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AP1000 DCWG
Plan for I&C
Design Acceptance Criteria (DAC)

DRAFT

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Agenda

- I&C DAC Status
- Scope of CIM DAC
- CIM DAC Closure Strategy
- CIM DAC Documentation
- I&C ITAAC Strategy & Schedule
- Future Interactions

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I&C DAC Status

- The following PMS & DAS DACs were completed in DCD R.18/19:
 - PMS 2.5.2-11a – Design Requirement Phase (Completed but new DAC opened for CIM – DCD R.19)
 - PMS 2.5.2-11b – System Definition Phase (Complete – FSER)
 - DAS 2.5.1-4 - Design Requirement Phase (Completed and deleted in DCD R.19)
 - DAS 2.5.1-4 - System Definition Phase (Completed and deleted in DCD R.19)Other I&C ITAACS are not considered DAC with one exception, see below.
- The following I&C DAC remains open:
 - PMS 2.5.2-14 – CIM Development Process

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Scope of CIM DAC

- CIM architecture and design were technically approved by the NRC. This completed the overarching PMS DAC 11.b (System Definition Phase)
 - WCAP-17179 Rev. 2 "AP1000 Component Interface Module Technical Report"
 - DCD FSER Supplement 2
- CIM Design Requirement Phase scope is:
 - Provide planning documentation to the NRC for inspection in accordance with NUREG-0800 BTP 7-14 (planning phase of SLC)
 - The plans can be a single document, multiple documents or an update to WCAP - 17179 (Tier 2*)

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CIM DAC / ITAAC

- Design Commitment (DCD 2.5.2):
 - The Component Interface Module (CIM) is developed using a planned design process which provides for specific design documentation and reviews.
- Inspections, Tests, Analyses (DCD Table 2.5.2-8, Item 14):
 - An inspection and or an audit will be performed of the processes used to design the hardware, development software, qualification and testing.
- Acceptance Criteria:
 - A report exists and concludes that CIM meets the below listed life cycle stages.

Life cycle stages:

- a. Design requirements phase, may be referred to as conceptual or project definition phase
- b. System definition phase
- c. Hardware and software development phase, consisting of hardware and software design and implementation
- d. System integration and test phase
- e. Installation phase

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CIM DAC Closure Strategy

The following strategy can be used for closing CIM DAC. We need to reach agreement on schedule needs and consistency with closing ITAACs:

- Since ALS/CSI procedures are ready, provide an overarching document (roadmap) for the CIM development process and make the roadmap plus the process plans/procedures ready for an NRC inspection (~3-6 months).

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CIM DAC Documentation

Provide the following for inspection and closure of ITAAC

- CIM planning / overarching document
- ALS procedures

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ITAAC Strategy and Schedule

AP1000 I&C Systems

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I&C Systems ITAAC

- Most I&C Systems ITAAC are in Section 2.5.1 and 2.5.2 of Tier 1 of the AP1000 DCD.
- 2.5.1 – Diverse Actuation Systems
 - ITAAC of interest – 2.5.01.04
- 2.5.2 – Protection and Safety Monitoring System
 - ITAACs of interest – 2.5.02.11, 2.5.02.12, and 2.5.02.13

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I&C ITAAC 2.5.01.04

•The DAS hardware and any software are developed using a planned design process which provides for specific design documentation and reviews during the following life cycle stages:

- a) Development phase for hardware and any software
- b) System Test phase
- c) Installation Phase

The planned design process also provides for the use of commercial off-the-shelf hardware and software.

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I&C ITAAC 2.5.2.11 (b,c,d,e)

•The PMS hardware and software is developed using a planned design process which provides for specific design documentation and reviews during the following life cycle stages

b) System definition phase

c) Hardware and software development phase, consisting of hardware and software design and implementation

d) System integration and test phase

e) Installation phase

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I&C ITAAC 2.5.2.12

- The PMS software is designed, tested, installed, and maintained using a process which incorporates a graded approach according to the relative importance of the software to safety and specifies requirements for:
 - a) Software management including documentation requirements, standards, review requirements, and procedures for problem reporting and corrective action.
 - b) Software configuration management including historical records of software and control of software changes.
 - c) Verification and validation including requirements for reviewer independence.

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I&C ITAAC 2.5.2.13

•The use of commercial grade computer hardware and software items in the PMS is accomplished through a process that specifies requirements for:

- a) Review of supplier design control, configuration management, problem reporting, and change control.
- b) Review of product performance.
- c) Receipt acceptance of the commercial grade item.
- d) Acceptance based on equipment qualification and software validation in the integrated system.

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Timing of closure of the ITAACs

- The four ITAACs have distinct closure activities and Timing.
 - Definition and management phases are completed early in the process.
 - Verification and Validation (or System Integration Testing) is completed when the system is tested before shipped to site.
 - Installation Testing would be completed on site and is dependent on construction schedule.
 - As we develop the Plans for ITAAC closure we would provide links in the ITAAC schedule that tie each distinct activity to the ITAAC closure.

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Example I&C ITAAC 2.5.2.11 (b,c,d,e)

- The PMS hardware and software is developed using a planned design process which provides for specific design documentation and reviews during the life cycle phases

- Schedule:

- b) System Definition - February 2012 (est.)

- c) through e): TBD

- Report: One report plus design outputs for Systems Definition phase, only design outputs for subsequent stages

- Inspection Documents:

- b) WCAP-17420 "AP1000 Protection and Safety Monitoring System (PMS) Tracing Methodology for the System Definition Phase", plus design outputs

- c) through e): design outputs to be identified

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One Inspection/One Review Concept

- Parts of the ITAAC (Definition/Management Phases, etc.) will be common across the Licensees.
- Parts (Installation, etc.) are definitely Unit specific.
- One Inspection/One Review is most efficient for all parties.
 - Each Licensee would confirm they have not made any changes different than what was reviewed as part of the standard plant.
 - No future inspection would be required if the NRC evaluates the WEC configuration management and requirements management processes as sufficient
- How could this process be documented within NRC?
 - Standard CIPMS entry that would be applicable to all AP1000s?
 - Standard inspection report that would be documented by Licensee?

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Future Interactions

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Questions



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