



August 30, 1982

POLICY ISSUE
(Information)

SECY-82-111A

For: The Commissioners

From: William J. Dircks
Executive Director for Operations

Subject: REQUIREMENTS FOR EMERGENCY RESPONSE CAPABILITY
(SECY 82-111)

Purpose: This paper provides the staff response to the ACRS letter of May 11, 1982.

Issue: ACRS endorsement of SECY 82-111 with comments.

Discussion: SECY 82-111, dated March 11, 1982, requested Commission approval of a set of basic requirements for emergency response capability and approval for the staff to work with licensees to develop plant-specific implementation schedules. The ACRS reported its conclusions concerning SECY 82-111 in a letter to Chairman Palladino on May 11, 1982. The ACRS concluded that the overall plan outlined in SECY 82-111 is generally sound and should be adopted. On July 16, 1982, the Commission approved SECY 82-111, subject to modifications identified in the Secretary's memorandum to the EDO, dated July 20, 1982. The Secretary's July 20, 1982 memorandum requested an information paper responding to the ACRS comments.

The ACRS noted the heavy burden of responsibility placed on the NRC project manager in negotiating detailed implementation schedules with licensees. We recognize the additional

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responsibility placed on the project managers and plan significant support for the project managers. To this end, we are augmenting our tracking system to monitor developments in and progress on implementing the provisions of SECY 82-111. Through the use of this system, management will be able to: 1) identify any difficulties that might arise during the negotiation stage and 2) monitor overall progress by utilities in completing the upgrading of emergency response capabilities at their facilities. In addition, we will be providing management guidance on the conduct of the negotiations and the acceptable bounds on the implementation schedules.

The ACRS discussed five issues that were recommended for additional staff attention. The staff response to the five issues raised by the ACRS is provided in the Enclosure. The ACRS views on four of the five issues are consistent with SECY 82-111 and the guidance that has been issued by the staff. The staff plans for implementing SECY 82-111 are in accord with the ACRS recommendations on these four issues.

The ACRS recommendation concerning the fifth issue appears inconsistent with the basic requirements of SECY 82-111 and the supporting staff guidance. The ACRS recommended that priorities be assigned to the guidelines of NUREG-0700 so that improvements that provide important risk reductions will be emphasized. The staff believes that the approach outlined in the basic requirements of SECY 82-111 for the control room review is preferable. The guidelines of NUREG-0700 are the end result of a prioritization process to select those with the largest potential for risk reduction. Their application within the context of a control-room-specific design review can range from significant to trivial, but this determination cannot be made on a generic basis of specific control room reviews, using the licensee's assessment process to select, from all identified human engineering discrepancies, those whose improvement will provide significant risk reduction.



William J. Dircks
Executive Director for Operations

Enclosure:
Staff responses to comments
of 5/11/82 ACRS letter

ENCLOSURE

STAFF RESPONSE TO COMMENTS
CONTAINED IN THE ACRS LETTER

OF

MAY 11, 1982

1. ACRS COMMENT:

The timing for implementation of new Emergency Operating Procedures (EOPs) and the Safety Parameter Display System (SPDS) appears to be a problem. Apparently, EOPs will be written with the SPDS as an important element of the control room information management system. New EOPs are scheduled, we understand, to be put into use in most plants later this year. SPDS installation in plants is two or three years in the future. There may be a temptation to delay upgrading of EOPs pending completion of SPDS installations. We believe use of new EOPs is very important and should be implemented without delay, if necessary, using non-SPDS versions in the interim.

STAFF RESPONSE:

We agree with the ACRS comments and intend to encourage implementation of upgraded EOPs as soon as they are developed and the operating staff is trained in their use. It is likely that upgraded EOPs will be in use prior to installation of the SPDS at a number of plants. Once the SPDS has been installed, the utility will need to describe use of the SPDS for overview of the plant by the operating crew.

2. ACRS COMMENT:

The SPDS has been singled out by the NRC staff to be implemented on a higher priority than some other elements of the program. This is because of the Staff's judgment that the SPDS will be highly beneficial in reducing the type of operator error which contributes most significantly to risk. There is some opinion that SPDS implementation should not be singled out but should evolve out of the more general control room information management evaluation and upgrading described in NUREG-0700,

"Guidelines for Control Room Design Reviews." While we have some sympathy with this view, we believe the SPDS implementation should proceed as the Staff suggests.

STAFF RESPONSE:

We agree with the ACRS comment. We believe that emphasis on early implementation of an SPDS need not inhibit the integration of the control room review, upgraded EOPs, SPDS, improved instrumentation to follow the course of an accident (R.G. 1.97), and improved training. The re-analysis of transients and accidents and the development of EOP Technical Guidelines are well under way and in their present form can serve as useful input for developing SPDS requirements. It will be highly desirable for the utility control room review teams to have SPDS preliminary designs and formats available for integration into the control room design reviews. Human engineering discrepancies (HEDs) may be identified in the control room design review that are amenable to correction by changes to the SPDS. The option is left to the utility as to whether to revise the SPDS, modify the control boards, or justify not correcting HEDs having a small safety impact.

3. ACRS COMMENT:

We believe that implementation of the SPDS should not be forced at a rate which will preclude its orderly development. The SPDS has considerable potential as a diagnostic tool to assist operators in the effective management of a wide range of possible abnormal occurrences. We believe the industry should be encouraged to develop designs which can be expanded to incorporate confirmatory and diagnostic functions and should be permitted the flexibility to do this.

STAFF RESPONSE:

We agree with the ACRS comment. The NRC guidance (NUREG-0696 and NUREG-0835) and the proposed basic requirements of SECY 82-111 relate to an SPDS that

provides only the detection function. However, the staff recognized the potential for future control room improvements through the incorporation of diagnostic tools such as disturbance analysis techniques and confirmatory functions, and computerized display of safety system status. Because of the possible benefits in incorporating diagnostic and confirmatory functions into the SPDS data base and displays, the staff recommended in the guidance documents that SPDS designs be flexible so as to permit future expansion.

4. ACRS COMMENT:

We suggest that additional attention be given to some specification of reliability for the SPDS. We encourage the industry, in cooperation with the NRC Staff, to develop appropriate standards.

STAFF RESPONSE:

We believe it would be appropriate for industry to develop standards addressing SPDS reliability. We intend to work with industry in this effort.

5. ACRS COMMENT:

We are skeptical about the need for the comprehensive analysis of control room information management systems called for in NUREG-0700. We believe that many of the benefits coming from such a review will be in control board improvements which will tend to raise the "skill-based" performance of operators. However, our understanding of the contribution of operator error risk is that cognitive error is the major factor. Because resources are limited, we recommend that priorities be assigned to the guidelines of NUREG-0700 so that improvements that provide important risk reduction will be emphasized.

STAFF RESPONSE:

We agree with the objective of assigning priorities to control room improvements that provide important risk reduction. Our experience to date, however, shows that it is not feasible to establish the relative risk reduction potential of the individual guidelines of NUREG-0700 prior to conducting control room design reviews. The appropriate time to prioritize in accordance with risk reduction potential is after control room specific discrepancies have been identified utilizing NUREG-0700 or comparable human factors guidelines.

The guidelines of NUREG-0700 were developed from a review of human engineering principles and practices as used by the armed forces and by industry. During the course of their development, the guidelines have been modified, screened and adapted to reflect what the staff and our consultants believe are those with the largest potential for risk reduction when applied to the design review of nuclear power plant control rooms. The staff attempted a generic prioritization of the guidelines early in our review of control rooms for OL applications, in order to give guidance to reviewers. We were unable to develop a useful prioritization, because implementing a given guideline was judged to have significant risk reduction potential in one application, but only trivial improvement in another. For example, decisions on protecting a control switch against accidental actuation might depend on whether accidental actuation would turn off a non-safety device or would bypass a safety

channel. Further, there are both cumulative and synergistic effects associated with human engineering discrepancies which, if not identified and corrected, can lead to operator errors with serious risk potential. These effects cannot be addressed unless all discrepancies are identified and assessed. Moreover, the potential for operator error is further reduced when operating crews are aware of the discrepancies in their control rooms, even though the discrepancies remain uncorrected.

The staff also expects that the portion of the control room design review which will utilize the NUREG-0700 guidelines (the control room survey) will not involve a significant expenditure of licensee resources. Any savings resulting from removing some of the guidelines from the review process would be minor, and incommensurate with the risk of failing to identify discrepancies with potential safety consequences.

Based on the above, the staff concludes that the basic requirements incorporated in SECY 82-111 should remain unchanged.