CONSTRUCTION INSPECTION PROGRAM WORKSHOP
ON
MATERIALITY OF INSPECTION RESULTS TO ITAAC
MAY 4, 2005

At the conclusion of this workshop, each example must be assigned to one of four (4) bins. The following activities are designed to achieve that outcome. These activities will also ensure that the results from each group will be reported consistently from group to group.

DEFINING THE WORKSHOP BINS
Activity 1

There are four unique “bins” for categorizing and ranking the impact that the situational problems stated in each of the construction examples has upon the specific plant ITAAC.

- “Bin 1" captures those problems that invalidate the ITAAC acceptance or existing determination.
- “Bin 4" includes those examples that are determined to have no material impact upon any ITAAC.
- “Bin 2" and “Bin 3" exist on a sliding scale to collect those examples that have “more” or “less’ relevance to the materiality of the applicable ITAAC.

TASK: Work within your group to identify the attributes that you believe would characterize each of the four Bins. Record your ideas in the table below. The results should be your best ‘guesstimate’ at this time since you can revise and refine your list of attributes as you discuss the various examples and identify aspects you may not have considered previously.

Bin 1 INVALIDATES THE ITAAC	Bin 2	Bin 3	Bin 4 NO ITAAC IMPACT

BINNING THE WORKSHOP EXAMPLES
Activity 2

Review each of the workshop examples as a group. Compare the attributes of each example to the attributes you developed in Activity 1. Use the questions below to guide your discussion and to develop a consensus within each group. Document your ideas by completing these questions for each example. Each Group may provide comments regarding the thought processes used in answering the existing questions or the need for additional questions.

1. Does the stated problem raise any regulatory concerns? Y ” N ”
   If yes, what is the basis? ________________________

2. Could these concerns be related to an ITAAC? Y ” N ”

3. Does the stated problem have the potential to invalidate the ITAAC acceptance? Y ” N ”

4. Does the stated problem clearly invalidate an ITAAC? Y ” N ”

5. Is the impact upon an ITAAC conditional? Y ” N ”

   If so, summarize the conditions that would be necessary to establish such impact.

6. Could the stated problem (because of programmatic or generic concerns) adversely affect additional ITAAC beyond the one most relevant to the example? Y ” N ”

7. In what Bin should the example be placed? 1 ” 2 ” 3 ” 4 ”

8. If the problem were identified after the licensee had provided an ITAAC determination letter to the NRC, should the NRC be notified? Y ” N ”

   If yes, should the planned corrective actions be part of this notification? Y ” N ”

9. Would you make the completion of the corrective actions a requirement of the final acceptance of the ITAAC? Y ” N ”

Example 1

AP1000 Section 2.3.1," Component Cooling Water System "

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The functional arrangement of the CCS is as described in the Design Description of this section 2.3.1	Inspection of the as-built system will be performed.	The as-built CCS conforms with the functional arrangement described in the Design Description of this section 2./3.1

Background: The licensee's position is that the system is complete. Operations has assumed responsibility for the system and they are ready to support fuel load. On September 14, 2008, the licensee provided the NRC an ITAAC determination letter for the completion of AP1000 ITAAC 2.3.1.1

Section 2.3.1 Design Description states "The CCS is as shown in Figure 2.3.1-1 and the component locations are as shown in table 2.3.1-3".

On September 30, 2008 the CIPIMS data base was reviewed for open items and NRC inspectors performed walkdown inspections of the turbine building Rooms 54 and 77N to evaluate the adequacy of the Component Cooling Water System completion.

Issue: The inspectors identified that the spent fuel heat exchangers "A" and "B" were configured outboard of the Normal Residual Heat Removal System (RNS) heat exchangers, where as Figure 2.3.1 shows the spent fuel heat exchangers, HX -A and HX-B inboard of the RNS heat exchangers. It was also noted that all heat exchangers were correctly labeled and the electrical and piping configurations were functionally correct, and that the CCS system had successfully completed an integrated functional test.

Example 2 - Part A

AP1000 Section 2.3.1, “Component Cooling Water System”

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The functional arrangement of the CCS is as described in the Design Description for section 2.3.1.	Inspection of the as-built system will be performed.	The as-built CCS conforms with the functional arrangement described in the Design Description for section 2.3.1.

Background: The CCS system has already been turned over to operations, but a ITAAC determination letter has not yet been received from the licensee. NRC is conducting walk downs of the CCS system to verify that ITAAC 2.3.1.1 As-built functional arrangement conforms with the functional arrangement of the design description have been satisfied. Inspectors used the functional description described in the Tier II FSAR and the ASME Section III as criteria for their determinations.

Issue: Numerous potential deficiencies were identified by the NRC inspectors which had not been identified by the licensee walk downs as follows:

In Room 54,
- A spring nut was not in the Unistrut channel for a support for Conduit C14KI3443.
- A conduit clamp on Component Cooling Water pump 01 was removed and not replaced.
- A Hilti bolt used for conduit support ESBI-1-5-39 had a large arc strike.
- Abandoned Hilti bolt holes were not grouted.
- No washers were installed on Nelson studs for conduit C13007483.
- No washers were installed for conduit support ESB1-1-39.

In Room 77N
- Valve I-'1138 had no tag., Valve 1-HV-477'7 had a loose bolt
- An air line for valve 1-HV-2408 was leaking air and was not well restrained.
- A filter was missing on valve I-HV-2408 and an Ashcroft gauge was missing the face plate.
- The connections of conduits C13QI2869 and C13GI1871 to valve I-HV-2408 were loose.
- The insulation cover on the line from penetration MIV-4 to I-HV-2408 was separated at the corner.
- A nonstructural defect In the concrete (11" x 5" deep x 1/4" wide) was identified.

Example 2 - Part B

In addition to the above conditions, the NRC inspectors are evaluating the significance of other potential nonconforming conditions including: (1) springs bottomed out and/or stops still installed in several spring-can type supports, (2) penetrations without Bisco seal, and (3) missing washers on conduit supports.

Example 3

AP1000, Section 2.3.2, “Chemical and Volume Control System”

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2.a) the components identified in Table 2.3.2-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements.	Inspections will be conducted of the as-built components as documented in the ASME design reports.	The ASME Code Section III design report exists for the as-built components identified in Table 2.3.2-1 as ASME Code Section III.0

Background: During routine inspection of ITAAC sub-elements, inspectors witnessed the alignment and subsequent connection of a CCS spool piece to a CVS pipe spool piece. It was noted that the discharge of the CCS (A and B) heat exchangers is an 18‘ length of pipe with a spool piece on the end. However, 3' from the spool piece is a fixed wall pipe support preventing any lateral movement. This spool pieces was being aligned to connect with another spool piece on the bitter end of a 5‘ length of pipe connecting to the CVS letdown Isolation Valve (CVS-PL-VO45). During the alignment of the spool pieces, a flange misalignment was discovered. Excessive forces appears to been used in the realignment of the piping because a hydraulic jack was used to reposition the subject piping (cold springing the pipe) into alignment for making the connection. This was contrary to site procedures.

The inspector noted that the CVS system ITAAC acceptance criteria for ITAAC 2.3.2 .2 (a) states that the components listed in table 2.3.2-1 are classified as ASME Code section III are designed and constructed in accordance with ASME Section III requirements. Table 2.3.2-1 indicates CVS letdown Isolation valve (CVS-PL-VO45) as ASME III and Seismic.

ASME Section III NB-3000 Design, Section NB3672.8 Cold Springing states “The maximum stress allowed due to cold springing is 2.0*Sm* at the cold spring temperature”.

Issue: The licensee’s evaluation of the pipe stresses determined that the 27,600 pound force (27.6 kips), as measured using a dynamometer, exceeds the 2 *S of m* criteria.

Example 4

AP1000, Section 2.3.3, “Standby Diesel and Auxiliary Boiler Fuel Oil System”

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3.a)Each fuel oil storage tank provides for at least 7 days of continuous operation of the associated standby diesel generator.	Inspection of each fuel oil storage tank will be performed.	The volume of each fuel oil storage tank between the diesel generator fuel oil day tank supply connection and the auxiliary boiler supply connection is greater than or equal to 55,000 gallons.

Background: The licensee has provided an ITAAC determination letter to the NRC for the completion of AP1000 ITAAC 2.3.3.3.a). The licensee believes that the fuel oil tank is properly sized and meets the ITAAC.

As part of the review of the information contained in the ITAAC determination package, the calculation sizing the fuel oil storage tank was reviewed for its design basis and assumptions by the NRC inspector.

Issue: An error was found in the assumptions in that it was assumed that there was sufficient capacity in the fuel oil storage tank to meet the operating requirements of the standby diesels for 7 days and also their testing requirements. However, the amount of fuel oil assumed for testing was lower than what was actually required based on vendor manual. This assumption caused each fuel oil storage tank to have a volume that was too small by about 1000 gallons.

Example 5

AP1000, Section 2.3.3, “Standby Diesel and Auxiliary Boiler Fuel Oil System”

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3.a)Each fuel oil storage tank provides for at least 7 days of continuous operation of the associated standby diesel generator.	Inspection of each fuel oil storage tank will be performed.	The volume of each fuel oil storage tank between the diesel generator fuel oil day tank supply connection and the auxiliary boiler supply connection is greater than or equal to 55,000 gallons.

Background: The licensee has provided to the NRC an ITAAC determination letter for the completion of AP1000 ITAAC 2.3.3.3.a). The licensee’s position is that the volume of the fuel oil storage tank is as sized in that ITAAC.

As part of the review of the information contained in the ITAAC determination package, the calculation sizing the fuel oil storage tank was reviewed for its design basis and assumptions by the NRC inspector.

Issue: An error was found in the assumptions in that supply line to the auxiliary boiler was supposed to be about 2 feet above the supply line tapoff for the standby diesels. However, this was incorrect in that the tapoff for the auxiliary boiler should have been about 2 feet 6 inches above the supply nozzle from the fuel oil tank to the standby diesels in order for there to be sufficient capacity in the fuel oil storage tank to meet the operating requirements of the standby diesels for 7 days and also their testing requirements. However even if the tapoff for the diesels was moved up this would not correct the problem entirely because then there would be insufficient capacity in the upper portion of the fuel oil tank to supply the auxiliary boilers for seven days. This incorrect assumption caused each fuel oil storage tank to have a volume that was too small by about 2000 gallons.

Example 6

ABWR, Section 2.6.1, “Reactor Water Cleanup System”

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
2. The ASME Code components of the CUW System retain their pressure boundary integrity under internal pressures that will be experienced during service.	2. A hydrostatic test will be conducted on those Code components of the CUW System required to be hydrostatically tested by the ASME Code.	2. The results of the hydrostatic test of the ASME Code components of the CUW System conform with the requirements in the ASME Code, Section III.

Background: The licensee has provided to the NRC an ITAAC determination letter for the completion of ABWR ITAAC 2.6.1.2. The licensees position is that all required hydrostatic testing is complete on the code components of the Reactor Water Cleanup System. ITAAC 2.6.1.2 states that a hydrostatic test will be conducted on those Code components of the Reactor Water Cleanup System required to be hydrostatically tested by the ASME Code. All hydrostatic testing is complete and all documentation has been reviewed to verify this. The piping has been stamped in accordance with the appropriate section of the ASME Code.

Issue: The piping in question indeed has the appropriate N-Stamp affixed in a conspicuous place. However, because of a related design change, an extra piping support is being installed requiring welding an attachment to the piping. The design change has been properly processed in accordance with the applicant’s procedures. An inspection of the work package reveals that a hydrostatic test is required following completion of the work.

Example 7

AP1000, Section 2.3.2, “Chemical and Volume Control System”

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
8.a) The CVS provides makeup water to the RCS.	i) Testing will be performed by aligning a flow path from each CVS makeup pump, actuating makeup flow to the RCS at pressure greater than or equal to 2000 psia, and measuring the flow rate in the makeup pump discharge line with each pump suction aligned to the boric acid tank.	i) Each CVS makeup pump provides a flow rate of greater than or equal to 100 gpm.

Background: The licensee has provided to the NRC an ITAAC determination letter for the completion of AP1000 ITAAC 2.3.2-4.8.a)i. The licensees position is that all required testing is complete on the CVS Makeup Pump of the Reactor Coolant System. ITAAC 2.3.2-4.8.a.i states that testing will be performed by aligning a flow path from each CVS makeup pump, actuating makeup flow to the RCS at pressure greater than or equal to 2000 psia, and measuring the flow rate in the makeup pump discharge line with each pump suction aligned to the boric acid tank. All testing for the CVS Makeup Pumps is complete and all documentation has been reviewed to verify this.

Issue: Following submittal of the ITAAC determination letter and completion of the NRC 52.99 determination, the system was operated to support plant testing. As a result of incorrect procedural guidance, the pump was operated with the suction valve closed, resulting in severe damage to the pump and casing. The damage requires the pump to be overhauled and retested.

Example 8

AP1000, Section 2.1.2, "Reactor Coolant System"

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3.a) Pressure boundary welds in the components identified in Table 2.1.2-1 as ASME Code Section III meet the ASME Code Section III requirements.	3.a) Pressure boundary welds in components identified in Table 2.1.2-1 as ASME Code Section III meet the ASME Code Section III requirements.	A report exists and concludes that the ASME Code Section III requirements are met for Non–destructive examination of pressure boundary welds.

Background: The licensee has provided to the NRC an ITAAC determination for the completion of AP1000 ITAAC 2.1.2.3a). The licensee's position is that the RCS pressure boundary welds in the pressurizer safety valves identified in related table as ASME Section III meet the ASME Section III requirements.

Issue: An NDE technician, who has performed preservice examinations on the RCS pressure boundary welds in the pressurizer safety valves, is found not to satisfy the requirements for NDE certification. Some of the technician's qualifications have expired. The ASME Section III Code requires that examinations be performed by a certified NDE technician. The examinations performed by this technician are in question. All of this technician's work performed prior to the lapse in NDE certification has been acceptable.

Example 9

AP1000, Section 2.1.2, "Reactor Coolant System"

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
3.a) Pressure boundary welds in piping identified in Table 2.1.2-2 as ASME Code Section III meet the ASME Code Section III requirements.	Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	A report exists and concludes that the ASME Code Section III requirements are met for Non–destructive examination of pressure boundary welds.

Background: The licensee has provided to the NRC an ITAAC determination letter for the completion of AP1000 ITAAC 2.1.2.3b). The licensee's position is that the RCS pressure boundary welds in the pressurizer surge line identified in a related table as ASME Section III meet the ASME Section III requirements.

Issue: Equipment used for preservice examination of the RCS pressure boundary welds in the pressurizer surge line is subsequently found to be out of calibration. The ASME Section III Code requires that examinations be preformed using properly calibrated equipment. The examinations performed using this equipment are in question. The test equipment was found to be to be out of calibration to the point the test was determined to be invalid.

Example 10

AP1000, Section 2.1.2. “Reactor Coolant System”

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
4.a) the componenets identified in Table 2.1.2-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.	A hydrostatic test will be performed on the components required by the ASME Code Section III to be hydrostatically tested.	A report exists and concluded that the results of the hydrostatic test of the components identified in Table 2.1.2-1 as ASME Code Section III conform with the requirements of the ASME Code Section III

Background: The licensee has provided to the NRC an ITAAC determination letter for the completion of AP1000 ITAAC 2.1.2.4.a). The licensee’s position is that the reactor pressure vessel head vent valve (a valve listed on Table 2.1.2-1 as ASME Section III) can retain its pressure boundary integrity at design pressure. The NRC has completed it’s review of the information and issued a Federal Register Notice on the ITAAC

Issue: Subsequently, a component identified in Table 2.1.2-1 is found not to be an ASME component even though the required Section III RCS system hydrostatic test was successfully performed based on the conclusions documented in the design report.