Examples for Assigning Construction Inspection Program Findings to Rows in the Construction Significance Determination Process Matrix

The following tables contain examples of findings that may be identified during the construction inspection program. The table illustrates the differences between findings of minimal significance that would typically be assigned to Row 1 of the construction significance determination matrix, findings of moderate significance that would typically be assigned to Row 2 of the matrix, and findings of substantial significance that would typically be assigned to Row 3 of the matrix. These examples are not all-inclusive, but are intended to guide the user of this document in determining the appropriate matrix row to assign a finding.

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I. Organization		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
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Note: Most findings associated with Criterion I will be processed through the construction programmatic SDP.

II. Quality Assurance Program		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
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Note: Most findings associated with Criterion II will be processed through the construction programmatic SDP.

III. Design Control		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Configuration management discrepancies (e.g. minor interferences due to tolerance stack-up) • Drafting errors that do not result in incorrect or deficient design • Computer software deficiencies identified during or after verification testing that are determined to be isolated to software that has not been utilized in any application • Design errors or deficiencies found in design documents, (e.g. drawings, specifications, calculations, etc.) after release for use, procurement, or construction that do not : (1) require extensive evaluation or redesign to establish the adequacy of the structure, system, or component to perform its intended function or (2) fail to meet Design Reliability Assurance or ITAAC requirements • Condition identified where tolerances are not met but condition is dispositioned as use as is	• Design errors or deficiencies found in design documents, (e.g. drawings, specifications, calculations, etc.) after release for use, procurement, or construction that (1) require extensive evaluation or redesign to establish the adequacy of the structure, system, or component to perform its intended function or (2) fail to meet Design Reliability Assurance or ITAAC requirements • A design deficiency by which the capability to withstand a single failure is compromised, where required • A design condition identified after an piece of equipment, activity, or service is released for use that would prevent the piece of equipment, activity, or service from meeting or performing its intended function or output • Completed construction activities are not within the tolerances allowed by design documents or process controls • Adverse condition found after licensee acceptance of the of a structure or system for service, such as an of a structure or system that fails to conform to one or more applicable codes or standards (e.g., the CFR, Combined License, Tech Specs, FSAR, and/or licensee commitments)	• Design errors or deficiencies found in design documents, (e.g. drawings, specifications, calculations, etc.) after release for use, procurement, or construction and results in the system or structure not being able to perform its intended function • A significant error in a computer program used to support activities affecting quality after it has been released for use (e.g. the error results in significant non-conservative analytical results relied upon in a safety-related design)

IV. Procurement Document Control		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
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V. Instructions, Procedures and Drawings		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Work packages or Travelers found to have incorrect instructions after being issued for use and implementation but have not resulted in work of unknown or indeterminate quality • Isolated examples of failure to follow procedures • Incorrect supplier manuals/instructions identified during work execution prior to SSC turnover	• Significant procedural or administrative control non-compliance that affects plant safety	• Incorrect supplier instructions identified after of a structure or system turnover that significantly affects of a structure or system safety function

VI. Document Control		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
•	•	•

VII. Control of Purchased Material, Equipment, and Services		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Conditions identified with equipment or materials identified during receipt inspection that deviate from technical or quality requirements specified in the purchase documents • Errors in procurement documentation (inadequate procurement requirements that affect the quality of the item or service) identified prior to issuance and/or receipt of the materials • Inadequate storage conditions identified prior to the installation of the materials in the plant • Deviations from procurement documents or other quality-related conditions identified prior to the installation of the product in the plant • Procurement document errors (inadequate procurement requirements that affect the quality of the item) identified prior to installation of the item • Conditions identified with equipment or materials identified after receipt inspection that deviate from technical or quality requirements specified in the purchase documents prior to installation in the plant	• Inadequate environmental storage conditions that have degraded stored items that have been installed in the plant and released for use	• Procurement document errors (inadequate procurement requirements) that result in an item delivered by the supplier to be of insufficient quality for its intended purpose and it has been installed and accepted for use • Inadequate environmental storage conditions that have degraded stored items that have been installed in the plant, released for use, and subsequently determined to not be able to perform its intended safety function

VIII. Identification and Control of Materials, Parts and Components		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance

IX. Control of Special Processes		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Unsatisfactory weld inspection or nondestructive examination results to predetermined criteria that can be reworked in accordance with an approved Welding Procedure Specification (e.g., excessive undercut, undersized weld, linear indication, lack of penetration, arc strikes, scratches) • Deficiencies related to code compliance identified during review of procedures governing special processes prior to release for use • Performing special process without proper instructions/procedure (e.g. weld traveler) with no material impact	• NRC identifies major weld defects after weld completion and acceptance where engineering disposition is required for directing repair • Weld rod control problems that resulted in incorrect filler material in an accepted weld installed in the facility • Improper weld preparation (e.g. dimensions for an EB insert, improper land dimension, wrong face angle) identified outside the process • Improper preparation for coating application identified outside the process • Heat treatment outside procedure acceptance criteria (requiring engineering evaluation) • Unqualified process/procedure/person used (may be weld/welder, NDE technician, coating, concrete mix adjustment, fire barrier installation, etc.) for fabrication/installation • Expired shelf life of consumable material (e.g. NDE materials, fire barrier material, coatings, etc.) discovered after their use • Performing a special process without proper instructions/procedure.	• Major weld process control problems (programmatic) that could result in significant defects • Weld rod control problems that resulted in incorrect filler material in an accepted weld installed in the facility that results in noncompliance with the applicable code • Unqualified process/procedure or personnel used (may be weld/welder, NDE technician, coating, concrete mix adjustment, fire barrier installation, etc.) for fabrication/installation, and the process/procedure/person could not qualify when attempted • Programmatic process control problems that result in unacceptable defects

X. Inspection		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Inspection results that indicate deviation from engineering drawings, specifications, procurement documents, or procedures identified during in process Quality Control inspection activities. • Individual performing inspection activities does not have a valid qualification • Foreign Material Exclusion concerns such as near miss events in systems/components important to Nuclear Safety prior to turnover	• Inspection results that indicate deviation from engineering drawings, specifications, or procedures identified after final acceptance/inspection • Unsatisfactory inspection results where corrective action involves multiple work processes • A program or process deficiency that has the potential to affect a previously accepted inspection • Foreign Material in any system/component with a high potential to affect its design function • Individual performing inspection activities does not have a valid qualification and inspection results are invalidated during subsequent inspections	• Significant Loss of Foreign Material Exclusion controls impacting safety-related systems

XI. Test Control		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Conditions identified during the set-up of the test • Computer software deficiencies identified during or after verification testing that are determined to be isolated to software that has not been utilized in any application • Conditions or problems identified during tests (equipment functional and pre-operational testing problems) that can be corrected within the test plan • Test personnel not qualified for test performance	• Control system error identified after software has been released for use • Inadequately performed test due to test procedure not adhered to or incorrectly written • Test personnel not qualified for test performance results in inadequately performed test	• A significant error in a computer program used to support activities affecting quality after it has been released for use (e.g. the error results in significant non-conservative analytical results relied upon in a safety-related design) • Control system error in the safety-related control system that would result in an unintended action or disable the system that is identified after software has been released for use

XII. Control of M&TE		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• M&TE found out of the required accuracy limits (i.e., out of tolerance) during post-use calibration that does not require reinspection or retest • Calibration activities not performed in accordance with specified procedures – • Calibration activities not performed in accordance with specified procedures identified prior to issuance of M&TE • Incorrect specifications or standards utilized in calibration process identified prior to issuance/use of M&TE • Evaluation of out of tolerance, lost, or damaged M&TE indicates questionable acceptability for previous inspection or test results indicating the need to re-inspect or re-test the SSC	• Re-inspection or re-test of a structure or system, as a result of out of tolerance, lost, or damaged M&TE, has an unacceptable result • Incorrect specifications or standards utilized in calibration process identified after issuance/use of M&TE	• Reinspection or re-test of a structure or system, as a result of out of tolerance, lost, or damaged M&TE, has an unacceptable result that adversely affects a completed ITAAC

XIII. Handling, Storage, and Shipping		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
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XIV. Inspection, Test, and Operating Status		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Isolated examples of inadequate management oversight of individual processes •	•	•

XV. Nonconforming Materials, Parts, or Components		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Nonconforming item conditions from engineering technical or quality requirements dispositioned as repair, rework, or use-as-is that is within the design requirements for the item • Expired shelf life identified prior to using the material • Nonconforming item discovered prior to final acceptance	• Nonconforming item that renders the quality of an installed component unacceptable or indeterminate identified after final acceptance	

XVI. Corrective Action		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Construction experience/operating experience not evaluated by the applicant/licensee. • Error or deficiency related to an ITACC inspection or test performed prior to installation in the plant • Error identified in ITAAC closure documentation (e.g. test or inspection record) that was generated at the supplier site and provided to the licensee. • Errors found in the licensee's ITAAC closure package before the closure letter is sent • Deficiency related to an SSC covered by ITAAC that is not material to an ITAAC conclusion	• Errors found during inspection of the licensee's ITAAC closure package after the closure letter is sent • Error or deficiency related to an ITAAC inspection or test performed prior to installation in the plant that invalidates a prior ITAAC Closure letter. • Errors identified in ITAAC closure documentation (e.g., test or inspection record) that was generated at the supplier site and provided to the licensee that invalidates a prior ITAAC Closure letter.	• Deficiencies in the fabrication or construction of, structures, systems or components that require extensive evaluation, re-design or repair in order to establish the adequacy of the structure, system or component to perform its intended function

XVII. Quality Assurance Records		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Obvious editorial or typographical errors on a QA Record • Missing, incomplete or otherwise deficient QA records that are not related to the design function of the SSC in question	• Missing, incomplete or otherwise deficient QA records that are related to the design function of the of a structure or system in question	• Missing, incomplete or otherwise deficient QA records such that it cannot be determined that an of a structure or system can meet its design function

XVIII. Audits		
Row 1 – Minimal Significance	Row 2 – Moderate Significance	Row 3 – Substantial Significance
• Audit team member not qualified • A program or process deficiency that has the potential to affect audit performance • Audit team members are not independent of the process being audited • Isolated cases of not performing audits within the required frequency	• Repeated occurrences of not performing audits within the required frequency	• Audit team fails to identify pre-existing conditions such as: inadequate records retention, or inadequate configuration control