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General Comment

See attached file(s)

Attachments

Hybrid Comment EP for SMR r0

Strikes us that the effort is heavily loaded with methodology complications that inevitably lead to seemingly never-ending exercises. This type of ill-defined, over-regulation leads to grossly excessive costs -- likely multiples of tens of millions of dollars in our view.

The entire line of reasoning associated with "performance-based" and "risk-informed" cannot help but create confusion and constantly moving goal-posts because the terms are unbounded and lack reasonably quantifiable acceptance criteria. In our view as an advanced reactor developer, these costs greatly exceed those associated with simply adapting the basic methods used with conventional water reactors.

By way of an observation, the original methods used to establish the current 10-mile evacuation zones were remarkably prescient, as actual events have demonstrated. Adaptation of these earlier methods, realigned for fundamental technology differences associated with advanced-reactors, would be logical and relatively straightforward while also being based on precedence from a legalistic standpoint.

We propose the following:

Applicant *proposes* and *justifies* the following:

1. The most severe event for the purposes of establishing the evacuation zone. This would involve probability risk analysis (PRA) methods currently approved by the NRC.
2. The amount of radioactive material contained in the core(s), relative to the nominal baseline reactors used to establish the current 10-mile evacuation zone.
3. The amount of radioactive material released from the fuel for the specific severe event, relative to the nominal reactor used to establish the current 10-mile evacuation zone. As with the original methods, the availability of active core cooling methods must be conservatively discounted.
4. The amount of radioactive material released into the building(s) housing the reactor core(s), relative to the nominal baseline reactor used to establish the current 10-mile evacuation zone. As with the original methods, the availability of building active pressure suppression and cleansing methods must be conservatively discounted.
5. The amount of radioactive material that leaves the building(s) housing the reactor(s) and becomes airborne, relative to the nominal baseline reactor used to establish the current 10-mile evacuation zone.
6. Using the currently approved dose calculating methodology, identify the distance to achieve the current regulatory acceptable dose (Code of Federal Regulations), including nominal time frames, associated with the current 10 mile evacuation zone limit. The NRC must clearly identify this dose, as currently used for licensed reactors.
7. The evacuation zone is the distance between the site boundary and the distance determined by item (6).

The above would need to be cast into proper but *simple* regulatory language. Ground water contamination would follow the same principles.

The **NRC** *approves* the **Applicant's** proposed evacuation zone.

In our view, the NRC staff should **not** attempt to analyze myriads of events. That is the responsibility of the **Applicant**. Rather, the **Staff** must be satisfied, in a Due Diligence sense, that the **Applicant** has demonstrated that ultimately the public is properly protected.

The NRC should not attempt a-priori formulation of specific evacuations zones for the myriad of diverse reactor types under development because such a task is inherently unbounded in terms of effort.

Research efforts involving performance based criteria should be curtailed as ill-advised expenditures of taxpayer money, as the specific types of likely economically successful advanced reactors remain highly uncertain. Bluntly stated, the emergence of advanced reactors into US marketplace may never occur.

We suspect that advanced reactors employing diverse, passive decay heat removal methods and passive containments will ultimately arrive at evacuation zones at or very near the site boundary. Initial costs for justification of the proposed evacuation zone would likely be a few million dollars. However, much of the work (i.e. the PRAs) would be conducted in conjunction with design efforts, irrespective of the evacuation zone sub-set effort. Annual costs would be essentially zero for evacuation zones at the site boundary.

In closing, the NRC should approve (based on already well established dose acceptance standards and methods) the **Applicant's** proposal when and if such proposals actually emerge.

Michael F. Keller

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