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May 2, 1975

SECY-75-208 - see also 178

## COMMISSIONER ACTION

*Revised ltr  
signed FD 0  
5-14-75*

For: The Commissioners

Thru: Executive Director for Operations

Subject: PROPOSED REPLY TO MR. CRAWFORD OF EEI *Yes*

Purpose: To acquire Commissioners' approval/comments on proposed response.

Issue: NRC position on power plant reliability issue.

Discussion: Mr. W. Donham Crawford's letter (Enclosure 1) notes EEI concern over the memorandum of December 2, 1974 by Dr. Triner to L. Manning Muntzing concerning reliability which was the subject of an item in the New York Times on March 9, 1975. Mr. Crawford volunteered to arrange for a group of Utility Managers to discuss their activities regarding reliability.

Commissioner Action Paper 75-178 circulated a reply which implied some support of Dr. Triner's position.

This redraft (Enclosure 2) takes a more neutral position and responds positively to EEI offer of a NRC/EEI meeting on the subject.



T. A. Rehm  
Assistant to the Executive  
Director for Operations

Enclosures:  
1. Ltr. from W. D. Crawford  
2. Proposed ltr. to  
W. D. Crawford

Contact: W. J. Dircks  
Extension 7561

Commissioners' comments should be provided directly to Mr. Dircks by cob May 12, 1975.



## EDISON ELECTRIC INSTITUTE

90 PARK AVENUE • NEW YORK 10016 • (212) 873-8700 31 PM 3:52

March 28, 1975  
GENERAL SECRETARY

Hon William A Anders, Chairman  
U S Nuclear Regulatory Commission  
1717 H Street, N W  
Washington, D C 20555

Dear Mr Chairman

In the March 9, 1975 issue of the New York Times, an article written by David Burnham stated that a Nuclear Regulatory Commission study concluded that utilities are not sufficiently concerned about the safety and performance of their nuclear reactors. While it appears that Mr Burnham accurately reflected what Dr Triner's report said about utility companies' attitudes toward reactor reliability, we believe Dr Triner's conclusions are entirely erroneous in this regard. Despite Mr Burnham's commentary, we find nothing in Dr Triner's report to suggest that he was critical of the utility industry on safety matters.

Although we understand that Dr Triner's memorandum does not represent the official position of NRC, we are concerned that the article will imply that it does. Consequently, we wish to comment on his observations regarding the utility industry's role in power plant reliability matters.

Often utilities rely on architect/engineers to provide power plant design and construction services. In many instances, the relationship between a utility and its architect/engineer is of such long standing that each is intimately familiar with the design and operating philosophy of the other. The utility considers the architect/engineer as an extension of its own engineering department and exercises control over the activities of the architect/engineer by reviewing layouts, specifications for major equipment, costs and the like. These relationships provide an economic and technically sound method of designing and building steam-electric generating plants, particularly for small and medium-size utility systems which cannot justify a large engineering department. We are not aware of any data which demonstrate that plants designed and constructed under such arrangements are less reliable than generating units built utilizing only the services of utility company personnel.

You may wish to discuss the role of architect/engineers with several such firms. We believe they have a continuing interest in providing for reliable plant operations in their designs, otherwise their reputations would suffer and further business opportunities would be limited.

ENCLOSURE 1

rec'd Off. Dir.:

Date 4/8/75

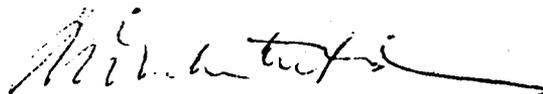
Dr Triner has asserted that "it is advantageous for the utilities to reduce front end costs even at the expense of accepting higher long-term operating and maintenance costs since the latter can be passed on to the customer." This suggests that Dr Triner is not familiar with the manner in which utility regulatory commissions carry out their responsibilities or with the attention utilities pay to plant performance. While regulatory bodies do not participate in the details of power plant design, they concern themselves with all costs upon which rates are based, including operating and maintenance expenses. This is particularly true at a time when utility rates are increasing due to rising costs of every description.

Operability and maintainability are important criteria used in developing power plant design. First costs are not the only consideration. In addition, throughout the life of an electric generating unit efforts are made to improve plant operations. The Edison Electric Institute's Prime Movers Committee provides one of the principal means of achieving this objective. At meetings of this committee, utility engineers responsible for power plant design and operations exchange information and experiences regarding plant performance. Through this forum, which is aided by the power plant operating statistics available through the annual EEI Equipment Availability Report, utility engineers develop modifications to plant designs and to operating and maintenance procedures in order to decrease plant outages. Problems of a generic nature are promptly brought to the attention of architect/engineers and appropriate equipment manufacturers. This procedure also involves a feedback for improving future plant and equipment design.

Primary responsibility for power plant reliability, both fossil and nuclear, should continue to rest with the electric utility industry. Because of their operating experience, utilities are best qualified to oversee the work of architect/engineers and equipment manufacturers to provide component and plant designs for maximum reliability. The establishment of nuclear power plant reliability criteria by NRC is unnecessary and would undoubtedly result in additional expense and delay in the construction of nuclear generating units.

We would welcome an opportunity to arrange for a group of utility managers with responsibilities for power plant design, construction, and operations to meet with your staff to discuss our activities regarding power plant reliability, as well as our views on methods to further improve generating unit availability.

Sincerely yours



W Donham Crawford  
President

Mr. W. Donham Crawford, President  
Edison Electric Institute  
90 Park Avenue  
New York, New York 10016

Dear Mr. Crawford:

Chairman Anders has asked me to thank you for your March 28, 1975, letter to him in regard to the article in the March 9, 1975, issue of the New York Times concerning an informal memorandum written to L. Manning Muntzing, the Director of Regulation, U. S. Atomic Energy Commission by Dr. Edward Triner, Director of the Office of Planning and Analysis, Directorate of Regulation.

In your letter, you expressed your views that the conclusions reached by Dr. Triner regarding utility companies' attitudes toward reactor reliability are erroneous. You also felt concern that the news article implies that the NRC has taken an official position on this matter. Your letter then went on to describe the efforts that the utilities are making to assure reliable and safe operation of nuclear power plants and that, because of these efforts, NRC should not establish nuclear power plant reliability criteria.

Let me assure you that the Nuclear Regulatory Commission has not taken an official position on this subject. The memorandum by Dr. Triner represents his point of view. I have enclosed a copy of that memorandum for your information. The issues raised by Dr. Triner are important ones affecting the interests of the general public as well as the public utility industry. However, as you can see, the issues and the recommendations were expressed in general terms designed primarily to stimulate further investigation and discussion.

**ENCLOSURE 2**

The staffs of the Commission's various program offices are currently evaluating the recommendations made in the memorandum. Before taking any action in this area, the staff will undoubtedly want to seek additional data and analyses from the general public and the utility industry. Your offer to arrange for a group of utility managers with responsibilities for power plant design, construction and operation to visit with our staff to discuss their activities regarding power plant reliability as well as additional views to improve generating unit availability is thus a welcome and timely one. The NRC staff will contact you by telephone to make further arrangements.

It may also be beneficial for you to meet at the same time with ERDA and FEA. These two agencies have formed a Joint Task Force to examine means of improving LWR availability. I shall provide ERDA and FEA with copies of your letter and this response.

Sincerely,

Lee V. Gossick  
Executive Director for Operations

Enclosure:  
Memo by Dr. E. Triner

December 2, 1974

L. Manning Muntzing, Director of Regulation

### IMPROVING THE RELIABILITY OF NUCLEAR POWER PLANTS - A POINT OF VIEW

Reference is made to the meeting you held on Friday afternoon, November 22, to discuss various aspects of the reliability of nuclear power plants. The following represents a point of view that has not had the benefit of detailed analysis. Nonetheless, it does pull together a number of the issues that need to be further considered in coming to grips with the important area of improving nuclear plant reliability. (I am using the term "improved reliability" in a broad sense to mean increasing power generation rather than a statistical definition of being able to predict failure with a high confidence factor.)

The subject of improving nuclear power plant reliability is at once controversial, technically and managerially challenging and fraught with potential problems as might be expected in almost any new Regulatory initiative that impacts industry. As can be seen by the attached article (Attachment 1) from Nucleonics Week, the subject of plant reliability is beginning to be of considerable concern to the industry taking the form of nuclear plant occupational exposure. If for no other reason, reliability and its corollary - maintainability - need to be aggressively pursued by Regulation. The following is a discussion of pertinent aspects of reliability for your consideration.

#### Is Improved Nuclear Power Plant Reliability in the Public Interest?

Frankly, I cannot think of one argument against this concept. I'm sure that the degree of reliability achieved when traded off against the cost expended for each incremental reliability gain would be the subject of cost benefit analysis. Aside from the detailed economical assessment of increased marginal utility, improving reliability has to have a beneficial impact upon both safety and economics. An increase in average nuclear power plant generation of 5% over the current 60% average capacity factor could result in a net capital cost avoidance of approximately 50 million dollars. Fewer power plants would be needed to produce the same amount of generation or, from a different point of view, a given number of nuclear power plants generating increased electrical output would reduce the need for oil-fired plants. I believe there is general agreement that improving the reliability of nuclear power plants is clearly in the public interest with the proviso that careful assessment be made of the comparison of incremental costs to increases in reliability.

Who Should Be Concerned with Achieving Enhanced Reliability?

It is apparent that the utilities in their role as customers for nuclear power plants have prime responsibility for assuring that the plants they purchase are both safe and cost effective. The reality, however, is that without external suasion, the likelihood of the utility customer taking aggressive action to improve plant reliability in the near term is not very great. This stems from a number of reasons.

By and large, the utilities are not that sophisticated. There is no evidence, for example, that they have contractually imposed reliability standards upon their A-Es. Very few of the utilities exercise much influence at all over the design process as it impacts reliability.

Utilities are also reluctant to incur additional design costs which would increase the front end load upon their requirement to generate construction capital. There is no incentive for them to make a total life cycle cost analysis that includes both design and construction cost and the thirty or forty years of operating and maintenance cost. Instead it is advantageous for the utilities to reduce front end costs even at the expense of acc-pting higher long term operating and maintenance costs since the latter can be passed on to the consumer.

Similarly, the A-Es who are largely responsible for power plant design have little incentive to consider increased reliability during the design process. Their interest is primarily short term. Once a plant is constructed, the A-E fade out of the picture. Except for a few utilities, like Duke Power, who not only design and build the plant as well as operate it, the organization responsible for design does not usually have to live with the results. Parenthetically, our very limited investigation into this area seems to indicate that Duke Power, because of the all inclusiveness of its responsibility for design, construction and operation, is more concerned with the question of reliability than most other utilities. They have production engineers assigned as an integral part of the design group.

The public utility commissions (PUC) have an interest in the cost to the consumer of plant operation. They certainly should be interested in the question of how to make a plant more reliable and more efficient. The fact is that they have little or no influence upon the design process.

Additionally, to my knowledge, the appointment of individuals to these commissions is not normally based upon their technical knowledge of the design and operation of a power plant. In all-too-many instances the quantity and quality of the staff assigned to this function within the state is inadequate. Should the PUCs become more concerned with improved reliability and actively take the initiative in this area, they would have to look to the Nuclear Regulatory Commission (NRC) to provide guidance related to the design of power plants to achieve increased reliability standards.

Clearly, the FEA has an organizational responsibility to improve energy availability. Hence, increased reliability of nuclear power plants should be of considerable interest to them. Realistically, they do not have any control over the nuclear power plants and certainly have no way of impacting design considerations without, similar to the PUCs, interacting closely with the NRC.

NRC has responsibility for the safety of nuclear power plants along with the public utilities. Insofar as reliability is closely connected to safety, the responsibility of NRC is well established. The question of how active a position Regulation should take to improve plant reliability arises as the connection between safety and reliability becomes more tenuous. A most important issue that NRC needs to consider is whether, in its public interest role, NRC should more broadly interpret its mandate to influence the design of nuclear power plants to improve reliability to insure not only safety but more cost effective operation as well.

#### What Should Be the Role of the NRC to Improve Nuclear Power Plants Reliability?

If we believe - as I firmly do - that the most significant impact upon plant reliability can be achieved during the design phase, then the NRC has probably the most important role to play of any Federal Agency in improving nuclear power plant reliability. The NRC is the only agency that regulates the design of nuclear power plants. The contributory roles that could be played by FPC, FEA and the PUCs could only be accomplished by some agreement with the NRC. Hence, regardless of the effort expended by other government agencies having an interest in improved nuclear power plant reliability, the NRC would necessarily be involved in order to enhance the likelihood of success.

#### What Actions Can the NRC Take?

Given that the NRC is willing to take on this new initiative, and it is determined to be in the NRC's mandate to do so, there are a number of steps that can be taken. All of these steps can be justified either within our legislative responsibilities for safety or our requirement to evaluate the need for power.

1. We could expand our program of failure data reporting by the utilities. These data would be collected and analyzed by the NRC and a systematic program developed to feed the results of this analysis back into the design process. Where we find that parts, components and systems are developing histories of failure, we would systematically force adjustments by modifying design requirements.
2. We can work with the PUCs and educate them concerning the relationship between design investment and operating and maintenance costs. This could result in the PUCs influencing the utilities to impose upon A-Es contractual requirements for improved reliability.
3. We could modify our application format to include the requirement that the utilities explicitly identify the plans they have for assuring high reliability. While this tends more toward "jawboning" than the establishment of firm mandates, it would start identifying an area of interest that over some period of time would result in improved sophistication on the part of the utilities. Additionally, at some point of time we could establish criteria against which the utilities' reliability plans could be evaluated. (This would lead us away from "jawboning" to a position of exercising positive control.)
4. The illustration that is sometimes used of NASA developing high reliability systems is not immediately transferrable to the NRC since NASA was the customer whereas NRC is not. However, there are lessons that can be learned if, as a Regulatory agency, the NRC develops an active program to transfer NASA's experience in reliability to the utilities. This transfer of experience can be done in connection with the action proposed in paragraph 3. above.
5. NRC could selectively interact with officials of the public utilities as well as with the architect and engineering companies to express our interests in improved system reliability and solicit their ideas on the subject. This could be followed by an industry wide workshop to air the question of improved reliability. Our approach to improving reliability would take the form of public airing of the issues and by so doing persuade the industry to take positive action.

In summary, improving the reliability of nuclear power plants is clearly in the public interest. While other government agencies including FEA,

FPC, the State PUCs all have some share of the responsibility in improving the efficiency and effectiveness of power plants, the NRC is the single agency with the best front end leverage. A decision needs to be made concerning how active a role NRC should take in executing its responsibility for protecting the public interests. If protecting the public interest is narrowly defined to mean only those aspects that are directly relatable to safety and environment, then the actions we're taking at present are probably adequate. If, however, public interest is interpreted more broadly, then the NRC may wish to consider new initiatives like those mentioned above to improve nuclear power plant reliability.

Edwin G. Triner, Director  
Office of Program Analysis -  
Regulation

Attachment:  
Article frm Nucleonics Week

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