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Commission Policy Statement on Engineering Expertise on Shift

AGENCY: Nuclear Regulatory Commission.

ACTION: Policy Statement on Engineering Expertise on Shift.

SUMMARY: This Policy Statement presents the policy of the Nuclear Regulatory Commission (NRC) with respect to ensuring that adequate engineering and accident assessment expertise is possessed by the operating staff at a nuclear power plant. This Policy Statement offers licensees two options for providing engineering expertise on shift and meeting licensed operator staffing requirements.

Option 1 provides for elimination of the separate Shift Technical Advisor (STA) position by allowing licensees to combine one of the required Senior Reactor Operator (SRO) positions with the STA position into a dual-role (SRO/STA) position. Option 2 provides that a licensee may continue to use an NRC-approved STA program, with certain modifications, while meeting licensed operator staffing requirements.

EFFECTIVE DATE: October 28, 1985.

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SUPPLEMENTARY INFORMATION:

Background

Following the accident at Three Mile Island in March 1979, a number of studies were conducted to determine why the accident occurred, what factors might have contributed to its severity, and what the industry and the NRC could do to prevent the recurrence of the same or a similar accident. These studies concluded, among other things, that a number of actions should be taken to improve the ability of shift operating personnel to recognize, diagnose, and effectively deal with plant transients or other abnormal conditions.

To address these recommended improvements, the NRC initiated both short-term and long-term efforts. The short-term effort required that as of January 1, 1980, each nuclear power plant have on duty a Shift Technical Advisor (STA) whose function was to provide engineering and accident assessment advice to the Shift Supervisor in the event of abnormal or accident conditions. The STA was required to have a bachelor's degree in engineering or the equivalent and specific training in plant response to transients and accidents. The STA requirement was identified to licensees via NUREG-0578 (July 1979) [1] and NUREG-0737 (November 1980) and was later mandated by plant-specific Confirmatory Orders.

Concurrently, the NRC and industry embarked on a longer-term effort aimed at upgrading staffing levels and the training and qualifications of the operating staffs, improving the man-machine interface, and increasing capabilities for responding to emergencies. At the time the STA requirement was imposed, it was intended that use of the dedicated STA would be an interim measure only until these longer-term goals were achieved.

These long-term initiatives collectively result in an improvement in the capabilities and qualifications of the shift crew and their ability to diagnose and respond to accidents. These initiatives include shift staffing increases, training and qualification program improvements, hardware modifications, emphasis on human factors considerations, procedural upgrades, and development of extensive emergency response organizations to augment on-shift capabilities during abnormal conditions.

Draft Policy Statement

On July 25, 1983, the Commission published in the Federal Register (48 FR 33781) a Draft Policy Statement on Engineering Expertise on Shift to reassert the Commission's belief that engineering and accident assessment expertise must be available to the operating crew at all nuclear power plants.

The Draft Policy Statement on Engineering Expertise on Shift offered licensees of nuclear power plants and applicants for operating licenses two options for meeting the staffing requirements of 10 CFR 50.54(m)(2) and the requirement in NUREG-0737, Item 1.A.1.1 for a Shift Technical Advisor (STA). Option 2 gave them the opportunity to combine the licensed Senior Operators' (SRO) and Shift Technical Advisors' (STA) functions. Under Option 1, licensees that did not want to combine the SRO and STA functions could continue with their approved STA program in accordance with the description in NUREG-0737, "Clarification of TMI Action Plan Requirements."

Interested persons, applicants, and licensees were invited to submit written comments to the Secretary of the Commission. Following consideration of the comments, the Commission amended the Draft Policy Statement, as discussed in the following sections.

Comments on the Draft Policy Statement

A total of 34 responses were received and evaluated. The public comments related primarily to the combined SRO/STA position. The following discussion highlights the major points raised in the comments and the resolution of those comments. A detailed analysis of all public comments and their resolution was also prepared. (Copies of those letters and the detailed analysis of all the public comments are available for public inspection and copying for a fee at the NRC Public Document Room at 1717 H Street NW., Washington, DC)

Of the 34 letters received, 18 included

[1] NUREG-series reports and other documents referenced in this notice are available for inspection or copying for a fee in the NRC Public Document Room, 1717 H Street NW, Washington, DC. The reports may be purchased from the U.S. Government Printing Office (GPO) by calling 202/275-2060 or by writing the GPO, P.O. Box 37082, Washington, DC 20013-7082. They may also be purchased from the National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161.

support for the flexibility provided by the Policy Statement. The major points made in the public comments were as follows:

1. Support for the Policy Statement;
2. Opposition to combining the functions of the SRO and the STA;
3. Opposition to a bachelor's degree requirement for the SRO/STA position;
4. Recommendation that equivalency to a bachelor's degree be further defined;
5. Concern that a bachelor's degree requirement for the SRO/STA position would result in a higher turnover rate and potentially blocked career paths for operators; and
6 Reference to a proposed bachelor's degree requirement for the Shift Supervisor, believed to be currently under NRC consideration.

A general description of the major public comments and responses to these are as follows:

1 Support for the Policy Statement—

Eighteen commenters favored the option offered in the Draft Policy Statement of combining the SRO and STA functions into one dual-role position. They endorsed the flexibility provided by the Policy Statement. They supported the view that it is beneficial to combine engineering expertise with operating experience.

2 Opposition to the Dual-Role SRO/STA Position—

Four individual commenters stated that there is a possibility that the person in the dual-role position would function as an additional operator in the event of an abnormal occurrence instead of being available to provide the engineering and accident assessment expertise necessary in these circumstances. In response, the Commission notes it is the intent of the Policy Statement that the person in the dual-role position have specific training in accident assessment and provide that expertise during an abnormal occurrence. The staffing levels required by 10 CFR 50.54(m)(2), which became effective January 1, 1984, increased the number of operators and Senior Operators on shift after the initial STA position was required. This increase in shift personnel would allow the SRO/STA to provide both accident assessment expertise and to analyze and respond to off-normal occurrences when needed. Experience has shown that an STA, who is also an SRO, is better accepted by the shift crew. Therefore, the assessment and direction by an SRO/STA in an off-normal event might be better accepted by the crew than assessment and advice by a separate STA.

3. Opposition to a Bachelor's Degree for the SRO/STA Position—

Several commenters felt that the person who filled the SRO/STA position should not be required to have a bachelor's degree. The Commission notes that since NUREG–0737, Item I.A.1.1, specified that the STA should have a bachelor's degree or the equivalent in a scientific or engineering discipline, the degree requirement is not new. This continues to be the educational requirement for a dedicated STA. However, the educational requirements for the dual-role (SRO/STA) position have been changed to allow the individual to meet one of four educational alternatives.

4 Recommendation that Equivalency to a Bachelor's Degree Be Further Defined—

Many commenters stated that the equivalency options were too restrictive or required clarification. In response, the Commission notes that a bachelor's degree in engineering is no longer a basic requirement but is one of four educational alternatives. The term "equivalent" has been deleted.

Changes related to educational alternatives are summarized below:

- Most states require a bachelor's degree in engineering and several years of engineering experience for an individual to sit for the Professional Engineer (PE) examination. A few states still allow an individual without formal education but many years of practical engineering experience and training to sit for the examination. However, this option is becoming available less often Hence, this alternative allows individuals who do not have a degree but have successfully completed the PE examination to meet one of the educational alternatives of Option 1.
- Other bachelor's degrees determined to be acceptable alternatives are a bachelor's degree in engineering technology from an accredited institution or a bachelor's degree in a physical science from an accredited institution. These degree programs are acceptable provided that they include course work in the physical, mathematical, or engineering sciences. These requirements are intended to ensure that the individual has substantial knowledge and understanding of the physical and mathematical sciences and the principles of engineering.
- The Commission has deleted the educational alternatives that allow for successful completion of the technical portion of an engineering degree program and the successful completion of the Engineer-in-Training (EIT) examination. The Commission's objective is to enhance engineering expertise on shift through more stringent educational requirements for the individual filling the dual-role position.

5 Concern that a Bachelor's Degree Requirement Would Result in a Higher Turnover Rate and a Potentially Blocked Career Path for Shift Employees—

Several commenters expressed concern that degreed individuals would leave for other positions in the plant, contributing to a high turnover rate on shift. Another concern of commenters was that career paths to the senior operating positions would be blocked for those individuals without degrees. In response, the Commission notes that individuals may move to other positions within the utility. However, this can be viewed as desirable since it would increase the number of employees with valuable operating experience in other positions at the utility.

The only positions which may not be available for individuals without a degree would be the STA or the SRO/STA position. The career path to other senior operating positions remains available.

6. Reference to a Proposed Bachelor's Degree Requirement for the Shift Supervisor—

A few commenters on the Federal Register notice took the opportunity to comment on whether a bachelor's degree should be required for specific positions in the operating staff of nuclear power plants, and in particular, for the Shift Supervisor's position.

The Final Policy Statement on Engineering Expertise on Shift does not address the issue of requiring a degree for the Shift Supervisor. Early in 1984, the staff considered a "Proposed Rulemaking Concerning Requirements for Senior Managers" in SECY–84–106. This proposed rulemaking would have required that an additional degreed, SRO-licensed individual be assigned to each shift of a nuclear power plant who would be responsible for managerial direction of all plant functions including chemistry, health physics, maintenance, operations, security, and technical services. Following several meetings with the staff and industry representatives, the Commission concluded that this proposed rulemaking was not warranted; therefore, it was not approved. One of the primary bases for the proposed senior manager rule was the need to provide engineering expertise to the shift crew, which is also the primary objective of this Policy Statement.

Development of Final Policy Statement

As a result of the analysis of public comments, the Commission clarified the educational alternatives of the dual-role (SRO/STA) position. The revisions to the Draft Policy Statement resulted in SECY-84-355, a draft Final Policy Statement on Engineering Expertise on Shift.

The main difference between the Draft Policy Statement and SECY-84-355 concerned the educational qualifications for the dual-role position. The Draft Policy Statement required, of the person filling the dual-role position, a baccalaureate degree in engineering or related sciences or one of three equivalents to the degree. SECY-84-355 required a bachelor's degree in engineering from an accredited institution or one of five acceptable alternatives to the engineering degree.

The staff met with the Commissioners on November 5, 1984, to discuss SECY-84-355. As a result of that meeting, the Commissioners directed the staff to coordinate the Policy Statement on Engineering Expertise on Shift with the Nuclear Utilities Management and Human Resources Committee (NUMARC). Another draft Final Policy Statement, SECY-85-150, was the result of the Commissioners' direction, staff analysis, resolution to public comments, and staff coordination with NUMARC.

The majority of the Commission approved a version of the Policy Statement in SECY-85-150 with changes in the educational alternatives. Furthermore, the Commission has deleted an item from SECY-85-150, which allowed for college-level training instead of formal college education for the dual-role position. The objective of the Commission is to enhance engineering expertise on shift through more stringent educational requirements for the individual filling the SRO/STA position. The educational alternatives in this Final Policy Statement require a bachelor's degree in engineering, engineering technology, or physical science from an accredited institution, or a PE license obtained through successful completion of the PE examination.

Finally, although this Final Policy Statement includes an option which allows for the continued use of the STA position, as did the Draft Policy Statement, the former encourages licensees to work towards having the STA assume an active role in shift activities.

While it is the Commission's preference that licensees move toward the dual-role (SRO/STA) position, continuation of an approved STA program remains an acceptable option. The Commission acknowledges that some licensees may prefer the dedicated STA position for a number of reasons. The Commission also recognizes the advantages of integrating the qualifications and training of the STA into the licensed operating staff.

The separate views of Commissioner Thomas M. Roberts on this Policy Statement follow:

I am in agreement with the majority's intent that operators should be well trained and qualified to perform their duties. However, this policy, by requiring that an individual have both an SRO license and a BS degree in engineering or related science or have passed the PE examination prior to assuming the combined STA/SRO duties, places inordinate confidence in "academic" credentials. Strinkingly absent from the policy are the specific skills or abilities needed to perform those duties. Thus, the Commission has postponed the question of what those skills should be and how they should or could be achieved and *demonstroted*. This leaves me no choice but to vote against the modifications proposed to the Policy Statement on Engineering Expertise on Shift. By eliminating alternatives to a bachelor's degree for individuals who would otherwise occupy the dual role, the Commission would be ignoring the compelling arguments made in public comments and the staff's proposal for flexibility. We would be imposing our solution without addressing the benefits that will be eliminated by not allowing flexibility. This leaves the utilities with little incentive to change from the current position, which is allowed by Option 2. Since a majority of the Commission has already determined that improvement from the current program would be desirable, the Commission should provide some mechanism to move toward improvement. The proposed statement, as modified, does not provide that mechanism, and we provide no justification for overriding the staff's evaluation of the benefits that the flexibility would bring.

Policy Statement

The Commission continues to stress the importance of providing engineering and accident assessment expertise on shift. In this Policy Statement, "accident assessment" means immediate actions needed to be taken while an event is in progress. This policy Statement does not require any changes in the formal education and training of operators and Senior Operators not expected to fill the dual-role SRO/STA position.

The intent of this policy guidance may be satisfied by either of the options described below. The Commission prefers a combined SRO/STA position (Option 1). In addition, in the long term, the Commission would prefer that the STA be combined with the Shift Supervisor in the dual-role position.

Either Option 1 or Option 2 may be used on each shift. A utility may use Option 1 on some shifts and Option 2 on other shifts, or may use the same option on every shift. If Option 1 is used for a shift, then the separate STA position may be eliminated for that shift.

Option 1: Combined SRO/STA Position

This option is satisfied by assigning an individual with the following qualifications to each operating shift crew as one of the SROs (preferably the Shift Supervisor) required by 10 CFR 50.54(m)(2)(i):

a. Licensed as a senior operator on the nuclear power unit(s) to which assigned, and

b. Meets the STA training criteria of NUREG-0737, Item I.A.1.1, and one of the following educational alternatives:

(1) Bachelor's degree in engineering from an accredited institution;

(2) Professional Engineer's license obtained by the successful completion of the PE examination;

(3) Bachelor's degree in engineering technology from an accredited institution, including course work in the physical, mathematical, or engineering sciences; or

(4) Bachelor's degree in a physical science from an accredited institution, including course work in the physical, mathematical, or engineering sciences.

Option 2: Continued Use of STA Position

This option is satisfied by placing on each shift a dedicated Shift Technical Advisor (STA) who meets the STA criteria of NUREG-0737, Item I.A.1.1. The STA should assume an active role in shift activities. For example, the STA should review plant logs, participate in shift turnover activities, and maintain an awareness of plant configuration and status.

Licensee proposals different than the two options described above will be considered by the staff on a case-by-case basis. To eliminate the STA position, a licensee of an operating reactor should apply for a modification to its license and an applicant for an operating license should modify its Final Safety Analysis Report to reflect elimination of the STA position and a commitment to provide a required SRO on shift with the qualifications described in Option 1 above.

NRC will accept a utility's modifications if it finds that the proposal meets the intent of this Policy Statement. NRC will review, on a case-by-case basis, multi-unit sites with dual-licensed SROs to ensure that an adequate number of licensed staff are available and that engineering expertise can be provided when needed. It is the intent of this Policy Statement to ensure that engineering and accident assessment expertise is possessed by the plant operating staff.

Dated at Washington, DC, on this 22 day of October, 1985.