

# Nuclear Standard

<b>TITLE</b>
<b>CONTRACTOR/OWNER ENGINEERING INTERFACE AND OVERSIGHT</b>

<b>AUTHORIZATION</b>	
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<b>PURPOSE</b>
<p>This Standard specifies the Engineering requirements for the development, <i>review</i> and acceptance of documents, which prescribe <i>Interface Requirements (IR)</i> between Ontario Power Generation Nuclear and <i>Contractors</i>. Engineering requirements for defining specific <i>IRs</i> for <i>task</i> deliverables/activities and oversight requirements are provided to facilitate the successful implementation of <i>tasks</i> at OPG by ensuring that <i>Contractor</i> activities are in conformance with OPG’s Quality Assurance (QA) Program and regulatory requirements or an OPG approved <i>Contractor</i> QA Program.</p> <p>This Standard applies equally to those portions of a document, which include the contents of an <i>IR</i> or serve the purpose of an <i>IR</i>, such as Scope of Work (SOW) or <i>Engineering Specifications</i> as well as to documents detailing deviations or amendments to the <i>IRs</i> of such documents.</p>

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**Nuclear Standard**

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Compliance Date:	Immediate
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**EXCEPTIONS**

This Standard does not apply to augmented staff, management consultant services, or services directly supervised by OPG staff.

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## 1.0 DIRECTION

### 1.1 General Requirements

- 1.1.1 OPG retains ultimate responsibility for ensuring nuclear safety and shall not delegate this responsibility to *Contractor* personnel executing any portion of an Engineering contract. Although *Contractor* personnel often fulfill an important role in ensuring nuclear safety during their work (which may occur on-site or at off-site facilities), OPG shall not relinquish or allow erosion of OPG's responsibility for ensuring nuclear safety.
- 1.1.2 Engineering oversight is a method OPG uses to validate purchase services provided by the *Contractor* are as per the issued purchase order for said service. Engineering oversight is not a method of *verification* of the individual deliverables in *Contractors* work; the *Contractor* is ultimately responsible to ensure that the design work being performed conforms to all applicable codes, standards and processes, and is able to meet all requirements for the work being completed.
- 1.1.3 Non-governance instructions, such as desktop guides and job aids may be developed for the purpose of providing the line of business with a consistent set of instructions implementing the requirements of this Standard. Such non-governance instructions shall meet the requirements of this Standard and may provide additional instruction, provided this additional instruction does not contravene the requirements of this Standard or other OPG governance. The development and use of such non-governance instructions is at the discretion of the line of business and is not a requirement of this Standard.
- 1.1.4 OPG quality requirements shall be satisfied by *Contractors* performing work in accordance with OPG Managed System, or in accordance with an OPG approved *Contractor* QA Program and *IR*.
- 1.1.5 Performance standards and expectations for the conduct of work activities by *Contractors* should meet high performance standards expected by the OPG Managed System. To ensure these standards and expectations are met:
- (a) OPG should clearly communicate standards and expectations to *Contractors*, and *Contractors* should ensure they understand and meet these standards and expectations.
  - (b) OPG should not tolerate expedited work schedules as a reason for allowing standards and expectations to be lowered for *Contractors*.
- 1.1.6 *Engineering Single Point(s) of Contact (E-SPOC(s))* in support of, and working closely with the *Accountable Engineering Manager*, is responsible for executing the engineering oversight activities to be performed on the *Contractor* to ensure that engineering quality requirements are satisfied by the *Contractor*.
- 1.1.7 Users may refer to N-GUID-00700-10015, Contractor Oversight Guide for Nuclear Engineering, which provides additional guidance supporting use of this standard.

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**CONTRACTOR/OWNER ENGINEERING INTERFACE AND OVERSIGHT****1.2 Interface Requirements (IR)**

The *IR* between the *Contractor* and OPG staff/processes should be documented. The *IR* is a listing of the responsibilities and accountabilities associated with the deliverables, not just a list of deliverables. All documents or portions of documents including these requirements are referred to as *IR* within this standard.

**1.2.1 Deliverables and Activities Interface Requirements**

1.2.1.1 The *Accountable Engineering Manager*, with the support of *E-SPOC(s)*, should ensure that the Deliverables and Activities Interface (DAI) requirements are documented in an *IR*.

- a) The *IR* may be a standalone document or incorporated into other documentation (e.g., SOW, *Oversight Plan* or *Engineering Specification*). Template N-TMP-10185, Deliverables and Activities Interface, may also be used to develop the *IR*.
- b) Pre-developed or generic *IRs* may be attached, referenced or otherwise incorporated into a new *IR* or an addendum or deviations list may be attached to a pre-developed or generic *IR*, as long as the set of documents comprising the new *IR* continues to meet the requirements of this Standard.
- c) N-COI-00120-00001, Contractor/Owner Interface Requirements For Nuclear, may be used as a basis for developing an engineering *IR* by removing the non-engineering interface requirements.

1.2.1.2 The minimum information required to document the *IR* is:

- A list of deliverables and activities to be completed.
- *Contractor's* accountabilities and responsibilities including use of OPG processes or portions thereof as per N-STD-MP-0028, Conduct of Engineering.
- OPG's accountabilities and responsibilities.

1.2.1.3 Engineering products, including *Engineering Drawings*, provided by *Contractors* shall meet the requirements of the Professional Engineers Act of Ontario.

- (a) A Professional Engineer's seal shall be applied by the *Contractor* to engineering documentation to comply with the Professional Engineers Ontario guideline, "*Use of the Professional Engineer's Seal*". Users may refer to Appendix B of N-LIST-01300-10000, Bounded Document Set.
- (b) For *Engineering Drawings* in particular:
  - (1) The Professional Engineer's seal is required for changes to the associated *Engineering Change Papers* that are within the practice of Professional Engineering.

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**Note:** The Professional Engineers Ontario guideline, “*Use of the Professional Engineer’s Seal*” requires sealing of ‘drawings or sketches accompanying change notices’.

- (2) The Professional Engineer’s seal is **not** required for incorporation of *Engineering Change Papers* into final drawings where the final drawings are considered ‘as-built documents’. Refer to N-LIST-01300-10000, for guidance regarding ‘as-built documents’ and other Professional Engineer’s seal exceptions.

1.2.1.4 When software is used in the creation of Design product(s) for a safety-related system by a *Contractor*, the *Contractor* shall provide evidence that the software is compliant with CSA N286.7, Quality assurance of analytical, scientific, and design control computer programs for nuclear power plants.

1.2.1.5 The *Accountable Engineering Manager* and *E-SPOC(s)* should identify specialized training requirements for *Contractor* Staff, when required. Specific training and mentoring of *Contractor* staff by OPG may be required to provide or augment *Contractor* expertise.

## 1.2.2 Contractor Liaison with OPG

Liaison organizational roles between the *Contractor* and OPG should be identified in the *IR*.

- (a) Where the role of Design Authority has been delegated to the contractor (e.g., Darlington New Nuclear Project [DNNP]), a process must be in place to either:
- (1) Explicitly maintain the *Contractor* as Design Authority after turnover of systems or a facility.
  - (2) Turn over to OPG the role of Design Authority at a time to be defined (for example, at or near the time when defined systems or a facility are being turned over to OPG).
- (b) *E-SPOC(s)* should not direct the efforts of the *Contractor*. *E-SPOC* accountabilities should be limited to providing oversight of the *Contractor’s* activities to ensure quality requirements and conditions of the Purchase order for the purchased service are being met.
- (c) The *Contractor* and *E-SPOC(s)* are responsible for identifying any proposed changes to the engineering SOW to the Contract Owner.
- (d) *Contractor* or *E-SPOC* correspondence related to possible changes in scope of the contract that may arise during the course of design activities should be routed through the OPG Contract Owner for disposition.

## 1.2.3 Documentation Requirements

1.2.3.1 Documentation prepared by *Contractors* should be:

- (a) Listed in *IR*, together with OPG and *Contractor* accountability.

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- (b) Numbered in accordance with OPG standards and procedures applicable to the type of document.

**EXCEPTION:** DNNP may allow a *Contractor* to use alternate numbering system(s) when the intent is to transfer the *Contractor* information management system to OPG in order to become an OPG Authorized Information Management System (AIMS).

- 1.2.3.2 *E-SPOC(s)* shall ensure that engineering information transmittal across interfaces is documented and controlled. Transmittal of engineering documentation should identify the status of the engineering information or document provided and, identify, where necessary, incomplete items requiring further evaluation, *review*, or *approval*. Protocols for documenting these transmittals should be established with the *Contractor* for each *task*.
- 1.2.3.3 *Accountable Engineering Manager and E-SPOC(s)* shall ensure that document transmittal, release, or *approval* for document system access to *Contractors* complies with OPG-STD-0030, Protecting OPG's Information And Intellectual Property, at all phases of the *task*.
- 1.2.3.4 OPG acceptance of documentation prepared by the *Contractor* should be in accordance with N-PROC-MP-0078, Specification, Review, Acceptance, and Use of Vendor Technical Documents, or in accordance with an alternate acceptance process, specified in the contract or DAI, and approved by OPG. An alternate acceptance process should meet the following requirements:
- (a) Process ensures that the document meets requirements equivalent to those specified in N-PROC-MP-0078.
- (b) Process provides a traceable record of document acceptance by OPG or an independent agent delegated to accept products on OPG's behalf.
- 1.2.3.5 Design documentation should be accepted by the *E-SPOC*.

**Note:** Acceptance should not be confused with *approval* or *verification*, which resides with the *Contractor* (unless noted otherwise in this Standard). Acceptance does not relieve the *Contractor* from responsibility for errors or omissions or from any obligation or liability under the contract.

#### 1.2.4 Interface Requirement (IR) Restrictions

The following engineering activities and products have restrictions, which must be considered when preparing *IRs*.

- (a) *E-SPOCs* should conduct a *review*, prior to OPG acceptance of *Contractor* prepared commissioning results in accordance with the applicable engineering change control process (for example, but not limited to, N-PROC-MP-0090, Engineering Change Control Process) in addition to or in place of any oversight or acceptance by the *Contractor*.

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- (b) The type and level of the review should be decided by the SM of reviewing/accepting organization based on the complexity of the deliverables.
- (c) *E-SPOCs* should provide industry and OPG Operating Experience (OPEX) related to the procurement of major equipment and should accept the choice of major equipment that may be part of the Engineering *Task*.
- (d) OPG **shall** provide the interface with the Canadian Nuclear Safety Commission (CNSC).

**1.2.5 Interface Requirement (IR) Approvals and Revision Control**

The contract owner organization ensures that the *IR* document and all revisions to the documents are *reviewed* and *approved* by the appropriate stratum level authorities. In addition, *IR* documents should meet the requirements specified below for the engineering accountabilities.

- 1.2.5.1 Each engineering accountability included within the *IR* should be *reviewed* by the accountable engineering organization and the accountable OPG Stratum IV Engineering Manager's (or higher) concurrence or *approval* documented on the document coversheet or within the document.
- 1.2.5.2 Revisions to engineering accountabilities in an *IR* should be *reviewed* by the accountable engineering organization and the OPG Stratum IV Engineering Manager's (or higher) concurrence or *approval* documented on the document coversheet or within the revised document.

**1.3 Engineering Oversight Requirements****1.3.1 General Engineering Oversight Requirements**

Oversight activity focuses on contractor compliance to approved engineering processes in accordance with the approved QA Program being followed. This oversight activity does not only focus on a single product, deliverable or design package, but rather whether the *Contractor* is following the applicable processes as required in the approved QA Program, purchase order, SOW and *IR*.

- 1.3.1.1 The *Accountable Engineering Manager* with support of the *E-SPOC(s)* should ensure that all oversight activities are planned, performed, documented and followed up in accordance with the *IR* and *Oversight Plan*.
- 1.3.1.2 Engineering oversight should at minimum take a graded approach commensurate with the safety significance and complexity of the work being performed. Complex designs of Special Safety Systems should have the most rigorous level of oversight applied and simple designs of systems outside the protected area should have the least rigorous level of oversight with a sliding scale for everything in between. Considerations for the level of risk should include:
  - Whether the design is for or interfaces with a Special Safety, Safety Related, Non-Safety Related or Facility Related System.



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- If it is First of a Kind (FOAK) or First in a While (FIAW).
- The System's Proximity to the Core (Nuclear System, Balance of Plant, Building Structure, or Outside the Protected Area).
- Number of Interfacing System(s) and number of engineering disciplines involved
- The existence of design requirements and work practices.
- *Contractor* past performance and experience.

1.3.1.3 The *Accountable Engineering Manager* with support from the *E-SPOC(s)* should grade the level of risk associated with the *Contractor* activity and identify specific oversight activity hold points for engineering deliverables and activities performed by the *Contractor* based on that grade. These oversight activities should be included in the SOW or *IR* or associated *Oversight Plan*.

**Note:** It is the *E-SPOC(s)* responsibility to ensure that the scope of the engineering oversight activity is clearly defined.

1.3.1.4 The *E-SPOC(s)* with support from, and working closely with the *Accountable Engineering Manager*, is responsible for managing the oversight activities and tracking *Contractor* performance for engineering deliverables and activities throughout the *task* life cycle. For more complex *tasks*, the *E-SPOC(s)* may consider use of an *Oversight Plan*, independent from the *Contractors* Design Plan, to record and track the oversight activities.

1.3.1.5 The *E-SPOC(s)* should trigger additional oversight activities based on *Contractor* performance to reinforce OPG's expectations and should document the issue(s) in a Station Condition Record (SCR). The *E-SPOC(s)* should change the level of oversight applied based on increases or decreases to risks as work progresses. Increased oversight resulting from poor *Contractor* performance should be documented in a Station Condition Record (SCR). Any changes should be documented in the oversight plans as required.

### 1.3.2 Oversight Activity: Engineering Process

- (a) This Oversight activity addresses the *Contractors* overall engineering process ensuring *Contractor* compliance to Engineering and Quality standards, and should be in place from contract initiation to contract completion. Oversight activities should comply with N-STD-MP-0028.
- (b) The *Accountable Engineering Manager*, with support of the *E-SPOC(s)*, is responsible for the process of requesting, planning, and conducting this engineering oversight activity on the *Contractor* to evaluate if they are in compliance with approved processes in accordance with the approved QA Program.

**Note:** Audits are performed to qualify or re-qualify a *Contractor's* QA Program or elements of the program. Oversight activities are performed on *Contractors* to evaluate if they are in compliance with their QA Program.

- (c) Engineering process oversight typically includes the following:
  - Oversight activities should have clearly defined plans and goals.

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- Results should be presented to the *Contractor* including both issues and areas of strength.
- Corrective action items should be confirmed with the *Contractor* with respect to timely response and closure.
- A significant finding should be documented in an SCR and tracked through OPG Supply Chain Nuclear Corrective Action Request (NCAR) database in accordance with N-PROC-MM-0010, Establishing and Maintaining Ontario Power Generation Approved Suppliers List.

### 1.3.3 Oversight Activity: In-Progress Engineering Reviews

This oversight activity focuses on the *Contractor* demonstrating that they have ensured design requirements will be met, that the final product will be suitable for its intended use, and operability, maintainability and constructability will be achieved.

- 1.3.3.1 The *E-SPOC(s)* with the support of the *Accountable Engineering Manager* is responsible for obtaining and coordinating any individuals required to conduct in-progress *review* activities.
- 1.3.3.2 The *Contractor* should demonstrate to the *E-SPOC(s)* and OPG stakeholders during in-progress *reviews* at a minimum that:
- (a) The final deliverable is progressing such that the engineering quality requirements are met.
  - (b) The assumptions have been documented and validated.
  - (c) That the final product(s) will be suitable for its intended use and have been properly accepted in accordance to N-PROC-MP-0078.
  - (d) Operability, maintainability and constructability are achieved in *Contractor* design.
- 1.3.3.3 The *Contractor* should demonstrate to the *E-SPOC(s)* that they have a clear understanding of the IR and SOW.
- 1.3.3.4 *Collaboration* and communication between the *Contractor* and *E-SPOC(s)* should be facilitated.
- 1.3.3.5 The *Contractor* should document actions, risks and issues associated with the work and document that they have been dispositioned and validated prior to the completion of the work.
- 1.3.3.6 The *Contractor* should escalate actions, risks and issues to the *E-SPOC(s)*. The *E-SPOC(s)* should help the *Contractor* close actions, risks and issues after they have been escalated.
- 1.3.3.7 Adverse conditions found by the *Contractor* shall be communicated to the *E-SPOC(s)* and documented as SCRs.

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1.3.3.8 The *E-SPOC(s)* should document the progress of the work activities and performance by the *Contractor*. Poor *Contractor* performance should at minimum be documented with an SCR.

**2.0 ROLES AND ACCOUNTABILITIES**

**2.1 Accountable Stratum IV Manager**

*Approves* deviations to the *IR* document.

**2.2 Senior Manager Computer and Controls Design**

2.2.1 Review intent changes to this document for impact on Human Factors Engineering (HFE).

**Note:** When revising this document to incorporate any intent change, to facilitate the above review the document author should send a copy of the draft to the Senior Manager Computers and Controls Design as part of the intent-change technical review of the document.

**3.0 DEFINITIONS AND ACRONYMS**

**3.1 Definitions**

The following terms are defined in N-LIST-01300-10008, Lexicon of Engineering Governance Terms. All of these defined terms are shown in italic font in this document’s text, to alert users that the term has been defined.

- Accountable Engineering Manager*
- Approval*
- Contractor*
- E-SPOC(s)*
- FOAK*
- FIAW*
- Interface Requirements (IR)*
- Oversight Plan*
- Review*
- Task*

**3.2 Abbreviations and Acronyms**

<b>AIMS</b>	Authorized Information Management Systems
<b>CNE</b>	Chief Nuclear Engineer
<b>CNSC</b>	Canadian Nuclear Safety Commission
<b>DAI</b>	Deliverables and Activities Interface
<b>DNNP</b>	Darlington New Nuclear Project
<b>E-SPOC</b>	Engineering Single Point of Contact
<b>IR</b>	Interface Requirements
<b>NCAR</b>	Nuclear Corrective Action Request

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<b>OPEX</b>	Operating Experience
<b>OPG</b>	Ontario Power Generation
<b>QA</b>	Quality Assurance
<b>SCR</b>	Station Condition Record
<b>SOW</b>	Scope of Work

**4.0 BASES, RECORDS AND REFERENCES**

**4.1 Bases**

None

**4.2 Records**

The following records may be generated by use of this document and shall be registered in appropriate document management system in accordance with the following table.

Record Created	Associated Form/Template Number	QA Record? Y/N	Records Management System Filing Information/Retention
Deliverables and Activities Interface	N-TMP-10185	Y	Indexed in AIMS Document Number - Fac-DAI-SCI-xxxxx Fac - Facility Code SCI - System Classification Code xxxxx - 5 Digit Sequence Number. Doc Type - PLAN Retention - Life of Facility. Records Retention Code - N02-0003

**4.3 References**

**4.3.1 Performance References**

N-COI-00120-00001, Contractor/Owner Interface Requirements For Nuclear

N-FORM-10521, Document Scoping Checklist

N-FORM-10958, Modification Outline

N-FORM-10959, Design Scoping Checklist

N-GUID-00700-10015, Contractor Oversight Guide for Nuclear Engineering

N-INS-00700-10007, Preparation of Modification Design Requirements

N-LIST-01300-10008, Lexicon of Engineering Governance Terms

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N-PROC-MM-0010, Establishing and Maintaining Ontario Power Generation Approved Suppliers List

N-PROC-MP-0078, Specification, Review, Acceptance, and Use of Vendor Technical Documents

N-PROC-MP-0090, Engineering Change Control Process

N-PROC-RA-0010, Facility Access and Working Rights (Radiological)

N-STD-AS-0030, Project Oversight Standard

N-STD-MP-0028, Conduct of Engineering

N-TMP-10185, Deliverables and Activities Interface

OPG-STD-0030, Protecting OPG’s Information and Intellectual Property

Professional Engineers Ontario, Use of the Professional Engineer’s Seal, July 2005, Revised Nov. 2008

**4.3.2 Developmental References**

ASME, NQA-1, Quality Assurance Requirements for Nuclear Facility Applications

CSA N286, Management System Requirements for Nuclear Power Plants

CSA N286.7, Quality assurance of analytical, scientific, and design computer programs for nuclear power plants

INPO AP-930, Supplemental Personnel Process Description, Revision 1

OPG-PROC-0178, Controlled Document Management

**5.0 REVISION SUMMARY**

This is an **intent** revision.

The intent of this revision is to specify the expectations for Oversight of *Contractors* by engineering personnel at OPG. To reinforce the expectation that the level of oversight required is commensurate with risk, clearer guidelines for evaluating risk and applying the results of that evaluation have been added. Specific activities to improve *Contractor* oversight have also been added as per below.

- Document has been placed into latest template (no revision bars shown).
- Cover Page: Changed the name and role of the document owner to align with OPG Organization changes. (DCR # 154813)
- In the Purpose statement “*approval*” was replaced with “acceptance”.

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- Added section 1.1.2 to clarify engineering oversight and renumber the remaining sections.
- 1.1.3: Changed “guides and desktops” to “desktop guides and job aids”.
- 1.1.5 (b): Changed “expedient work completion” to “expedited work schedules” to clarify that adherence to schedule cannot be an excuse for poor quality.
- 1.1.7: Added recommendation to use N-GUID-00700-10015.
- 1.2.1.1 (a): Added “*Oversight Plan*” to clarify that the interfacing requirements can be integrated into the *Oversight Plan*.
- 1.2.1.4: Made the requirement “shall” as its mandatory as per CSA N286.
- Section 1.2.2: Paragraph (a) added (DCR 155043).
- 1.2.2 (b): Added “and conditions of the Purchase order for the purchased service” at the end to make clear that oversight consists of ensuring conformance to QA requirements and the contractual agreement.
- 1.2.2 (c): Removed section as it is the *Contractor’s* responsibility to learn and ensure compliance to OPG procedures.
- Section 1.2.3.1 (b): Exception added. (DCR 155043).
- 1.2.3.5 Note: Added “or *verification*” to clarify that acceptance should not be confused with verification.
- 1.2.4 (a): Changed the wording from “shall” to “should”
- 1.2.4 (a): Clarification added.
- 1.2.4 (d) changed to (a): Removed “detailed engineering” before review as it is unclear what a detailed engineering *review* means.
- Section 1.2.4 (a): Updated title of N-PROC-MP-0090 to “Engineering Change Control Process. (DCR 148910).
- Section 1.2.4: Step (b) updated. (DCR 154162).
- 1.3.1: Moved paragraph from 1.3.2 and changed to clarify what activities oversight is generally focused on and that it is more appropriately placed here.
- 1.3.1.1: Changed to make clear that oversight activities are those that have been documented in the IR or SOW and will be executed as such.
- 1.3.1.2: Removed as the requirements for Engineering Oversight are reflected in this standard.

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- 1.3.1.3: Removed as this is too much detail for a standard, these activities will be reflected in N-GUID-00700-10015.
- 1.3.1.4: Removed as it is an optional contractor requirement and as such is not needed in a standard.
- 1.3.1.5 Changed to 1.3.1.2: Replaced the wording to clarify that oversight activities are to take a graded approach and to provide some examples of how it is to be graded.
- 1.3.1.3: Added to clarify that once the overall activity has been graded, specific oversight tasks to be done will be as per the risk assessed.
- 1.3.1.6 Changed to 1.3.1.4.
- 1.3.1.7 Changed to 1.3.1.5: Changed wording to clarify that oversight activities can decrease as well as increase.
- 1.3.1.8: Removed as the same *E-SPOC(s)* can perform the reviews and oversight activities.
- 1.3.3: Added “the *Contractor* demonstrating that they have ensured” to make the focus that the contractor proves that they have met requirements.
- 1.3.3: Removed “in vendor design for specific scopes of work (such as a specific Engineering Change Package)”. The whole standard is for vendor scopes of work so this sentence is not needed.
- 1.3.3.2: Changed to clarify that it is the *Contractor’s* responsibility to demonstrate progress.
- 1.3.3.2 (d): Change the wording for clarification.
- 1.3.3.3: Removed: “Engineering acceptance of specific deliverables or products, accordance with N-PROC-MP-0078, can also be considered as an in progress oversight activity”. This is too specific for a standard, in progress activities will be detailed in N-GUID000700-10015.
- 1.3.3.3: Added to ensure that *Contractor’s* and OPG personnel have a common understanding.
- 1.3.3.4: Added is to ensure that the collaborative approach is taken.
- 1.3.3.5: Added to ensure that the *Contractor* is properly documenting actions, risks and issues.
- 1.3.3.6: Added to ensure that the contractor engages OPG personnel to escalate to ensure quick resolution.
- 1.3.3.7: Added as it is a requirement that any adverse condition is documented via SCR.

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- 1.3.3.8: Added to ensure *Contractor* performance is documented with SCRs to trend negative performance.
- Section 2.2 and 2.2.1: Added the roles and responsibilities of “Senior Manager Computer and Controls Design”. (DCR 145292).
- Section 3.0: Added FOAK and FIAW definitions.
- Section 3.2: Added and DNNP AIMS abbreviations (DCR 155043).
- Section 4.2: Updated records table
- Section 4.3.1: Updated title of N-PROC-MP-0090 to “Engineering Change Control Process” (DCR 148910).
- Section 4.3.1: Added N-GUID-00700-10015.
- Section 4.3.2: Removed “1994” from ASME, NQA-1 reference.