

**Preliminary Comments on the
Proposed Revision of
NUREG-0654/FEMA-REP-1**

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General Comments

- UCS supports a more comprehensive, site-specific technical basis for development of protective action recommendations (PARs) following severe accidents or terrorist attacks
- However, we do not believe the NRC has developed an adequate technical foundation for the proposed revision to the PAR criteria
 - Better technical tools are needed
 - Uncertainties must be more fully accounted for
 - Fukushima lessons need to be better understood

PARs should be based on PAGs --- but they aren't

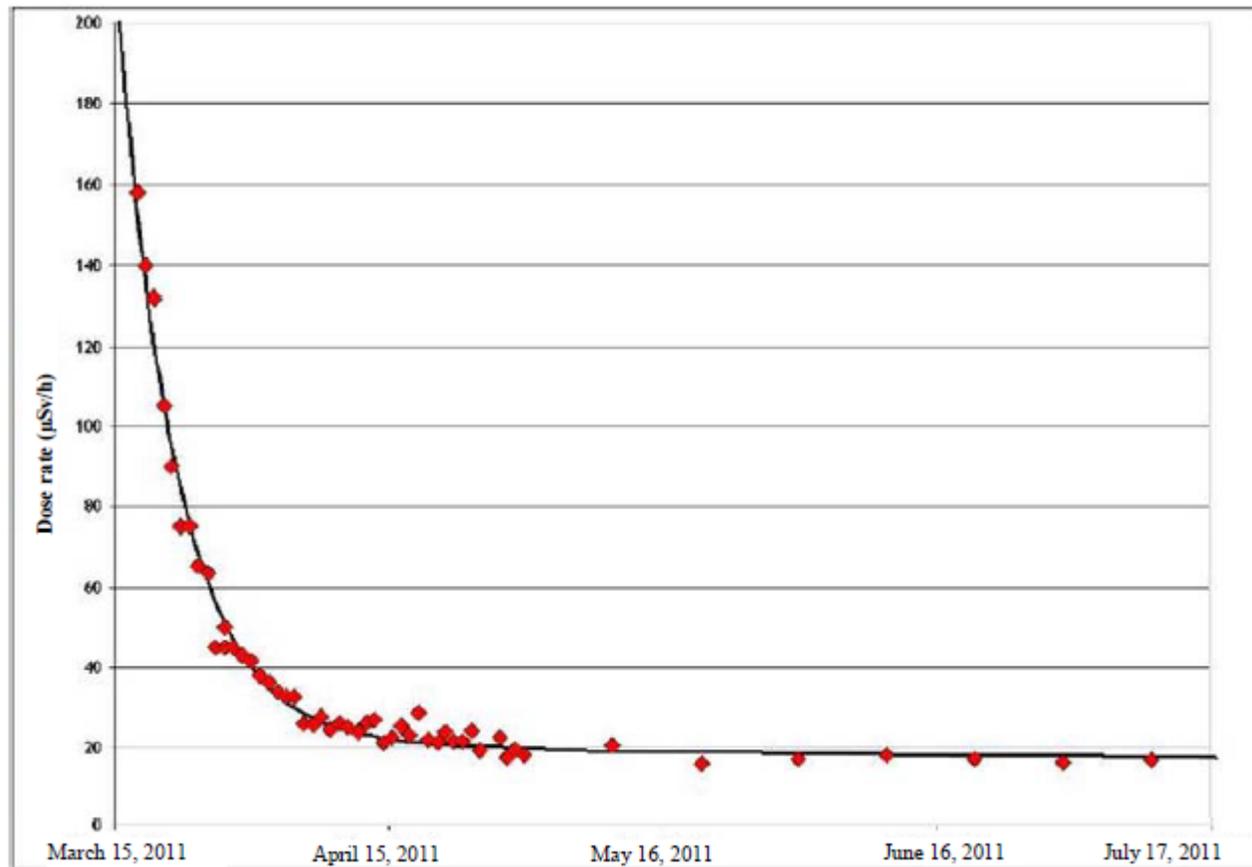
The size (about 10 miles radius) of the plume exposure EPZ was based primarily on the following considerations:

- a. projected doses from the traditional design basis accidents would not exceed Protective Action Guide levels outside the zone;
- b. projected doses from most core melt sequences would not exceed Protective Action Guide levels outside the zone;
- c. for the worst core melt sequences, immediate life threatening doses would generally not occur outside the zone;
- d. detailed planning within 10 miles would provide a substantial base for expansion of response efforts in the event that this proved necessary.

Fukushima ...

- Was not a “worst” core-melt sequence by any standard
 - Core melt did not begin for hours to days after initiation of accident
 - Large release did not occur until 24 hours after initiation of accident
 - Primary containment failure occurred late (if at all)
- Yet PAGs were likely exceeded well beyond 10 mile from the site

Dose rate in litate (19 miles NW)



The NRC PAR Study

- The PAR study uses a very limited set of crude models to derive broad conclusions
- All recommendations, including those for rapidly progressing source terms, need to be based on detailed site-specific analysis (not just ETEs)
- Some PAR study assumptions are unrealistic (all radiation exposure magically vanishes beyond the 10-mile EPZ)

Sheltering

- The effectiveness of sheltering is very sensitive to the specifications of the shelter and the duration of sheltering
- How representative are the sheltering-in-place (SIP) parameters used in the PAR study? For instance, do they adequately represent structures like trailer parks?
- Is a sheltering recommendation that air conditioning or heating must be turned off a reasonable option for all times of year, all climates and all populations?
- The PAR study rejects preferential sheltering (PS) as a viable strategy even though it found a significantly improved benefit over SIP and evacuation for several scenarios. It also found that PS would represent the highest “regulatory burden.”
- But wouldn't a well-designed PS system, with filtered ventilation, be an important option to consider?

Expansion of PARs

- The draft guidance provides a very cursory discussion of how PARs might be expanded based on accident and meteorology evolution
- Fukushima experience shows the great difficulty of making good recommendations given the absence of effluent monitor data, spotty field measurements, extensive lack of communication, accident complexity, rapid changes in meteorological conditions, and misjudgment of the extent of travel of severe releases
 - Led to serious overexposures among some evacuee cohorts
- Technology and infrastructure is simply not available to support fine-grained, real-time modifications to PARs

Conclusions

- Until these issues are fully explored and better understood on a site-specific basis, UCS does not support a generic change to the PARs to endorse SIP, for any source term
- The technical basis is insufficient to support the current 2-5 mile keyhole PAR
- Emphasis should remain on swift radial evacuation of all people who are at risk of exposures exceeding PAGs
 - This will likely include areas well beyond the current 10-mile EPZ