-200 | Overflow Line Inside Tank | 3 | * |
| APP-PCS-PLR-210 | Vent Line A Inside Tank | 2 | |
| APP-PCS-PLR-220 | Vent Line A Outside Tank | 2 | |
| APP-PCS-PLR-230 | Vent Line B Inside Tank | 2 | |
| APP-PCS-PLR-240 | Vent Line B Outside Tank | 2 | |
| APP-PCS-PLR-250 | Discharge Line Inside Tank From Screen Y02 | 2 | |
| APP-PCS-PLR-270 | Discharge Line Inside Tank From Screen Y03 | 2 | |
| APP-PCS-PLR-290 | Discharge Line Inside Tank From Screen Y04 | 4 | * |
| APP-PCS-PLR-300 | PCCWST Instrumentation Line V031A | 1 | |
| APP-PCS-PLR-310 | PCCWST Instrumentation Line V031B | 1 | |
| APP-PCS-PLR-400 | Recirculation, Fill and Drain from PCCWST to Embedded Pipe | 4 | * |
| APP-PCS-PLR-430 | Recirculation Heater Supply to Distribution Bucket from Embedded Pipe | 3 | * |
| APP-PCS-PLR-450 | Makeup to Spent Fuel Pool | 2 | |

| TABLE A-3 ASME CLASS 2/3 PIPE OUTSIDE CONTAINMENT | | | |
|---|---|---|---|
| Pipe Stress Analysis Report | Description | Diameter (in) | Large Bore |
| APP-PCS-PLR-*** | Recirculation Line Embedded Pipe | 4 | * |
| APP-PCS-PLR-*** | PCCWST Drain Embedded Pipe | 2 | |
| APP-PSS-PLR-510 | Primary Sample From Penetration C01 to Sample Cooler Rack | 0.25 | |
| APP-PSS-PLR-520 | Containment Atmosphere Sample From Penetration C02 to Grab Sample Panel | 0.375 | |
| APP-PSS-PLR-530 | Return to Containment From Grab Sample Panel to Penetration C03 | 1 | |
| APP-PWS-PLR-930 | Potable Water Tank to Main Control Room | 1 | |
| APP-PWS-PLR-*** | PWS VALVE V420 IN MCR | 1 | |
| APP-PXS-PLR-810 | Nitrogen Makeup and Relief to Penetration C01 | 1 | |
| APP-RNS-PLR-100 | From Spent Fuel to RNS and PCCWST Drain | 8, 2, 1 | * |
| APP-RNS-PLR-170 | Normal RHR to Heat Exchangers and Pumps from Containment Penetrations C01 and C02 | 10, 8, 6, 4, 3, 1 | * |
| APP-RNS-PLR-240 | RNS Hx-A/B Drain | 1 | |
| APP-RNS-PLR-*** | RNS Pump-A/B Drain | 1 | |
| APP-SFS-PLR-110 | RNS Return to Spent Fuel Pool | 6 | * |
| APP-SFS-PLR-350 | Spent Fuel Cooling Module R3-65 | 6, 4, 2, 1 | * |
| APP-SFS-PLR-510 | From Containment Penetration C02 to SFS Pumps | 6, 1 | * |
| APP-SFS-PLR-520 | From SFS Pumps to Containment Penetration C01 | 4, 1 | * |
| APP-SFS-PLR-*** | From SFS Strainer S02 to anchor | 8 | * |
| APP-SFS-PLR-*** | Embedded pipe from SFS Strainer S02 | 8 | * |
| APP-SFS-PLR-*** | Embedded pipe from RNS Return | 6 | * |
| APP-SFS-PLR-*** | RNS Return in Spent Fule Pool | 6 | * |
| APP-SFS-PLR-*** | RNS Suction from Cask Loading Pit | 8 | * |
| APP-SFS-PLR-*** | I&C to Spent Fuel Pool | 1 | |
| APP-SGS-PLR-010 | Feedwater to SG 01 | 20, 1 | |

| TABLE A-3 ASME CLASS 2/3 PIPE OUTSIDE CONTAINMENT | | | |
|---|---|---|---|
| Pipe Stress Analysis Report | Description | Diameter (in) | Large Bore |
| APP-SGS-PLR-020 | Feedwater to SG 02 | 20, 1 | |
| APP-SGS-PLR-030 | Main Steam to SG 01 | 38, 24, 12, 10, 8, 6, 3, 2, 1 | |
| APP-SGS-PLR-040 | Main Steam to SG 02 | 38, 24, 12, 10, 8, 6, 3, 2, 1 | |
| APP-SGS-PLR-090 | SG 02 Blowdown from Penetration C03B | 4 | * |
| APP-SGS-PLR-100 | SG 01 Blowdown from Penetration C03A | 4 | * |
| APP-SGS-PLR-110 | SG 01 Startup Feed Water to Penetration C05A | 6 | * |
| APP-SGS-PLR-120 | SG 02 Startup Feed Water to Penetration C05B | 6 | * |
| APP-VBS-PLR-*** | Nonradioactive Vent Return from Main Control Room | 28, 1 | * |
| APP-VBS-PLR-*** | Nonradioactive Vent Supply to Main Control Room | 28, 16, 1 | * |
| APP-VBS-PLR-*** | Nonradioactive Vent Return from Main Control Room Toilet | 6, 1 | * |
| APP-VES-PLR-020 | VES Supply in Main Control Room | 1 | |
| APP-VES-PLR-030 | VES from Storage Tanks to Main Control Room Wall | 1, 0.375 | |
| APP-VES-PLR-100 | VES Main Control Room Relief Valves | 4 | * |
| APP-VES-PLR-*** | VES Main Control Room Pressure Differential Lines | 0.375 | |
| APP-VFS-PLR-010 | VFS Supply to Containment Penetration C01 | 36, 16, 1 | * |
| APP-VFS-PLR-030 | VFS Return from Containment Penetration C02 | 36, 16, 1 | * |
| APP-VUS-PLR-*** | Containment Leak Rate Test 1" lines | 1 | |
| APP-VUS-PLR-*** | Containment Leak Rate Test 0.375" lines | 0.375 | |
| APP-VWS-PLR-910 | VWS Supply to Containment Penetration C02 | 8 | * |
| APP-VWS-PLR-920 | VWS Return from Containment Penetration C01 | 8, 1 | * |
| APP-WLS- PLR-520 | WLS from RCDT from Penetration C02, ORC | 1 | |

Note: *** indicates that the analysis package number has not been assigned

**Table B**

| Analysis Package | Description | Comments |
|---|---|---|
| | **Class 1** | |
| APP-PXS PLR-010 | Direct Vessel Injection, Core Makeup Tank Discharge, Normal Residual Heat Removal Discharge, In-Containment Refueling Water Storage Tank Gravity Injection, and Containment Recirculation Lines Train A | LBB, LB Prototype |
| APP-RCS-PLR-010 | ADS Stage 1, 2, and 3 and Pressurizer Safety Valve Inlets | LBB, LB |
| APP-RCS-PLR-020 | Pressurizer Spray, Auxiliary Spray, CVS Letdown, CVS Charging | SB, LB |
| APP-RCS-PLR-030 | ADS Stage 4 Loop 2 | LBB, LB |
| APP-RNS-PLR-050 | Primary Loop | LBB, LB |
| | | |
| | **Class 2/3 Inside Containment (IRC)** | |
| APP-CCS-PLR-040 | Component Cooling from Penetration C01 IRC | LB |
| APP-CVS-PLR-090 | CVS Makeup from Penetration C03 IRC | SB, LB |
| APP-SGS-PLR-070 | SG 01 Blowdown to Penetration C03A | SB, LB |
| APP-SGS-PLR-310 | SG 01 Startup Feed Water from Penetration C05A | LB |
| APP-WLS- PLR-020 | WLS from RCDT from Penetration C02, IRC | SB |
| | | |
| | **Class 2/3 Outside Containment (ORC)** | |
| APP-CCS-PLR-820 | Component Cooling from Penetration C02 ORC | LB |
| APP-RNS-PLR-100 | From Spent Fuel to RNS and PCCWST Drain | SB, LB |
| APP-RNS-PLR-170 | Normal RHR to Heat Exchangers and Pumps from Containment Penetrations C01 and C02 | SB, LB |
| APP-VWS-PLR-910 | VWS Supply to Containment Penetration C02 | LB |
| APP-WLS- PLR-520 | WLS from RCDT from Penetration C02, ORC | SB |
| | | |

Notes:
LBB – Leak-Before-Break
LB – Large Bore (> 2" nominal OD)
SB – Small Bore (≤ 2" nominal OD)
Prototype – Line selected for review in January 2008 to verify review process.

## Table C

Documents available at time of audit:

Class 1 ASME Piping Design Specification (420A06)

Class 2/3 ASME Piping Design Specification

ASME Safety Class Pipe Support Design Specification

ASME Class 1 Piping As-Designed Design Report (summary results for selected lines)
Fatigue Analysis for selected lines

ASME Class 2/3 Piping As-Designed Design Report (summary results for selected lines)

ASME Safety Class Pipe Support As-Designed Design Report (summary report for pipe supports in each of the defined analysis packages)

Safety Class Pipe Support Fabrication Drawing (for each pipe support in the defined analysis packages)

P&IDs and isometric drawings for the defined analysis packages

Supporting calculation notes for the piping analysis and pipe support analysis

Pipe Break Hazard Evaluation (for the high energy piping in the nuclear island)

Pipe whip restraint designs for restraints needed for the defined analysis packages