Westinghouse

Westinghouse Non-Proprietary Class 3

Advanced Logic System

ALS Configuration Management Plan

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Nuclear Safety Related

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ACRONYMS AND TRADEMARKS

Acronyms used in the documents are defined in 6002-00040, "ALS Terms and Abbreviations" (Reference 4) and WNA-PS-00016-GEN, "Standard Acronyms and Definitions" (Reference 24), or included below to ensure unambiguous understanding of their use within this document.

Acronym	Definition
ALS PCSAs	Advanced Logic System Platform Configuration Status Accounting
NIST	National Institute of Standards and Technology
NRC	Nuclear Regulatory Commission
PCB	Printed Circuit Board
RH	Relative Humidity

GLOSSARY OF TERMS

Standard terms related to configuration management used in the document are defined in Westinghouse Automation Procedure, NA 4.37, "Configuration Management" (Reference 25), and WNA-PS-00016-GEN, "Standard Acronyms and Definitions" (Reference 24), or included below to ensure unambiguous understanding of their use within this document.

Term	Definition
ALS	ALS is a platform is a logic based platform which does not utilize a microprocessor or software for operation, but instead relies on a simple hardware architecture. The logic is implemented using field programmable gate array (FPGA) technology
ALS II	ALS II is based on the ALS. It has a front field connector (versus rear connection for ALS) and a more compact form factor resulting in higher IO density
Configuration Item	A configuration item (CI) is an aggregation of hardware, software, documentation, and/or tools designated for configuration management (CM) and treated as a single entity.
Baseline	A unique design level that has been formally declared in terms of requirements CIs and agreed upon by management. This design level can then serve as the basis (target) for further development and implementation. A baseline, once declared, is not permitted to be materially changed since it is not possible to determine the impact to existing work in a traceable way. In cases where a new target is required to be established, a new, unique baseline should be declared.
Configuration	The arrangement, quantity and interconnections of constituent parts of a system or component as defined by the applicable design documents.
Configuration Audit	Configuration audits (CA) are broken into functional and physical audits. They occur at delivery or at the moment of effecting the change. A functional CA ensures that functional and performance attributes of a CI are achieved, while a physical CA ensures that a configuration item is installed in accordance with the requirements of its detailed design documentation.
Configuration Control	An element of configuration management consisting of the evaluation, coordination, approval or disapproval, reporting, communication, and implementation of changes to configuration items after formal establishment of their configuration identification.
Configuration Control Board	An assigned team, including a chairperson, responsible for approval/disapproval of formal design change requests in accordance with the requirements of NA 4.37 (Reference 25).

GLOSSARY OF TERMS (cont.)

Term	Definition
Configuration Management	Application of technical/administrative direction & control to establish a design, control change to it, and ensure suitability for purpose of the constituent parts.
Configuration Status Accounting	An element of configuration management consisting of the recording and reporting of information needed to manage a configuration effectively.
Control Point	Defined process point when Configuration Status Accounting is to be specified.
Document Index	A Document Index (DI) is a structured database, established for the organization and transmittal of CIs relative to baselines and releases.
EDMS	The Quality Record archiving system for archiving all CIs per WEC 6.1 (Reference 23). Westinghouse's electronic document management systems (EDMS) meet the electronic storage criteria for quality records established by the regulatory agencies and industry standards.
Issue Reporting	A system used to identify and track issues as defined in 9006-01501, "Defect Management Work Instruction" (Reference 13).
Promotion	A change in the configuration management status of a CI, based on its qualification.
Release	A particular version of a configuration item, or set of CIs, that is formally made available for external use. A release is associated with a specific baseline.
Request for Engineering Change (REC)	A vehicle for the definition and approval of proposed changes to the design level.
CM Release Letter	A letter utilized during platform development activities to release configuration items to projects and to update the applicable Configuration Status Accounting documents.

REFERENCES

Following is a list of references used throughout this document.

1. 6002-00000, "ALS Management Plan," Westinghouse Electric Company LLC.

2. 6002-00007, "ALS Platform Configuration Status Accounting," Westinghouse Electric Company LLC.

3. 6002-00030, "ALS Design Tools," Westinghouse Electric Company LLC.

4. 6002-00040, "ALS Terms and Abbreviations," Westinghouse Electric Company LLC.

5. Deleted.

6. Deleted.

7. Westinghouse Electric Company Quality Management System, Westinghouse Electric Company LLC.

8. Westinghouse Electric Company Automation and Field Services Level 3 Procedure NA 4.51, "Field Programmable Gate Array (FPGA) Development Procedure"

9. Deleted.

10. Deleted.

11. Deleted.

12. Deleted.

13. 9006-01501, "Defect Management Work Instruction," Westinghouse Electric Company LLC.

14. Deleted.

15. IEEE Standard 828-1998, "IEEE Standard for Software Configuration Management Plans"

16. Westinghouse Electric Company Level 2 Procedure WEC 16.2, "Westinghouse Corrective Action Program"

17. Deleted.

18. Deleted.

19. Deleted.

REFERENCES (cont.)

20. Deleted.

21. 6003-00000, "ALS II Project Management Plan," Westinghouse Electric Company LLC.

22. 6003-00007, "ALS II Platform Configuration Status Accounting," Westinghouse Electric Company LLC.

23. Westinghouse Electric Company Level 2 Procedure WEC 6.1, "Document Control"

24. WNA-PS-00016-GEN, "Standard Acronyms and Definitions," Westinghouse Electric Company LLC.

25. Westinghouse Electric Company Automation and Field Services Level 3 Procedure NA 4.37, "Configuration Management"

26. WNA-IG-00109-GEN, "Configuration Management Implementation Guideline," Westinghouse Electric Company LLC.

27. Westinghouse Electric Company Automation and Field Services Level 3 Procedure NA 4.28, "Request for Engineering Change"

28. Westinghouse Electric Company Automation and Field Services Level 3 Procedure NA 4.3.1, "Document Index"

29. 9006-00037, "Human Diversity Management for FPGA Based Development and Test Activities," Westinghouse Electric Company LLC.

30. 6002-00301-P-A, Rev. 4, "Advanced Logic System Topical Report," Westinghouse Electric Company LLC.

31. WCAP-17266-P, "Common Q Platform Generic Change Process," Westinghouse Electric Company LLC.

32. [ ]^{a,c,e}

33. Westinghouse Electric Company Automation and Field Services Level 3 Procedure NA 4.44, "Engineering Drawing Creation and Change Process"

34. Westinghouse Electric Company Automation and Field Services Level 3 Procedure NA 4.45, "Hardware Configuration Management"

35. Regulatory Guide 1.169-1997, Rev. 0, "Configuration Management Plans for Digital Computer Software Used in Systems of Nuclear Power Plants"

REFERENCES (cont.)

36. IEEE 828-1990, "IEEE Standard for Software Configuration Management Plans"

37. IEEE 1042, "Guide to Software Configuration Management," 1987, re-affirmed 1993

38. IEEE 610.12-1990, "Standard Glossary of Software Engineering Terminology"

39. WNA-GU-00109-GEN, "Standard Document Index User Guide," Westinghouse Electric Company LLC.

40. Westinghouse Electric Company Level 2 Procedure WEC 7.5, "Control of Purchased Items and Services"

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SECTION 1
INTRODUCTION

1.1 PURPOSE

The Advanced Logic System (ALS) Configuration Management (CM) Plan defines the complete configuration management plan for projects developing the ALS Platform as well as project specific applications that use the ALS Platform.

The earlier version (revision 9) of this CM Plan was compliant with IEEE 828-1998. In addition the approved topical report, 6002-00301-P-A, Rev. 4, "Advanced Logic System Topical Report" (Reference 30) identifies applicability of NRC Reg. Guide 1.169-1997 which endorses IEEE 828-1990. This revision of the CM Plan is also compliant with IEEE 828-1998 which encompasses Reg. Guide 1.169-1997. Appendix A provides an overview of how this CM Plan maps to NRC Reg. Guide 1.169-1997 and IEEE 828-1998, "IEEE Standard for Software Configuration Management Plans."

The plan defined in this document is based on NRC Reg. Guide 1.169, which endorses IEEE 828-1990, "IEEE Standard for Software Configuration Management Plans."

Earlier revisions of the ALS CM Plan were also based on guidance from WEC 23.20, "Westinghouse Nuclear Automation / CS Innovations Interface Agreement." This document is no longer applicable guidance given the closure of Scottsdale Operations and the transfer of ALS platform application and maintenance to Westinghouse Automation.

The remaining sections of this document, as defined in IEEE 828-1990, are Configuration Management, Configuration Management Activities, Configuration Management Schedules, Configuration Management Resources, and Configuration Management Plan Maintenance.

1.2 SCOPE

The ALS CM Plan is to be applied consistently and uniformly throughout the Life-Cycle of ALS boards (platform) as well as project specific applications using ALS. The intended audience for the ALS CM Plan is personnel associated with managing, developing, reviewing, testing, and providing quality assurance of ALS platform and its applications.

1.2.1 Project Overview

Generally, ALS Platform development performed by Westinghouse is customer independent. The ALS boards are designed to be generic boards which are configured to meet different customer needs. The individual ALS board development is performed under a common set of project management documents. Refer to 6002-00000, "ALS Management Plan" (Reference 1) and 6003-00000, "ALS II Project Management Plan" (Reference 21) as applicable.

The ALS Platform has an approved topical report, 6002-00301-P-A, Rev. 4, "Advanced Logic System Topical Report" (Reference 30). The configuration status accounting of the ALS platform is defined in 6002-00007, "ALS Platform Configuration Status Accounting" (Reference 2). Per this CM plan, it is

intended that the Configuration Control of the ALS platform will continue to be maintained and documented via revision to the 6002-00007 status accounting document. The same status accounting approach will be used for ALS II and documented in 6003-00007, "ALS II Platform Configuration Status Accounting" (Reference 22) accordingly.

Project specific applications of the ALS platform will have unique Project Management Plans that will describe an overview of the particular project and augment this ALS CM Plan as applicable.

1.2.2 Identification of Project Configuration Items

This ALS CM plan applies to all Configuration Items (CIs) that are created as part of ALS Platform development or project specific applications. Relevant CI definitions are presented in a later section of this document.

As stated in subsection 1.2.1, for the ALS and ALS II platform, identification of Configuration Items (CIs) occurs in the 6002-00007, "ALS Platform Configuration Status Accounting" (Reference 2) and 6003-00007, "ALS II Platform Configuration Status Accounting" (Reference 22) respectively.

1.2.3 Identification of Project Support Configuration Items

Pre-existing CIs, or CIs developed outside of an ALS based development project may be incorporated.

For example, the ALS Platform Configuration Status Accounting document, 6002-00007 or 6003-00007 (depending on which platform is being used), is incorporated as a CI in project specific applications of ALS.

1.2.4 Relationship of Configuration Management Activities

IEEE 828 is primarily oriented towards configuration management of software developments. However, a similar approach can be extended to cover related hardware and system developments to ensure a seamless, integrated configuration management approach for the entire project.

The ALS CM Plan is intended to define the configuration management activities for all configuration items that relate to the platform or a project specific application. This includes, but is not limited to, hardware drawings, mechanicals, bills of material, etc. Some activities are specific to a particular type of development, such as software, and are noted accordingly.

1.2.5 Application of the CM Process

The ALS CM Plan is to be applied consistently and uniformly throughout the Life-Cycle of ALS boards as well as project specific applications using ALS. Although IEEE 828-1990 requires this plan to apply to the "software" scope of the project only, the definitions made within this document are to be applied to all configuration items that pertain to ALS based development projects. See Appendix A for an overview of how this CM plan maps to NRC Reg. Guide 1.169 and IEEE 828-1990, "IEEE Standard for Software Configuration Management Plans."

The ALS Platform has an existing configuration status accounting, documented in 6002-00007, that is referenced in the approved topical report, 6002-00301-P-A, Rev. 4, "Advanced Logic System Topical Report" (Reference 30). This CM plan recognizes and specifies differences in CM activities that apply between ALS Platform development and maintenance activities, versus those that are associated with project specific applications using ALS or ALS II platforms.

The ALS CM Plan is invoked and augmented by ALS based Project Management Plans. Certain CM activities, including defining CM organizational structure, the scope of CIs and timing of baseline and CM Summary report releases, are defined by the applicable ALS based Project Management Plan.

The ALS CM Plan is intended to be applied with sufficient formality to successfully support regulatory reviews of safety system applications. The remainder of this document defines the CM processes required to achieve this level of support.

1.2.6 Configuration Management Plan Limitations

This CM Plan applies to the ALS Platform Development projects, see 6002-00000, "ALS Management Plan" (Reference 1) and 6003-00000, "ALS II Project Management Plan" (Reference 21), which are internal development programs that are intended to be used as the basis for further project specific application developments that will result in a deliverable, licensable system. The ALS and ALS II Platforms themselves are not a deliverable system and cannot fulfill all regulatory requirements for one.

This CM plan also applies to project specific application of ALS for deliverable systems. The final approval for the overall processes will be established by the regulatory authorities as part of the final review of the applied system.

1.2.7 Configuration Management Plan Assumptions

This revision of the CM plan notes the major changes that reflect the transition from Scottsdale Operations to Westinghouse Automation and its associated configuration management processes for project specific I&C applications.

While there are changes to how CM activities are applied and executed versus the previous Scottsdale Operations based CM plan, the changes in CM activities are intended for project specific applications that use the ALS or ALS II platforms.

It is assumed that that the Configuration Control of the ALS platform will continue to be maintained and documented via revision to the 6002-00007 status accounting document. It is also assumed that the same status accounting approach will be used for ALS II and documented in 6003-00007, "ALS II Platform Configuration Status Accounting" (Reference 22) accordingly. CM activities associated with ALS and ALS II platform development and maintenance are described in Section 4.

1.3 DEFINITIONS

See front matter.

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SECTION 2
CM MANAGEMENT

2.1 ORGANIZATION

The applicable ALS Project Management Plan shall define the specific organizational structure associated with the execution of configuration management for the project.

In general, the ALS Platform group has overall responsibility for the ALS platform projects and the ALS Safety Systems Upgrades group has overall responsibility for project specific applications using ALS. One of these groups, as applicable to the ALS based project, has overall responsibility for the implementation of the CM process as prescribed by this ALS CM plan.

In addition, various interfacing Westinghouse groups and outside sub-vendors are involved in the project and are responsible for implementing their portions of the CM process as defined in the subsequent sections.

The following other organizations and their relationships to the ALS CM plan are as follows:

- Independent Verification & Validation (IV&V): performs independent verification and validation of the ALS platform and application logic.

- Equipment Qualification: performs seismic, environmental, and Electromagnetic Compatibility (EMC) qualification of ALS II Platform developments.

- Licensing: provides licensing requirements for the ALS/ALS II Platform developments, and performs licensing support tasks and reviews of documentation.

- Quality Assurance: performs audits of the configuration management activities for ALS.

2.2 CM RESPONSIBILITIES

The default allocation of CM activities to organizational units and/or roles is defined in Table 2.2-1. The applicable ALS Project Management Plan may modify these responsibilities. For items that list "ALS Platform Group or ALS Safety System Upgrades," responsibility is determined by the type of project (platform development or project specific application) that applies to the given ALS Project Management Plan.

Table 2.2-1. Allocation of CM Activities to Organizational Units

CM Activity	Organizational Responsibility	Notes
Generation of CM Plan	ALS Platform Group	Has ownership of the ALS CM Plan
Generation of Document Index (DI)	ALS Platform Group or ALS Safety System Upgrades	Establishes overall DI scope
Establishment and Chair of CCB	ALS Platform Group or ALS Safety System Upgrades	Controls configuration changes
Participate on CCB, representing organization's scope of supply	ALS Platform Group or ALS Safety System Upgrades Optional: IV&V, EQ, Subcontractor	Support control of configuration changes
Issuance of Baselines	ALS Platform Group or ALS Safety System Upgrades	Timing of baselines is defined by the Project Management Plan
Issuance of Releases	ALS Platform Group or ALS Safety System Upgrades	Timing of releases is defined by the Project Management Plan

2.2.1 Establishment of Configuration Control Board (CCB)

The ALS Platform group shall establish a Configuration Control Board (CCB) for the purpose of controlling configuration changes to the ALS Platform, ALS II Platform and subsequent platform development and maintenance efforts. See Section 4 for CM activities that specifically apply to ALS Platform maintenance and development.

The ALS Safety System Upgrades group (or equivalent) shall establish a CCB for project specific applications using ALS. The CCB shall be chaired by a member of one of the groups, and shall have adequate representation from the individuals responsible for CM Activities listed in Table 2.2-1. The CCB shall review Requests for Engineering Changes (RECs), see NA 4.28, "Request for Engineering Change" (Reference 27). Configuration changes that are approved shall be formally invoked via the establishment of a new platform baseline as defined in the CM activities section of the CM Plan. See Section 3 for CM activities that specifically apply to project specific applications that use ALS.

2.3 APPLICABLE POLICIES, DIRECTIVES, AND PROCEDURES

Existing Westinghouse Automation policies and procedures have been established that define the overall CM processes for project specific I&C applications.

- NA 4.3.1, "Document Index" (Reference 28) governs the establishment and use of a Document Index.
- NA 4.28, "Request for Engineering Change" (Reference 27) governs control of configuration changes.
- NA 4.37, "Configuration Management" (Reference 25) provides the overall CM strategy and definitions.
- WNA-IG-00109-GEN, "Configuration Management Implementation Guideline" (Reference 26) defines a detailed CM process for generic application to Automation projects.

2.4 MANAGEMENT OF THE CM PROCESS

For ALS Platform developments, the ALS Platform group is responsible for project management, schedule and cost management, and risk management as they relate to the implementation of CM, as well as day-to-day execution of CM, change control, and problem reporting and resolution processes and activities.

For ALS based project specific applications, the ALS Safety System Upgrades group is responsible for project management, schedule and cost management, and risk management as they relate to the implementation of CM, as well as day-to-day execution of CM, change control, and problem reporting and resolution processes and activities.

Costs of the CM process can be measured in terms of the estimated costs of proposed changes to Configuration Items (CI), including time associated with the implementation of approved changes, and time associated with CCB meetings, generation of baselines and releases. Estimated costs shall be documented as part of the RECs, and considered in the approval of these changes; and in addition shall include any project management monitoring as defined in the applicable ALS based Project Management Plan.

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SECTION 3
CM ACTIVITIES FOR PROJECT SPECIFIC APPLICATIONS OF ALS

This section identifies functions and tasks required to manage a project specific application of ALS. Both technical and administrative CM activities are identified.

3.1 CONFIGURATION IDENTIFICATION

Configuration Items (CIs) shall be named, identified, archived and maintained in accordance with the requirements presented in this plan.

3.1.1 Configuration Items and Levels

CIs are categorized according to the process step that creates them. Groups of CIs can be distributed together via project control points, which are points in the process where specified agreements or controls are applied to a selected group of CIs that are being developed. The applicable ALS Project Management Plan shall define the CIs and alignment of project control points to the Project Life-Cycle defined within the management plan.

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Table 3.1-1. [

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Table 3.1-1. [ ][a,c,e]

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CIs are captured in a Document Index (DI). A DI is a repository captures applicable CIs and categorizes them in accordance with the defined project control points. See NA 4.3.1 "Document Index" (Reference 28), for the associated CI attribute information that shall be captured in the DI as well as an overview of the DI structure.

Some references used in document based CIs are used for information purpose only to prepare the CI and are not applicable to the configuration control requirements for the project specific application. The list of CIs included in a project specific DI reflects this delineation.

A project DI and associated CIs shall be named and numbered in accordance with the applicable ALS Project Management Plan and/or procedures governing the specific type of CI.

The configuration control of the CI shall be implemented per the Configuration Control section below.

3.1.2 Releasing Configuration Items Associated with Project Control Points

A release is a particular version of a CI or a set of CIs that is formally made available for a specific purpose.

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3.1.2.2 [ ]a,c,e

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3.2 CONFIGURATION CONTROL

Configuration control shall be implemented to establish and manage changes to baselines and CMRRs.

Configuration control includes the steps of requesting a change, evaluating the change, approving or disapproving the change, and designing, implementing, and validating the change. Changes include error corrections as well as enhancements. All changes are subject to the formal CM process defined in this section.

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3.2.2 [ ]a,c,e

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3.2.3 Implementing Changes to Baselines and CMRRs (Level A, B, and C)

Changes to release documentation (baseline or CMRR) occur only as a result of the need by the Project to incorporate a changed CI for use.

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3.2.4 Releases and Release Reports

CIs and releases are categorized according to the process step that creates them. The applicable ALS Project Management Plan shall define the schedule of releases with respect to the applicable Project Life-Cycle.

3.2.5 CM Summary for Project Specific Applications of ALS

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3.3 CONFIGURATION STATUS ACCOUNTING

In accordance with NA 4.37, Configuration Status Accounting keeps track of the state of each CI, [

]a,c,e Configuration status accounting is accomplished via usage if the DI as defined by NA 4.3.1 "Document Index" (Reference 28). The DI documents the CIs, baselines, and releases relevant to the applicable ALS based project using a unique identifier and corresponding status. This ALS based project information shall be maintained using the DI tool in accordance with NA 4.3.1. The updating of the DI shall be performed as a complete task upon any of the following:

- Approval of a new baseline
- Approval of a new CMRR
- Approval of a new CI

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3.4 CONFIGURATION AUDITS AND REVIEWS

Reviews shall be performed on CIs (including baselines and CMRRs) to ensure compliance to the CM processes specified in this plan. CIs shall be reviewed and approved in accordance with [

]a,c,e. For each baseline and CMRR document, a readiness review shall be performed by the CCB defined for that particular project, in addition to a second party review and approval. [

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3.5 INTERFACE CONTROL

3.5.1 Hardware and Software Used for Programming FPGA and NVM

The FPGA image is programmed (burned) into the FPGA using the appropriate programming tool and libraries provided by the FPGA manufacturer. The 3rd party tools are described in 6002-00030, "ALS Design Tools" (Reference 3). The version of the tools is captured in 6002-00007, "ALS Platform Configuration Status Accounting" (Reference 2) and 6003-00007, "ALS II Platform Configuration Status Accounting" (Reference 22) as applicable. Project specific applications of ALS shall include the applicable revision of 6002-00007 or 6003-00007 (dependent on which ALS platform the project is using) in the CI for the project.

3.5.2 Critical Software Used in the FPGA Development Flow

All FPGA simulation, synthesis and Place & Route tools are identified in 6002-00030, "ALS Design Tools" (Reference 3). The FPGA development flow follows the procedures defined by NA 4.51, "Field Programmable Gate Array (FPGA) Development Procedure" (Reference 8).

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3.5.3 Critical Software Used in the Board (PCB) Development Flow

All schematic and PCB development tools are identified in 6002-00030, "ALS Design Tools" (Reference 3). All outputs from the schematic and PCB tools are reviewed and approved in accordance NA 4.44, "Engineering Drawing Creation and Change Process" (Reference 33).

3.5.4 Accounting for Interfaces

The versions of the tools mentioned above are captured in 6002-00007, "ALS Platform Configuration Status Accounting" (Reference 2) and 6003-00007, "ALS II Platform Configuration Status Accounting" (Reference 22) as applicable. Project specific applications of ALS shall include the applicable revision of 6002-00007 or 6003-00007 (dependent on which ALS platform the project is using) in the CI for the project so that these interfaces are accounted for.

3.6 SUBCONTRACTOR/VENDOR CONTROL

If a project specific application of ALS is leveraging Subcontractor and Vendor CIs, the program manager shall monitor and assess the application of CM accordingly. The applicable ALS Project Management Plan shall define the method of integrating the subcontractor and vendor scope of supply into the CM of the overall project, including subcontractor and vendor CM documentation. All inputs provided by Westinghouse to a subcontractor or vendor for use in the performance of its work activities shall be considered a CI and handled according to CM processes defined for CIs in this plan. All scope of work received from a subcontractor or vendor shall be considered a CI and handled according to CM processes defined for CIs in this plan.

The applicable ALS Project Management Plan shall also define the method of processing changes with respect to the subcontractor or vendor scope of supply. Changes required to CIs provided to a subcontractor or vendor for use in the performance of its work activities shall be handled in the same manner as internal CIs. Changes made to CIs received from a subcontractor or vendor may be governed by the subcontractor or vendor processes. The applicable ALS Project Management Plan shall define the method of monitoring subcontractors and vendors for compliance to CM requirements and flow the information into applicable purchase orders per WEC 7.5, “Control of Purchased Items and Services” (Reference 40).

3.7 RELEASE MANAGEMENT AND DELIVERY

The delivery of project specific applications of ALS products and documentation shall be formally controlled via the use of baselines and associated CMRRs. [

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SECTION 4
CM ACTIVITIES FOR ALS PLATFORM DEVELOPMENT AND MAINTENANCE

This section identifies all functions and tasks required to manage an ALS platform development or maintenance. Both technical and administrative CM activities are identified.

4.1 CONFIGURATION IDENTIFICATION

The ALS Platform has an approved topical report, 6002-00301-P-A, Rev. 4, "Advanced Logic System Topical Report" (Reference 30). The configuration of ALS platform, and it's associated CIs, is defined via the 6002-00007, "ALS Platform Configuration Status Accounting" (Reference 2). Within the context of this Westinghouse Automation based ALS CM Plan the ALS Platform Configuration Status Accounting document satisfies the intent of both a baseline and CMRR for the ALS Platform.

Per this CM plan, the Configuration Control of the ALS platform will continue to be maintained and documented via revision to the 6002-00007 status accounting document. See Section 4.2.

The same status accounting approach will be used for ALS II and documented in 6003-00007, "ALS II Platform Configuration Status Accounting" (Reference 22) accordingly.

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4.1.1 Configuration Item Levels

As specified in Section 3.1, CIs related to ALS Platform development are also categorized according to the process step that creates them. Groups of ALS Platform related CIs can be distributed together via project control points, which are points in the process where specified agreements or controls are applied to a selected group of CIs that are being developed.

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4.1.2 Releasing Configuration Items Associated with Project Control Points

For ALS Platform development efforts such as the ALS II Platform development defined in 6003-00000, the applicable ALS Project Management Plan shall define the CIs and the relationship with the project control points and the Project Life-Cycle. [

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4.2 CONFIGURATION CONTROL

Configuration control associated with an ALS Platform falls into the following two categories:

- ALS Platform Development Configuration Control
- ALS Platform with an Approved Topical Report Configuration Control

4.2.1 ALS Platform Development Configuration Control

The Project Manager shall establish a CCB for the applicable ALS Platform development whose purpose is to:

- Review proposed changes to CIs listed in the applicable ALS PCSA
- Assess when to release a new revision of an ALS PCSA and determine if an ALS Platform CM Release letter is required
- Document the impact assessment of revised CIs as part of the issuance of ALS Platform CM Release Letters

4.2.1.1 Initiating Changes for ALS Platform Development

Once a Level A/B CI is included in an ALS PCSA, proposed changes to the CI shall be submitted for review by the CCB via the REC process. At the discretion of the ALS Project Manager (or designee), other Level C CIs, may also be required to be submitted for review by the CCB via the REC process. CIs that require RECs are identified by the Project Manager in the ALS PCSA.

4.2.1.2 Implementing Changes for ALS Platform Development

CWEC 6.1, “Document Control” (Reference 23).Revisions to an ALS PCSA occur as a result of the need by the Project to formally document the inclusion of a changed CI (or set of CIs). Revisions of an ALS PCSA may occur independently of project control points and associated ALS Platform CM Release Letters.

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4.2.2 ALS Platform with an Approved Topical Report Configuration Control

4.2.2.1 Initiating Changes for Approved Topical Report Configuration Control

Recommended changes identified on ALS Platforms with Approved Topical Reports (ATRs) are formally tracked in OnTime in accordance with 9006-01501, "Defect Management Work Instruction" (Reference 13) and, as required a CAPAL per WEC 16.2.

OnTime tickets and CAPALs are reviewed by the manager of the ALS Platform Group and dispositioned for action accordingly.

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4.2.2.2 Implementing Changes for Approved Topical Report Configuration Control

For approved CI changes that do not require submittal for NRC review (per the review process described by WCAP-17226-P), the ALS PCSA will revised to incorporate the CIs accordingly, so that it can be used as a CI for future project specific applications of ALS.

For CI changes that require NRC review, the ALS PCSA cannot incorporate the revised CI until formal acceptance by the NRC is received.

4.2.3 Releases and Release Reports

See subsection 3.2.3.

4.2.4 CM Summary for ALS Platform Development and Maintenance

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4.3 CONFIGURATION STATUS ACCOUNTING

See Section 3.3.

4.4 CONFIGURATION AUDITS AND REVIEWS

See Section 3.4.

4.5 INTERFACE CONTROL

See Section 3.5.

4.6 SUBCONTRACTOR/VENDOR CONTROL

6002-00030, "ALS Design Tools" (Reference 3) documents the tools used to develop the ALS Platform and associated project specific application of ALS. The ALS PCSA specifically lists out the applicable revisions of the tools that are identified in the 6002-00030 document. [

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4.7 RELEASE MANAGEMENT AND DELIVERY

The delivery of ALS Platforms shall be formally controlled via the release of the applicable ALS PCSA and ALS Platform CM Release Letters. [

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(Last Page of Section 4)

SECTION 5
ALS CM SCHEDULES

For project specific applications of ALS, the schedule for the release of baselines and CIs is determined by the Project Manager and the associated Project Life-Cycle.

For ALS Platform development efforts, the applicable ALS Project Management Plan shall define the CIs and the relationship between the project control points and the Project Life-Cycle defined within the management plan. A baseline and/or CMRR release shall be implemented via a revision to the applicable ALS PCSA. Revisions to the ALS PCSA associated with an ALS Platform under development shall be communicated via an ALS Platform CM Release Letter at project control points defined by the applicable ALS Project Management Plan.

(Last Page of Section 5)

SECTION 6
ALS CM RESOURCES

This section defines the various types of resources employed for the implementation of the activities defined in this CM plan.

6.1 CONFIGURATION MANAGEMENT TOOLS

The Configuration Management process for the ALS based projects is supported by the use of software tools, which provide structure and automation to the process. The following software tools are applicable:

- EDMS – Document archival system
- CVS – Version Control System for software related activities
- DOORS – Requirements Tracing tool, supports requirements management
- REC – Request for Engineering Change tool, supports configuration control
- ONTIME – Issue Tracking tool, supports error tracking and correction
- DI – Document Index tool, supports tracking of configuration items (NA 4.3.1).

Access to each of these systems shall be defined and controlled by the Integrated Process Lead (IPL) or Project Manager as follows:

- Read Only access is granted to all project members.
- Access to create issues to be tracked is granted to all project members.
- Access to support Release creation is granted to all project technical leads.
- Access to update CI information is granted to appropriate node owners.

Also note that special consideration must be given to Human Diversity criteria/commitments associated with ALS based developments when access is being requested, approved and assigned to any tools that contain restricted information as defined by 9006-00037, “Human Diversity Management for FPGA Based Development and Test Activities” (Reference 29).

(Last Page of Section 6)

SECTION 7
ALS CM PLAN MAINTENANCE

The Next Generation Safety Systems Platform group is responsible for maintenance, update, review, and approval of this CM plan.

This CM plan shall be reviewed and updated as necessary to address changes in the ALS platform and/or project specific application development and processes in addition to changes in existing Westinghouse Automation policies and procedures that define the generic CM process.

Any revisions made to the ALS CM plan shall be reflected in the ALS Platform Configuration Status Accounting documents, 6002-00007, "ALS Platform Configuration Status Accounting" (Reference 2) and 6003-00007, "ALS II Platform Configuration Status Accounting" (Reference 22). The 6002-00007 and 6003-00007 documents shall then be revised, archived as described in Section 4, and made available to ALS based project specific applications accordingly to include in their CIs.

(Last Page of Section 7)

APPENDIX A
CONFORMANCE

A.1 CONFORMANCE TO NUCLEAR AUTOMATION POLICIES AND PROCEDURES

For project specific I&C applications, NA 4.37 (Reference 25) establishes the responsibilities and requirements for implementing Configuration Management (CM) for Automation products, platforms, and projects. It is supplemented by WNA-IG-00109-GEN, "Configuration Management Implementation Guideline (Reference 26) which describes the elements required to be included in the Configuration Management Plan in accordance with NA 4.37. The following table shows the mapping from sections of these documents to the sections of this CM Plan that address them.

Table A.1-1. [ ][a,c,e]

a,c,e

Table A.1-1. [ ][a,c,e]

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A.2 CONFORMANCE TO REGULATORY POSITION

This CM Plan conforms to USNRC Regulatory Guide 1.169-1997, "Configuration Management Plans for Digital Computer Software Used in Systems of Nuclear Power Plants" (Reference 35) which states that, "IEEE Std 828-1990, IEEE Standard for Software Configuration Management Plans" (Reference 36) provides an approach acceptable to the NRC staff for meeting the requirements of 10 CFR Part 50, as applied to software, in planning configuration management of safety system software, subject to the provisions listed below."

Table A.2-1. [ ][a,c,e]

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Table A.2-1. [ ][a,c,e]

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A.3 [ ]a,c,e

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Table A.3-1. [ ][a,c,e]

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(Last Page of Appendix A)