

June 22, 2000

Dr. William D. Travers
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Dr. Travers:

SUBJECT: DRAFT REPORT, "REGULATORY EFFECTIVENESS OF THE STATION
BLACKOUT RULE"

During the 473rd meeting of the Advisory Committee on Reactor Safeguards, June 7-9, 2000, we reviewed the staff's draft report on its evaluation of the regulatory effectiveness of the station blackout (SBO) rule. During our review, we had the benefit of discussions with representatives of the NRC staff and of the documents referenced.

Conclusions and Recommendations

1. The initiative undertaken by the staff to evaluate selected regulations to determine whether they have been effective in achieving their objectives is valuable and should be continued.
2. Regulatory documents related to the SBO rule should be revised to eliminate identified inconsistencies in the definition of reliability. Because of these inconsistencies, the intended reliability targets for emergency diesel generators (EDGs) are not being met in some cases.
3. Acceptance of the use of trigger values in inspection documents should be discontinued.
4. The evaluation of the regulatory effectiveness of the SBO rule provides significant lessons that should be beneficial in preparing a template for the evaluation of other regulations and in the development of future regulations.

Discussion

The staff has an ongoing program to make NRC activities and decisions more effective, efficient, and realistic. As part of this program, the staff is evaluating selected regulations to determine whether the requirements imposed by such regulations are effective in achieving their intended objectives.

The SBO rule is the first to be subjected to this type of evaluation. To assess the regulatory effectiveness, the staff translated regulatory requirements of the SBO rule and other related regulations into a set of expectations on station blackout coping capability, risk reduction, EDG reliability, and value-impact. Actual outcomes from implementing the rule were reviewed to determine if these expectations were met.

The evaluation provides valuable insights on the benefits of the SBO rule and on ways to make future regulations more effective. The SBO rule has provided significant safety benefits in each area evaluated and has resulted in a mean risk reduction consistent with the Commission's objective (core damage frequency reduction of 2.6×10^{-5} events per reactor year). This safety improvement appears to have been cost effective, notwithstanding an implementation cost that exceeded the staff's estimated cost by a factor of four. Much of the excess cost may be associated with the addition of dedicated EDGs at some sites, which was not foreseen by the original cost-benefit evaluation performed by the staff. Safety improvements made by individual utilities that went beyond the minimum to meet the provisions of the SBO rule should not be the basis for a "cost-related" criticism of the rule.

The evaluation also shows that some of the safety improvements provided by the implementation of the SBO rule are being eroded because reliability calculations for some cases are not correct. For example, some licensees do not include EDG maintenance outage times in their reliability calculations, and some licensees do not count failures of EDG support equipment, such as the load sequencer, in their assessment of EDG reliability. This is occurring because several SBO-related regulatory documents provide inconsistent guidance on how to calculate reliability for comparison against EDG reliability targets. These documents should be revised to eliminate inconsistencies in the definition of reliability.

In addition, NRC field inspection documents allow the use of NUMARC 87-00, Revision 1, Appendix D trigger values for assessing compliance with Regulatory Guide 1.155, "Station Blackout," reliability targets. Trigger values were recognized as inappropriate by the ACRS and the staff, but have been retained inadvertently in the inspection documents and are being used by some licensees. The use of trigger values ought to be eliminated.

An important lesson learned from the evaluation of the SBO rule is that regulatory documents have to be reviewed more carefully for consistent interpretation of terms, goals, criteria, and measurements. Also, the evaluation showed the importance of establishing a risk-reduction expectation prior to the development of a new regulation. It was possible to evaluate the risk-reduction expectation for the SBO rule only because the Commission established expectations at the time the rule was issued. These lessons should be valuable in preparing a template for evaluating the effectiveness of other regulations and in developing future regulations.

Sincerely,

/RA/

Dana A. Powers
Chairman

References:

1. Letter dated April 14, 2000, from Charles E. Rossi, Office of Nuclear Regulatory Research, to David Modeen, Nuclear Energy Institute, Subject: Draft Report, "Regulatory Effectiveness of the Station Blackout Rule."
2. U. S. Nuclear Regulatory Commission, Regulatory Guide 1.155, "Station Blackout," August 1988.
3. Nuclear Management and Resources Council, "Guidelines and Technical Bases for NUMARC Initiatives Addressing Station Blackout at Light Water Reactors," NUMARC-87-00, November 1987.
4. Letter dated December 14, 1993, from J. Ernest Wilkins, Jr., Chairman, ACRS, to Ivan Selin, Chairman, NRC, Subject: ACRS Concern Over "Trigger Value" Approach Proposed by Regulatory Guide 1.160."