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The Honorable Ivan Selin
Chairman
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Chairman Selin:

SUBJECT: RESOLUTION OF GENERIC SAFETY ISSUE B-56, "DIESEL GENERATOR RELIABILITY"

During the 380th meeting of the Advisory Committee on Reactor Safeguards, December 12-14, 1991, we reviewed the NRC staff's proposed amendment to the station blackout (SBO) rule, 10 CFR 50.63, and the corresponding revision of Regulatory Guide 1.9 that addresses resolution of Generic Safety Issue (GSI) B-56, "Diesel Generator Reliability." A meeting of our Subcommittee on AC/DC Power Systems Reliability was also held on November 20, 1991 to discuss this matter. We also had the benefit of the referenced documents.

In 1990, the staff proposed resolution of GSI B-56 by issuance of a generic letter requiring licensees to adopt the strictures of proposed Regulatory Guide 1.9, Revision 3, pertaining to the establishment of a diesel generator reliability program. The Committee reviewed this proposed resolution during its 364th meeting in August 1990, and did not support the staff's position, arguing that to do so was an "unjustified imposition of maintenance requirements on licensees, in contravention of the Commission's decision to defer issuance of a maintenance rule...." The Committee also noted that the industry was monitoring the reliability of emergency diesel generators (EDG) pursuant to the requirements of the SBO rule.

The Commission also rejected the staff's proposed resolution. Instead, it directed the staff to develop a rule using a "results-oriented" approach. The staff has done this.

In our view, the proposed rule amendment is unnecessary to ensure adequate diesel generator reliability. We continue to believe that the commitments of the licensees to monitor and maintain diesel generator reliability as specified in the SBO rule, combined with industry initiatives in this regard, are sufficient. If an EDG fails to start, it is industry practice to take appropriate corrective actions. We were told by the NRC staff that statistics compiled by the nuclear industry indicate that the present overall diesel generator reliability level is about 98 percent.

In the course of our discussions with the staff, we were also told that there does not now appear to be a problem with emergency diesel generator reliability, but that there might be one in the future. When asked if the proposed rule would solve a problem if one developed, the response was unclear. In a situation in which both staff and licensees have limited resources, we are reluctant

to add to their burden a rule which is designed to solve a problem that does not now exist by means of a proposed solution whose results are uncertain.

In summary, we believe that additional regulation of emergency diesel generators is not warranted and the rule should not be promulgated.

Additional comments by ACRS Members James C. Carroll, Ivan Catton, and Paul G. Shewmon and by ACRS Members Thomas S. Kress and Harold W. Lewis are presented below.

Sincerely,

David A. Ward
Chairman

Additional Comments by ACRS Members James C. Carroll, Ivan Catton, and Paul G. Shewmon

We do not agree with our colleagues' recommendation and believe that this proposed rule should be issued for public comment. In our view, it represents an appropriate approach to the closure of the station blackout rule and will formalize more reasonable technical specification surveillance testing requirements for EDGs. We further believe that the use of performance-based regulation provides a highly desirable approach to regulation, given the present maturity of the nuclear power industry.

It appears to us that licensees with good EDG maintenance programs and root cause analysis techniques will have no difficulty in staying below any of the proposed trigger values. We note that the failure of an EDG to start is not in general a random event, but an event due to some specific cause that is usually identified and corrected. Proper corrective action will generally improve the reliability of the EDG relative to the reliability it had prior to the event; i.e., the cause of failure to start should be eliminated or greatly reduced. The approach used to evaluate a plant's EDG test data needs to recognize this fact. The small amount of data that is available also must be considered. We believe that the proposed rule strikes a reasonable balance in dealing with these issues.

Additional Comments by ACRS Members Thomas S. Kress and Harold W. Lewis

We support the recommendations but have additional reasons.

The statistical treatment in the proposed action is badly flawed, and is beyond repair. The fundamental problem is that the staff is trying to do something that is mathematically impossible, to derive meaningful reliability information from small numbers of failures. To exaggerate the point only a bit, it is like trying to learn the underlying reliability of an airplane by counting how often it has

crashed.

There are so many problems that it is pointless to list them, but here are a couple.

Recall that the only information on which the staff is relying is the number of failures to start. Take as an example the case of the "problem diesel" threshold of 4 failures in the last 25 starts. (The use of prejudicial terms like "problem diesel," "false alarms," "early warning," etc., only obfuscate the issue.) A diesel with a claimed 0.95 reliability, which is maintaining that reliability, will trigger that signal on the average, after 312 efforts to start. But 10 percent of the population will do so in less than 46 starts, and the top 10 percent in more than 705 starts. That is a factor of 15. What kind of threshold is that?

Further, it will take a diesel rated for 0.975 reliability 2534 starts, again on the average, to press this trigger. Since problem status is just as important for a 0.975 diesel as it is for a 0.95 diesel, what is the justification for waiting eight times as long to find out?

A particularly troublesome feature of the proposed rule is the proposal to regard activation of the "double trigger" as a punishable offense. Since even a diesel that is kept at the promised reliability will press the trigger (it just takes a little longer) the staff proposes to punish licensees who have done no demonstrable wrong. That is improper.

It would be easy to go on, but the conclusion is clear -- the proposed rule would be an embarrassment if issued, and the fundamental statistical problem, small numbers of failures, cannot be overcome.

Note that these comments apply to individual diesels or individual sites. It is entirely appropriate to monitor industry-wide diesel experience, where appropriate statistical analysis can yield generic information of value. Further, the thrust toward performance-based regulation is commendable - it just wasn't done well here. It could have been.

References:

1. Memorandum dated November 26, 1991 from A. W. Serkiz, NRC, transmitting Draft Commission Paper, Draft Federal Register Notice, and Draft Regulatory Guide 1.9, Revision 3 "Selection, Design, Qualification, Testing, and Reliability of Emergency Diesel Generator Units Used As Class IE Onsite Electric Power Systems at Nuclear Power Plants" (Predecisional)
2. Staff Requirements Memorandum dated June 26, 1991 from Samuel J. Chilk, Secretary, to James M. Taylor, NRC Executive Director for Operations, Subject: SECY-90-340 - "Diesel Generator Reliability," Resolution of Generic Safety Issue B-56
3. Memorandum dated September 20, 1991 from T. M. Novak, NRC, transmitting AEOD Special Study Report, "Performance of Emergency Diesel Generators in Restoring Power to Their

Associated Safety Buses - A review of Events Occurring at Power," AEOD/S91-01

4. Letter dated August 14, 1990, from Carlyle Michelson, ACRS, to Kenneth M. Carr, Chairman, NRC, Subject: Proposed Resolution of Generic Safety Issue B-56, "Diesel Generator Reliability"