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3/08/2010
75 FR 10524

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AUG -9 PM 2:30

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August 06, 2010
ENOC-10-00027

Ms. Cynthia Bladey, Chief
Rules, Announcements, and Directives Branch
Office of Administration
Mail Stop: TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Entergy Nuclear Operations, Inc. Comments on NRC Proposed Draft
NUREG-0654 FEMA-REP-1, Revision 1, Supplement 3, "Guidance for Protective
Action Recommendations for General Emergencies; Draft for Comment," Federal
Register (FR Vol. 75, No. 44), Docket ID NRC-2010-0080

- REFERENCES:
1. June 8, 2010 NEI letter to Cynthia Bladey from Susan Perkins-Grew, NEI
Comments on NRC Proposed Draft NUREG-0654 FEMA-REP-1,
Revision 1, Supplement 3
 2. <http://www.regulations.gov> document NRC -2010-0080
 3. IPEC Letter to Chief, Rulemaking, Announcements and Directives Branch
(RDB), dated July 21, 2010 regarding NUREG-0654/FEMA-REP-1/Rev.1,
Supplement 3.

Dear Ms. Bladey:

This cover letter and the attached comments on NRC Docket ID NRC-2010-0080 are submitted
by Entergy Nuclear Operations, Inc. on behalf of the following nuclear power plants:

- Arkansas Nuclear One
- River Bend Nuclear Station
- Waterford-3 Nuclear Station
- Grand Gulf Nuclear Station
- Pilgrim Nuclear Power Station
- Vermont Yankee Nuclear Power Station
- Indian Point Energy Center
- James A FitzPatrick Nuclear Power Station
- Palisades Nuclear Power Station

Entergy appreciate the opportunity to comment on the Draft NUREG-0654 FEMA-REP-1,
Revision 1, Supplement 3, "Guidance for Protective Action Recommendations for General
Emergencies." We hope that you will find these comments useful as you work to finalize the
proposed guidance.

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Call = R. Sullivan (RX53)

In addition to our comments presented herein, Entergy endorses the comments provided by the Nuclear Energy Institute in its letter dated June 8, 2010. Entergy personnel participated on the task force that developed the NEI comments.

The following overview highlights the particular aspects of Entergy's comments that we wish to emphasize:

Implementation: It is not clear how the draft Supplement 3 document is to be implemented. The Protective Action Recommendation (PAR) Study is predicated on a hypothetical Emergency Planning Zone (EPZ) and subsequently presents Protective Action Strategy (PAS) guidance as if EPZs were homogenous. This is not the case for most EPZs in the country.

The draft Supplement 3 document contains a protective action logic flow diagram for use by licensees and offsite response organizations in developing their site-specific protective action strategies. The flow diagram, while useful in establishing some considerations, does not provide for a consistent process that will always result in a well considered pre-planned response to a General Emergency at a nuclear power facility.

Entergy proposes an alternate methodology that could better serve the user in the implementation of the document. This proposal is discussed in Attachment 1, Comment #1. The full example of this alternate methodology is provided in Attachment 2.

SOARCA: Entergy strongly believes that the findings associated with the State of the Art Reactor Consequence Analysis (SOARCA) being performed for the NRC by the Sandia National Laboratory are materially important to the content of the proposed draft document. Because the issuance of the final SOARCA study is anticipated in the foreseeable future, the proposed Supplement should incorporate pertinent elements of the SOARCA. Entergy provides a more detailed discussion on SOARCA in Attachment 1, Comment #2.

Wind Shift PAR: Information associated with PARs for wind shifts is contained in Section 4 of the proposed Supplement 3. Detail contained in this section is insufficient to appropriately inform licensees and Off-Site Response Organizations (OROs) on the implementing guidance regarding wind shifts. In addition, Entergy believes that screening criteria should be used by the licensee emergency response organization as a tool in determining when it is appropriate to use PARs based on dose assessment information in preference to PARs based on plant conditions. Entergy's comments on this subject are provided in Attachment 1, Comment #3.

Emergency Alerting and Instructions: The Appendix of the proposed Supplement 3 introduces subject matter related to public information and is not within the scope of guidance and criteria for public protective actions for the general public. Therefore, Entergy recommends removal of this section from Supplement 3 and relocation of this information to a document intended to provide similar guidance to OROs such as the FEMA REP Program Manual. Entergy provides discussion on the draft Supplement 3 Appendix in Attachment 1, Comment #7.

If you have any questions, please contact Jack Lewis of our Nuclear Emergency Preparedness Projects Group at (504) 739-6624.

Sincerely,

A handwritten signature in black ink, appearing to be 'JFM', written in a cursive style.

JFM/jjl/aye

ATTACHMENTS:

1. Entergy Nuclear Operations, Inc. Comments on Draft NUREG 0654 Supplement 3
2. Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

Entergy Corporation Comments on Draft NUREG-0654 Supplement 3

COMMENT #1 – Implementation Methodology

Entergy views the PAR logic diagram provided in the draft Supplement 3 as a generic example of one way to develop site specific protective action logic based on evacuation time estimates and surrounding population densities. Depending on site specific characteristics, the PAR logic diagram requires modification to accommodate these characteristics.

The discussion in this section of the Entergy comments recommends a different implementation approach.

Site Differences:

More specificity on the application of the Protective Action Strategy (PAS) guidance presented in Supplement 3 is required. The Protective Action Recommendation (PAR) Study is predicated on a hypothetical EPZ and subsequently presents PAS guidance as if EPZs were homogenous with respect to population demographics and road network features.

Page 2, paragraph 1 states:

The PAR Study modeled a hypothetical EPZ with generic weather and a population of about 80,000 people based on 100 residents per square kilometer in the 10-mile (16-kilometer) plume exposure pathway emergency planning zone (EPZ).

As NRC states, this is a hypothetical EPZ with a large population with uniform distribution. This type of population distribution around nuclear power plants is not representative of actual conditions. Industry EPZs have varying population configurations. For example:

- Very low population with corresponding short Evacuation Travel Time Estimates (ETEs) for the 5 mile radius around the plant. In this case staged evacuation may have little value.
- A large variation in population distribution within the 2 to 5 mile radius with low population elsewhere in the 10-mile EPZ. While staged evacuation may be of benefit for one sector, staged evacuation may not be of value in other sectors.

In addition to varying population distributions, varying and unique EPZ characteristics such as road networks, topography, and coastal locations exist as well, creating individual considerations for many sites. Therefore, a description of how the Supplement would apply to the various population distributions, EPZ characteristics, and evacuation time estimates (ETEs) should be more deliberate and specific.

Clarity of Implementation Instructions

Entergy believes that the draft Supplement 3 does not provide sufficient guidance to licensees and OROs on how they would go about making the required site-specific modifications to the generic logic diagram contained in the document. In addition, the document blurs the distinction between onsite and offsite responsibilities.

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Supplement 3 does provide some general implementing instructions. These instructions are excerpted from the document and provided below. Key text is underlined:

Page iii, paragraph 1 states:

The guidance suggests that nuclear power plant licensees and the offsite response organizations (OROs) responsible for implementing protective actions discuss and agree to various elements and criteria of the PAR logic diagram contained in the attachment to this supplement. This diagram should be used to develop a site-specific PAR logic diagram for use by the licensee's emergency response organization. The NRC expects that nuclear power plant licensees will develop PAR procedures that embody ORO input at the various decision points as identified in the guidance, and that such input will guide criteria used in the PAR logic diagram.

Page 2, paragraph 5 states:

Staged evacuation should be considered because it is more protective than immediate radial evacuation. Although in some scenarios, the improved benefit of staged evacuation is not large, the strategy decreases demand on offsite response organization resources as well as disruption to the public.

Page 5, paragraph 1

The Attachment to this supplement contains a PAR logic diagram, which should be used to develop a site-specific PAR logic diagram for use by the licensee's emergency response organization (ERO). The PAR Logic Diagram (Attachment 1) is not intended to be used without site-specific modification. The site-specific PAR logic diagram is expected to be contained in emergency plan implementing procedures used by the nuclear power plant ERO. The Attachment is intended to guide the development of a PAR procedure for operational shift personnel and is designed to be implemented rapidly without the initial need to confer with offsite response organization (ORO) personnel.

Page 5, Paragraph 3 states:

The NRC expects that nuclear power plant licensees will develop PAR procedures that include ORO input at various decision points, identified in the guidance, and that this input will guide the criteria used in the PAR logic diagram.

From a review of the underlined key text, it is clear that the Protective Action Strategies (PAS) presented in the Supplement and in the logic diagram in the attachment should be:

- Discussed between the licensee and ORO and result in agreement to various inputs and decision points for the PAS
- Influenced by site-specific and EPZ-specific considerations

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In other words, actual EPZ characteristics and real-time conditions need to drive which PAS is used and those that are to be excluded. The guidance should be clear that it is appropriate to employ a limited number of PAS and/or to modify certain PAS that best suit the population configuration, EPZ characteristics and real-time EPZ conditions. Based on the selection of PAS by the licensee and its OROs that are deemed appropriate for a specific EPZ, then the specific range of protective action recommendations required by 10 CFR 50.47(b)10 would be determined.

Alternate Approach in Implementation of Protective Action Strategies

Entergy recommends that a systematic process be used by each licensee. This process should result in similar PARs for EPZs that have similar characteristics.

The proposed alternate approach guides the implementer to consider each suggested PAS, provides a place to provide detailed instruction, where required, on how to evaluate the PAS, makes a determination of whether to implement or to modify the strategy and provides a basis for each selection and pertinent decision. The intent is to provide clear instruction on implementation to facilitate a systematic approach for the licensee and its OROs to collaboratively evaluate each strategy, make a determination of effectiveness for the specific EPZ characteristics, and in most cases, agree on decision points and critical inputs. This would lead to a more consistent implementation of the guidance.

In addition, the final product that is produced and used by licensees to generate PARs may not take the form of a logic diagram. This fact should be acknowledged in and accepted by Supplement 3.

It is recommended that each PAS in the supplement be listed in the format presented in Attachment 2 hereto and that amplifying instructions guiding implementation be formulated for each PAS. The notes attached to the PAR logic diagram can be developed from the instructions as is illustrated in Attachment 2, "Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations".

During implementation of the supplement at each site, the second column in the alternative methodology would be completed. Each of the PAS contained in Supplement 3 would be evaluated, and a basis for the decision to use/not use or modify provided. As shown in Attachment 2, the final PARs would be informed by this analysis and a final logic diagram (or other decision making tool) developed.

The evaluation and analysis performed during discussions by the licensee and OROs and completed in this matrix (shown in Attachment 2) can be used to provide documentation for subsequent NRC/FEMA review and inspection.

Entergy believes that this alternate methodology is a preferable approach to present and implement the logic contained in the supplement.

Entergy notes that the alternate process presented in Attachment 2 is based on the current content of the draft Supplement 3. As these and other stakeholder comments are dispositioned

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by the NRC, changes to the alternate methodology may be required. Entergy further offers that NRC may ultimately wish to choose to allow industry to develop the information contained in an alternate methodology based on the final version of Supplement 3, then review and endorse this industry-generated document as acceptable guidance for the generation of site-specific PAS.

Comment #2 – SOARCA/Use of Rapidly Progressing Severe Accident

The NRC established a study of severe accident phenomenology and consequences by the Sandia National Laboratory known as the State-of-the-Art Reactor Consequence Analysis (SOARCA). This multi-year study is nearing the point at which it will undergo independent peer technical review and then a separate technical review by the Advisory Committee on Reactor Safeguards (ACRS). Early findings from the SOARCA have been presented in various forums, including the NRC's Regulatory Information Conference (RIC) in March 2009 and the Workshop on Implementation of Severe Accident Management (SAM) Measures convened in October 2009 by the Organization for Economic Cooperation and Development (OECD).

The preliminary results reported at the March 2009 RIC and the OECD Workshop provided valuable insights into the findings of the SOARCA. It appears that the findings are materially important to the content of the proposed Supplement 3 to NUREG-0654. The SOARCA findings are of such significance that Entergy believes it is particularly prudent for NRC to take them into consideration in the development of any revisions to NUREG-0654 and its supplements. Clearly the SOARCA findings are preliminary and subject to change. However, the SOARCA findings are of particular relevance to Supplement 3 because they have the potential for substantially modifying the nature of emergency planning for nuclear power reactors and because those findings are likely to be issued in the relatively near term. Entergy strongly recommends that any revisions to NUREG-0654 Supplement 3 be deferred until the final SOARCA is released, its implications evaluated and, as may be appropriate, its findings are incorporated into the bases for radiological emergency planning in the United States. Some examples of the preliminary findings and their implications (available on the NRC internet website), are provided as follows:

From the March 2009 RIC presentation *Phenomenological Advance of Severe Accident Progression* by R.O. Gauntt, Sandia National Laboratory (<http://www.nrc.gov/about-nrc/regulatory/research/soar/soarca-ric-2009-b.pdf>):

- Severe accidents progress significantly more slowly than in current models
- There is significantly more fission product retention in the reactor coolant system and in containment than predicted in current models
- Slower accident progression allows for more time to accomplish accident mitigation
- Overall source terms are significantly reduced from those predicted in current models

From the March 2009 RIC presentation *Updated Accident Progression Analyses* by Jason Schaperow, NRC Office of Nuclear Regulatory Research (<http://www.nrc.gov/about-nrc/regulatory/research/soar/soarca-ric-2009-a.ppt>):

- All events can reasonably be mitigated
- For unmitigated cases there is no large early release fraction (LERF)

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- Releases are dramatically smaller and delayed from the 1982 Siting Study

From the October 2009 OECD workshop presentation *Best-Estimate Calculations of Unmitigated Severe Accidents in State-of-the-Art Reactor Consequence Analyses* by Jason H. Schaperow, et al:

- Even without operator mitigating actions, accident progressions are slower and source terms are smaller than current models predict
- Operator actions to accomplish accident mitigation are likely and are likely to be effective
- There is no Large Early Release Fraction (LERF) of radionuclides into the environment
- Overall accidents have lower frequencies (probabilities) and lower consequences

One of the more significant implications of the SOARCA findings to date is that there is no large early release event commonly referred to as the Large Early Release Fraction (LERF). This is important because the proposed changes to protective action strategies in the draft Supplement 3 assume a large early release (left hand side of the logic diagram on page 17). Additional implications for the proposed changes to Supplement 3 include the SOARCA findings that accident progressions generally are far slower than found in the accident models currently in use. This finding has implications for which protective actions are appropriate. In this case it appears that SOARCA findings would support proposals in the draft revision to Supplement 3 for sheltering outer portions of the emergency planning zone and evacuating those portions closer to the accident source. The SOARCA findings may lead to conclusions that protective actions beyond 4-5 miles are unnecessary in almost all cases. Similar implications may arise from the SOARCA findings that source terms are far smaller than current models predict.

While the final outcome of the SOARCA is not known, it is reasonable to conclude based on what is already known that the study will have significant implications for radiological emergency planning. It would be imprudent to make changes to Supplement 3 that would be contradicted or at least substantially modified if the NRC adopts the SOARCA. Because the issuance of a final SOARCA report is anticipated in the foreseeable future, the interests of public health and safety are better served by delaying the issuance of the changes in this draft Supplement 3 until the Commission has the opportunity to study and act on the SOARCA.

Comment #3 – Wind Shift PAR

In the second paragraph of section 4 page 12, the proposed Supplement 3 document addresses PARs for wind shifts with the statement “Where there is reason to believe containment may fail...” The portion of this section dealing with wind shifts lacks specificity and does not consider all elements that may be involved in a decision to make a lesser protective action recommendation than was initially made (before the wind shift), regardless of the dose assessment information available. In addition, the statement “where there is reason to believe containment may fail” doesn’t provide congruence with the definition of a General Emergency, which is a failure of two fission product barriers and the potential failure of the third barrier. If containment is one of the failed barriers, then a release to the environment is in progress. If containment is the barrier that meets the criteria for potential failure, then the issue of “where there is reason to believe containment MAY fail,” has been addressed through the Emergency Action Levels in reaching a General Emergency and this determination is “yes,” containment

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MAY fail. The wording in the proposed Supplement 3 is appropriate in cases in which the accident has been mitigated. In addition, section 4 goes on to state 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."

Entergy does not believe that the protection of public health and safety is best served by a strict and narrow reading of source term in determining subsequent protective action recommendations. Plant conditions may continue to deteriorate, meteorological conditions may change, or the ongoing (or potential) radiological release isotopic composition, release rate and release points may vary or even be unknown at the time the wind shift occurs.

While Entergy agrees with the NRC that severe nuclear power plant accidents will most likely be mitigated by the power plant operators and that all available resources will be brought to bear to accomplish this as quickly as possible, it is also clear that the absolute determination of whether or not plant conditions support a lesser PAR when a wind shift occurs may not be possible for some time while these mitigating actions are in progress. This is borne out in EPA-400-R-92-001, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" which refers to the need for making PARs based on plant conditions for a nuclear power plant accident. Four of these EPA-400 references are listed below:

- a. Section 1.1: "...The early phase (also referred to as the emergency phase) is the period at the beginning of a nuclear incident when immediate decisions for effective use of protective actions are required and *must therefore usually be based primarily on the status of the nuclear facility (or other incident site) and the prognosis for worsening conditions.*

When available, predictions of radiological conditions in the environment based on the condition of the source or actual environmental measurements *may also be used. Protective actions based on the PAGs may be preceded by precautionary actions during this period. This phase may last from hours to days.*" (Emphasis added in paragraphs).

- b. Section 2.1.1: "...*Conversely, in some cases evacuation may be useful at projected doses below the PAGs. Each case will require judgments by those responsible for decisions on protective actions at the time of an incident.*" (Emphasis added).
- c. Section 2.4: "...The PAGs are expressed in terms of projected dose. *However, in the early phase of an incident (either at a nuclear facility or other accident site), parameters other than projected dose may frequently provide a more appropriate basis for decisions to implement protective actions...* (Emphasis added).
- d. Section 5.2: "...During the first period, speed in completing such actions as evacuating, sheltering, and controlling access may be critical to minimizing exposure. *Environmental measurements made during this period may have limited use because of the lack of availability of significant data and uncertainty about changes in environmental releases of radioactive material from their sources.* In the case of a facility, for example, the uncertainty might be due to changes in pressure and

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radionuclide concentrations within the structures from which the plume is being released. *Therefore, it is advisable to initiate early protective actions in a predetermined manner that is related to facility conditions.* This will normally be carried out through recommendations provided by the facility operator..." (*Emphasis added*).

These EPA-400 references frequently refer to an "early phase" or "first period" of an accident. Section 1.1 of the EPA document describes the early phase of a nuclear incident as a period that may last "from hours to days."

Entergy offers that before a lesser PAR is made based on dose assessment or current containment source term information alone for a new area affected by a wind shift, screening criteria should be applied to ensure such an action is the most appropriate action at the time. Such screening criteria should consider elements such as the following:

1. Are plant conditions well understood and can changes be reasonably predicted?
2. Do radiological releases have a high degree of predictability in terms of isotopic composition, release path and release rate?
3. Are meteorological conditions for the projected duration of the release well understood?

If the criteria above are met and well understood, then Entergy agrees with the NRC that any changes to PARs provided to OROs should not be based on the initial plant conditions PAR, but should be based on dose assessment for the new areas impacted by a wind shift.

Comment #4 – Staged Evacuation

Entergy supports the concept of staged evacuation as a protective action strategy that efficiently and effectively provides protection for the population that would be most at risk in a nuclear power plant accident. This is (in general) the population located closest to the plant. Entergy believes that this strategy is most effective for larger EPZ populations, particularly those with larger populations in the 2 to 5 mile area surrounding the plant. Staged evacuation will have reduced effectiveness for sites with smaller EPZ populations or shorter duration ETEs. Entergy therefore believes that the Supplement 3 document should include staged evacuation as a protective action strategy as it does now, but that the document should also indicate in its generic flow diagram or associated notes that this strategy may not be as effective in all cases. Specifically, Entergy believes that Supplement 3 should clearly indicate that staged evacuation may not be selected as a protective action strategy where it is determined due to population density (or ETE results) that it offers little advantage over immediate evacuation of both the 2 mile radius and 5 mile downwind areas. The current draft Supplement 3 does not presently contain such guidance.

Comment #5 – Heightened Preparedness

Entergy believes that all reference to Heightened Preparedness as a Protective Action should be removed from the draft Supplement 3. Entergy agrees that the group of actions referred to in

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the draft Supplement 3 as “Heightened Preparedness” is appropriate for inclusion in the document, but does not agree that these actions are protective actions, to be treated in the same way as Shelter-in-Place (SIP) and evacuation.

Information regarding Heightened Preparedness (or any other terminology that may be used by licensees and OROs for the same group of actions) is routinely provided to the public by OROs and licensees in educational materials and EAS messaging. In many locales, these EAS messages would be disseminated in an actual event at a Site Area Emergency, prior to a requirement to implement SIP or evacuation protective actions, should these protective actions be required for the event. In addition, Heightened Preparedness information would be included via offsite messaging as part of the Evacuation or SIP Protective Action EAS messages and Special News Broadcasts. Including the actions encompassed by the term “Heightened Preparedness” as Protective Actions may introduce additional complications since these actions are not in fact intended as protective but are potential precursors to the successful execution of a protective action, such as SIP or evacuation.

Comment #6 – Lateral Evacuation

Remove the term “lateral evacuation” as a protective action from Supplement 3.

Evacuation of an area depends considerably on the availability of evacuation roadway infrastructure for evacuees to egress out of at-risk areas. The layout of these evacuation routes determines the direction of travel, which involves both radial and lateral movement of evacuees in the course of their egress out of the EPZ. ETE studies incorporate the available and applicable roadway network “as-is” within the 10-mile EPZ of a nuclear power plant site, and do not explicitly account for only “lateral” or “radial” direction of travel. The proposed ETE rulemaking does not require licensees to develop separate ETEs for “lateral” and/or “radial” evacuation scenarios. In addition, there are no practical and/or economic means of notifying the public to travel “laterally to the plume” since any such instruction to the public does not consider a “directional” component (in terms of E-W-N-S or its derivatives) that is critical to accurate public communication.

Other observations supporting removal of lateral evacuation from the document as a protective action are:

1. NRC representatives stated in the April 13, 2010 public meeting that lateral evacuation is considered to be an “ad hoc” response that is not required to be addressed in ORO plans or procedures.
2. The first bullet on page 2 of the draft Supplement 3 clearly states that radial evacuation should remain the major element of protective action strategies.

Comment #7 - Appendix

Supplement 3 is a technical document for determining protective actions. The appendix to Supplement 3 is a communications plan. Entergy does not believe that this communications

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plan belongs in Supplement 3 and that there are other more appropriate regulatory venues for this information.

Entergy suggests that FEMA should incorporate the appendix information into Section 1.E and Section III of the draft FEMA REP Manual. The draft Supplement 3 appendix information should also be coordinated with the radiological risk and communications NUREG currently in development by NRC and perhaps removed from Supplement 3 and incorporated in this communications NUREG.

Comment #8 – Actions at a Site Area Emergency

Entergy does not believe that offsite protective actions at a Site Area Emergency are required based on the description of this classification in industry EAL schemes. Entergy further believes that any condition that would require that protective action recommendations be made because of plant status or dose assessment information falls within the context of a General Emergency. This does not preclude OROs and licensees from agreeing (during planning and implementation of site-specific processes) on actions that are recommended or taken at a Site Area Emergency that are precautionary in nature. These actions should not be referred to as “protective actions” in section 2.3 of the draft Supplement 3 document in order to prevent confusion with those actions that must be considered at a General Emergency.

In addition, Entergy does not believe the draft Supplement 3 should attempt to provide guidance on Site Area Emergencies that may be “potential precursors to a more serious accident,” including a discussion on assessment of the condition and the conferring between licensee and ORO personnel (at the time of the event) regarding the nature of the event and the likelihood of core degradation. This does not mean that licensees and OROs will not communicate with one another during an event of this nature, but that the draft Supplement 3 guidance in this area is inappropriate given the way that emergency classification schemes are intended to be used. Site Area and General Emergencies are well defined in EAL schemes. If a licensee has plant indication that a failure of two fission product barriers has occurred and the potential failure or failure of the third is also present or that these conditions are imminent, then a General Emergency should be declared and protective action recommendations made within 15 minutes. The draft Supplement 3 language might be taken to imply that a condition that should be classified as a General Emergency is not classified that way.

Comment #9 – Inspection and Enforcement

In response to a question on demonstration requirements at the April 13, 2010 public meetings, NRC personnel stated that there is nothing in the new rule, the draft Supplement 3 or FEMA’s draft REP manual that would require specific periodic demonstration of various logic diagram elements. Though Entergy agrees with this statement, Entergy recognizes that the combination of the new emergency preparedness rulemaking, the Supplement 3 revision and the FEMA REP manual revision represents the most significant change to emergency preparedness programs since their inception. NRC and FEMA should develop policies and guidance on inspection and enforcement in these areas as soon as practicable. Another question on inspection and enforcement was asked in the public meeting on July 19, 2010. Entergy believes that

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inspection and enforcement questions will continue to be raised by stakeholders until such information is made available.

Comment #10 – Implementation Schedule

Final implementation of the draft Supplement 3 is informed by the evacuation time estimate. Specifically, the 90% evacuation information required to implement the supplement may not be available for all nuclear power plant sites in their current ETEs. Emergency preparedness regulation changes related to ETEs will require that this value be calculated. It is therefore important that a coordinated implementation, which includes implementation of the ETE rulemaking, implementation of this Supplement 3 and data availability from the 2010 census, be considered.

Suggested implementation schedule sequence:

1. Final site-specific census data necessary for ETE studies compliant to ETE rulemaking
2. Final ETE rulemaking approved and issued
3. Site-specific ETE studies completed and submitted to NRC by licensees
4. Approval of site-specific ETEs by NRC
5. Implementation of the approved ETEs in site-specific Supplement 3 PAR logic

Items 1 and 2 above can occur in parallel, but 3, 4 and 5 are performed in series only after 2 is complete. This sequence puts the logical time frame for final implementation of Supplement 3 in sequence with the ETE rulemaking or later.

In addition, if the new PAR strategies will be based on current ETEs, Entergy believes that in most cases, these PAR strategies will need to be significantly revised once new ETEs are completed that are in compliance with the rulemaking.

Entergy does not believe that the schedule published in the original Federal Register associated with the draft Supplement 3 (Vol. 75 No. 44 dated March 8, 2010) supports the recommended implementation sequence described above. The Federal Register schedule indicated that licensees would be required to implement the guidance by mid-2012. It is likely that revised site-specific ETEs based on the 2010 census and using the rulemaking requirements will not be available at that time. Even if revised ETEs are available, Entergy does not believe the 2012 schedule supports the level of document revision and training (for both licensee and ORO organizations) that will be required to implement the Supplement 3 guidance.

Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

An alternate methodology for developing considered Protective Action Recommendations (PARs) in response to the draft of "Supplement 3 to NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Revision 1, (NRC, 1996)*"

Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

Objective

This document provides an alternate methodology for developing Protective Action Recommendations (PARs) in consideration of the draft "Supplement 3 to NUREG-0654/FEMA-REP-1, *Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, Revision 1, (NRC, 1996)*". The draft aforementioned document contains a logic flow diagram for the use by licensees and Offsite Response Organizations (OROs). That flow diagram, while useful in establishing some considerations, does not provide for a consistent process that will always result in a well considered pre-planned response to a General Emergency at a nuclear power facility.

The intent of this alternate methodology document is to provide a four step process that individual nuclear power facilities and OROs can use to establish initial and short term response actions for a General Emergency based on the regulatory guidance provided by Supplement 3. This document details the process and then provides a generic response for an example BWR plant with a surrounding low population and low Evacuation Time Estimates (ETEs).

STEP 1

Develop Regulatory Guidelines

This step specifies the considerations that have been developed in the Draft Supplement 3 that need to be included or considered as developed by the NRC and through its process of public comment. It is envisioned that the guidelines would detail all of the potential considerations and their bases that should be reviewed in the proper preparation of predetermined protective actions by licensees and OROs.

- 1) Include a beyond design basis rapidly progressing severe accident as part of site specific protective action considerations. This is a General Emergency (GE) with a rapid loss of containment integrity and loss of all ability to cool the core. This (logic diagram) path is only used for very unlikely scenarios where containment integrity can be determined as bypassed or immediately lost during a GE with core damage.
- 2) Consider impediments to include the following:
 - Evacuation support not yet in place - For example, the GE is the initial notification to offsite response organizations or if there is a previous emergency classification notification, the GE notification occurs before preparations to support evacuation can be completed. Many sites have a low population density within 2 miles (3.2 kilometers) and evacuation support readiness will not be considered an impediment. This element should be discussed and agreed to with OROs. The expected time for

Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

evacuation support to be put in place should be agreed to with OROs in advance and embodied in the site-specific protective action recommendation (PAR) logic for those sites where delay of a 2-mile (3.2-kilometer) radius evacuation is necessary, pending support setup. The licensee would base the recommendation on the agreement and would not confer with OROs on this matter before making the initial PAR. If the impediment was the time to set up evacuation support, when the agreed upon time (e.g., 1 hour) for evacuation support to be in place has elapsed, the PAR should be changed. Licensee shift staff is not expected to confer with OROs before changing the PAR although, if the ERO is activated, they may confer.

- Hostile action event - Many OROs consider that initial shelter-in-place is preferred in this type of event. The licensee would discuss this element with OROs and reach agreement. The licensee would then base its recommendation on the agreement and would not confer with OROs before making the initial PAR. If the impediment was a hostile action event, within 1 hour of the initial PAR, the licensee should discuss with OROs whether the sheltering PAR should be changed. This will depend on plant status as well as local law enforcement support obtained by OROs.
 - Licensees are not responsible for soliciting information or making a determination that weather or other impediments (e.g., earthquake, wildfire) to safe public evacuation exist at the time of the emergency. However, the licensee will consider an impediment to exist if OROs notify the licensee of such an impediment (e.g., roadways are closed because of deep snow, flooding, construction, etc.). If the impediment was caused by weather or other roadway disruption, OROs will determine when it is appropriate to change the protective action. Licensees may inquire as resources allow, but have no responsibility for PAR modification unless a PAR change is necessary because of plant conditions. OROs determine when it is safe for the public to evacuate.
- 3) Include the "Shelter-in-Place" (SIP) protective action and staged evacuation (as appropriate to the site). SIP is intended to mean that instructions are given to remain indoors, turn off heating or air conditioning (as appropriate for the region and season), close windows, monitor communications channels and prepare to evacuate. The instructions should specify that SIP is safer than evacuation at this time, or alternatively, SIP is being implemented in order that the public remain off roadways to allow other areas, under an evacuation order, to evacuate unimpeded (staged evacuation). The intent is for members of the public to remain where they are, or seek shelter close by, but not to return home to shelter.
 - 4) Include downwind (22.5 degree) compass sector(s) and adjacent compass sectors in protective actions where appropriate. Some sites may express these areas as something other than compass sectors based on geopolitical considerations.
 - 5) Consider predetermining to what degree site-specific downwind sector(s) and adjacent sectors would be included in protective actions based on wind persistence analysis. Wind persistence analysis may indicate the need to include additional sectors with the initial recommendation. The licensee must discuss this element with OROs and reach agreement.
 - 6) Include "Heightened Preparedness" actions for offsite populations for which an evacuation or SIP recommendation is not given. "Heightened Preparedness" is intended

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to mean that the population within the plume exposure pathway emergency planning zone (EPZ) is informed of the emergency at the nuclear power plant and instructed to monitor the situation and prepare for the possibility of evacuation, shelter-in-place or other protective actions. Further, if an evacuation is taking place, the public not residing in the evacuation areas should be asked to remain off the roadways to allow those instructed to evacuate to do so. Communications with this population must be clear and frequent to be effective.

- 7) Follow-up Recommendations: Once a GE is declared, terminating the declaration will take time. If the conditions that caused the declaration have improved (i.e., core cooling is restored), it may not be necessary to expand the PAR to evacuate additional areas. However, if there is a source term in containment that exceeds the GE emergency action level, expansion of the PAR in areas where protective action guidelines (PAGs) could be exceeded is appropriate.
- 8) Expansion of initial PAR considering staged evacuation impact. At $T=X$ hours, where X equals the site-specific 2-mile (3.2-kilometer) ETE for 90 percent evacuation, (e.g., 3 hours after the public is notified of the initial PAR), the licensee should evaluate the need to expand the PAR, based on plant conditions. The licensee identifies the value of T using the site-specific ETE and shall consider T_D for a daytime ETE and T_N for a nighttime ETE. These values should be representative for the site and should not include special events. The shift staff is expected to make this PAR without conferring with OROs, and the PAR is based on the ETE time value alone, not on verification of evacuation progress. If the augmenting emergency response organization (ERO) has been activated, there should be sufficient resources available for the licensee to confer with OROs more fully.
- 9) Beyond design basis rapidly progressing severe accident. The rapidly progressing severe accident is more severe than other GEs, and different protective actions are appropriate for all sites. However, differences in ETE will dictate the most appropriate protective actions. Sites where the time to evacuate 90 percent of the population within a 2-mile (3.2-kilometer) radius is 2 hours or less should immediately and urgently recommend evacuation of the 2-mile (3.2-kilometer) radius, otherwise recommend shelter-in-place. The licensee uses the site specific ETE for this decision and shall consider T_D for a daytime ETE and T_N for a nighttime ETE. The ETE values should be representative for the site and should not include special events. If the 2 to 5 mile (3.2 to 8 kilometer) downwind evacuation time for 90 percent completion is 3 hours or less then that area should also be immediately evacuated (this time should include any traffic control preparations where necessary), otherwise, recommend shelter-in-place. For all cases shelter-in-place should be recommended for the 5 to 10 mile (8 to 16 kilometer) downwind areas.
- 10) Evacuation after the initial shelter-in-place period is critical to reducing public exposure. However, the rapidly progressing severe accident scenario cannot be precisely characterized in advance. In general, accident analyses show that this source term may be initially large, but it will be reduced within several hours because of the exhaustion of the available radionuclide inventory (NRC, 1990). Mitigative actions may also be implemented to reduce the source term. While the timing of this reduction can not be specified in advance, the licensee must use available radiological monitoring information to identify when it would be safe to begin public evacuation from affected areas. PAR Study results showed that shelter-in-place times in excess of 4 hours reduce public

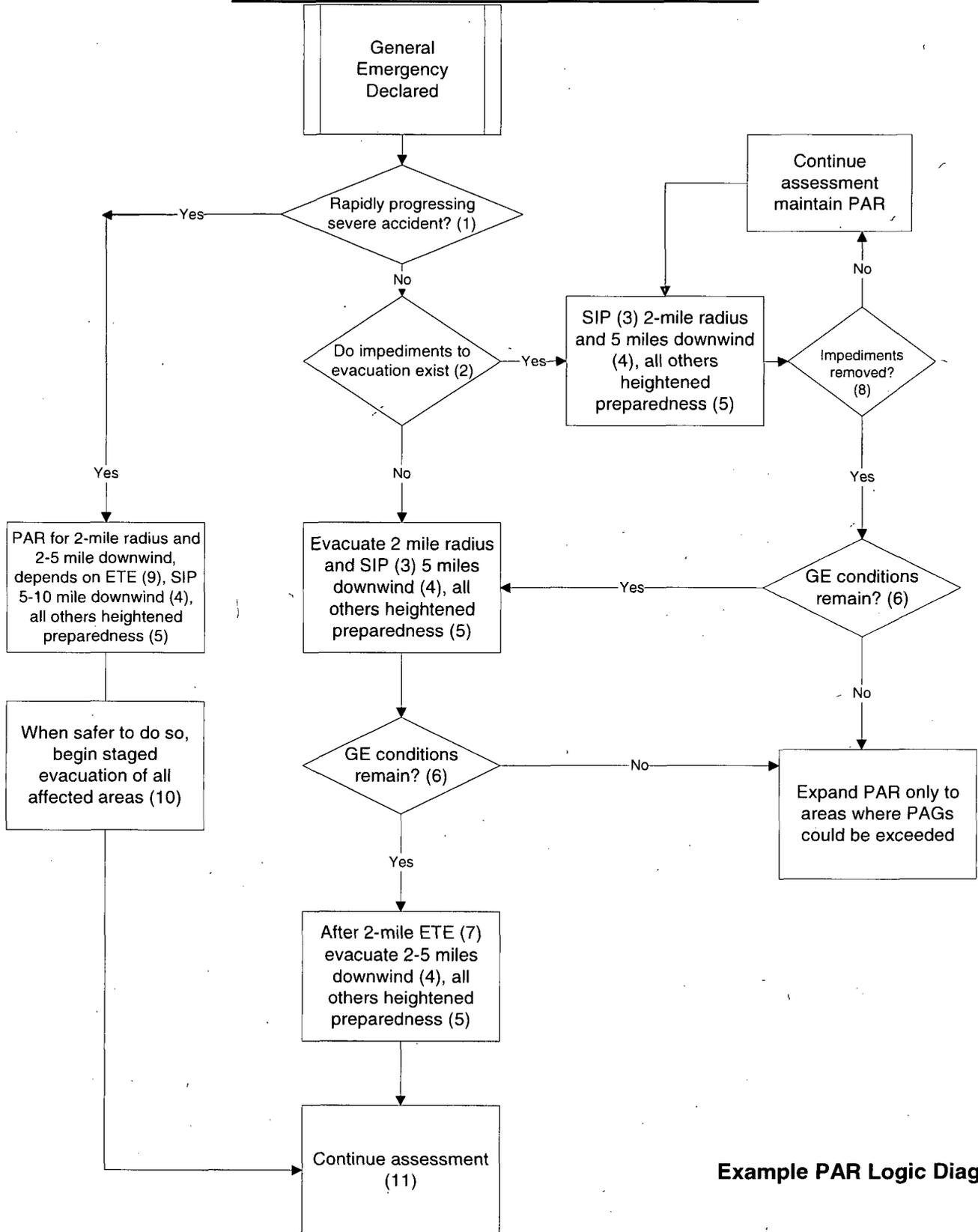
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exposure for the hypothetical events analyzed; and conversely, shelter-in-place for less than 4 hours did not reduce public exposure. However, the determination must be based on current information from effluent monitors, operational status, and field monitoring efforts.

- The NRC expects that licensees would discuss evacuation of the sheltered population with OROs and plan for rapid evacuation of the public through potentially contaminated areas. Lateral evacuation should be considered, as it may reduce public exposure where the roadway network and plume meander are conducive.
 - The evacuation should proceed from the areas most at risk. This is expected to be the 2-mile (3.2-kilometer) radius (if sheltered), unless field monitoring data shows otherwise. The 2 to 10 mile (3.2 to 16 kilometer) downwind sectors should be evacuated when the initial evacuation is nearing completion.
- 11) Continue radiological and meteorological assessments and evacuate any areas where dose projections or field measurements indicate that protective action guidelines are likely to be exceeded. Recommend shelter-in-place for additional areas, as appropriate. Maintain heightened preparedness. OROs should communicate frequently with the public while protective actions are in effect.
- 12) Continue plant assessments to determine if accident conditions warrant changes to the PAR.

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ATTACHMENT FROM DRAFT SUPPLEMENT 3



Example PAR Logic Diagram

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STEP 2

Develop Industry & ORO Discussion Questions

This step translates the guidelines developed by the NRC and through its process of public comment in the Draft Supplement 3, delineating them in the form of a question bank. It is envisioned that the questions would detail potential considerations and their bases that should be reviewed in the preparation of predetermined protective actions by the licensees and OROs. The questions are used to guide the conversations conducted by the licensee and OROs about initial and follow up PARs. The response to each of the questions should be documented to provide a basis for this decision making.

Example Question bank:

Planning Areas & Staged Evacuation

Do the current planning areas need to be reconsidered in terms of shape and size to best incorporate the issues raised in the supplement 3 document, specifically the concept of staged evacuation and easy dissemination of information to the public?

Does site analysis or tools exist where staged evacuation of an area other than the 2 mile ring would be required first (i.e., BWR stack release touchdown beyond 2 miles)?

Beyond Design Basis Rapidly Progressing Severe Accident

Does the site have any site specific studies that detail a beyond design basis rapidly progressing severe accident, and specifically what the release duration or extent of the release pathway would be that could aid in making decisions?

Is linkage to the site specific Severe Accident Management Guidelines (SAGs or SAMGs) the appropriate threshold for decision making for stating that a beyond design basis rapidly progressing severe accident has occurred or is in progress?

Impediments to Evacuation

Is "evacuation support in place" a consideration as an impediment to evacuation for this site? Is that support needed for the 2 mile radius? The 5 mile downwind areas of interest? The 10 mile areas of interest? How long should this impediment last?

What is the best protective action recommendation when a declared hostile action is occurring or has occurred? How long should this impediment last?

What additional impediments to evacuation should be considered by the licensee and ORO? Weather? Roadway issues? How long should this impediment last?

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Protective Action Alternatives/Staged Evacuation

How long should "shelter in place" (SIP) be maintained, specifically if continuing releases are in progress?

When is SIP the proper protective action to allow other areas, under an evacuation order, to evacuate unimpeded?

Are site specific studies available to guide PAR decision making in the 2 to 5 mile ring or 5 to 10 mile ring?

Wind Persistence

How wide an area should be considered for initial protective action decisions due to wind variance (using the site specific license data for variation and adjacent area margin) over a minimum 3 hour period (or some site specific duration consideration)?

How should wind persistence (duration of consideration and degrees impacted) be used to guide follow up PARS or PADS?

Follow-up Actions

What should follow up PARs and PADs be based on (any or all of the following)? Actual measured atmospheric releases with an agreed upon threshold? Dose Assessment modeling (using actual or assumed release values)? Plant conditions at a GE entry threshold? Plant conditions that are addressed in the severe accident management guidelines area?

ETEs

Do the site ETEs include evacuation times for the planning areas of consideration and the combination of those areas (i.e. impact of 2 mile radius evacuation with 5 miles downwind)? Do they include day and night scenarios with the aforementioned information? Do they include the time duration estimated to achieve 90% completion for the corresponding planning areas and combinations?

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STEP 3

Document site specific discussion decisions

This step translates the licensee and ORO discussions into a documented guide for pre-planning PARs and PADs. The resultant document would provide a basis and understanding of the decision making.

Response Questions	Licensee and ORO Response
Planning Areas & Staged Evacuation	
<p>Do the current planning areas need to be reconsidered in terms of shape and size to best incorporate the issues raised in the supplement 3 document, specifically the concept of staged evacuation and easy dissemination of information to the public? <i>(Typically a large number of planning areas in the 10 mile EPZ is not ideal for planning. Change documentation should include the former planning areas and the new planning areas. The new planning areas should be designed to reflect at least the following;</i></p> <ul style="list-style-type: none"> • <i>Understanding of staged evacuation</i> • <i>Relationship of planning area boundaries to evacuation routes</i> • <i>Evacuation travel time impacts</i> • <i>Ease of description and public understanding of the planning area by "descriptors")</i> 	
<p>Does site analysis or tools exist where staged evacuation of an area other than the 2 mile ring would be required first? <i>(i.e., BWR elevated stack releases may have a touchdown beyond 2 miles, and therefore may result in a higher potential dose. Consideration for evacuation priority should first be given to higher potential dose areas when possible)</i></p>	
Beyond Design Basis Rapidly Progressing Severe Accident	
<p>Does the site have any site specific studies that detail a beyond design basis rapidly progressing severe accident, and specifically what the release duration or extent of the release pathway would be that could aid in making decisions?</p>	

Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

Response Questions	Licensee and ORO Response
Is linkage to the site specific Severe Accident Management Guidelines (SAGs or SAMGs) the appropriate threshold for decision making for stating that a beyond design basis rapidly progressing severe accident has occurred or is in progress?	
Impediments to Evacuation	
Is "evacuation support in place" a consideration as an impediment to evacuation for this site? Is that support needed for the 2 mile radius? The 5 mile downwind areas of interest? The 10 mile areas of interest? How long should this impediment last?	
What is the best protective action recommendation when a declared hostile action is occurring or has occurred? How long should this impediment last?	
What additional impediments to evacuation should be considered by the licensee and ORO? Weather? Roadway issues? How long should this impediment last?	
Protective Action Alternatives/Staged Evacuation	
How long should "shelter in place" (SIP) be maintained, specifically if continuing releases are in progress?	
When is SIP the proper protective action to allow other areas, under an evacuation order, to evacuate unimpeded?	
Are site specific studies available to guide PAR decisions in the 2 to 5 mile ring or 5 to 10 mile ring?	
Wind Persistence	
How wide an area should be considered for initial protective action decisions due to wind variance (using the site specific license data for variation and adjacent area margin) over a minimum 3 hour period (or some site specific duration consideration)?	

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Response Questions	Licensee and ORO Response
How should wind persistence (duration of consideration and degrees impacted) be used to guide follow up PARS or PADS?	
Follow-up Actions	
What should follow-up PARs and PADs be based on (any or all of the following)? Actual measured atmospheric releases with an agreed upon threshold? Dose Assessment modeling (using actual or assumed release values)? Plant conditions at a GE entry threshold? Plant conditions that are addressed in the severe accident management guidelines area?	
ETEs	
Do the site ETEs include evacuation times for the planning areas of consideration and the combination of those areas (i.e., impact of 2 mile radius evacuation with 5 miles downwind)? Do they include day and night scenarios with the aforementioned information? Do they include the time duration estimated to achieve 90% completion for the corresponding planning areas and combinations?	

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STEP 4

Establish a matrix of responses for initial and follow up PARs and PADs

This step would establish a matrix of responses for the licensee (PARs) and for the OROs (PADs) for each of the evaluated questions that require a response. Below are examples of the established matrixes. The matrix can be used by the licensee as is or where deemed necessary be flow charted for ease of use by licensee and ORO staffs.

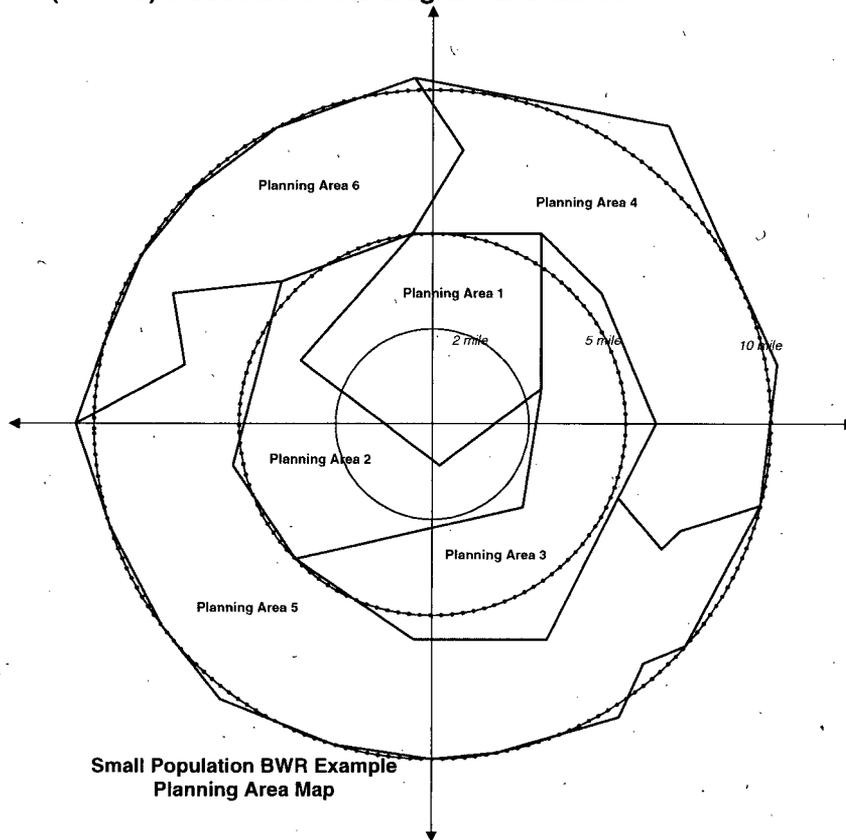
Initial Predetermined Response Actions (Sample Matrix)

Situation	Licensee PAR	ORO PADS (may be multiple columns dependent on jurisdictional differences between states / locals)

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Example Small Population BWR

850 MW plant, Mark 1 containment, population of 500 in 2 mile EPZ, and 17,000 in 10 mile EPZ and identified as XX Licensee. Four (4) total OROs, 2 states (YY & ZZ) each with one county (M & G), but only in one state does the county have PAD decision making (County M), therefore 3 OROs were involved in this decision process. The 10 mile EPZ includes 6 planning areas (ERPAs) illustrated in the diagram and table below.



Small Population BWR Example
Planning Area Map

Planning Area	State	County	Designation
ERPA 1	YY	M	Town of Martin North
ERPA 2	YY	M	Town of Martin South
ERPA 3	ZZ	G	Nicholas Village
ERPA 4	ZZ	G	James Town North
ERPA 5	ZZ	G	James Town South
ERPA 6	YY	M	City of Paultown

Protective actions

Identifier	Areas
Planned Response 1	ERPAs 1 & 2
Planned Response 2	ERPAs 1 & 2 & 3
Planned Response 3	ERPAs 1 & 2 & 3 & 4 & 6
Planned Response 4	ERPAs 1 & 2 & 3 & 4 & 5
Planned Response 5	ERPAs 1 & 2 & 3 & 5 & 6
Planned Response 6	All ERPAS

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Small Population BWR Basis Decisions Documentation

Response Questions	“XX” Licensee and “YY”, “ZZ” and “M” ORO Response
Planning Areas & Staged Evacuation	
<p>Do the current planning areas need to be reconsidered in terms of shape and size to best incorporate the issues raised in the supplement 3 document, specifically the concept of staged evacuation and easy dissemination of information to the public? <i>(Typically a large number of planning areas in the 10 mile EPZ is not ideal for planning. Change documentation should include the former planning areas and the new planning areas. The new planning areas should be designed to reflect at least the following;</i></p> <ul style="list-style-type: none"> • <i>Understanding of staged evacuation</i> • <i>Relationship of planning area boundaries to evacuation routes</i> • <i>Evacuation travel time impacts</i> • <i>Ease of description and public understanding of the planning area by “descriptors”</i> 	<p>The current 45 planning areas for the “xx” plant will be modified to best incorporate the concepts of staged evacuation and easy dissemination of information to the public. The current planning areas were based on the road base in 1981 and some arbitrary demarcations and do not provide the best delineation for making protective actions based on NUREG-0654 Supplement 3. A reanalysis has yielded 6 planning areas, incorporates the radial staged evacuation areas and uses appropriate geopolitical boundaries to allow for simple public information descriptions.</p>
<p>Does site analysis or tools exist where staged evacuation of an area other than the 2 mile ring would be required first? <i>(i.e. BWR elevated stack releases may have a touchdown beyond 2 miles, and therefore may result in a higher potential dose, consideration for evacuation priority should first be given to higher potential dose areas when possible)</i></p>	<p>Yes an area other than the 2 mile ring may have a more significant release, but our review of ETEs show that both the 2 mile ring and 5 mile downwind areas can be evacuated simultaneously and our predetermined PARs and PADs will reflect that both are evacuated simultaneously.</p>

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Response Questions	"XX" Licensee and "YY", "ZZ" and "M" ORO Response
Beyond Design Basis Rapidly Progressing Severe Accident	
Does the site have any site specific studies that detail a beyond design basis rapidly progressing severe accident, and specifically what the release duration or extent of the release pathway would be that could aid in making decisions?	No for plant "xx"
Is linkage to the site specific Severe Accident Management Guidelines (SAGs or SAMGs) the appropriate threshold for decision making for stating that a beyond design basis rapidly progressing severe accident has occurred or is in progress?	Yes for plant "xx."
Impediments to Evacuation	
Is "evacuation support in place" a consideration as an impediment to evacuation for this site? Is that support needed for the 2 mile radius? The 5 mile downwind areas of interest? The 10 mile areas of interest? How long should this impediment last?	No for all areas for plant "xx"
What is the best protective action recommendation when a declared hostile action is occurring or has occurred? How long should this impediment last?	Based on our discussion the PAR and PAD we recommend will be for SIP affected areas and adjacent areas until "All Clear" is declared by the Incident Commander. Following the "All Clear," a recommendation for evacuation for affected and adjacent areas will be based on dose assessment, plant conditions or actual field measurements.
What additional impediments to evacuation should be considered by the licensee and ORO? Weather? Roadway issues? How long should this impediment last?	No additional impediments need to be considered for licensee PARs, but additional impediments and their duration may be considered for PADs.
Protective Action Alternatives/Staged Evacuation	
How long should "shelter in place" (SIP) be maintained, specifically if continuing releases are in progress?	Does not apply, based on our evaluation of planning areas impacted and the ETEs we have for those areas. We will recommend evacuation for 2 mile radius and 5 miles downwind and adjacent areas as an initial action for all events except a hostile action event as detailed above.

Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

Response Questions	"XX" Licensee and "YY", "ZZ" and "M" ORO Response
When is SIP the proper protective action to allow other areas, under an evacuation order, to evacuate unimpeded?	Never for this site.
Are site specific studies available to guide PAR decisions in the 2 to 5 mile ring or 5 to 10 mile ring?	Not for this site.
Wind Persistence	
How wide an area should be considered for initial protective action decisions due to wind variance (using the site specific license data for variation and adjacent area margin) over a minimum 3 hour period (or some site specific duration consideration)?	Three hours is appropriate for this site. Based on our review of wind persistence data, we determined that a 70 degree spread may occur during a 3 hour period. We are using this 70 degrees and adding 33 degrees to each side to account for adjacencies for a total of a 136 degree area of concern for downwind sectors. Based on our six planning areas we will have 2 possible initial protective actions (using our 2 mile ring and 5 miles downwind initial protective action) and 5 potential protective actions as follow-up actions.
How should wind persistence (duration of consideration and degrees impacted) be used to guide follow-up PARS or PADS?	Three hours is an appropriate consideration for follow up PARS and PADS. Based on our review of wind persistence data we determined that a 70 degree spread may occur during a 3 hour period. We are using this 70 degrees and adding 33 degrees to each side to account for adjacencies for a total of 136 degree area of concern for downwind sectors
Follow-up Actions	
What should follow-up PARs and PADS be based on (any or all of the following)? Actual measured atmospheric releases with an agreed upon threshold? Dose Assessment modeling (using actual or assumed release values)? Plant conditions at a general emergency entry threshold? Plant conditions that are addressed in the severe accident management guidelines area?	PARs and PADS for this site will be based on any of the following, and include the predetermined ERPA combinations listed above. <ul style="list-style-type: none"> • Dose assessment modeling (using actual or assumed release values) • Plant conditions that are addressed in severe accident management guidelines

Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

Response Questions	"XX" Licensee and "YY", "ZZ" and "M" ORO Response
ETEs	
Do the site ETEs include evacuation times for the planning areas of consideration and the combination of those areas (i.e. impact of 2 mile radius evacuation with 5 miles downwind)? Do they include day and night scenarios with the aforementioned information? Do they include the time duration estimated to achieve 90% completion for the corresponding planning areas and combinations?	<p>The site has day and night ETEs (including 90% thresholds) for each ring and each planning area as well as all the combinations that were listed as a possible evacuation combination.</p> <ul style="list-style-type: none"> • Planned Response 1 ERPAs 1 & 2 • Planned Response 2 ERPAs 1 & 2 & 3 • Planned Response 3 ERPAs 1 & 2 & 3 & 4 & 6 • Planned Response 4 ERPAs 1 & 2 & 3 & 4 & 5 • Planned Response 5 ERPAs 1 & 2 & 3 & 5 & 6 • Planned Response 6 All ERPAS

Initial Predetermined Response Actions (By description) agreed to by "XX" Licensee and OROs "YY", "M", "ZZ"

Situation	"XX" Licensee PAR	"YY" and "M" ORO PADS	"ZZ" ORO PADS
GE Base Action	Evacuate 2 mi radius, shelter 5 miles 136 degrees all others heightened preparedness	Evacuate 2 mi radius, shelter 5 miles 136 degrees all others heightened preparedness	Evacuate 2 mi radius, shelter 5 miles 136 degrees all others heightened preparedness
Hostile Action Uncertainty Impediment Exists	Shelter in place 2 mi & 5 mi 136 degree downwind, all others heightened preparedness	Shelter in place 2 mi & 5 mi downwind, all others heightened preparedness	Shelter in place 2 mi & 5 mi downwind, all others heightened preparedness
Plant has entered Severe Accident Guidelines (SAGs) and ETE for 2 miles is less than 2 hrs and 2 to 5 less than 3 hrs	Evacuate 2 mile radius and 5 miles 136 degrees downwind, all others heightened preparedness	Evacuate 2 mile radius and 5 miles 136 degrees downwind, all others heightened preparedness	Evacuate 2 mile radius and 5 miles 136 degrees downwind, all others heightened preparedness

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Follow-Up Predetermined Response Actions (By description) agreed to by "XX" Licensee and OROs "YY", "M", "ZZ"

Situation	"XX" Licensee PAR	"YY" and "M" ORO PADS	"ZZ" ORO PADS
Hostile Action Uncertainty Impediment Exists	Shelter in place 2 mi & 5 mi downwind 136 degrees until "All Clear" is declared by the Incident Commander, all others heightened preparedness. After "All Clear" is declared use situation " PAR & PAD Expansion"	Shelter in place 2 mi & 5 mi downwind 136 degrees until "All Clear" is declared by the Incident Commander, all others heightened preparedness. After "All Clear" is declared use situation " PAR & PAD Expansion"	Shelter in place 2 mi & 5 mi downwind 136 degrees until "All Clear" is declared by the Incident Commander, all others heightened preparedness. After "All Clear" is declared use situation " PAR & PAD Expansion"
PAR & PAD Expansion	After initial ETE evacuations are complete to 90%, conduct dose evaluations and evacuate areas agreed to with ORO where dose is greater than EPA PAGS	After initial ETE evacuations are complete to 90%, conduct dose evaluations and evacuate areas agreed to with ORO where dose is greater than EPA PAGS	After initial ETE evacuations are complete to 90%, conduct dose evaluations and evacuate areas agreed to with ORO where dose is greater than EPA PAGS
Plant conditions in Severe Accident Guidelines (SAGs)	After initial evacuations are complete to 90%, use situation " PAR & PAD Expansion"	After initial evacuations are complete to 90%, use situation " PAR & PAD Expansion"	After initial evacuations are complete to 90%, use situation " PAR & PAD Expansion"

Alternate Methodology for Developing Protective Action Recommendations (PARs) for Nuclear Power Plant Licensees and Off Site Response Organizations

Diagrammatic Representation of Predetermined Response Actions agreed to by "XX" Licensee and OROs "YY", "M", "ZZ"

