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Chairman Greta Dicus
Commissioner Nils Diaz.
Commissioner Edward McGaffigan, Jr.
Commissioner Jeffrey Merrifield
U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Dear Commissioners:

A detailed review of the Safety Evaluation Report by the NRC staff for the San Onofre Task Zero (Pilot Program for Risk-Informed, Performance-Based Regulation) submittal of September 3, 1998 concerning the hydrogen control system convinced me that some immediate action by the NRC Commissioners would be beneficial. To this end, I request some time to talk to you about the two items listed below:

1. The San Onofre Task Zero submittal and the NRC Safety Evaluation Report. See Attachment 1 for relevant excerpts from the NRC Safety Evaluation Report and a possible NRC Commissioners' "interim" policy statement on design basis accident requirements versus severe accident information. .

2. Proposed changes to 10CFR50.44 and 10CFR50 Appendix A, General Design Criteria 41. See Attachment 2.

My purpose in requesting time to discuss these items is to start NRC Commissioner action to remedy any possible adverse conditions at the nuclear units because it is clear (at least to me) that the present regulations with regard to hydrogen control systems are detrimental to public health risk at some nuclear units and similar detrimental situations may apply to other systems as well (10 second diesel start time for example). I would be available for either discussions with individual Commissioners in your offices or at a public meeting at the convenience of the Commissioners. I will contact you in the near future to determine if you believe such discussion would be beneficial.

Sincerely,

Bob Christie

Bob Christie

Attachment 1

Subjects for discussion

A. Discussion item: Public Health Risk from Nuclear Electric Power Units.

Since the publication of the Reactor Safety Study (WASH 1400) in 1975, there has been a growing agreement between practitioners of Probabilistic Risk Assessment (both NRC and industry) and licensing personnel (both NRC and industry) that the public health risk from nuclear power units comes from the release of fission products from the reactor core during severe accidents, not from design basis accidents. I believe that this position has now been formally recognized by the staff of the NRC,

Excerpts from the San Onofre Task Zero Safety Evaluation Report:

1. "Subsequent risk studies have shown that the majority of risk to the public is from accident sequences that lead to containment failure or bypass, and that the contribution to risk from accident sequences involving hydrogen combustion is quite small."

2. "As mentioned in the previous section, the risk associated with hydrogen combustion is not from design-basis accidents but from severe accidents."

3. "The overall public risk and radiological consequences from reactor accidents is dominated by the more severe core damage accidents that involved containment failure or bypass."

B. Discussion item: Consideration of Design Basis Accidents

Since the publication of the Reactor Safety Study (WASH 1400) in 1975, there has been a growing agreement between practitioners of Probabilistic Risk Assessment and licensing personnel that compliance with some design basis accident requirements can be detrimental to public health risk. I believe that this position has now been formally recognized by the staff of the NRC.

Excerpts from the San Onofre Task Zero Safety Evaluation Report:

1. "Although the recombiners are effective in maintaining the Regulatory Guide 1.7 hydrogen concentration below the lower flammability limit of 4 volume percent, they are overwhelmed by the larger quantities of hydrogen associated with severe accidents which are typically released over a much shorter time period (e.g., 2 hours)."

2. "From this information, the NRC staff concludes that the quantity of hydrogen, prescribed by 10CFR50.44(d) and Regulatory Guide 1.7, which necessitates the need for hydrogen recombiners and its backup the hydrogen purge system is bounded by the hydrogen generated during a severe accident. The NRC staff finds that the relative importance of hydrogen combustion for large, dry containments with respect to containment failure to be quite low. This finding supports the argument that the hydrogen recombiners are insignificant from a containment integrity perspective."

3. "In a postulated Loss of Coolant Accident, the San Onofre Nuclear Generating Station Units 2 and 3 Emergency Operating Instructions direct the control room operators to monitor and control the hydrogen concentration inside the containment after they have carried out the steps to maintain and control the higher priority critical safety functions. The key operator actions in controlling the hydrogen concentration are to place the hydrogen recombiners or hydrogen purge system in operation which involves many procedural steps. These hydrogen control activities could distract operators from more important tasks in the early phases of accident mitigation and could have a negative impact on the higher priority critical operator actions."

C. Discussion item: Possible NRC Commissioner "Interim" Policy Statement - Design Basis Accident Requirements versus Severe Accident Information

As described in the San Onofre Safety Evaluation Report, the NRC staff granted an exemption to San Onofre from the design basis accident requirements for the hydrogen control system based on information obtained in the analysis of severe accidents. The evaluation by the NRC staff also indicated that adherence to the requirements of design basis accidents could have a detrimental effect on public health risk. It is likely that similar situations exist with respect to the hydrogen control systems at other nuclear units and also for other systems at San Onofre and other nuclear units. Therefore, it is my belief that the Commissioners of the Nuclear Regulatory Commission should consider issuing an "interim" policy statement concerning this situation.

As a "strawman" statement, I offer the following statement for consideration.:

"All situations where there is an indication that adherence to design basis requirements would be detrimental to public health risk must be brought to the immediate attention of the Executive Director of Operations of the Nuclear Regulatory Commission. The Executive Director of Operations will make a decision as to whether an exemption to the design basis requirements should be granted on an expedited basis."

I believe the objective in issuing such a "interim" policy statement would be to clarify the role of the NRC staff in making sure that appropriate high level attention is brought to all matters which are detrimental to public health risk. I believe that the NRC Commissioners would want all individuals, who may be aware of a situation where

adherence to design basis requirements could be adverse to public health risk, to bring the situation to the attention of some member of the NRC staff without fear of recrimination and regardless of the present licensing basis for each nuclear unit. In the present culture of licensing at nuclear electric power units, there are few individuals (either NRC or industry) who are foolhardy enough to suggest that adherence to the design basis accidents can be detrimental to safety. It is my opinion that this culture must change and that the change must have NRC Commissioner blessing. The policy statement is "interim" because the NRC Commissioners, the NRC staff, the nuclear industry and the public are in the process of changing the NRC regulations to eliminate situations where adherence to regulations could be adverse to the public health risk.

Attachment 2

Since I believe that that the present regulations concerning combustible gas control systems have serious flaws, I believe that it is incumbent on me to propose fixes to the regulations as necessary. My proposed revised 10CFR50.44, Standards for combustible gas control system in light-water-cooled power reactors, is as follows:

(a) An inerted reactor containment atmosphere shall be provided for each boiling light-water nuclear power reactor with a Mark I or Mark II type containment.

(b) Each licensee with a boiling light-water nuclear power reactor with a Mark III type of containment and each licensee with an ice condenser type of containment shall provide its nuclear power reactor containment with a hydrogen control system. The hydrogen control system must be capable of handling (based on realistic calculations) the hydrogen equivalent to that generated from a metal-water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the cladding surrounding the plenum volume).

(c All light water reactors with other types of containment than in (a) or (b), must demonstrate that the reactor containment (based on realistic calculations) can withstand, without any hydrogen control system, a hydrogen burn for accidents with a high probability of causing severe reactor core damage. If such an evaluation of reactor containment capability can not be demonstrated, then the licensee shall provide a hydrogen control system per the backfit process. This hydrogen control system must be capable of handling (based on realistic calculations) the hydrogen equivalent to that generated from a metal-water reaction involving 75% of the fuel cladding surrounding the active fuel region (excluding the cladding surrounding the plenum volume)

(d) Each light-water nuclear power reactor shall be provided with high point vents for the reactor coolant system, for the reactor vessel head, and for other systems required to maintain adequate reactor core cooling if the generation of noncondensible gases in these systems would realistically lead to severe reactor core damage during an accident. High point vents are not required, however, for the tubes in U-tube steam generators.

My proposed revised 10CDR50, Appendix A, General Design Criteria 41, Containment atmosphere cleanup, is as follows:.

As necessary, systems to control fission products, hydrogen, oxygen, and other substances which may be released into the reactor containment shall be provided, consistent with the functioning of other associated systems, to assure that reactor containment integrity is maintained for accidents where there is a high probability that fission products may be present in the reactor containment.