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Rules and Directives

Rules and Directives Branch  
Office of Administration  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Rockville, Maryland 20852

SUBJECT: Comments on Draft Regulatory Guide DG-1110, Proposed Revision 1 to  
Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment  
in Risk-Informed Decision on Plant-Specific Changes to the Licensing Basis"

Dear Sirs:

I have looked over the subject draft regulatory guide and have the following comments.

1. Section 1.5, page 5, first paragraph, third sentence. This sentence references reference 10, which is NUREG/CR-6595, "An Approach for Estimating the Frequencies of Various Containment Failure Modes and Bypass Events," as "... a simple screening method for assessing one measure used in the regulatory guide – large early release frequency." This report is easily misunderstood and would yield extremely conservative results if applied for determination of LERF. For example, Tables 3-2 and 3-3 indicate that the conditional containment failure probability is independent of both the reactor pressure (at vessel failure) and the presence (or absence) of water (Mark II) or igniters operability (Mark III). This implies, in the case of Mark III containments, that igniters are unimportant to containment survivability. Someone could cite this as a basis for removing the igniters, which the NRC would probably find unacceptable. Other information is needed to assure the information in this report is properly used. The simplified event trees, e.g., Figure 3-3, make an assumption related to the magnitude of the source term, which is assuming some level of core damage. Not all core damage events or sequences will result in a source term that is "large," i.e., big enough to result in one or more prompt fatalities. Furthermore, there is no provision for natural source term mitigation (decay, plateout, gravitational settling, agglomeration, scrubbing, etc.). Finally, there is no consideration of site characteristics. Therefore, I recommend the regulatory guide be revised to clearly and explicitly include the following provisions:
  - a) to only consider frequencies of those core damage sequences which best estimate analyses indicates would likely generate a sufficiently large source term that a best estimate consequence analysis would predict one or more prompt fatalities, given the release to the environment,
  - b) to consider natural fission product removal mechanisms along the pathway from the reactor core to the site boundary and beyond, as appropriate, and
  - c) to consider the site specific conditions, including, but not limited to, population

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distributions, wind rose, historical meteorological conditions, and protective action guidelines in best estimate consequence assessments to determine which sequences result in one or more prompt fatalities.

2. Ibid., fourth paragraph. Remove the space between the “T” and the “he” in the first word, it should be “The” not “T he.”
3. Section 2, page 8, footnote 5. This footnote states that LERF “is defined as the frequency of those accidents leading to significant, unmitigated releases from containment in a time frame prior to effective evacuation of the close-in population such that there is a potential for early health effects.” This is an unreasonable definition. The problem is that this definition is neither clear for licensees nor for the NRC. This definition raises questions with no answers. For example:
  - a) What is meant by “unmitigated releases?” Does this mean that one only has to consider those releases where there is no fission product attenuation? If this is the case, then no releases are in this category because there will always be natural attenuation (decay, agglomeration and gravitational settling, plateout, scrubbing, hygroscopic effects, dispersal, etc.), except potentially for bypass sequences, e.g., SGTRs. If this means filters or active systems, then the only sequences that would fit into this category would be short term station blackout sequences (with the same possible exception of bypass sequences).
  - b) What is the definition of “effective evacuation?” During hurricanes, there is always some small percentage of the population that will not leave the coast. If this happens around a nuclear power plant, have you had an “effective evacuation?” What percentage of the population has to stay before you no longer have had an “effective evacuation?” How does a licensee ensure, verify, or demonstrate that there will be or can be an “effective evacuation?” There are accident scenarios where evacuation is the wrong protective action to take. In some cases, sheltering some portion or all of the population results in the least exposure to the public. In these cases, if you take the responsible action to protect the public by sheltering, does this mean that you have not had an “effective evacuation” by virtue of not having any evacuation?
  - c) What is “close-in population?” Is it those people that live at the site boundary? Within 0.5 miles from the site? Within 10 miles from the site? Within 100 miles of the site? Or would it be those people that are in the path of the fission product plume? If this is the case, is this a “best estimate” assessment, i.e., does not consider plum meandering, or does it include adjacent sector evacuation? How many sectors? And out to how far?
  - d) What is the “potential for early health effects?” Does this mean that a best

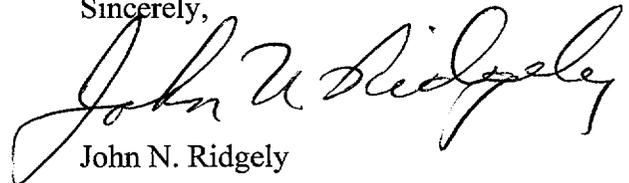
estimate offsite consequence code predicts one prompt fatality? Predicts 10 prompt fatalities? Predicts a 50/50 chance of a prompt fatality?

Without clear answers to these questions, how can this regulatory guide be applied by industry or the public responsibly?

- 4) This regulatory guide only addresses prompt (early) fatalities (LERF). This is not the only potential offsite consequence of the release of fission products to the environment. Why is there no consideration being given for latent cancer fatalities? Economic losses for disruption of the public due to evacuation? Local and national impacts due to loss of usable produce?
- 5) Section 2.2.6, Integrated Decisionmaking, should not have the section title on the last line of the page (see page 25) without any text.
- 6) Section 2.3, there are too many blank lines ahead of this title (see page 28).

Thank you for considering my comments.

Sincerely,

A handwritten signature in black ink that reads "John N. Ridgely". The signature is written in a cursive style with a large, sweeping initial "J".

John N. Ridgely