

DSI-12

52

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The Honorable Shirley Ann Jackson  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Chairman Jackson:



**COMMENTS ON DIRECTION SETTING INITIATIVE 12**

I have chosen to offer some brief comments on the subject initiative as a private citizen and practitioner of risk assessment. As you know, I am a member of the Advisory Committee on Nuclear Waste. My comments on DSI-12 are more influenced by my experience in nuclear reactor safety than nuclear waste. As indicated by the Nuclear Regulatory Commission (NRC) authors, DSI-12 is much more driven by nuclear power safety considerations than issues associated with nuclear waste or other nuclear materials. In fact, one of my concerns about this initiative is that it fails to recognize the unique character of the safety issue in relation to nuclear waste. Thus, the real question of how to address the issue of risk-informed, performance-based regulation in relation to nuclear waste is simply not addressed, except to say that it is less of a problem than nuclear power safety.

In particular, the initiative is heavily oriented around *accidents* as the underpin of nuclear safety and makes the point that "the consequences of an accident in the nuclear materials area would be less severe and event sequences would be less complex than the consequences of an accident in the reactor area". This may be correct with respect to some nuclear materials and with respect to accidents as we usually perceive them. It is not correct, with respect to nuclear waste in the context of assuring the permanent disposal of the waste. The critical nuclear safety issue in the disposal of nuclear waste is not accidents, but rather the extremely long-term performance of the repository. In fact, to suggest that the nuclear waste safety issue is "less complex" is further evidence of failing to recognize the unique character of the nuclear waste safety issue in this initiative. What can be more complex than providing a scientific basis for the performance of a repository tens of thousands of years into the future? In fact, it is so complex that we have not been able to provide a scientific basis for demonstrating the safety of a high-level waste repository. The nuclear safety issue of high-level waste disposal is likely to be resolved only through the formulation of policy that fills the scientific gaps.

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Recognizing that there is little discussion in DSI-12 with respect to the use of risk-informed, performance-based analysis as a basis for regulating nuclear waste safety, the following few comments are offered in the spirit of the discussion as it was presented.

- While nuclear safety goals, backfit rules, NUREG-1150, and the PRA policy statement are indications of an NRC committed to transitioning to risk-based regulation, the evidence does not support such a commitment. In fact, the evidence supports the trend of more regulation, not less. The NRC, neither in its PRA policy statement nor its strategic planning, puts forth any concrete proposals for actions that would, indeed, lead to the reduction of burden on the part of industry or the regulators. Rather the discussion is one of risk assessments being "complementary" or "enhancements" to traditional methods. The entire strategy, at least in terms of a commitment, must be interpreted as "in addition to" rather than positive evidence of actual relief of regulatory burden.
- The proposals put forth by the NRC for increasing the use of probabilistic risk assessment methods may lead to extensive delays in the transition process. The result is the wasting of valuable resources and the possible demise of the nuclear option as a component of this country's energy mix. Rather than following a strategy of minor pilot applications of risk assessment to such issues as obtaining QA and tech spec relief, a much more creative approach would be to regulate an entire plant or other nuclear facility of some significance on a pilot basis on the basis of risk. Perhaps a collaboration with the Department of Energy to involve a nuclear waste facility would be a creative move. The "clean sheet of paper" approach could be designed to provide the necessary safety assurances while providing a data base free of current regulatory practices that would clearly begin to expose the strength and weaknesses of the existing regulations. It would be sending the signal that the NRC is serious about wanting more modern safety assessment and management methods and wanting to be the best regulator possible.

The implication of the discussion of DSI-12 is that existing deterministic-based regulations have demonstrated their correctness and that risk-based methods have yet to be proven. In my experience, the evidence does not support this view. More has been learned about what is important to nuclear plant safety through the application of PRA in the last decade than all of our experience with deterministic methods. PRA has allowed calibration of safety measures and safeguards, whereas the existing regulations do not. We should be challenging the regulations with PRA, not forcing the illogical exercise of measuring PRA against prescriptive rules that were to a considerable degree arbitrarily generated.

- The absence of substantive discussion of risk-informed, performance-based high-level waste regulation in DSI-12 is disturbing. The extensive performance assessment work in the nuclear waste field provides a considerable amount of actual experience in risk-informed, performance-based analysis. In many respects, it is a better example than nuclear plants since performance assessment has in fact evolved as a performance-based analysis and, with time, has become increasingly risk-informed. Again, this may be due to the "accident frequency mentality" noted above rather than the broader and more relevant issue of nuclear safety. The NRC, by not seriously reviewing the lessons learned from performance assessment work, may have missed an opportunity to offer concrete examples of specific risk-informed, performance-based safety analysis in its discussion of this initiative.

I greatly respect your leadership in bringing the risk-based regulation issue to the forefront of the staff, the advisory committees, the licensees, and the public. The concept of a "risk-informed, performance-based" approach is clearly the capstone of a rational transition to risk-based regulation. It is just not clear that the message of the idea has resulted in the kind of progress necessary to build confidence that the critically important goal of risk-based regulation can be achieved in any timely manner.

Very truly yours,



B. John Garrick

cc: Commissioner Rogers  
Commissioner Dicus  
Commissioner Diaz  
Commissioner McGaffigan, Jr.