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TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401

5N 157B Lookout Place

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PROPOSED RULE PR-50.
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OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Docketing and Service Branch

Dear Sir:

On behalf of the Tennessee Valley Authority, we wish to express our agreement with, and support for, the comments which the Nuclear Utility Management and Resources Committee is filing on the proposed rule on station blackout (USI A-44).

We wish to thank the Commission for the opportunity to comment on this issue. If our comments should engender further questions by the Commission or Staff, we stand ready to answer them.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

R. L. Gridley, Director
Nuclear Safety and Licensing

DS10
ADD: Alan Rubin, 244 Phil
Pat Daranowsky NL 565C
Wm. Olmstead, 9604 MNE

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7/2/86 emp

(45)

Washington Public Power Supply System
Box 1223 Elma, Washington 98541-1223 (206)482-4428

June 24, 1986

The Secretary of the Commission
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Docketing and Service Branch

Subject: PROPOSED RULE
STATION BLACKOUT

Reference:
a) Letter (G03-85-0654), G. C. Sorensen to Karl Kniel, subject, NUREG-1032, "Evaluation of Station Blackout Accidents at Nuclear Power Plants", dated November 8, 1985.

b) Letter (RWW-85-071), R. W. Wells to K. Kniel, subject, NUREG-1032, "Evaluation of Station Blackout Accidents at Nuclear Power Plants", dated October 11, 1985.

On March 21, 1986, the Nuclear Regulatory Commission (NRC) published, for comment in the Federal Register, a proposed rule for resolving Unresolved Safety Issue (USI) A-44, "Station Blackout." The Supply System has reviewed the proposed rule and appreciates this opportunity to provide comments.

In general, our findings support the results of industry initiatives to evaluate this issue. As such, the Supply System supports and endorses comments provided by NUMARC, NUGSBO and the Atomic Industrial Forum concerning the proposed rule, the technical bases for the rule (NUREG-1032), "Evaluation of Station Blackout Accidents at Nuclear Power Plants"), and the appropriateness of the staff's backfit analysis (NUREG-1109, "Regulatory Analysis for the Resolution of Unresolved Safety Issue A-44, Station Blackout"). Specifically, we believe that the above NUREG documents do not provide an adequate technical justification for the proposed rule.

DS10
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Acknowledged by card. 7/2/86

We would also like to direct the staff's attention to earlier comments submitted on NUREG-1032 by the Supply System [Reference a)] and by the Combustion Engineering Owners Group (CEOG) [Reference b)], and re-emphasize the detailed technical comments provided in those transmittals.

Attachment 1 represents the Supply System's comments on the proposed rule and associated Draft Regulatory Guide. Attachment 2 provides our comments on NUREG-1109 "Regulatory Analysis for the Resolution of USI A-44, Station Blackout." Attachment 3 provides a copy of our comments on NUREG-1032 "Evaluation of Station Blackout Accidents at Nuclear Power Plants", previously transmitted via Reference a).

Again, the Supply System appreciates this opportunity to review and provide comments on this subject.

Very truly yours,

GC Sorensen

G. C. Sorensen, Manager
Regulatory Programs

AJM/cae

Attachments

Attachment 1

COMMENTS

FEDERAL REGISTER PUBLICATION OF PROPOSED RULE
CONCERNING STATION BLACKOUT

1) Consideration of additional single failures, as implied (but not included) by the Commissioners in the proposed Rule, would add considerably to the costs of implementation, and should be explicitly removed from consideration. Examples would include a second steam driven train of auxiliary feedwater for PWRs and a backup to RCIC for BWRs. Substantial justification should be required prior to making any add on features safety grade, since utilization of available non-safety grade equipment will provide the desired result. This is acknowledged in the draft Regulatory Guide, Section C3.1.5. Availability can be maintained at a high level by appropriate preventative maintenance and surveillance testing programs.

2) We strongly disagree with Commissioner Asselstine that additional measures as pursued in "Countries abroad" should be considered for domestic applciation. It is not apparent that the details of U. S. Grid stabilities and on site power reliabilities are substantially similar enough to those found "abroad" to warrant a simple adoption of these measures.

3) The proposed definition of Station Blackout to be added to Section 50.2 should exclude AC power provided by battery backed inverters.

4) Since this rulemaking will alter the Licensing basis for the entire industry, it should be made very clear that the issues of fuel design limits, pressure boundary integrity, core cooling and containment integrity are to be addressed using best estimate codes and assumptions.

5) The implementation of this rule would require a demonstration of the ability to maintain core cooling and containment integrity for the duration of the Station Blackout (SBO) condition. This raises a substantial issue of qualification of equipment which has not been addressed and which will add significantly to the cost of implementation. In general, the equipment to be relied upon during the SBO may not have been qualified for the elevated temperatures (no HVAC) and durations (up to 8 hours). Previously most of this gear has been considered to be in a mild environment. Also, not addressed are the potential Human Factors implications associated with the Blackout Scenario, such as Emergency Lighting. We believe this could have a major impact on the Cost/Benefit Analysis for this rule.

6) Table 1 of the draft Regulatory Guide identifies the criteria to be used for determining acceptable SBO duration capability. This table provides 4 hour and 8 hour criteria based on off-site power system design, diesel generator reliability, and emergency power system configuration. Using the same bases, it should be possible for certain utilities to demonstrate a zero hour blackout. This should be left as an option.

7) A definition of initial plant parameters to be assumed for analysis purposes is not provided. An example of such parameter would be Reactor Coolant Pump seal leakage. The wide variation in time dependence, due to the RC pump seal leakage issue alone, militates against a rulemaking, at least until the issue is resolved.

8) "Ability to Cope" with a Station Blackout needs to be defined.

9) With regard to diesel generator reliability, we would like to draw your attention to the recently published NUREG/CR-4557 (4/86) "A review of Issues Related to Improving Nuclear Power Plant Diesel Generator Reliability." This document analyzes and summarizes data and recommendations of the utility responses to Generic Letter 84-15. The Supply System finds the recommendations in this document regarding reduction/minimization of Cold Fast Starts, prelube systems, maintenance, root cause failure analysis and training, in general to be sound, common sense approaches. We would take under advisement any recommendations for additional record keeping.

   Of particular interest is the finding that the average DG reliability at Nuclear Power Plants is 98%. This is a remarkable finding, given the Commission's concerns with reliability. It suggests that with a bit more attention to those plants with lower than acceptable availabilities, and industry acceptance of the above noted recommendations, the average DG reliability could be brought much closer to 100%. Thus reducing even further the probabilistic contribution of this factor to the overall core melt risk.

10) Clarification regarding required responses to a DG failure rate of >0.05 failure per demand is needed.

11) Clarification is needed as to whether failure rate is to be based upon all test and valid emergency start signals or simply on valid emergency start signals only.

Attachment 2

COMMENTS ON PROPOSED NUREG 1109

"Regulatory Analysis For The Resolution
of USI A-44, Station Blackout"

1) In Table 3, Page 9 - Definitions of P1 and P2 use frequency of extremely severe weather and severe weather interchangeably, thus creating confusion in the definition.

2) The offsite power design characteristic is dominated by weather related failures. This is not representative of the northwest BPA grid with its large hydro capacity and mild weather. The regulations should allow "no action" for grids with a demonstrable reliability above a "cut off" value, (e.g., 10^{-4}/yr).

3) In Table 5, Page 17 - The estimated reduction in core damage frequency, except for the worst case, is not as large as uncertainty in the calculated median values. If this is carried through the value impact statement, the logical conclusion is that the regulation is not cost beneficial except in the cases of poor grid and/or diesel generator reliability. However, these cases would be required to be remedied under current regulations.

4) Without publication of a safety goal, the probabilistic arguments presented are irrelevant. That is, for loss of all AC power to be significant, it is not enough that it is potentially a large contributor to core melt frequency. If the total core melt frequency is less than an established safety goal, no change to the plant should be imposed irregardless if blackout is the largest contributor or not.

5) Pages 30 through 37 discuss the impact of this issue on eight other regulatory issues. Rather than enumerate opposing arguments in each case, we urge the NRC to consider the AIF Working Group on Station Blackout's original arguments for not separating the Station Blackout from the resolution of these issues. It is more reasonable to coalesce the issues under the IDCOR - degraded core and source term work now on going. To separate Station Blackout frequency out as an independent variable when many sequences are dependent on it is a misapplication of the probabilistic technique (also see Item 4 above).

Attachment 3

COMMENTS REGARDING NUREG 1032

"Evaluation of Station Blackout Accidents
at Nuclear Power Plants"

1) The NUREG utilizes overly conservative frequencies for loss of offsite power events. The Nuclear Safety Analysis Center (NSAC) has published two reports summarizing loss of offsite power (LOOP) events in the U. S., NSAC/80 (all events through 1983) and NSAC/85 (events up to 1984).

   As noted by NSAC, the frequency of LOOP activities has been decreasing due to improved grid configurations, larger utility systems and improved switchyard designs. Combining NSAC frequencies for the last 3 years gives a LOOP frequency of 0.045 per site year compared to the NUREG-1032 frequency of 0.088 per site year. The NUREG-1032 estimates seem to be based on data that is not as current as NSAC's.

2) The NUREG utilizes overly conservative estimates of the time to restore AC power. Again, the NUREG-1032 data is not current and thus does not reflect the substantially upgraded grid reliabilities and switchyard designs.

3) The NUREG uses the Regulatory Guide 1.108 definition of a failure to start for the Emergency Diesel Generators (EDG). This definition does not credit degraded mode operation or valid starts that exceed 10 seconds. The ongoing effort to reduce challenges and wear on the EDG's (see for example Generic Letter 83-30) due to overly prescriptive testing requirements, will likely lead to a future relaxation of this definition in the Regulatory Guide.

   In any case, NUREG-1032 is misapplying a regulatory criterion in place of more realistic success criteria based on actual experience data. The actual operating experience used by NUREG-1032 is out of date (NUREG/CR-2989-7/83). More recent data (NUREG/CR-3831-1/85) suggests that another over conservatism may have been introduced in terms of EDG failure rates and time to repair.*

4) The NUREG-1032 Accident Sequence Analysis assumes that the Loss of Core Cooling leads directly to core melt due to the short (1-2 hour) time period assumed from onset of core damage to onset of core melt, and the low probability assigned to the restoration of AC power during this interval.

   As noted above, in comment 2 & 3, this assumption may not be reflective of reality in terms of the actual ability to restore AC power in some form.

* Also, see Attachment 1, comment 9, regarding NUREG/CR-4557.

5) NUREG-1032 uses overly conservative values for the fraction of fission products released to the containment. This leads to a significantly over conservative result for time to containment failure. It is suggested that attention be given to the results obtained by the Source Term Reassessment (NUREG-0956) and the IDCOR Program. The IDCOR result of 32 hours from start of SBO to containment failure (for large dry containments; the shortest time calculated is 18 hours for Mark I and II BWR's) is based on more realistic physical and chemical models, which are in good agreement with the NUREG-0956 results. However, depending on accident sequence, a difference of from 10 to 22 hours exists between NUREG-1032 and IDCOR.

In view of the actual experience in recovering AC power (no LOOP has ever lasted longer than 10 hours), this difference in time to containment failure becomes critical to the ultimate outcome of the analysis.

Whether containment failure occurs at all is another issue which ought to be considered (see NUREG-0956). Thus, the probability of recovering AC power and arresting or substantially changing the accident sequence, prior to containment failure, becomes much greater.

As noted on Page 7-15 of NUREG-1032, "The time to containment failure after the onset of core damage and the containment failure mode is an important factor in determining fission product release and ultimately public risk."

Core damage and vessel melt through, while undoubtedly involving substantial financial risk to the utilities, do not translate directly into public safety and health risks. A realistic evaluation of the true risk to the general public is likely to show that it is not substantially increased by Station Blackout sequences.