

ATTACHMENT 65001.16
INSPECTION OF ITAAC-RELATED ENGINEERING

PROGRAM APPLICABILITY: 2503

65001.16-01 INSPECTION OBJECTIVES

01.01 To evaluate the adequacy of the processes used for ITAAC engineering implementation.

01.02 To determine whether records reflect work accomplishment consistent with design drawings and specifications and approved procedures.

01.03 To verify the implementation of the quality assurance (QA) program related to engineering activities and records control.

65001.16-02 INSPECTION REQUIREMENTS

This inspection procedure (IP) is intended to verify that design requirements are being controlled in accordance with licensee procedures, to verify ITAAC-related engineering activities, and to verify that QA is auditing engineering activities and records. The reviews and following steps in this IP apply to the ITAAC and associated design information for row 16 of the ITAAC matrix.

02.01 Design Procedures. Check a sample of the results of the inspections performed under IP 65001 as they relate to the adequacy of the procedural controls established for engineering activities.

Guidance. The pertinent engineering procedures should be reviewed, along with applicable specifications, drawings and other design documents, to the extent necessary to ensure that the work activities discussed in sections 02.02 through 02.06 below are being properly performed in compliance with the approved procedures and design details. Particular emphasis should be placed on those procedures that control configuration management. Engineering personnel should be appropriately trained in the applicable procedural and programmatic requirements. Obtain an understanding of QA procedures, as well as applicable codes, standards and Regulatory Guides, to confirm QA verification of engineering work and compliance with commitments. Procedures, drawings and associated programs must be integrated together to ensure adequate control and consistent practices.

02.02 Design Input. Review the ITAAC Matrix for the inspected facility to determine the ITAAC residing in “families” along Row (16) for “Engineering”. Select specific design criteria for inspection based upon those ITAAC. For the selected inspection criteria, verify that design inputs are identified and documented and that their selection was reviewed and approved by the responsible engineering group.

Guidance. Design inputs are crucial to ensuring that design activities are carried out in a correct manner. Consequently, design inputs must be identified and documented. Design inputs should consider the bases behind the design, performance and regulatory requirements, and applicable codes and standards. The inspector should also ensure that design inputs appropriately consider both normal operations and anticipated operational occurrences, maintenance, testing, external events and postulated accident conditions. Ensure design inputs and assumptions are correctly selected, incorporated into the design, maintained, controlled and updated as required, and are readily available to the design

organization. Any design inputs which deviate from standards are identified, controlled and evaluated through effective design control procedures.

02.03 Design Documents. Verify that a sample of the design documents address the following provisions:

- a. The design documents adequately support facility design and construction.

Guidance. The design of risk significant SSCs should be consistent with the risk analysis assumptions and should include the integration of human factors engineering with human reliability analysis and the results of any human-system interface reviews.

- b. Appropriate standards are identified and documented in the design documents, and their selection is reviewed and approved.
- c. The design documents address the methods, materials, parts, equipment, and processes, essential to the function of an SSC.

Guidance. Procedures that control the content and distribution of listed materials, parts, equipment, and processes that are essential to the function of an item should require that they are properly identified and used for design, procurement, construction, and operations activities. Commercial grade items must be identified with the acceptance criteria defined for such items to be verified.

02.04 Design Analysis. Verify that a sample of design analyses are subject to the following:

- a. Calculations are controlled and identified by subject, originator, reviewer, approver and date such that they are readily retrievable. Changes posted to the calculations are easily retrievable and were subjected to the same rigor of the original approval.
- b. Documentation includes the objective, inputs and their sources, background data, assumptions, and computer inputs and conclusions.

Guidance. Design packages should contain information sufficient so that a technically qualified person could verify the results without recourse to the originator.

- c. Computer program acceptability has been previously verified or the results verified with the design analysis for each application. Ensure that any programs used for analysis or calculations have been properly verified in accordance with QA program requirements.

Guidance. Computer program verification should show that the program produces correct solutions for the encoded mathematical model within defined limits for each parameter employed. The inspector should verify the encoded mathematical model produces a valid solution to the physical problem for the particular application.

02.05 Design Verification. Ascertain whether a sample of the design products of engineering are subject to the following:

- a. Design verification is performed by methods which include, but are not limited to, any one or a combination of design reviews, alternate calculations, and qualification testing. If utilized, qualification testing should demonstrate the adequacy of performance under conditions that simulate the most adverse design conditions.

Guidance. The inspector should use judgement and consider that the extent of design verification should be a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously approved designs. Some of the documents that could require design verification by the licensee or its contractors are the following: seismic analyses, various software plans required from development to installation and testing, equipment qualification reports, ASME Code stress reports, pipe break analyses, and human factors analyses and plans.

- b. Design verification is performed by any competent individual or group other than those who performed the original design but who may be from the same organization.

02.06 Audits. Verify that a sample of the audits performed on design documents ensure the effectiveness of the design control program.

Guidance. The inspector should review at least the last QA audit report of the design program and any other surveillances or audits which may have been conducted. The inspector should determine if there were any significant findings, and if so, the adequacy of the corrective actions which were taken.

65001.16-03 RESOURCE ESTIMATE

Resource estimates are currently under development for this inspection procedure. This document will be revised to add this information as it becomes available.

65001.16-04 REFERENCES

NUREG 0700, Rev. 2, "Human System Interface Design Review Guidelines."
NUREG 0711, Rev. 2, "Human Factors Engineering Program Review Model."

END

Exhibit 1: Revision History for IP 65001.16

Exhibit 1

Revision History For IP 65001.16

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
	10/03/07 CN 07-030	Researched commitments for 4 years and found none. Initial Issuance	N/A	N/A	N/A