From: ANDERSON, Ellen
To: McCoppin, Michael
Subject: Regulatory Guide 1.143
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Mike,

Since our discussion concerning a possible revision to RG 1.143 during the public meeting on January 28, 2013, I received some comments from a licensee who appears to have some historical knowledge and insights regarding the initial development RG 1.143. I have received his approval to share these licensee's comments with you.

The licensee *concurs with the NRC that the writers of RG 1.143 did not intend to include all of NUREG/CR 5733 into the RG or they would have duplicated most of it or stated that you must follow certain sections of the NUREG. However, accepted academic and law practices dictate that when you footnote sentences in a document you intend that the footnote is used to inform the reader of further information or a "Basis" for the item footnoted. The NRC's un-stated premise that RG 1.143 is a "stand alone" document* ***is just not so****. There are two places where footnote #1 regarding NUREG 5733 is invoked. One is the introduction section on page 2 stating why the RG is being revised and most importantly the second is the very first sentence in section 5 of RG 1.143 regarding "...classifications for radwaste - management* ***facilities****..." When you read NUREG 5733 looking for info on these two RG 1.143 footnoted items you find the answers primarily in section 4 of the NUREG which is labeled* ***Regulatory Guide 1.143 Investigation****. Section 4 of NUREG 5733 at a minimum, and the two referenced DOE standards certainly should be used to inform the staff and licensees.*

As to reason for the RG changes one aspect was to bring the NRC guidance in line with the DOE standards by paralleling the three DOE facility hazard classifications. Section 4.6.4 of the NUREG states:

" In general, the radiological consequences from the design basis failure of nuclear power plant radwaste systems should result in much less effects to the public and collocated workers as compared to a reactor related accident. This is due primarily to the fact that there is normally no high energy driving force for the radwaste as compared to a reactor system failure. Secondly the specific activity and quantity of most of the radwaste systems are several orders of magnitude less than the reactor systems. For these reasons, we suggest developing safety criteria for radwaste SSC considerably less stringent or rigorous than that used for large power reactor safety related systems consistent with the approach taken by the US Department of Energy."

The section continues and compares the DOE facility classifications and references DOE standards 3009 and 1027. DOE 1027 defines the unmitigated release hazards by category with the highest category as one that the hazard analysis shows the potential for ***significant off-site consequences.*** *DOE standard 3009 appendix A clearly defines unmitigated release, and gives examples of what can be considered in that calculation. I believe the unmitigated release terminology actually comes from DOE vice NRC documents. Also importantly, DOE standards do not use the term "unmitigated dose". If there is any typo in NUREG 5733 and RG 1.143 it is in the use of unmitigated dose.*

Unmitigated dose is simply the dose you calculate due to the unmitigated release calculation. Applying restrictions on interpretation of unmitigated dose on top of the unmitigated release really is "double dipping". The final blow occurred when the staff insisted that we could not consider the exterior walls of the building as providing shielding. This is completely contrary to the DOE standards of which the NRC was to parallel.

*As to the 500 millirem number; section 4.7.3.2 labeled **10CFR20 criteria** states: "Further Subpart D sets the limits of the release rate (TEDE) to the general public at 500 millirem annually. 10CFR20 subpart D also limits on site personnel, radiation exposure (TEDE) to 5 Rem."*

The key word here is "limits". Clearly the author viewed the 500 millirem in 10CFR20 Subpart D as a limit.

Lastly I have personally talked to the principal author of NUREG 5733, and have this quote in writing: "It was never the intent of NUREG/CR 5733 to use a lower value such as 100 millirem . In my opinion, the 100 millirem limit at the compliance point is unreasonably conservative and is not consistent with historical limits for faulted accident scenarios."

Thanks, Mike and please let me know if you have any questions concerning these thoughts.

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