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**Comment On:** NRC-2010-0080-0009
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Comment on FR Doc # 2010-11842

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## Submitter Information

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## General Comment

Please see attached comments submitted on behalf of the NYS Department of Health.

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## Attachments

**NRC-2010-0080-DRAFT-0044.1:** Comment on FR Doc # 2010-11842

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Richard F. Daines, M.D.
*Commissioner*

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*Executive Deputy Commissioner*

August 6, 2010

Ms. Cynthia K. Bladey
Acting Chief, Rulemaking and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: NUREG-0654/FEMA-REP, Rev. 1, Supplement 3, Guidance for Protective Action Recommendations for General Emergencies as published March 8, 2010 for public comment

Dear Ms. Bladey:

Thank you for the opportunity to review NUREG-0654/FEMA-REP, Rev. 1, Supplement 3, "***Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants: Guidance for Protective Action Recommendations for General Emergencies.***"

The NYS Department of Health has the following general comments:

- The implementation schedule is not realistic. There are multiple rulemakings in progress and multiple guidance documents under revision. There needs to be coordination of these efforts such that licensees and OROs can have all of the necessary information available to revise their procedures. A specific example is the need to consider evacuation time estimates (ETEs) in the revised PAR methodology. All licensees will need to revise their ETEs based on the new ETE rulemaking and 2010 census. The schedule for implementation of the revised PAR methodology should take the timetable for completion of these other efforts into consideration.

- The document blurs the lines between the licensee and the OROs. Licensee and ORO actions are discussed concurrently. It is not always clear which entity is expected to have the responsibility. Many issues traditionally under the auspices of the ORO (i.e., impediments to evacuation) now have to be considered by the licensee and/or discussed with the ORO during the PAR process.

- Information from NRC's recent SOARCA study is not considered in the document. Preliminary information from the SOARCA study indicates that there will be ramifications for radiological emergency planning, including potential revisions to the size of the EPZ and need for protective actions. Recommended revisions to the PAR process such as incorporation of staged and lateral evacuations should be evaluated against the findings of the SOARCA.

In addition to these general comments, the NYS Department of Health has several detailed comments on the document. These comments are contained in the attachment.

Thank you for your consideration of these comments.

Sincerely,

Stephen M. Gavitt, CHP
Director
Bureau of Environmental Radiation Protection

**NUREG-0654, Supp. 3 – NYSDOH Comments**

SECTION 1

- The document states that "The ACRS...recommended against making PAR strategies overly complicated, such that they slow down decision-making during emergencies." However concepts presented in this document appear to complicate PAR decision-making, not simplify it.

- The PAR study used a hypothetical site with generic weather and a 10-mile EPZ population of 80,000 (100 residents per square kilometer). While we recognize that certain EPZ population assumptions are needed in order to do the analysis, NRC should recognize that this hypothetical site does not actually represent any particular site and that differences in total population, population density and population distribution may render the conclusions on relative efficacy of different PAR strategies inapplicable to any nuclear power plant site.

- The document talks about *precautionary protective actions.* EPA-400 defines Protective Action as "an activity conducted in response to an incident or potential incident to avoid or reduce radiation dose to members of the public." By this definition, only evacuation and sheltering-in-place can be considered protective actions. All other actions...closing schools and parks, heightened preparedness, etc...should be termed "precautionary actions" since they do not fit the dose avoidance definition of protective action listed in EPA-400.

SECTION 2

- The document states that attachment PAR Logic Diagram is intended to be modified to be used by shift personnel prior to augmented ERO being ready. However, the diagram has several blocks for decisions to be made several hours after declaration of GE when shift personnel would no longer be making those decisions.

SECTION 2.1

- Part of the reason for developing EALs was to standardize response actions for emergencies with similar expected consequences. An ORO response to an ALERT or SAE is the same regardless of what plant conditions initiated the emergency declaration. The document discusses "severe accidents" and " general emergencies" and states that they are not synonymous. This implies that protective action recommendations and ORO actions for a severe accident should be different from those for a general emergency. This essentially adds a fifth category to the EAL scheme, which is not defined in any plant's or ORO's emergency procedures. Please clarify the difference between a severe accident and a general emergency. The need for a fifth EAL should be determined through an industry-wide review of EAL bases.

- The document further states "This guidance recognizes the disparity between a severe accident and a General Emergency and requires evacuation (or shelter-in-place as appropriate) of the closest population; it provides a decision point for increasing protective actions after that initial protective action." The PAR logic diagram includes a *rapidly progressing* severe accident. Is this different from a severe accident or are all severe accidents rapidly progressing? Please clarify.

- The document states "The PAR logic diagram in this guidance reflects this probabilistic perspective in a qualitative manner, while requiring escalated protective actions, when appropriate." This statement is confusing. Please clarify.

- The document states that "the PAR diagram provides a decision point for increase of protective actions after initial protective actions." This decision point is based on whether it is "safer to do so," but this term is not defined. One would assume that "safer to do so" occurs at the point where the dose to a member of the public from remaining sheltered would exceed the dose to a member of the public who proceeded to evacuate. This is a complicated analysis that requires numerous assumptions to calculate. Guidance on performing this "safer to do so" assessment should be included in the document.

- The document states that "The PAR diagram recognizes that it may be some time before GE can be terminated and provides decision point for expanding protective actions based on plant status." This decision point is based on whether or not GE conditions remain. The notes accompanying this decision box talk about the plant condition that triggered the GE declaration and whether or not there is a containment source term that exceeds the GE EAL. Usually, if you are at the point where a GE should be declared, there are multiple plant conditions that could be the triggering factor, so even if the condition that the GE was declared on no longer exists, there could still be other conditions that warrant a GE declaration. In addition, there is not a GE EAL basis that specifically includes containment source term. Please clarify.

SECTION 2.2

- The document states that "... protective actions should not be terminated by OROs until fully discussed among responsible State and local officials, with the licensee supplying input regarding plant status. The PAR logic diagram recognizes this path and provides decision points for protective actions, based on the current plant status." The PAR logic diagram has decision points to increase protective actions, but there does not appear to be any decision points for relaxing protective actions. Please clarify.

SECTION 2.3

- Change "precautionary protective actions" to "precautionary actions."

- The document states that the PAR Study and the historical record illustrate that precautionary protective actions are prudent only for a Site Area Emergency that is a precursor to a more serious event. How was this determined, since there has not been a Site Area Emergency that evolved into a more serious event?

- The document states that NRC only recommends precautionary protective actions for SAEs that are likely to escalate. An industry-wide review of EAL bases should be performed to determine which SAEs are likely to escalate.

- It appears from the document that the NRC expects licensees to make precautionary PARs at SAE or Alert. Traditionally, the recommendation for precautionary actions has been within the purview of the OROs.

- Section 2.3 defines Heightened Preparedness as a precautionary protective action; however, the glossary defines it as a protective action. Heightened Preparedness should be defined as a precautionary action since it does not result in decreased dose.

SECTION 2.4

- This entire section needs to be expanded and explained. Additional guidance is needed on when and how to do the wind persistence study as described in the document.

- Wind persistence varies with time of day and time of year. Does NRC expect that licensees will have multiple protective action strategies based on wind persistence data for various times of day/year?

- The document states that a wind persistence analysis is recommended when site meteorology includes shifting wind directions on a time scale that is less than the ETE for the downwind sectors. Note 4 of the PAR logic diagram says that one may need to evacuate more than 3 sectors wide when wind persistence analysis shows wind shifts more often than ETE for downwind sectors. Which ETE should be used for this analysis? How much variation in wind direction is needed to decide that additional sectors are warranted? How does one determine how many more sectors are needed?

- Use of wind persistence data in the PAR decision-making process seems to negate the use of actual meteorology and forecast information. It would seem that using actual meteorology would be most protective of the public. Please describe how actual meteorology/forecast data and wind persistence information would be used when making PARs.

SECTION 3

- The document states "As the PAR Study indicates, a nuclear power plant accident that leads to a rapidly progressing release is a very unlikely scenario..." This statement should reference the SOARCA, not the PAR study.

- The document states "A rapidly progressing event, in this context, is defined as a scenario in which a large radioactive release may occur in less than 1 hour." Less than 1 hour after what? Please clarify.

- The document states "The analysis evaluated the efficacy of protective actions for the 0 to 2 mile, 2 to 5 mile, and 5 to 10 mile (0 to 3.2 kilometer, 3.2 to 8 kilometer, and 8 to 16 kilometer) zones around a plant." Did the analysis include the entire 2, 5, 10 mile zones or the keyhole? Please clarify.

- What is meant by "efficacy" of protective actions? How is this determined?

- The document states that "For sites where the 90-percent ETE for the general public of the full EPZ is less than about 3 hours, results showed that, for the rapidly progressing scenario, evacuation is the most appropriate protective action" and "2 to 5 mile (3.2 to 8 kilometer) zone – If the 90 percent ETE for this area is 3 hours or less, immediately evacuate." However Note 9 of the PAR logic

diagram bases decisions on a <2 hour ETE for the 2 mile EPZ and a <3 hour ETE for 2-5 miles in the downwind sectors. These statements should be consistent. Please revise document accordingly.

- Note 9 on the PAR logic diagram states that the 5-10 mile zone should "Shelter-in-place, then evacuate when "safe to do so." Please define "safe to do so" and provide guidance on how this is determined.

- The document states that "Extreme weather conditions such as inversion, significant precipitation, or no wind, can change the efficacy of shelter-in-place and make evacuation the preferred protective action. The PAR logic diagram guidance reflects the consideration of weather." The PAR logic diagram only mentions wind persistence, not other weather phenomena. Please provide guidance on how these other weather phenomena should be addressed.

SECTION 4

- The document states that " when radiological assessment shows an ongoing release or containment source term is not sufficient to cause exposures in excess of EPA protective action guidelines, it would be inappropriate for licensees to expand PARs based only on changes in wind direction." EPA-400 states that for emergencies with the potential for offsite consequences, immediate evacuation or sheltering of designated populations should occur without waiting for release rate information or environmental measurements. By definition, at a GE, releases can be reasonably expected to exceed EPA PAGs offsite for more than the immediate site area. Standard protective actions for a GE are to evacuate (or shelter-in-place) the area two miles around and 5 miles downwind of the plant. Although the guidance states that it would be inappropriate for licensees to expand PARs based only on changes in wind direction, OROs would likely expect that the licensee would recommend protective actions for additional sectors in the new downwind direction, as this would be consistent with other guidance. Since it appears that one purpose of this revision to Supplement 3 is to encourage agreement between licensees and OROs on appropriate protective actions, it should not include an action that is contrary to what OROs would likely expect to happen. Please revise the document to remove this section.

GLOSSARY

- Heightened Preparedness in not a *protective* action. It is a *precautionary* action. Please revise.

- Glossary should be expanded to include additional terms such as: safer to do so, GE conditions remain, severe accident, rapidly progressing severe accident, etc.

ATTACHMENT

- The PAR logic diagram essentially changes the standard GE PAR to evacuate 0-2 miles, shelter-in-place 2-5 miles downwind and place the remainder of the EPZ on heightened preparedness. For sites with high stacks, elevated releases can result in higher doses further from the plant. The document should include consideration of this scenario when staged evacuation is being contemplated.

- The document states that the notes are included with the PAR logic diagram to assist OROs and licensees when they modify the diagram to fit their specific needs. The document should be revised to describe which parts of the logic diagram must remain for the licensee and ORO to meet the intent of the guidance.

- The document states that the PAR diagram is intended to be implemented without conferring with the ORO, however, some listed actions require conferring with the ORO prior to implementing the action. It is not likely that shift staff would be able to do this as they are busy trying to mitigate the accident and they only have 15 minutes to make a PAR after declaring an emergency.

- For completeness, the PAR logic diagram should be revised to include an arrow between the box that says "Expand PAR only to areas where PAGs could be exceeded" and "Continue assessment."

- For accidents other than a rapidly progressing severe accident, the PAR logic diagram has an evacuation impediment decision box. This decision is not included in the rapidly progressing severe accident path. Please explain why an evaluation of evacuation impediments is not needed for a rapidly progressing severe accident.

- Note 7 states that the licensee should evaluate the need to expand the PAR based on plant conditions at the site specific 2-mile, 90% ETE and that this evaluation should be done by shift staff without conferring with OROs. At most sites, the 2-mile, 90% ETE is longer than the amount of time needed for the licensee to get their augmented ERO in place, therefore this evaluation would not be made by shift personnel. Please revise the document accordingly.

- Note 7 states that only day and nighttime ETEs should be considered. However, some sites have weather or special events that significantly change their ETEs. If the requirement for ETE consideration when making PARs remains in the document, it should be revised to state that the licensee should use the most appropriate ETE for the time of the emergency.

- Note 7 states that if the ERO is activated, the licensee should be able to confer with the ORO. It is implied that they should confer about the status of the evacuation, but this is not stated explicitly. Please clarify.

- Note 8 states that the licensee should revise the PAR for an evacuation support impediment at a predetermined time. This guidance places an undue burden on the licensee to keep track of when they need to revise the PAR and should be eliminated. The licensee should make the PAR based on plant conditions, as if an evacuation support impediment did not exist. The document should be revised to state that it is the responsibility of the ORO to revise the PAD when evacuation support is in place.

- Note 8 states that within 1 hour of the initial PAR for a hostile action event, the licensee should confer with the ORO regarding a change in PAR. This guidance places an undue burden on the licensee to keep track of when they need to discuss changing the PAR and should be eliminated. The document should be revised to state that it is the responsibility of the ORO to initiate these discussions.

- Note 9 describes various evacuation/sheltering scenarios for a rapidly progressing severe accident. These times are inconsistent with the text in section 3 of the document. Please revise the document accordingly or explain the discrepancy.

- Note 10 states that the 2-10 mile downwind sectors should be evacuated when the 0-2 mile evacuation is nearing completion. This implies that this type of accident will produce a radiological release that requires protective actions based on dose assessment out to 10 miles. This is inconsistent with preliminary information from the SOARCA, which says that a 4-mile EPZ is sufficient.

- Note 10 states that for the hypothetical site analyzed, 4 hours is the break-even point for when sheltering-in-place provides a reduction in dose to a member of the public over the dose received during an evacuation. This break-even point will vary depending on EPZ population distribution and characteristics of the radiological release. The document should be revised to provide guidance for how to determine this break-even point.

APPENDIX

- Most of the information contained in the Appendix is standard public information guidance. While useful, it does not belong in this document. It should be published either as a separate document or incorporated into the public information NUREG currently in progress.

- The title of the document is "Criteria for the Preparation and Evaluation...." Does this mean that this Appendix is meant to be used as a checklist for evaluating the licensee's communications? Please clarify.