POLICY ISSUE

NOTATION VOTE

April 15, 2002 SECY-02-0067

FOR: The Commissioners

FROM: William D. Travers
Executive Director for Operations

SUBJECT: INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA (ITAAC) FOR OPERATIONAL PROGRAMS (PROGRAMMATIC ITAAC)

PURPOSE:

To request the Commission's approval that applications for combined licenses (COLs) for a nuclear power plant submitted in accordance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 52 Subpart C contain inspections, tests, analyses, and acceptance criteria (ITAAC) for operational programs required by regulations such as training and emergency planning (so-called programmatic ITAAC). The Commission asked the staff for a recommendation in its September 6, 2000, staff requirements memorandum (SRM) for SECY-00-0092, "Combined License Review Process," dated April 20, 2000.

BACKGROUND:

Subpart C of 10 CFR Part 52 sets forth a process for issuing a COL for a nuclear power facility. A COL authorizes construction and subject to conditions precedent, operation of a nuclear power facility. Subsection (c) of 10 CFR Section 52.79 requires that the COL application include ITAAC that are necessary and sufficient to demonstrate that the facility has been constructed and will operate in conformity with the COL, the Atomic Energy Act of 1954, as amended, and the Commission's regulations. Subsection (g) of 10 CFR 52.103 requires that the Commission find that the acceptance criteria in the COL have been met before a facility is authorized to operate.

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In SECY-00-0092 the staff provided a basis for its stated position that programmatic ITAAC are necessary to meet the requirements of 10 CFR Part 52 and the Atomic Energy Act. In the SRM on SECY-00-0092, the Commission provided guidance to the staff in this area and directed that the "staff should formally provide the Commission with a recommendation as to how to proceed on programmatic ITAAC, the basis for this recommendation, a discussion of alternatives proposed by stakeholders, a legal analysis supporting the recommendation, and a thorough description of how the staff would implement its recommendation." The SRM also directed the staff to seek comment and continue to work with stakeholders on the need for and the scope of the ITAAC for programmatic areas. The staff sought stakeholder input on this issue through a *Federal Register* Notice issued on June 25, 2001 (66 FR 33718).

DISCUSSION:

Attachment 1 to this SECY paper is the staff's response to the Commission's SRM. Attachment 2 contains a brief history of the issue to place the arguments for and against programmatic ITAAC in perspective. Attachment 3 is an example of a programmatic ITAAC from the design certification for the AP600. Attachment 4 is an illustrative example ITAAC on emergency planning from SECY-95-090, "Emergency Planning Under 10 CFR Part 52." These examples give a sense of how the staff has developed, and will develop, programmatic ITAAC.

RECOMMENDATIONS:

Consistent with its recommendation in SECY-00-0092, the staff recommends that COL applications for nuclear power plants submitted in accordance with the requirements of 10 CFR Part 52 Subpart C must contain ITAAC for operational programs required by regulations such as training and emergency planning, to the extent that such ITAAC are necessary and sufficient to support the finding that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations. The staff will work with its stakeholders to develop ITAAC for these and other areas.

RESOURCES:

The resources to develop ITAAC in these areas are in the NRR budget as part of the new reactor licensing budget.

COORDINATION:

The Office of the General Counsel has no legal objections to this paper.

/RA/

William D. Travers
Executive Director
for Operations

Attachments:
1. ITAAC for Operational Programs
2. History of ITAAC
3. Design Reliability Assurance Program ITAAC From the AP600 Certified Design
4. Illustrative ITAAC on Emergency Planning from SECY-95-090

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The Office of the General Counsel has no legal objections to this paper.

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3. Design Reliability Assurance Program ITAAC From the AP600 Certified Design
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Accession #ML020700641 *See previous concurrence

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Attachment 1

Inspections, Tests, Analyses, and Acceptance Criteria for Operational Programs

Attachment 1

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I. Background

Subpart C of 10 CFR Part 52 sets forth a process for issuing a combined license (COL) for a nuclear power facility. A COL authorizes construction and subject to conditions precedent, operation of a nuclear power facility. Subsection (c) of 10 CFR Section 52.79 requires that the COL application include ITAAC that are necessary and sufficient to demonstrate that the facility has been constructed and will operate in conformity with the COL, the Atomic Energy Act of 1954, as amended, and the Commission's regulations. Subsection (g) of 10 CFR 52.103 requires that the Commission find that the acceptance criteria in the COL have been met before a facility is authorized to operate.

In SECY-00-0092, "Combined License Review Process," dated April 20, 2000, the staff provided a basis for its stated position that programmatic ITAAC are necessary to meet the requirements of 10 CFR Part 52 and the Atomic Energy Act. In the SRM on SECY-00-0092 the Commission asked the staff to seek comment on and continue to work with stakeholders on the need for and scope of the ITAAC for programmatic areas. The NRC accordingly sought public comments on this issue through a *Federal Register* Notice (FRN) dated June 25, 2001.

The SRM also directed the staff to provide the Commission a formal recommendation on how to proceed with programmatic ITAAC, the basis for this recommendation, a discussion of alternatives proposed by stakeholders, a legal analysis supporting the recommendation, and a thorough description of how the staff would implement its recommendation. The alternatives proposed by stakeholders are discussed in Section I.b of this attachment, along with the comments in response to the FRN. The other items are discussed In Sections II.a through II.c.

The staff believes that the interpretation of 10 CFR 52.79(c) and section 185b. of the Atomic Energy Act are key to the resolution of this issue. These requirements are discussed throughout the paper. As a matter of reference the staff quotes these requirements below. The first sentence of 10 CFR 52.79(c) states the following:

> The application for a combined license must include the proposed inspections, tests, and analyses, including those applicable to emergency planning, which the licensee shall perform and the acceptance criteria therefor which are necessary and sufficient to provide reasonable assurance that, it the inspections, tests and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations.

In the Energy Policy Act of 1992, Congress amended section 185 of the Atomic Energy Act to add a new section 185b., which provides for the issuance of COLs containing ITAAC. Section 185b. states:

> After holding a public hearing under section 189a.(1)(A), the Commission shall issue to the applicant a combined construction and operating license if the application contains sufficient information to support the issuance of a combined license and the Commission determines that there is reasonable assurance that the facility will be constructed and will operate in conformity with the license, the provisions of this Act, and the Commission's rules and regulations. The Commission shall identify within the combined license the inspections, tests, and analyses, including those applicable to emergency planning, that the

> licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of this Act, and the Commission's rules and regulations. Following issuance of the combined license, the Commission shall ensure that the prescribed inspections, test, and analyses are performed and, prior to operation of the facility, shall find that the prescribed acceptance criteria are met. Any finding made under this subsection shall not require a hearing except as provided in section 189a.(1)(B).

I.a Description of the Issue

In SECY-00-0092 the staff described the issue as follows:

> Because ITAAC are the sole source of acceptance criteria, it is essential that the COL ITAAC include all significant issues that require satisfactory resolution before fuel loading. The COL ITAAC consist of the ITAAC from the referenced Design Control Document (Tier 1 information), plus the ITAAC resulting from the COL proceeding, which include the ITAAC for the site-specific design information and the regulations applicable to a COL applicant.

In SECY-00-0092 the staff also addressed the Nuclear Energy Institute's (NEI's) argument that the intent of Part 52 and Congress was that COL ITAAC pertain only to hardware and design-related issues and that ITAAC on "programmatic topics" are neither required nor preferred:

> The Energy Policy Act of 1992 and Part 52 [Sections 52.79(c) and 52.97(b)(1)] clearly require that ITAAC must verify that applicable regulations have been met before a facility can be authorized to operate. These regulations make no distinction between hardware and design-related issues, versus "programmatic topics." Thus, the so-called "programmatic" ITAAC (i.e., emergency plans) are consistent with the licensing process in Part 50 [Section 50.57(a)(1)] and were included by Congress and understood by the Commission to be prerequisites for operation under a COL. In addition, the NRC has already approved so-called "programmatic" ITAAC as part of the design certification process and, therefore, [ITAAC] are required to be successfully completed before the Commission can authorize operation. In conclusion, "programmatic" ITAAC are necessary to meet the requirements of 10 CFR Part 52 and the 1954 Act.

In a May 14, 2001, letter NEI gave its interpretation of the regulations for COL ITAAC:

> In SECY-00-0092, the NRC staff interprets the 1992 Energy Policy Act and Part 52 to require that COLs contain ITAAC on operational programs. Our longstanding interpretation of these requirements is that COL ITAAC may and should be focused on verifying the proper construction of the plant and that ITAAC on operational programs are not required. Our strong preference for this view is based on the underlying intent and objectives of Congress and Part 52 as well as important policy considerations, including continued reliance on the existing NRC inspection and oversight activities.

History of ITAAC

Because of the staff's disagreement with NEI on the interpretation of 10 CFR Part 52 and the 1992 Energy Policy Act a history of the development of ITAAC is provided in Attachment 2. The staff believes that the history of the development of ITAAC is consistent with, and supports, the staff's recommendation discussed in Section II.a.

I.b Discussion of June 2001 *Federal Register* Notice Comments

In the September 5, 2000, SRM on SECY-00-0092 the Commission provided guidance to the staff in the area of programmatic ITAAC and directed that "in connection with the Part 52 rulemaking, the staff should specifically seek comment on and continue to work with stakeholders on the need for and scope of the ITAAC for programmatic areas." As noted in the SRM, the staff originally intended to solicit comments on this issue as part of the 10 CFR Part 52 rulemaking update. However, in a May 14, 2001, letter, NEI provided its views on the issue of programmatic ITAAC and requested "early resolution of this issue to allow licensees, the NRC, and other stakeholders to be clear on how key Part 52 requirements on the scope of COL ITAAC are to be met."

Accordingly, the NRC staff sought comments on the need for and scope of ITAAC for programmatic areas separate from the Part 52 update rulemaking through an FRN published on June 25, 2001 (66 FR 33718). The staff also sent letters and in some cases made phone calls to the following stakeholders to inform them about the issue and request comment: Westinghouse, Department of Energy, Electric Power Research Institute, General Electric, Nuclear Information and Resource Service, Union of Concerned Scientists, NEI, and Public Citizen. The staff also used the occasion of a July 2001 workshop on future licensing to ask for comments on the issue.

The staff received 13 comment letters in response to the FRN: 10 of the comment letters were from industry, 2 comment letters were from the Illinois Department of Nuclear Safety (IDNS), and 1 comment letter was received from the public interest group, Public Citizen. The comment letters from industry included 2 letters from Exelon, and letters from: NEI, Southern Company, Tennessee Valley Authority, General Electric, Entergy, Westinghouse, Dominion, and PSEG Nuclear. In its July 31, 2001, comment letter NEI repeated the position stated in its May 14, 2001, letter. All of the industry comment letters endorsed NEI's May 14, 2001, letter. Public Citizen's and the IDNS's letters provide a different interpretation of the requirements contained in 10 CFR 52.79(c) and the Atomic Energy Act than that found in NEI's May 14, 2001, letter.

Summary and Discussion of Comments and Alternatives Proposed by Stakeholders

The SRM on SECY-00-0092 directed the staff to provide the Commission with a discussion of the alternatives proposed by stakeholders for programmatic ITAAC. The alternatives are discussed here because the comments in response to the FRN also proposed alternatives. The comments fit into the following categories:

- interpretation of the Energy Policy Act of 1992
- the licensing process
- regulatory bases for required Commission findings

- ITAAC compliance
- other comments

Interpretation of the Energy Policy Act of 1992

NEI and IDNS discussed the interpretation of the Energy Policy Act of 1992. NEI asked the following question in its comment letter, "Is the NRC's staff's interpretation of the statutory requirement the only reasonable interpretation and, if not, does a different interpretation make more sense from a policy perspective?"

NEI's discussion of the Energy Policy Act, its legislative history, and the SOCs support NEI's interpretation that ITAAC are intended to demonstrate that the design approved by the NRC was properly constructed (i.e., that the ITAAC are intended to focus on "hardware"). NEI also believes that the inclusion of the requirement for emergency planning ITAAC in the Energy Policy Act is not "dispositive" either way. NEI wrote:

> It is not unreasonable to assume, therefore, that the Congressional intent was formed by experiences in Part 50 operating license proceedings where emergency planning became a pivotal issue (e.g., Shoreham, Seabrook). As a result, the inclusion of emergency planning ITAAC most likely was an expression of interest in ensuring that fundamental decisions of site suitability for emergency planning purposes were resolved at the COL stage.

NEI contends that ITAAC developed for emergency planning should be hardware-oriented.

The staff also received a comment from the IDNS with a different interpretation of the Energy Policy Act of 1992. IDNS quoted section 185b of the act and then stated:

> The department believes that the plain language of the Atomic Energy Act (Act) makes clear the requirement of an applicant to provide assurance, specifically with respect to emergency planning, that the facility will be operated in conformity with the license before the license is issued. The above-emphasized language "...has been constructed and will be operated..." along with the specific mention of "... emergency planning..." reflects the clear intent of Congress to include operational programs within the scope of ITAAC in COL applications.

The staff agrees with IDNS. The staff stated in SECY-00-0092 that

> the Energy Policy Act of 1992 and Part 52 [Sections 52.79(c) and 52.97(b)(1)] clearly require that ITAAC must verify that applicable regulations have been met before a facility can be authorized to operate. These regulations make no distinction between hardware and design-related issues, versus "programmatic topics." Thus, the so-called "programmatic" ITAAC (i.e., emergency plans) are consistent with the licensing process in Part 50 [Section 50.57(a)(1)] and were included by Congress and understood by the Commission to be prerequisites for operation under a COL.

The staff disagrees with NEI's belief that emergency planning ITAAC should be limited to hardware-oriented ITAAC. The staff did some work on developing emergency planning ITAAC but then stopped because there were no prospective near-term COL applicants. This effort

culminated in SECY-95-090. In this SECY the staff identified the issues associated with emergency planning ITAAC. An attachment to SECY-95-090 provided an illustrative emergency planning ITAAC, addressing 2 of the 16 planning standards of 10 CFR 50.47(b). (Attachment 4 to this SECY paper contains these ITAAC). SECY-95-090, which includes a discussion of stakeholders' comments, gives no indication that there was any intention of limiting emergency planning ITAAC to hardware-related issues. In fact, the major commitments in the proposed emergency planning ITAAC in the SECY relate to the assignment of emergency planning responsibilities, and the conduct of a full-participation exercise that tests as much of the licensee, State, and local emergency plans as possible. These proposed ITAAC can hardly be considered hardware-oriented.

Licensing Process

The NEI and other industry letters expressed the concern that programmatic ITAAC are not objective, which is contrary to the goal of achieving a stable and predictable licensing process. Westinghouse noted that "programmatic ITAAC insert a significant degree of uncertainty in the licensing process and could thus inhibit the ordering of advanced reactors..."

The staff recognized in the SOCs for the final rule in 1989 that "not every finding the Commission must make before operation begins under a combined license will necessarily always be based on wholly self-implementing acceptance criteria." Furthermore some of the ITAAC that were developed for the certified designs could be considered subjective. Although making ITAAC as objective as possible may be a goal, it is not a requirement. The staff tried to make the ITAAC for the certified designs as self-evident and as objective as possible. The staff will do the same in developing ITAAC for a COL.

The staff also notes that in the Energy Policy Act of 1992, Congress granted the Commission authority to permit interim operation while a hearing proceeded if, after considering the petitioners's prima facie showing and answers thereto, the Commission determines there will be reasonable assurance of adequate protection during interim operation. The staff believes that this provision helps to limit the uncertainty in the licensing process while still allowing for focused public involvement.

Public Citizen commented that "ITAAC serves as a last-chance control on the safety of a proposed new plant before the fuel is loaded and the plant is put into operation. After a COL is issued, the public has no direct standing to challenge a safety issue unless the NRC grants an optional hearing after the ITAAC is implemented." Public Citizen also argued that each phase of the licensing, design, construction, and operation of a proposed nuclear facility should provide for the reexamination of issues relevant to ITAAC, with mandatory public participation on the record.

Public Citizen's comment regarding hearing opportunities is similar to several comments that the Commission addressed in the SOCs for 10 CFR Part 52. The SOCs noted that "public interest groups take a dim view of the proposed rule's limitations on the hearing, though their reasons are not the industry's. UCS says that a licensing proceeding without uncertainty is a sham." The staff responded to these comments in the SOCs as follows:

> There have to be substantial limits on the issues that can be raised after construction. A licensing proceeding without any uncertainty in result may be a sham, but the bulk of the uncertainty should be addressed and resolved prior to, not after, construction. Part 52 does not remove uncertainty, it simply

> reallocates it to the beginning of the licensing process. The alternative apparently offered by opponents of limits on the post-construction hearing is, in effect, to double the uncertainty by considering every design issue twice.

Clearly Part 52 addresses this issue. Specifically, 10 CFR 52.103(b) states that a request for hearing "shall show, prima facie, that — (1) One or more of the acceptance criteria in the combined license have not been, or will not be met; and (2) The specific operational consequences of nonconformance that would be contrary to providing reasonable assurance of adequate protection of the public health and safety." The need for ITAAC is not, however, driven by consideration of the potential scope of any hearings. Rather, ITAAC are needed to verify implementation matters which could not be fully resolved prior to issuance of a COL.

In separate comments IDNS and Public Citizen expressed concern regarding the potential COL application for the pebble bed modular reactor (PBMR). Exelon has indicated that it intends to submit a COL application for the PBMR without first receiving a design certification in accordance with 10 CFR Part 52 Subpart B. Exelon plans to pursue design certification on a separate track. Both IDNS and Public Citizen expressed concern that Exelon's plans to pursue a COL first without having a design certification would result in a less rigorous process for the PBMR review. IDNS wrote:

> Part 52 allows applicants to submit a non-precertified design and place it on a site without seeking an early site permit, thereby introducing numerous variables that impact the handling of programmatic ITAAC. There must be assurance that satisfactory programs are in place when needed to support plant construction and operation when applicants vary from the original process intended in Part 52. For these applicants who vary from the original three-step process, ITAAC must be at the front end of the process.

Public Citizen similarly wrote "the public will not have a constructive opportunity to make an informed challenge about design safety in a combined license hearing if the design is not certified yet."

Part 52 allows various sequences and combinations of its Subpart A—Early Site Permits, Subpart B—Standard Design Certifications, and Subpart C— Combined Licenses. An applicant can reference an approved early site permit with an approved certified design in its application for a combined license under Subpart C, but this is not a requirement. An applicant may submit a COL application without referencing a certified design. In that case the applicant must provide the technical information required by Subpart B and ITAAC for the staff's review and approval. In response to IDNS's comment that ITAAC must be at the front end of the process, the staff notes that all applicants, including COL applicants not referencing a certified design, must have approved ITAAC before a COL could be granted.

Referencing a certified design narrows the scope of the proceeding on the application for a facility license. Therefore, in response to Public Citizens' comment, the staff believes that the public will have a constructive opportunity to make an informed challenge in a combined license hearing regardless of whether the application references a certified design.

Regulatory Bases for Required Commission Findings

NEI proposed an alternative for the required Commission finding if programmatic ITAAC are not included in a COL application. NEI wrote:

> It is not the one-time verification of ITAAC on operational programs that will provide the NRC with reasonable assurance that the facility will be operated as licensed. The inclusion of programmatic ITAAC would be little more than a checklist of program elements and thus would do little in verifying a licensee's ongoing ability to implement such programs. Rather, it is continued compliance with operational program requirements and the ongoing NRC oversight of licensee performance that provides this reasonable assurance.

NEI's argument is that the NRC does not have to rely on the development and implementation of programmatic ITAAC to ensure the adequacy of operational programs. NEI noted that "under Part 52, the NRC retains its authority under Section 186 of the Atomic Energy Act and 10 CFR 50.100 to take enforcement action for any violation of the COL, FSAR, or any other regulations, including the suspension or revocation of the COL if necessary." NEI also argued that members of the public can raise questions through the 10 CFR 2.206 process.

The staff agrees with NEI's assessment that regardless of whether programmatic ITAAC are included in the COL the Commission retains its authority under 10 CFR 50.100 to revoke, suspend or modify licenses for cause. In fact, it is well understood that NRC oversight will continue after the ITAAC have been met and before (and after) commercial operation of a nuclear power plant. For example, NRC will oversee startup testing and low-power testing of the plant as well as subsequent operation over the period of the license. The staff believes that NEI's comment confuses the issue. In the narrow context of NEI's position with respect to this aspect of the ITAAC matters, the issue is not NRC's oversight function but under what conditions a hearing will be granted after construction is completed.

The staff notes that if the ITAAC are met, they provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations. As clearly stated in 52.103(b) the criteria for a hearing and the Commission's ability to prohibit fuel load after construction is completed are tied to the ITAAC. The staff believes that in order to comply with the Energy Policy Act the hearing opportunity, and the Commission's decision on whether to allow fuel loading, should not be limited to nonprogrammatic areas. Further, the staff believes that programs such as emergency planning, and radiation protection are critical to the Commission's finding in accordance with 52.103(g) that prior to operation of the facility the acceptance criteria in the combined license are met. The staff believes, therefore, that programs such as these must be verified to ensure that they are correctly implemented before an authorization to load fuel is issued.

ITAAC Compliance

Public Citizen expressed concern that licensees and not the NRC will be in charge of demonstrating conformity with the ITAAC before fuel load; there is no independent NRC evaluator in the process. (A similar comment was received from the Union of Concerned Scientists (UCS) during the 10 CFR Part 52 rulemaking.) The staff believes that Public Citizen has misunderstood the role of the NRC in the construction inspection process.

The SOCs for the 1989 version of 10 CFR Part 52 noted that Section 52.99

> envisions a "sign-as-you-go" process in which the staff signs off on inspection units and notice of the staff's sign-off is published in the Federal Register. UCS says that it is "totally inappropriate" for the Commission, while construction is

going on, to sign off on inspections and thus put matters beyond dispute which might otherwise be raised after construction is complete. However, UCS has misunderstood the Commissions's role in the inspection process. While construction is going on, only the staff signs off on inspections. The Commission makes no findings with respect to construction until construction is complete.

With respect to NRC's role, the staff envisions that the construction inspection process under 10 CFR Part 52 will be fundamentally the same as the construction inspection process under 10 CFR Part 50. The Commission never envisioned that the staff would be responsible for directly performing all ITAAC. Indeed, the staff does not have the resources to do so, nor did the staff do so for similar requirements during the construction of the current fleet of reactors. Licensees are required to directly perform all ITAAC. The staff will assure that the ITAAC have been met through audit-type inspections, which is consistent with how operating reactors are currently inspected and how plants were inspected during construction in the past.

Other Comments

Public Citizen objected to the term "programmatic ITAAC" stating that "it connotes a casual and routine activity." The staff notes that although the term "programmatic ITAAC" has been adopted relatively recently, the substantive issue has been discussed in previous SECY papers such as SECY-92-214, "Development of ITAAC for Design Certifications." The staff uses the term to frame the issue, however, it does not use it in the Part 52 rule itself because the staff believes that COL ITAAC will verify implementation of both hardware and procedural requirements.

II. Discussion

The SRM for SECY-00-0092 states that "the staff should formally provide the Commission with a recommendation as to how to proceed on programmatic ITAAC, the basis for this recommendation, a discussion of alternatives proposed by stakeholders, a legal analysis supporting the recommendation, and a thorough description of how the staff would implement its recommendation. This section of the paper addresses all of these requirements except alternatives proposed by stakeholders which are addressed above.

II.a Recommendation for Programmatic ITAAC and Basis for Recommendation

Consistent with its recommendation in SECY-00-0092, the staff recommends that COL applications for nuclear power plants submitted in accordance with the requirements of 10 CFR Part 52 Subpart C contain ITAAC for operational programs required by regulations such as, for example, training and emergency planning (programmatic ITAAC). The staff further recommends that no changes or clarifications to 10 CFR Part 52 are needed because its clear language already requires that programmatic ITAAC be required in a COL application.

The staff's basis for this recommendation is the following:

1) The inclusion of programmatic ITAAC in the COL application is in accordance with the Energy Policy Act of 1992 and the requirements of 10 CFR Part 52.

   Section 52.79(c) requires that the COL application include ITAAC that are necessary and sufficient to demonstrate that the facility has been constructed and will operate in

conformity with the COL, the Atomic Energy Act of 1954 and the Commission's regulations. In addition, pursuant to Section 52.103(g), the Commission must find that all acceptance criteria specified in the license are met before facility operation. Because ITAAC are the sole source of acceptance criteria for subsequent resolution of items which cannot be fully evaluated prior to issuance of a COL, it is essential that the COL ITAAC include all significant issues that require satisfactory resolution before fuel loading. The staff stated in SECY-00-0092 that the COL ITAAC would consist of the ITAAC from the referenced design certification rulemaking (Tier 1 information), plus the ITAAC resulting from the COL proceeding, which include the ITAAC for the site-specific design information and the ITAAC for the regulations applicable to a COL applicant.

The Energy Policy Act of 1992 and Part 52 (Sections 52.79(c) and 52.97(b)(1)) clearly require that ITAAC verify that applicable regulations have been met before a facility can be authorized to operate. These regulations make no distinction between hardware and design-related issues, versus programmatic topics.

2) The inclusion of programmatic ITAAC in the Commission's finding under 10 CFR Part 52 is consistent with similar Commission findings made in 10 CFR Part 50.

The Commission's finding in 10 CFR 52.103(g) was modeled after the Commission finding in 10 CFR Part 50. Section 50.57 requires that the Commission find, among other things, that the facility will operate in conformity with the provisions of the Atomic Energy Act and the rules and regulations of the Commission. It was never the staff's intention to limit the finding in 10 CFR Part 52 to hardware related issues because the Atomic Energy Act does not limit the Commission's finding to these issues.

3) The NRC has already approved programmatic ITAAC as part of the design certification process.

The best example of a programmatic ITAAC is the design reliability assurance program (DRAP). The DRAP ITAAC for the AP600 certified design are contained in Attachment 3 of this paper. If programmatic ITAAC were not included in the COL application, the staff could not explain to stakeholders why DRAP ITAAC are included in the certified design ITAAC, but similar ITAAC are not required for other programmatic areas in the COL application.

II.b Office of the General Counsel Review

The legal basis for the staff's recommendation is as follows. As more fully explained below, the Office of the General Counsel has advised the staff that section 185b. of the Act requires the Commission to include in a COL ITAAC for determining whether a COL holder has properly implemented operational programs approved in the COL where such a determination is necessary to provide reasonable assurance that the facility will be operated in conformity with applicable requirements. Examination of the legislative history of Section 185b. does not compel a different result. In the Energy Policy Act of 1992, Congress amended section 185 of the Atomic Energy Act to add a new section 185b., which provides for the issuance of COLs containing ITAAC. Section 185b. states:

> After holding a public hearing under section 189a.(1)(A), the Commission shall issue to the applicant a combined construction and operating license if the application contains sufficient information to support the issuance of a combined license and the Commission determines that there is reasonable assurance that the facility will be constructed and will operate in conformity with the license, the provisions of this Act, and the Commission's rules and regulations. The Commission shall identify within the combined license the inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of this Act, and the Commission's rules and regulations. Following issuance of the combined license, the Commission shall ensure that the prescribed inspections, test, and analyses are performed and, prior to operation of the facility, shall find that the prescribed acceptance criteria are met. Any finding made under this subsection shall not require a hearing except as provided in section 189a.(1)(B).

Atomic Energy Act of 1954, as amended, Section 185b.; 42 U.S.C. § 2235. The new section 185b. and section 185a. (in its current form, and as it existed then) require the same substantive findings, and differ solely with respect to the timing of the issuance of the operating license ("OL") and the COL. Since an OL under section 185a. is issued after construction (in the absence of Part 52), that section requires the Commission to find that "the facility has been constructed" in accordance with applicable requirements. In contrast, the parallel requirements for a COL issued under section 185b. before construction, *per force*, are in terms of how the facility "will be constructed." Sections 185a. and 185b. both require the Commission to find that the facility "will operate" in conformity with applicable standards. Because the COL is issued prior to the commencement of construction, one must then look to the second sentence of Section 185b. to determine what happens after COL issuance.

The second sentence of section 185b. requires the Commission to include in a COL ITAAC that, if met, are "necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of this Act, and the Commission's rules and regulations." This standard for the inclusion of ITAAC in a COL requires ITAAC with respect to two matters: first, that the facility "has been constructed" in accordance with applicable requirements, and second, that the facility "will be operated" in conformity with those requirements. Section 185b. requires that the acceptance criteria in ITAAC must be sufficient to provide reasonable assurance that a facility "will be operated" in accordance with all applicable requirements. The two requirements of the statute are separate, and the requirements with respect to construction do not limit the nature of the ITAAC which must be developed to support a finding that the facility will operate in accordance with all applicable requirements. Therefore, the ITAAC must include acceptance criteria for the COL holder's proper implementation of the operational programs approved in its COL when the staff determines that verification of such implementation is necessary for a finding of reasonable assurance that the facility will be operated in conformity with the regulations. This statutory scheme requiring a COL to include ITAAC with respect to operational programs is consistent with the Commission's implementation of Section 185a. of the statute. It has been the agency's practice in reviewing applications for operating licenses to make predictive findings with respect to the acceptability of operational programs, and to determine prior to issuance of the operating license that the procedures are in place to correctly implement those

programs. There is nothing in the legislative history which would indicate that Congress intended that the agency change its practices in this regard.

Examination of the legislative history of Section 185b. reveals statements that support the staff's interpretation set forth above. Moreover, the legislative history of the many licensing reform bills introduced in Congress during the early to mid-1980's clearly shows that the Commission consistently took the position that it would be necessary to verify, among other things, that operational programs have been properly implemented after facility construction has been completed. The staff acknowledges that the legislative history of section 185b. of the Energy Policy Act, as enacted in 1992, is somewhat confusing in this regard, and does contain statements that are inconsistent with the staff's construction. The remarks of a legislator, however, even the sponsor of a bill, do not override the plain meaning of a statute.

In a letter dated May 14, 2001, from Marvin Fertel, NEI, to Chairman Meserve, NEI asserts that ITAAC should only apply to whether a plant has been constructed in compliance with the design approved in the COL, and refers to portions of the legislative history of the Energy Policy Act of 1992 in support of its position. NEI argues that "[i]t is not the one-time verification of ITAAC on operational programs that will provide the NRC with reasonable assurance that the facility will be operated as licensed. . . . Rather, it is continued compliance with operational program requirements and the ongoing NRC oversight of licensee performance that provides this reasonable assurance."

Applicants could develop and implement some operational programs before receiving a COL. In such a case ITAAC may not be necessary. It may not be possible, however, for an applicant to develop and implement all operational programs fully before COL issuance, or an applicant might choose not to do so. Section 185b., requires that ITAAC be "sufficient" to provide reasonable assurance that the COL holder has met all applicable substantive requirements. Whether a licensee has properly completed the implementation of those operational programs which were not fully developed and implemented before COL issuance must be verified in order to determine whether the licensee has met all substantive requirements. The oversight process will be the vehicle for the agency to continue to have reasonable assurance that the programs are being implemented correctly once the plant begins operation. Therefore, section 185b. requires ITAAC to verify the implementation of operational programs in certain instances, and NEI's argument is incorrect.

Moreover, under the NEI interpretation, section 185b. would require that the Commission include in the COL only those ITAAC needed to assure that the "facility has been constructed" in conformity with applicable requirements. NEI's interpretation would require a reading limiting the scope of the phrase "and will be operated" in the second sentence of section 185b. solely to whether the facility has been constructed as designed, and thus will be operated, in accordance with applicable requirements. Such an interpretation, while possible, would deprive these words of any real meaning. As discussed above, such an approach would be inconsistent with longstanding agency practice in implementing similar provisions of the statute. The staff believes that the Commission should not, therefore, adopt the NEI approach.

II.c Implementation Recommendation

The staff's recommendation, if adopted, would entail considerable interaction with stakeholders in developing COL ITAAC that are as objective as possible. In SECY-95-090 the staff attempted to develop ITAAC for emergency planning, which is one of the programmatic areas. However, the staff believes that COL ITAAC also need to be developed in the areas

discussed below. The staff will assemble a group of individuals from headquarters and the regions to work with interested stakeholders on establishing the guidelines for such programmatic ITAAC. The New Reactor Licensing Project Office in NRR will take the lead in this effort and will work with the Inspection Program Branch in the Division of Inspection Program Management in NRR and with appointed representatives from the regions to develop the guidelines. This approach is consistent with the requirements contained in the SRM for SECY-00-0092.

List of Programmatic ITAAC

The staff believes that the COL ITAAC should include ITAAC in the following areas:

- ITAAC from the design certification rulemaking, which is contained in the Tier 1 material of the certified designs
- ITAAC resulting from the COL proceeding:
  - ITAAC for the site-specific design information if the application references a certified design
  - if the application does not reference a certified design, the COL ITAAC must include ITAAC for the design commensurate with the ITAAC that are included in the certified designs
  - ITAAC for regulations applicable to a COL applicant

The staff will work with its stakeholders to develop an approach for ITAAC for operational programs required by regulations applicable to a COL applicant (i.e., programmatic ITAAC). ITAAC under consideration include the following:

emergency planning program	physical security program
quality assurance program	fire protection program
radiation protection program	access authorization program
fitness for duty program	training program
licensed operator program	reportability program
containment leak rate test program	maintenance rule program
inservice inspection and inservice testing program	equipment qualification program

The staff will use the lessons learned from the development of SECY-95-090 and the process used in the past to assess and communicate construction completion status to identify areas requiring COL ITAAC. The process used to assess and communicate construction completion status is outlined in Inspection Procedure 94300, “Status of Plant Readiness for an Operating Licensee.” The process culminates in a letter from the applicable NRC Regional Administrator to the Director of NRR with a recommendation on whether to allow fuel loading based on the results of inspections done by the region. The staff believes that this process provided a

historical record of what programs require inspection and review before a licensee can load fuel under 10 CFR Part 50. The staff will review this historical record to determine what programs may need ITAAC under 10 CFR Part 52. The staff may identify additional programmatic ITAAC during this effort.

History of Inspections, Tests, Analyses, and Acceptance Criteria

Attachment 2

History of Inspections, Tests, Analyses and Acceptance Criteria (ITAAC)

Because of the staff's disagreement with the Nuclear Energy Institute (NEI) on the interpretation of 10 CFR Part 52 and the 1992 Energy Policy Act a history of the development of ITAAC is in order to place the arguments in perspective. The history of ITAAC in this attachment covers the following areas:

- Three Mile Island Unit 2 aftermath
- 1986 Atomic Industrial Forum (AIF) position paper on standardization
- 1987 policy statement on nuclear power plant standardization
- 1988 proposed 10 CFR Part 52 rule
- 1989 final 10 CFR Part 52 rule
- 1992 changes to 10 CFR Part 52
- lessons learned from design certification reviews

The history of ITAAC is intertwined with the history of nuclear power plant standardization, particularly standardization of the processes for issuing combined construction permits and conditional operating licenses. In the early years of the nuclear power industry, there were many first-time nuclear plant applicants, designers, and consultants, and many novel design concepts. Accordingly, the process was structured to allow licensing decisions to be made while design work was still in progress and to focus reviews on individual plant-specific and site-specific considerations. Construction permits were commonly issued with the understanding that open safety issues would be addressed and resolved during construction and that issuance of a construction permit did not constitute Commission approval of any design feature. Consequently, the operating license review was very broad in scope.

The fundamental premise of 10 CFR Part 52 Subpart C is that with a mature nuclear industry it is possible to describe and evaluate plant designs on a generic basis, and to have designs essentially complete in scope and level of detail prior to construction. This makes it possible to combine the construction permit proceeding with much of the operating license proceeding into a single proceeding for the issuance of a combined construction permit and conditional operating license. Full-power operation can then be authorized under the combined license following an opportunity for a hearing on a more limited set of issues related to whether acceptance criteria for an ITAAC have not or will not be met.

The following discussion provides background on how the concept of ITAAC was developed.

Three Mile Island Unit 2 Aftermath

The Rogovin Commission Report on Three Mile Island (TMI) recommended that the two-stage licensing process

> be abolished for nuclear plants of conventional design. Instead, a single licensing proceeding should be held prior to construction in which design plans that are as detailed as possible should be considered and approved. Once a license is granted, jurisdiction to oversee construction and confirm that the plant is constructed consistently with the design plans should be placed in the NRC Staff.

The report suggested the need for, but provided no guidance on, the process the staff should use to confirm that the plant is constructed "consistently with the design plans" and what, if any, public involvement was appropriate after the plant was constructed.

1986 Atomic Industrial Forum (AIF) Position Paper on Standardization

In a March 20, 1986, letter to Chairman Palladino, the AIF submitted a position paper on standardization for the Commission's consideration. This paper proposed design information requirements for final design approval (FDA) and design certification (DC) applications. The paper stated that

> applications for FDAs and DCs should define the tests, inspections, analyses, and acceptance criteria related thereto necessary to assure that the designs are properly installed in the plant. These tests, inspections, analyses, and acceptance criteria would be implemented in a series of sign-as-you-go reviews through construction and pre-operation.

This was one of the first mentions of the concept of ITAAC in industry documents related to the one-step licensing process.

In November 1986 the AIF released a widely distributed report on "Standardization of Nuclear Power Plants in the U.S." Appendix B of this report contained proposed design information requirements for design certification and construction for operating license applications. The preamble for the appendix stated that

> to support the NRC review and approval of a standard design to lead to a DC or COL, the plant or subsystem design must be sufficiently complete so that the applicant and the NRC have a clear definition of all safety aspects in order that construction and testing can be performed in accordance with preapproved methodology and procedures and measured against preapproved acceptance criteria.

The appendix then lists design and engineering information that should be in the application depending on the scope of the design and whether the application is for a DC or a COL. The list of proposed information includes such areas as the quality assurance program, the emergency plans, the security plan, and the radiation protection plan. Thus, in 1986, the nuclear power industry did not distinguish between programmatic ITAAC and other ITAAC.

1987 Policy Statement on Nuclear Power Plant Standardization

In 1987 the Commission announced its intention to proceed with rulemaking on standardization in a Policy Statement on Nuclear Power Plant Standardization (52 FR 34884; September 15, 1987). The background section of the FRN noted that the Commission forwarded to Congress in January 1987 a proposed Nuclear Power Plant Standardization and Licensing Act of 1987. The Act included a legislative proposal for issuance of a combined construction permit and operating license. The background section explained that "the one-step licensing process would give licensees greater assurance that if the facility is constructed in accordance with the terms of the application/permit, it will be permitted to operate once construction is complete."

The policy statement includes the following sentences:

> The rulemaking to obtain the design certification will cover the criteria necessary for design and construction of a plant; the quality assurance program; and whatever tests, analyses, and inspection criteria are necessary to assure that the plant is built within the certified design specifications.... The design certification application should also propose, for staff review and approval, the tests, analyses, inspections and acceptance criteria that are considered necessary to provide reasonable assurance that a plant which references the certified design is built and operated within the specifications of the final design.

The Nuclear Management and Resources Council (NUMARC) commented on the one-step licensing process and the concept of ITAAC in a November 10, 1987 letter:

> The COL should be issued after public hearing if the application contains sufficient information to support the issuance of the COL, and the Commission determines there is reasonable assurance the facility will be constructed and operated in conformity with the application, the provisions of the Atomic Energy Act, and the rules and regulations of the Commission. This also is consistent with the proposed legislation submitted to the Congress by the NRC.
>
> In sum, the safety determination that a plant is designed and can be constructed and operated in conformance with the conditions of the license, should be made by the Commission when the COL is issued. The license will detail the inspections, tests, and analyses which must be performed, and the acceptance criteria which must be met in order to provide reasonable assurance of adequate protection of the public health and safety. Such provisions, together with the ongoing reviews and inspections made by the staff during construction to verify that the construction conforms to the COL and that preoperational requirements have been met, are entirely adequate to allow the plant to commence operation upon completion of construction under the COL.

NUMARC thus supported the concept of ITAAC in the one-step licensing process.

1988 Proposed 10 CFR Part 52 Rule

In the statements of considerations (SOCs) that accompanied the proposed rule for 10 CFR Part 52 in 1988, the staff explained its basis for including ITAAC in the proposed rule:

> Section 52.97 provides that the Commission may issue a combined license for a facility if the applicable requirements of §§ 50.40, 50.42, 50.43, and 50.50 have been met and there is reasonable assurance that the facility will be constructed and operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's regulations. In addition to technical specifications, the license will include the inspections, tests, and analyses that the licensee shall perform and the acceptance criteria therefor which will provide reasonable assurance that the facility has been constructed and will be operated in accordance with those requirements. The Commission will verify the licensee's compliance... through its inspection program (§52.99).

Furthermore:

> Before the facility may operate, the holder of the combined license must apply for authorization of operation under the combined license. The Commission will

> publish a notice of the proposed authorization in the *Federal Register* pursuant to 10 CFR 2.105. Within 30 days, any person whose interests may be affected by the authorization may request a hearing on the basis (1) that there has been a nonconformance with the license, the Atomic Energy Act, or the Commission's regulation and orders, which has not been corrected and which could materially and adversely affect the safe operation of the facility; or (2) that some modification to the site or the design is necessary to assure adequate protection of public health and safety or the common defense and security. The petitioner must set forth with reasonable specificity the facts and arguments which form the basis for the request. These provisions are designed to accord finality to the Commission's earlier decisions regarding the facility and to assure that the operating license proceeding is focused on significant safety issues.

NUMARC commented on the use of ITAAC in a November 7, 1988, letter:

> An element essential to the practical implementation of design standardization and a meaningful combined license process is the effective use of tests, inspections, analyses and acceptance criteria in the design certification and combined license process. The proposed rule does not make it sufficiently clear that successful completion of such tests, inspections and analyses and compliance with the related acceptance criteria by the holder of a combined license provide a requisite demonstration that the plant has been constructed and will operate in conformance with the requirements of the combined license.

The final rule addresses this comment and many other comments on the use of ITAAC and the process for hearings after construction is complete.

The proposed 10 CFR Part 52 findings for a combined license are modeled on the findings in 10 CFR 50.57(a). Section 50.57 requires that the Commission find, among other things, that the facility will operate in conformity with the provisions of the Atomic Energy Act and the rules and regulations of the Commission. The basis for this language is Section 185 of the Atomic Energy Act. The 10 CFR 50.57 finding was adopted in the proposed rule's language in Section 52.97 (discussed above) and in Section 52.103(b), which states that "if a hearing is not requested, or if all requests are denied, the Commission may authorize operation under the combined license as provided in § 50.56, upon making the findings in § 50.57." It was never the staff's intention to limit the Part 52 finding to hardware related issues because the Atomic Energy Act does not limit the Commission's finding to these issues.

In its comments on the proposed § 52.103(b) NUMARC stated:

> There is no provision in proposed § 52.103 that requires the NRC to allow facility operation if the licensee builds the plant in conformance with the combined license, the Atomic Energy Act, and Commission regulations. (Contrast this with Section 185 of the Act and with 10 CFR § 50.56). In any event, the Commission should be obliged to issue a combined license, and later to sanction facility operation, if the rules' requirements are met, rather than giving the Commission direction (i.e., "may") to do so.

As discussed below, the Commission changed the wording of the Section 52.103 finding in the final 1989 version of the rule. The revised wording addresses NUMARC's comment.

1989 Final 10 CFR Part 52 Rule

The SOCs for the final rule addresses the comments on the proposed rule as follows:

> The deepest differences among the commenters concern the consequences of standardization and other devices for early resolution of licensing issues for the licensing process. One commenter believes that, once a plant is built under a combined license, there need be no hearing at all before operation begins. Several of these commenters characterize the proposed rule's provision for an opportunity for hearing just before operation as the old two-step licensing process under a different name. Others believe not only that there should be such a hearing but also that resolution of issues in earlier proceedings does not entail any restriction on the issues which may be raised in the hearing after construction. Many of the commenters attribute to the Commission an intent to do away with public participation in the licensing process.
>
> The Commission has given more consideration to this issue than to any other procedural question raised by the proposed rule. As a result, the proposed rule's provisions on hearings just before operation have been revised in the final rule.... However, the final rule still provides for an opportunity for a hearing on limited issues before operation under a combined license. But the mere fact of this opportunity does not mean that the rule is hiding the old two-step process under a different name. By far the greater part of the issues which in the past have been considered in operating license hearing would, under the new rule, be considered at the combined license stage or in a certification proceeding, including the bulk of emergency planning issues. Similarly, the mere fact that any hearing prior to operation would be limited does not mean that the Commission is attempting to remove the public from the licensing process. The rule does not prevent the public from participating in the resolution of any operating license issue. It simply moves the bulk of the issues up front in the licensing process to the design certification, early site permit, and combined license parts of the process.

The SOCs further noted that one of the important questions about a combined license is "whether, in cases where all design issues are resolved before construction begins, there should be a hearing after construction is complete, and if so, what issues should be considered at the hearing." The SOCs discussed the comments and stated that most commenters, whatever their affiliation, believed that there should be the opportunity for a hearing after construction is complete:

> In this regard, every commenter who believes there should be such an opportunity for hearing also believes that an issue in the hearing should be whether construction has been completed in accord with the terms of the combined license and the final rule so provides. Also, under section 185 of the Atomic Energy Act, the Commission must find, prior to facility operation, that the facility has been constructed and will operate in conformity with the application and the rules and regulations of the Commission. This statutory finding, in the context of Subpart C of this rule, translates into two separate but related regulatory findings: that compliance with the acceptance criteria in the combined license will provide reasonable assurance that the facility has been constructed and will operate in accordance with the Commission's

> requirements, and that the acceptance criteria have in fact been satisfied. The former finding will be made prior to issuance of the combined license, and will necessarily be the subject of any combined license hearing under section 189a of the Act. The latter finding cannot by its nature be made until later, after construction is substantially complete, and therefore cannot by its nature be the subject of any hearing prior to issuance of the combined license. Thus, to the extent that an opportunity for hearing should be afforded prior to operation, it should be confined to the single issue that cannot have been litigated earlier—whether the acceptance criteria are satisfied.

In this version of the rule 10 CFR 52.97(b) reiterated that

> the Commission shall identify in the license the tests, inspections, and analyses that the licensee shall perform and the acceptance criteria therefor which are necessary and sufficient to provide reasonable assurance that, if the tests, inspections, and analyses are performed and the acceptance criteria met, the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's regulations.

As discussed above, the Commission also changed the finding in 10 CFR 52.103 partly based on the comment that it received from NUMARC. The finding in the final rule § 52.103(c) reads as follows:

> Prior to loading fuel, the Commission shall find that the acceptance criteria in the combined license have been met and that, accordingly, the facility has been constructed and will operate in conformity with the Atomic Energy Act and the Commission's regulation.

Again the finding is not limited to hardware related issues.

<u>1992 Changes to 10 CFR Part 52</u>

Part 52 was changed in 1992 to conform the language of Part 52 to the provisions of the Energy Policy Act of 1992. For example, 10 CFR 52.97(b) was split and paragraph (b)(1) was changed to add a requirement relative to emergency planning. Specifically 52.97(b)(1) now reads:

> The Commission shall identify within the combined license the inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that, if met, are necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations.

In addition to linking emergency planning and ITAAC, the SOCs for the 1992 rule stated that there was a new paragraph (g), "which is a modified version of old § 52.103(c). The Commission has done nothing in this section other than to incorporate the language of the Energy Policy Act into its rule." The revised language § 52.103(g) now reads:

> Prior to operation of the facility, the Commission shall find that the acceptance criteria in the combined license are met.

The Commission's use of this language implies that the acceptance criteria include those that if met are necessary and sufficient to provide reasonable assurance that the facility will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations. If ITAAC did not include programmatic ITAAC, the Part 52 finding would be much narrower than the comparable finding for an operating license in Part 50.

Lessons Learned From Design Certification Reviews

Concerns related to programmatic areas started in the early 1990s. Several SECY papers at this time address the ITAAC issue, as did several letters from industry. The issue of programmatic ITAAC is discussed in some of these papers and letters. For example, in SECY-92-214, "Development of ITAAC for Design Certifications," the staff stated:

> Since the ITAAC are primarily system oriented, the staff is considering additional ITAAC to be developed during the combined license (COL) review and proceeding which, in combination with the design certification ITAAC, would meet the necessary and sufficient standard to provide reasonable assurance that the facility has been constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's regulations that are necessary to support fuel loading. These COL ITAAC will verify implementation of both hardware (e.g., site-specific design features) and licensee specific "soft" procedural requirements (e.g., training, quality assurance, etc.). The staff will use the results of its construction and preoperational inspection programs to independently verify that both design certification and COL ITAAC have been met.

In a letter dated August 26, 1992, NUMARC raised concerns regarding the use of ITAAC to verify procedural and programmatic requirements. NUMARC also wrote letters dated October 5, November 5, and November 17, 1992, commenting on programmatic ITAAC. NUMARC's position was that ITAAC should be associated with hardware and material aspects of the design. In its August 26, 1992, letter, NUMARC stated that "operational and programmatic issues are best addressed during the deliberations and review of a COL application, and are not an appropriate subject for ITAAC at design certification." The staff responded to these letters in a letter dated November 25, 1992 as follows:

> It is important to remember the fundamental requirement for ITAAC, as we continue our interaction on its development. Specifically, ITAAC must be necessary and sufficient to provide reasonable assurance that the facility has been constructed and will be operated in conformity with the license, the provisions of the Atomic Energy Act, and the Commission's rules and regulations. During meetings with you on November 10 and November 19, 1992, the staff agreed to focus its near term efforts upon resolving the scope of ITAACs associated with design certification. We discussed an approach to quality assurance, welding and equipment qualification which appears may resolve your concerns and ensure that design certification ITAAC meet the necessary and sufficient standard.

The staff then described its approach to resolving ITAAC issues for the three designs that have been certified. During the review of the three designs that were certified, issues associated with the ITAAC that were in the scope of the certified design were resolved. Some

of these issues involved ITAAC that were related to programs. Other issues involved more subjective ITAAC. Attachment 3 to this paper is an example of programmatic ITAAC—the design reliability assurance program (DRAP) ITAAC for the AP600 certified design. The other certified designs (the advanced boiling water reactor and the System 80+) have similar DRAP ITAAC. Therefore, the staff believes that it has already developed and certified ITAAC in a programmatic area.

The staff also discussed the development of emergency planning ITAAC in SECY-95-090, "Emergency Planning Under 10 CFR Part 52." This SECY discusses the process for developing and implementing emergency planning ITAAC. SECY-95-090 states that:

> The Commission will identify, in the combined license, the ITAAC necessary and sufficient to demonstrate that the emergency plans meet the 16 emergency planning standards in 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50. The acceptance criteria for each license will be based on the evaluation criteria in NUREG-0654/FEM-REP-1, Revision 1.

An attachment to SECY-95-090 provided an illustrative emergency planning ITAAC, addressing 2 of the 16 planning standards (Attachment 4 to this SECY paper). The staff noted that these ITAAC needed substantial refinement.

The staff believes that the ITAAC in Attachments 3 and 4 can serve as a starting point for developing other programmatic ITAAC.

Design Reliability Assurance Program ITAAC from the AP600 Certified Design

Attachment 3

3.7 Design Reliability Assurance Program

The Design Reliability Assurance Program (D-RAP) is a program that will be performed during the detailed design and equipment specification phase prior to initial fuel load. The D-RAP evaluates and sets priorities for the structures, systems, and components (SSCs) in the design, based on their degree of risk significance. The risk-significant components are listed in Table 3.7-1.

The objective of the D-RAP program is to provide reasonable assurance that risk significant SSC's (Table 3.7-1) are designed such that: (1) assumptions from the risk analysis are utilized, (2) SSC's (Table 3.7-1) when challenged, function in accordance with the assumed reliability, (3) SSC's (Table 3.7-1) whose failure results in a reactor trip, function in accordance with the assumed reliability, (4) maintenance actions to achieve the assumed reliability are identified.

1. The D-RAP provides reasonable assurance that the design of risk-significant SSCs is consistent with their risk analysis assumptions.

Inspections, Tests, Analyses, and Acceptance Criteria

Table 3.7-3 specifies the inspections, tests, analyses, and associated acceptance criteria for the D-RAP.

Table 3.7-1
Risk-Significant Components

Equipment Name	Tag No.
PMS Actuation Software (used to provide automatic control functions listed in Tables 2.5.2-2 and 2.5.2-3)	-
PMS Actuation Hardware (used to provide automatic control functions listed in Tables 2.5.2-2 and 2.5.2-3)	-
MCR 1E Displays	OCS-JC-010, OCS-JC-011
MCR 1E System Level Controls	OCS-JC-010, OCS-JC-011
Reactor Trip Switch Gear	PMS-JP-RTS A01/2 PMS-JP-RTS B01/2 PMS-JP-RTS C01/2 PMS-JP-RTS D01/2
Reactor Coolant Pump Circuit Breakers	ECS-ES-51, -52, -53, -54 ECS-ES-61, -62, -63, -64
Annex Building UPS Distribution Panels (provide power to DAS)	EDS1-EA-14 EDS2-EA-14
PLS Actuation Software and Hardware (used to provide automatic control functions listed in Table 3.7-2)	-
DAS Actuation Hardware (used to provide automatic and manual actuation)	DAS-JD-001 DAS-JD-002 OCS-JC-020
Containment Isolation Valves Controlled by DAS	Refer to Table 2.2.1-1

Note: Dash (-) indicates not applicable.

Table 3.7-1 (cont.)
Risk-Significant Components

Equipment Name	Tag No.
Control Rod MG Set Field Breakers	PLS-MG-01A, PLS-MG-01B
Makeup Pumps	CVS-MP-01A, -01B
RNS Pumps	RNS-MP-01A, -01B
Startup Feedwater Pumps	FWS-MP-03A, -03B
SFS Pumps	SFS-MP-01A, -01B
CCS Pumps	CCS-MP-01A, -01B
Service Water Pumps	SWS-MP-01A, -01B
PCCWST Recirculation Pumps	PCS-MP-01A, -01B
PCCWST Drain Isolation Valves	PCS-PL-V001A/B
Standby Diesel Generators	ZOS-MG-02A, -02B
Ancillary Diesel Generators	ECS-MG-01, -02
MCR Ancillary Fans	VBS-MA-10A, -10B
I&C Room B/C Ancillary Fans	VBS-MA-11, -12
Hydrogen Ignitors	VLS-EH-1 through -60
Containment Vessel	CNS-MV-50
Pressurizer Safety Valves	RCS-PL-V005A RCS-PL-V005B
First-Stage ADS MOV	RCS-PL-V001A RCS-PL-V001B RCS-PL-V011A RCS-PL-V011B
Second-Stage ADS MOV	RCS-PL-V002A RCS-PL-V002B RCS-PL-V012A RCS-PL-V012B
Third-Stage ADS MOV	RCS-PL-V003A RCS-PL-V003B RCS-PL-V013A RCS-PL-V013B

Table 3.7-1 (cont.)
Risk-Significant Components

Equipment Name	Tag No.
Fourth-Stage ADS Squib Valves	RCS-PL-V004A RCS-PL-V004B RCS-PL-V004C RCS-PL-V004D
RCS Hot Leg Level Sensors	RCS-160A RCS-160B
Pressurizer Pressure Sensors	RCS-191A RCS-191B RCS-191C RCS-191D
Pressurizer Level Sensors	RCS-195A RCS-195B RCS-195C RCS-195D
Main Steam Line Isolation Valves	SGS-PL-V040A SGS-PL-V040B
Steam Generator Narrow-Range Level Sensors	SGS-001 SGS-002 SGS-003 SGS-004 SGS-005 SGS-006 SGS-007 SGS-008
Steam Generator Wide-Range Level Sensors	SGS-011 SGS-012 SGS-013 SGS-014 SGS-015 SGS-016 SGS-017 SGS-018

Table 3.7-1 (cont.)
Risk-Significant Components

Equipment Name	Tag No.
Steam Line Pressure Sensors	SGS-030 SGS-031 SGS-032 SGS-033 SGS-034 SGS-035 SGS-036 SGS-037
Main Steam Safety Valves	SGS-PL-V030A SGS-PL-V030B SGS-PL-V031A SGS-PL-V031B SGS-PL-V032A SGS-PL-V032B
IRWST Screens	PXS-MY-Y01A PXS-MY-Y01B
Containment Recirculation Screens	PXS-MY-Y02A PXS-MY-Y02B
CMT Discharge Isolation Valves	PXS-PL-V014A PXS-PL-V014B PXS-PL-V015A PXS-PL-V015B
CMT Discharge Check Valves	PXS-PL-V016A PXS-PL-V016B PXS-PL-V017A PXS-PL-V017B
IRWST Gutter Bypass Isolation Valves	PXS-PL-V130A PXS-PL-V130B
Accumulator Discharge Check Valves	PXS-PL-V028A PXS-PL-V028B PXS-PL-V029A PXS-PL-V029B
PRHR HX Control Valves	PXS-PL-V108A PXS-PL-V108B
Containment Recirculation Isolation Motor-operated Valves	PXS-PL-V117A PXS-PL-V117B

Table 3.7-1 (cont.)
Risk-Significant Components

Equipment Name	Tag No.
Containment Recirculation Squib Valves	PXS-PL-V118A PXS-PL-V118B PXS-PL-V120A PXS-PL-V120B
IRWST Injection Check Valves	PXS-PL-V122A PXS-PL-V122B
IRWST Injection Squib Valves	PXS-PL-V123A PXS-PL-V123B PXS-PL-V124A PXS-PL-V124B PXS-PL-V125A PXS-PL-V125B
CMT Level Sensors	PXS-011A PXS-011B PXS-011C PXS-011D PXS-012A PXS-012B PXS-012C PXS-012D PXS-013A PXS-013B PXS-013C PXS-013D PXS-014A PXS-014B PXS-014C PXS-014D
IRWST Level Sensors	PXS-045 PXS-046 PXS-047 PXS-048
125 Vdc 24-Hour Battery	IDSA-DB-1A IDSA-DB-1B IDSB-DB-1A IDSB-DB-1B IDSC-DB-1A IDSC-DB-1B IDSD-DB-1A IDSD-DB-1B

Table 3.7-1 (cont.)
Risk-Significant Components

Equipment Name	Tag No.
125Vdc Distribution Panels	IDSA-DD-1 IDSB-DD-1 IDSC-DD-1 IDSD-DD-1 IDSA-EA-1 IDSA-EA-2 IDSB-EA-1 IDSB-EA-2 IDSB-EA-3 IDSC-EA-1 IDSC-EA-2 IDSC-EA-3 IDSD-EA-1 IDSD-EA-2
Fused Transfer Switch Box	IDSA-DF-1 IDSB-DF-1 IDSB-DF-2 IDSC-DF-1 IDSC-DF-2 IDSD-DF-1
125 Vdc MCC	IDSA-DK-1 IDSB-DK-1 IDSC-DK-1 IDSD-DK-1

Table 3.7-2
PLS D-RAP Automatic Control Functions

CVS Reactor Makeup
RNS Reactor Injection from IRWST
Startup Feedwater from CST
Spent Fuel Cooling
Component Cooling of RNS and SFS Heat Exchangers
Service Water Cooling of CCS Heat Exchangers
Standby Diesel Generators
Hydrogen Ignitors

Table 3.7-3
Inspections, Tests, Analyses and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
1. The D-RAP provides reasonable assurance that the design of risk-significant SSCs is consistent with their risk analysis assumptions.	Inspection will be performed for the existence of a report which establishes the estimated reliability of as-built risk-significant SSCs.	A report exists and concludes that the estimated reliability of each as-built component identified in Table 3.7-1 is at least equal to the assumed reliability and that industry experience including operations, maintenance, and monitoring activities were assessed in estimating the reliability of these SSCs.

Illustrative ITAAC on Emergency Planning from SECY-95-090

Attachment 4

COMBINED LICENSE ITAAC
RELATED TO EMERGENCY PLANNING
(EXAMPLE)

COMBINED LICENSE COMMITMENT	INSPECTIONS, TESTS, ANALYSES	ACCEPTANCE CRITERIA
1. Assign emergency planning responsibilities	1. Verify that primary responsibilities for emergency response by the nuclear facility licensee and by State and local organizations within the Emergency Planning Zones have been assigned in each plan. The emergency responsibilities of the various supporting organizations have been specifically established. Each principal response organization is provided with adequate staffing to respond.	1. a. The plan identifies the State, local, Federal and private sec tor organizations (including utilities), that are intended to be part of the overall response organization for Emergency Planning Zones. b. The plan for each organizatior and suborganization having an operational role clearly speci fies its scope of operations and its relationship to the total effort. c. The plan for each organization identifies a specific indivi- dual by title who shall be in charge of the emergency response. d. Adequate staffing is provided for each principle organizatic for 24-hours per day emergency response for a protracted (30 day) period, including 24-hour per day manning of communica- tion links. The individual in each principle organization wh will be responsible for asses- sing continuity of resources (including technical, admini- strative and material) is spe- cified by title. e. The plan for each offsite organization specifies the

COMBINED LICENSE COMMITMENT	INSPECTIONS, TESTS, ANALYSES	ACCEPTANCE CRITERIA
		functions and responsibilities for major elements and key individuals by title, of emergency response, including the following: Command and Control, Alerting and Notification, Communications, Public Information, Accident Assessment, Public Health and Sanitation, Social Services, Fire and Rescue, Traffic Control, Emergency Medical Services, Law Enforcement, Transportation, Protective Response (including authority to request Federal assistance and to initiate other protective actions), and Radiological Exposure Control. The description of these functions includes a clear and concise summary such as a table of primary and support responsibilities using the agency as one axis and the function as another.
		f. Each plan contains (by reference to specific acts, codes, or statutes) the legal basis for authorities in letter e above. Each plan includes written agreements referring to the concept of operations developed between Federal, State, and local agencies and other support organizations having an

COMBINED LICENSE COMMITMENT	INSPECTIONS, TESTS, ANALYSES	ACCEPTANCE CRITERIA
		emergency response role within the Emergency Planning Zones. The agreements identify the emergency measures to be provided and the mutually acceptable criteria for their implementation, and specify the arrangements for exchange of information. These agreements may be provided in an appendix to the plan or the plan itself may contain descriptions of these matters and a signature page in the plan may serve to verify the agreements. The signature page format is appropriate for organizations where response functions are covered by laws, regulations or executive orders where separate written agreements are not necessary.

COMBINED LICENSE ITAAC
RELATED TO EMERGENCY PLANNING
(EXAMPLE - CONTINUED)

COMBINED LICENSE COMMITMENT	INSPECTIONS, TESTS, ANALYSES	ACCEPTANCE CRITERIA
14. Conduct a full-participation exercise that tests as much of the licensee, State and local emergency plans as is reasonably achievable without mandatory public participation. Include participation by each State and local government within the plume exposure EPZ and each State within the ingestion exposure pathway EPZ.	a. Test the following aspects of licensee, State, and local emergency plans: 1) Adequacy and timeliness of implementing procedures and methods 2) Emergency equipment 3) Communication network	a. 1) The onsite and offsite portions of the exercise have been completed. 2) The specified aspects of emergency plans have been tested. 3) Deficiencies identified in the exercise which prevent a finding of reasonable assurance of adequate protective measures have been corrected.*

* Deficiencies referred to in these acceptance criteria are defined in a June 17, 1993, Memorandum of Understanding between the NRC and the Federal Emergency Management Agency (58 FR 47996, September 14, 1993) as "...an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency to protect the health and safety of the public living in the vicinity of a nuclear power plant."