Westinghouse

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Your ref: 99900404
Our ref: DCP_NRC_003266

April 24, 2014

SUBJECT: REPLY TO NOTICE OF NONCONFORMANCE cited in NRC INSPECTION REPORT NO.: 99900404/2014-201 dated March 25, 2014

Westinghouse received the NRC Inspection Report Number 99900404/2014-201 and the Notice of Nonconformances 99900404/2014-201-01 and 99900404/2014-201-02. Westinghouse views any notice of nonconformance it receives as serious and is committed to be in compliance with the provisions of Title 10, the *Code of Federal Regulations* (CFR), Section 50, Appendix B "Quality Assurance for Nuclear Power Plants and Fuel Reprocessing Plants".

Westinghouse also values the results from the NRC's inspection evaluating our design control planning processes associated with the Component Interface Module (CIM), testing of safety-related components as well as our corrective action program. Westinghouse immediately initiated actions to resolve the issues raised by the inspection team during this inspection.

As requested, details of actions associated with each issue are described below.

Summary of Issues Identified and Actions Taken During the Inspection

Nonconformance 99900404/2014-201-01

Criterion III, "Design Control," of Appendix B to Title 10 of the Code of Federal Regulations (10 CFR) Part 50, states, in part, that, "applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions."

WEC's Procedure WNA-PD-00050-GEN, "Project Plan, Component Interface Module (CIM) and Safety Remote Node Controller (SRNC) Development," Revision 10, dated May 20, 2013, Section 4.12, states, in part, that, "CS Innovations [WEC] shall map the Life Cycle Stages defined in [Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)] 2.5.2-8 #14a to their Life Cycle Model." and "will be designed in accordance with guidance provided in IEEE 1074-1995." In addition, Section 4.12, identifies the Standards and methodologies needed to manage and execute the project, in part, as, IEEE 1074-1995, IEEE 1012-1998, and IEEE 828-1990.

Contrary to the above, as of January 17, 2014, WEC did not apply appropriate design control measures to correctly translate applicable regulatory requirements and the design basis into specifications, drawings, procedures, and instructions. Specifically:

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(1) The WEC CIM-SRNC management processes did not ensure that the requirements for all mandatory lifecycle activities were adequately translated in chronological relationship into WEC's chosen lifecycle model identified in Westinghouse Design Certification Document, Tier 1 Table [ITAAC] 2.5.2-8 #14a, including lifecycle activities specified by IEEE 1074-1995, IEEE 1012-1998, and IEEE 828-1990;

(2) The WEC CIM-SRNC independent verification and validation (IV&V) process did not adequately translate the requirements specified by IEEE 1012-1998, for the IV&V effort to comply with the minimum set of V&V tasks described;

(3) The WEC IV&V plan did not translate the requirement to verify that the integration and test plan was developed using the required design documents including: the Software Requirements Specification, Interface Requirements Specification, Software Design Description, and the Interface Design Document Description; and

(4) The WEC SCM plan did not adequately identify all Configuration Items (CIs) and did not translate the requirement to verify the configuration audit of the software transfer procedure, 9006-00021 or to verify that 9006-00021 as a CI was listed in the SCM Plan.

Response:
(1) The reason for the noncompliance:

Westinghouse accepts the Non-Conformance and offers the following discussion regarding the circumstances which resulted in the Non-Conformance:

A root cause analysis was performed and identified the following organizational issues within the Automation and Field Services division:

- The organization failed to realize at the point of CIM incorporation into the AP1000 design the impact of more rigorous AP1000 licensing basis requirements on the CIM.
- The organization failed to implement the requirement for licensing compliance reviews of the planning documents.
- The CIM team composition was continually changing and resources were not assigned to the project full time.
- The organization's training program does not currently include curriculum and mentorship to properly develop employees' understanding of industry codes and standards.
- The organization applied less than adequate rigor in programmatic and process type requirement management.

(2) Corrective steps that have been taken and the results achieved:

Westinghouse conducted a mandatory stand-down that included discussions related to compliance to the licensing basis and accurate workmanship. In addition, Westinghouse has assigned full time resources to the CIM project. These two actions ensured an increased level of awareness and steps forward for the CIM project and in the appropriate digital I&C projects associated with the AP1000 project.

(3) Intermediate Corrective Steps to be Taken:

The review of the issue identified the following intermediate corrective steps that will be taken:

- The WEC CIM-SRNC management plan will be updated to ensure that the requirements for all mandatory lifecycle activities are mapped with respect to the Westinghouse life cycle model and to ensure that requirements of IEEE 1074-1995 are sufficiently captured in the management plan;

- The WEC CIM-SRNC independent verification and validation (IV&V) plan will be updated to meet the requirements specified by IEEE 1012-1998. Specifically,

  - The CIM-SRNC IV&V Plan will translate the requirements specified by IEEE 1012-1998 and,

  - the CIM-SRNC IV&V plan will be updated to include the requirement to verify that the integration and test plan (6105-00005 CIM-SRNC Test Plan) was developed using the required design documents including:
    - Software Requirements Specification
    - Interface Requirements Specification
    - Software Design Description
    - Interface Design Document Description

- The WEC SCM plan will be updated to ensure that all Configuration Items (CIs) are identified and listed in the plan.

- A review will be performed of AP1000 I&C licensing basis and applicable industry codes and standards (e.g., IEEE 830 and 1074) to identify any additional process or implementation gaps.

- Impacted processes and procedures (e.g., IV&V plan) will be updated based on results of the licensing basis verification.

- Work products will be reviewed based on the above actions and updated as necessary. Examples of the products to be updated are Software Requirement Specification, Requirement Traceability Matrix, IV&V documentation, and Software Hazard Analysis.

Corrective Steps That Will Be Taken to Avoid Further Violations:
The root cause analysis also identified the following long term corrective steps that will be taken within the Westinghouse organization responsible for digital I&C projects to avoid further Non-Conformances:

- Develop a process to ensure internal and external suppliers of safety system products to be used in 10CFR52 applications have received appropriate training on regulatory compliance.
- Develop a recurring training module for AFS employees on the traits of a healthy nuclear safety culture.
- Revise current process for the review of procedures, Westinghouse guidelines, work instructions, and work products (e.g., Software requirement Specification and IV&V Summary Report) with respect to regulatory compliance. The revision will include:
  - Guidance on qualification of preparers and reviewers,

  - Guidance to explicitly define expectations for compliance to the licensing and/or contractual requirements,
  - and Guidance for taking exceptions to the licensing and/or contractual requirements.
- Evaluate if the current automation training program adequately trains authors and reviewers of compliance evaluation spreadsheets and planning documents.

Date When Full Compliance Will Be Achieved:
Full compliance will be achieved by translating applicable regulatory requirements and the design basis as specified in the license application, into specifications, drawings, procedures, and instructions for the CIM by February 6, 2015.

Nonconformance 99900404/2014-201-02

Criterion III, "Design Control," of Appendix B to 10 CFR Part 50 states, in part, that, "design control measures shall provide for verifying or checking the adequacy of design."

WEC procedure 6105-00013, "CIM SRNC IV&V Plan," Revision 6, Section 3.3.1, "Concept Phase Tasks," identifies the concept phase task requirement for Hardware/Software/User Requirements Allocation evaluations. Appendix C, "Software Hazard Analysis Guidance," states, in part, that, "Execution of this guidance and preparation of possible error reports and capturing of these Software Hazard Analysis (SHA) activities reports is sufficient evidence of conforming to the SHA practices set forth in the standards and guidelines. The analysis shall identify the potential system hazards or hazardous system states, assess the severity of each hazard, assess the probability of each hazard, and identify mitigation strategies for each hazard."

Contrary to the above, as of January 17, 2014, WEC did not apply appropriate design control measures to verify the adequacy of design associated with the performance of safety analyses, system requirements review, and concept documentation evaluation.

Specifically:

(1) The WEC IV&V team did not verify that Hardware/Software/User System Requirements allocation was performed or that the safety analyses identified and analyzed the risk factors that may impair, prevent, or require technical trade-offs for accomplishing the technical objectives;
and

(2) The WEC IV&V team also did not identify or adequately address the two highest priority CIM-SRNC control ports that presented potential hazards as part of the Safety Hazard Analysis.

Response:
(1) The reason for the noncompliance:

Westinghouse accepts the Non-Conformance and offers the following discussion regarding the circumstances which resulted in the Non-Conformance:

For Item (1) listed above, the NRC identified the same issue during the September 2013 inspection for the Protection and Monitoring System (PMS) which was captured within Westinghouse's corrective action program. The issue report related to the observation for the PMS system included the need to perform an extent of condition analysis for this issue. This was self-identified for the CIM-SRNC

sub-system. The action includes determination of how the requirements will be addressed and subsequently injected into the CIM-SRNC design. The extent of condition action was captured within the corrective action issue report prior to the January 13-17, 2014 NRC inspection. Westinghouse recognized that there was insufficient communication of this issue to the CIM-SRNC IV&V team. As a result they were unaware of the corrective action plan that was being developed by the PMS IV&V team.

For Item (2) listed above, the CIM-SRNC IV&V team did identify that the Z-Port was not addressed in the Software Hazard Analysis (SHA) and that the SHA should address unused priority paths within the On-Time Ticket system. Westinghouse recognizes that the language used by IV&V as part of the On-Time ticket did not explicitly state that the issue needed to be corrected. However, the IV&V expectation was that the issue would be addressed and as a result the On-Time Ticket remains an open item. Open items are tracked throughout the life cycle process in the IV&V Phase Summary Report as well as within the Configuration Management Summary Report. The CIM-SRNC life cycle process allows the team to progress to the next life cycle phase with open items but all must be addressed prior to completion of the final IV&V Phase Summary Report.

Finally, the root cause analysis performed and identified causes described in the response to Nonconformance 99900404/2014-201-01 also applies to Nonconformance 99900404/2014-201-02.

(2) Corrective steps that have been taken and the results achieved:

The corrective actions described for Nonconformance 99900404/2014-201-01 also apply to Nonconformance 99900404/2014-201-02. See description above. In addition, the CIM-SRNC IV&V team was notified of the PMS efforts on allocation of hardware/software/user requirements and the CIM IV&V team was instructed to provide stronger language in comments to ensure that issues are properly addressed.

(3) Intermediate Corrective Steps to be Taken:

The review of the issue identified the following intermediate corrective steps that will be taken:

- Upon completion of the PMS action plan, the CIM IV&V team will verify that Hardware/Software/User System Requirements allocation was performed or that the risk factors that may impair, prevent, or require technical trade-offs for accomplishing the technical objectives as part of the concept phase have been identified and analyzed.

- An evaluation will be completed to determine if the CIM IV&V team should adopt the work instructions developed by the PMS IV&V team or develop additional work instructions to address IV&V gaps.

- The CIM Software Hazard Analysis will be revised to address the hazards for the Z port and the Manual Control inputs.

Corrective Steps That Will Be Taken to Avoid Further Violations:
The root cause analysis and corrective actions described for Nonconformance 99900404/2014-201-01 also apply to Nonconformance 99900404/2014-201-02. See the description above.

Date When Full Compliance Will Be Achieved:

Full compliance will be achieved by translating applicable regulatory requirements and the design basis as specified in the license application, into specifications, drawings, procedures, and instructions for the CIM by February 6, 2015.

Very truly yours,

T. J. Ray
U.S. Licensing and Regulatory Support

cc:

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