



# ENERGY NORTHWEST

## Columbia Generating Station

Regulatory Conference

Emergency Plan Implementing Procedure  
Guidance

June 15, 2015



# Opening Remarks

Grover Hettel, Vice President Operations

- ✦ Understanding and Acknowledgement
- ✦ Energy Northwest Perspective
- ✦ Review of Agenda

# Agenda

- |                                  |               |
|----------------------------------|---------------|
| ✦ Apparent Violation             | Don Gregoire  |
| ✦ Emergency Plan Commitments     | Don Gregoire  |
| ✦ NUREG-0654 Supplement 3 (2011) | Sean Clizbe   |
| ✦ PPM 13.2.2 Rev 18 Changes      | Sean Clizbe   |
| ✦ PPM 13.2.2 SIP Guidance        | Dave Brown    |
| ✦ Lessons Learned                | Kurt Gosney   |
| ✦ Summary of Differences         | Don Gregoire  |
| ✦ Significance Assessment        | Don Gregoire  |
| ✦ Closing                        | Grover Hettel |

Don Gregoire (Manager Regulatory Affairs)

# Apparent Violation

*“Columbia Generating Station failed to follow and maintain the effectiveness of an emergency plan meeting the requirements of Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b).”*

## **Inspection Report Finding (Emergency Plan Section 2.1)**

*“Specifically, Columbia Generating Station Procedure 13.2.2, “Determining Protective Action Recommendations,” Revision 18, Section 4.5.1, did not implement the requirements of Emergency Plan Section 2.1 because the procedure required the Emergency Director in the control room to delegate the formulation of protective action recommendations to the TSC or EOF. However, protective actions are a non-delegable responsibility of the Emergency Director.”*

# Apparent Violation

## **Energy Northwest Position (Emergency Plan Section 2.1)**

- (1) Procedure PPM 13.2.2, Revision 18, step 4.5.1 correctly transfers protective action recommendations (PARs) to the Technical Support Center (TSC) or Emergency Operations Facility (EOF) for the expansion of PARs beyond 10 miles because field monitoring, an augmented function, is important to the development of accurate PARs at these distances.
- (2) Augmented emergency response organization (ERO) functions are under the oversight of either the TSC or EOF in which case the Shift Manager would have transferred responsibilities to the emergency director in one of these locations.
- (3) Transfer of emergency director responsibilities to the TSC or EOF and the reliance on field team data for PARs beyond 10 miles is consistent with section 2.1 and 5.5.2 of the Columbia Emergency Plan.

# Apparent Violation

## Inspection Report Finding (Emergency Plan Section 5.5)

*“Procedure 13.2.2, Revision 18, did not implement the requirements of Emergency Plan Section 5.5 because it did not provide for the development of shelter-in-place as a protective action recommendation and did not provide for protection action recommendations to protect against planned releases of radioactive materials.”*

# Apparent Violation

## **Energy Northwest Position (Emergency Plan Section 5.5)**

### Shelter-in-Place Protective Action Recommendations

- (1) Procedure PPM 13.2.2 Revision 18 Attachment 7.1 and 7.2 provide for the development of shelter in place as a protective action recommendation.
- (2) Shelter and evacuation guidance in Attachment 7.1 and 7.2 is based on guidelines established in NUREG-0654 Supplement 3 (2011).
- (3) NUREG-0654 Supplement 3 (2011) was provided to licensees as an acceptable method for complying with Appendix E to 10 CFR Part 50 and 10 CFR 50.47(b).
- (4) Basing shelter and evacuation guidance on NUREG-0654 Supplement 3 is consistent with Section 5.5 and 5.5.2 of Columbia's Emergency Plan

# Apparent Violation

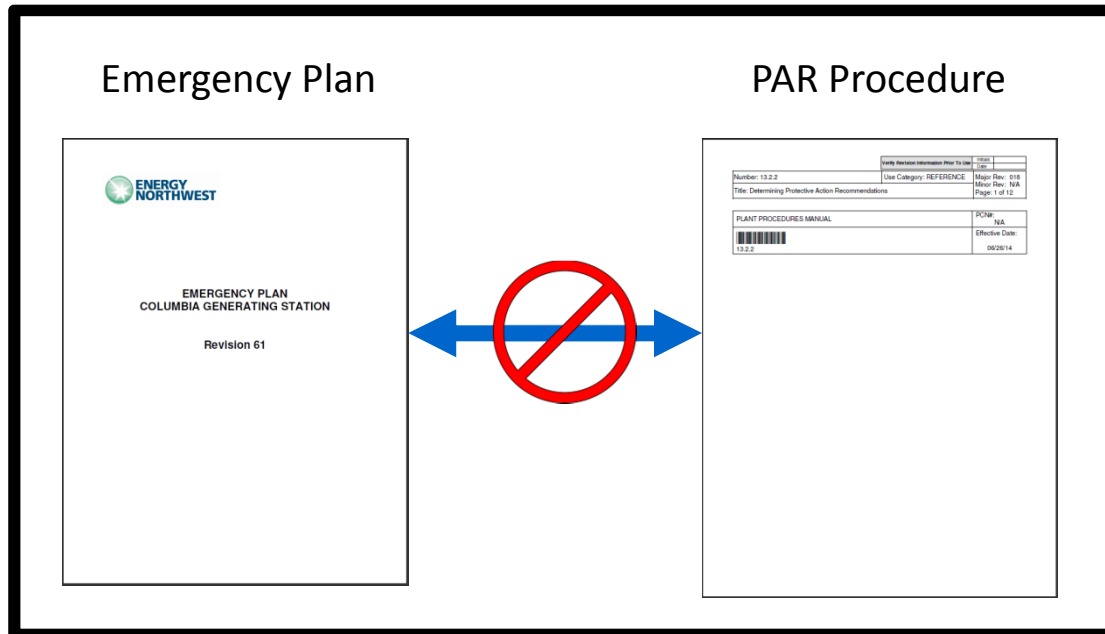
## **Energy Northwest Position (Emergency Plan Section 5.5)**

### Planned Release Protective Action Recommendations

- (1) Procedure PPM 13.2.2 Revision 18 Attachment 7.1 and 7.2 continue to provide for the development of PARs to protect against planned releases of radioactive material.
- (2) Use of Attachment 7.1 and 7.2 for developing protective action recommendations during a planned release (controlled, short duration releases) is consistent with Emergency Plan Section 5.5.2.



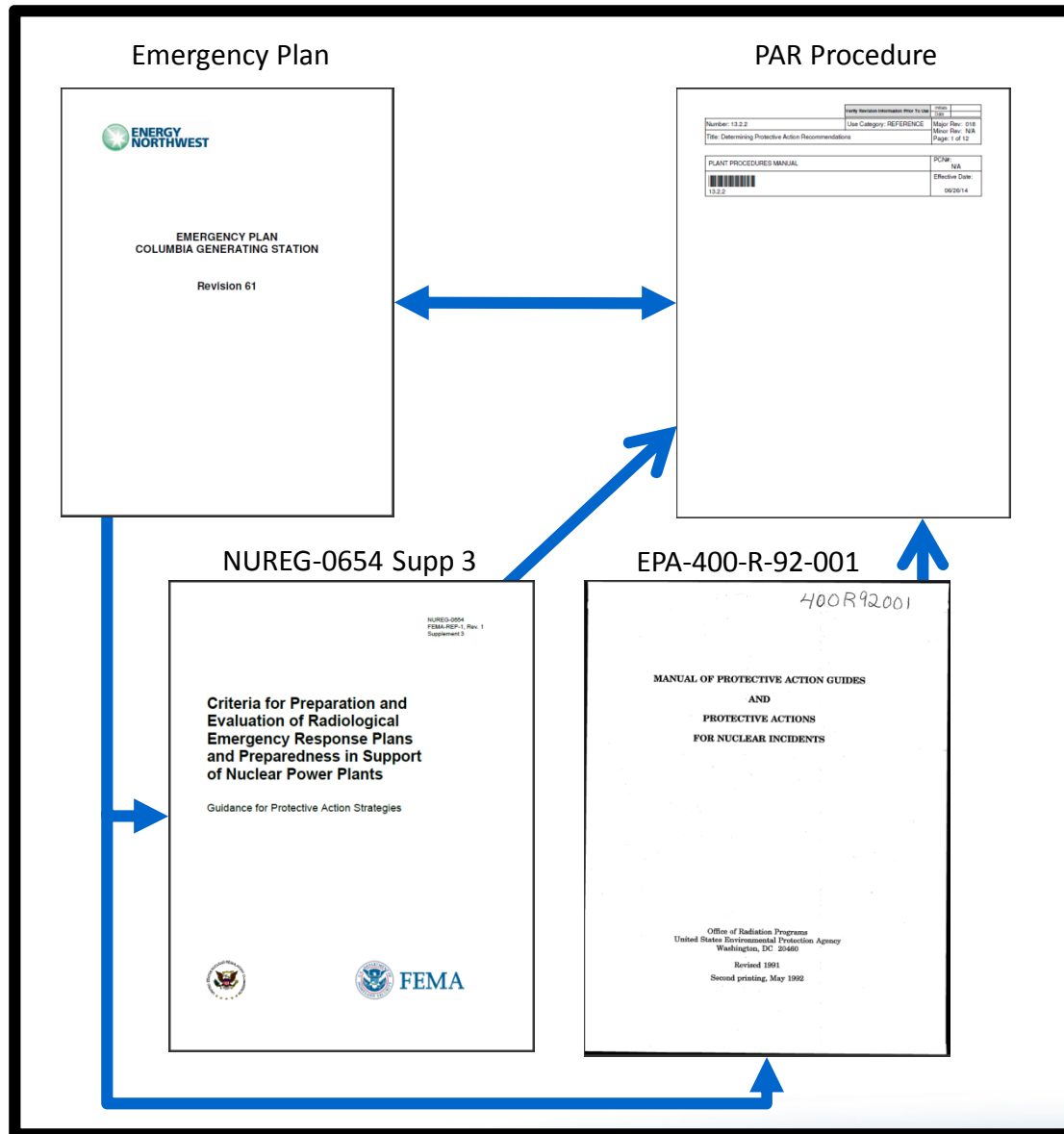
# Simplified Finding Statement



## Apparent Violation

E-Plan commitment says “X” and procedure does not implement X.

*“However, Revision 18 of Procedure 13.2.2 no longer follows the above quoted sections of the station’s Emergency Plan.”*



## Energy Northwest Position

E-Plan commitment says "X is based on federal guidance", procedure implements federal guidance, therefore procedure meets X.

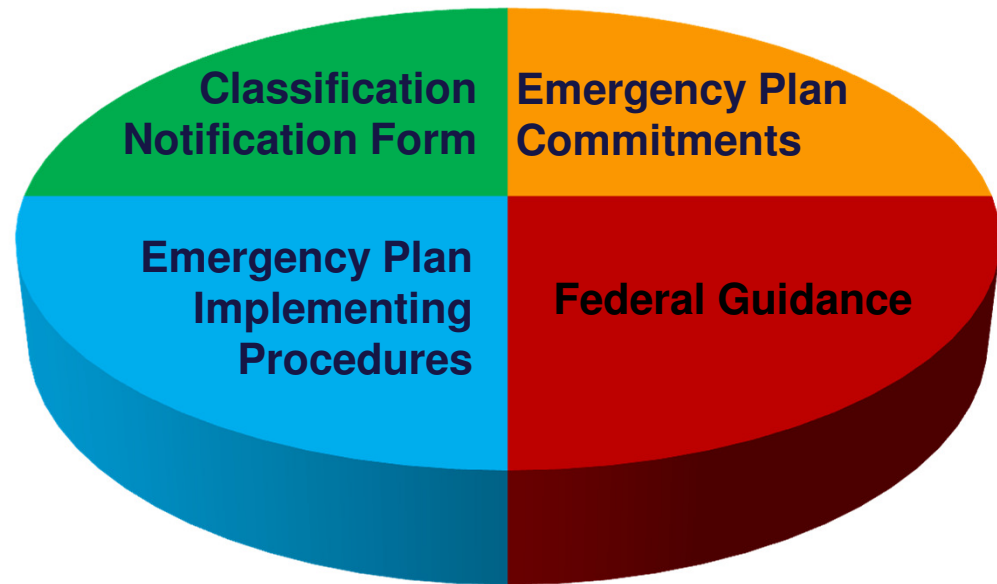
# Regulatory Compliance

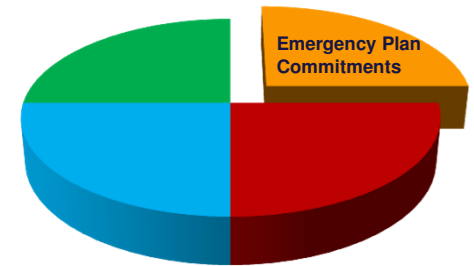
## 10 CFR 50.47(b)(10)

*“A range of protective actions has been developed for the plume exposure pathway EPZ for emergency workers and the public.*

*In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate...*

*..Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place.”*





# Emergency Plan Commitments

## Inspection Report

*“..the licensee failed to follow Sections...5.5 of Emergency Plan...which required that the appropriate protective actions for an airborne release of radioactivity were evacuation and sheltering, that decisions to evacuate or shelter are made based on the dose avoided, that protective action recommendations are based on plant or radiological conditions..”*



# Emergency Plan Commitments

## Emergency Plan Section 5.5

*“Protective Action Guides, discussed in Section 5.5.2, provide pre-planned guidance for making response decisions. When applied with professional judgment, they help to ensure rapid action to protect members of the public.”*

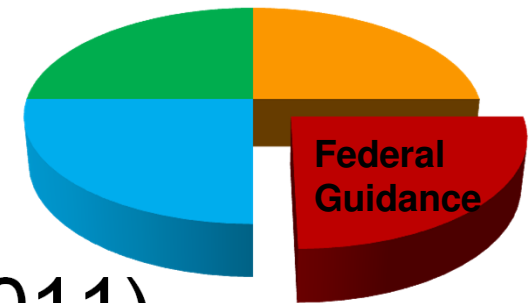


# Emergency Plan Commitments

## Emergency Plan Section 5.5.2

*“Shelter, evacuation or access control guidelines are based on the EPA Protective Action Guidelines and NUREG-0654 Supplement 3 recommendations.”*

Sean Clizbe (Manager Emerg Preparedness)



# NUREG-0654 Supp 3 (2011)

## Abstract

*“The guidance of Supplement 3 provides an acceptable method to comply with Appendix E to Part 50, Title 10 of the Code of Federal Regulations (10 CFR) Section IV, paragraph 3 in the use of evacuation time estimates in the formulation of protective action recommendations (PARs) for the plume exposure emergency planning zone, and provides guidance for the provisions of 10 CFR 50.47(b)(10) in the development of a range of PARs.”*

# NUREG-0654 Supp 3 (2011)

## 1.2 Regulatory Basis

*“Applicants and licensees<sup>2</sup> may voluntarily<sup>3</sup> use the guidance in this document to demonstrate compliance with Appendix E to Part 50, Section IV, paragraph 3 and the applicable provisions of section 50.47(b)(10)..”*

*“Licensees may use the information in this supplement for actions that do not require NRC review and approval such as changes to an emergency plan under 10 CFR 50.54 that do not require prior NRC review and approval.”*



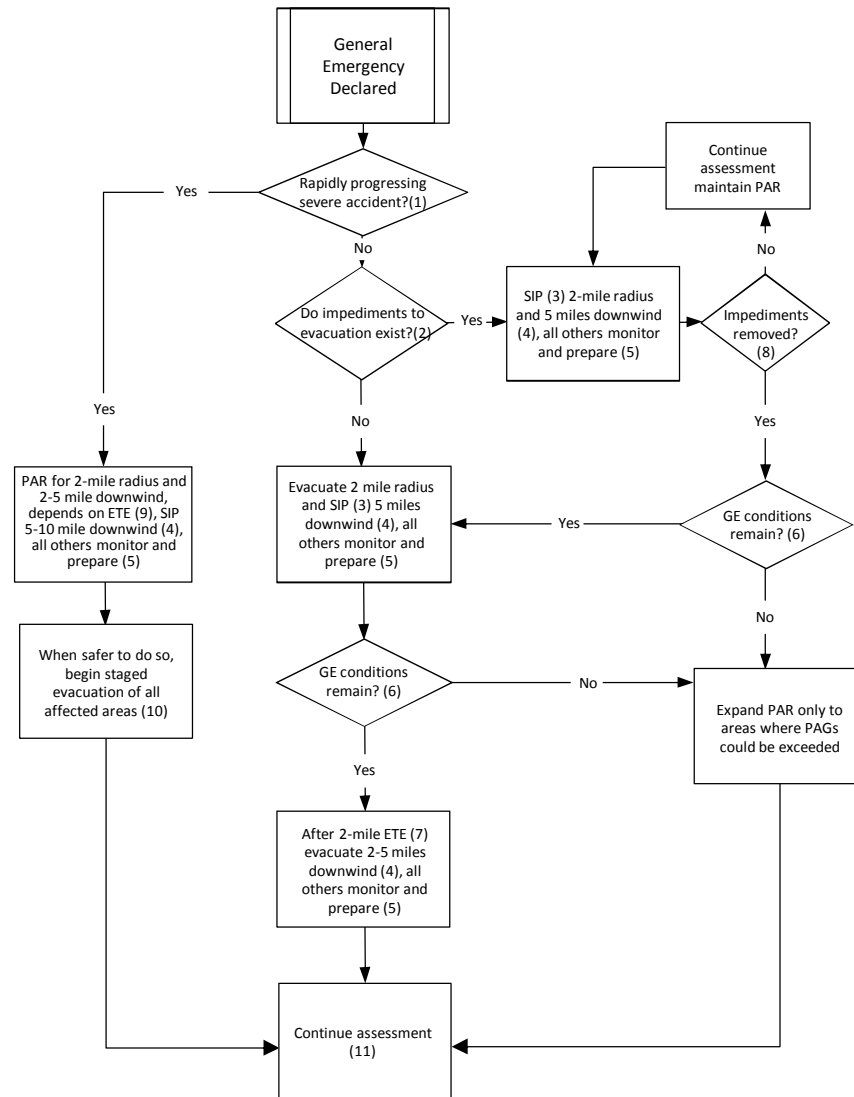
# NUREG-0654 Supp 3 (2011)

## ✦ 2.1 Development of Site-Specific Protective Action Recommendation and Decision Logic

*“The attachment to this supplement contains a protective action strategy development tool that...licensees should use to develop PAR procedures.”*

- ✦ Energy Northwest used the attachment of Supplement 3 for development of site specific PARS in procedure PPM 13.2.2 of Revision 18

# NUREG-0654 Supplement 3 (2011) Attachment Tool



Protective action strategy development tool

# NUREG-0654 Supp 3 (2011)

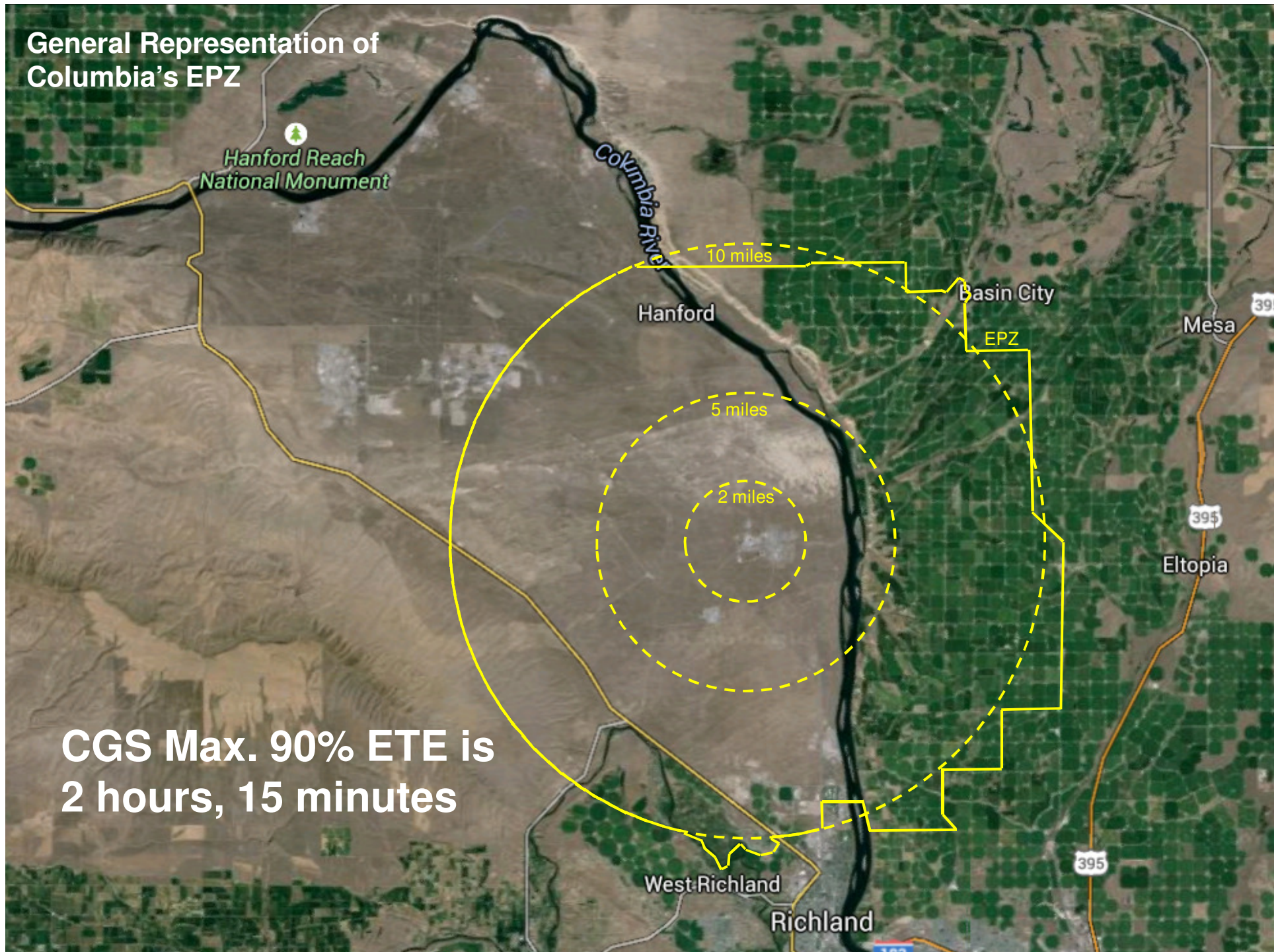
## ✦ Protective Action Strategy Development Tool Notes

*“It is not intended that licensees or offsite response organizations (OROs) have protective action implementing procedures that are exactly the same as provided here. Licensees for each nuclear power plant should develop site-specific strategies and decision tools/procedures for the site using the guidance provided below in collaboration with OROs responsible for protective action decision making.”*

- ✦ Energy Northwest collaborated with Offsite Response Organizations in the development of “appropriate” PARs for Columbia using the attachment in Supplement 3 to arrive at our site-specific procedure



## General Representation of Columbia's EPZ



# NUREG-0654 Supp 3 (2011)

## ✦ 2.7 Strategy for Rapidly Progressing Scenarios

*“For sites at which the 90-percent ETE for the general public of the full EPZ is less than approximately 3 hours, results showed that, for the rapidly progressing scenario, evacuation is the most appropriate protective action.”*

- ✦ Columbia’s evacuation time estimate (ETE) less than 3 hours for the entire Emergency Planning Zone (EPZ)

## ✦ 1.4 Background

*“ETEs can be used as timing criteria to expand staged evacuation and for SIP versus evacuation decision making for large early release scenarios”*

- ✦ Due to effect on ETE of low population in 0-5 miles, staged evacuation was judged to be unnecessary

# NUREG-0654 Supp 3 (2011)

## ✦ **Note 2: Impediments to Evacuation**

*“Impediments to evacuation include the following:*

- *Evacuation support (e.g., traffic control)...*
- *In a hostile-action-based GE (armed attack)...*
- *In the event of adverse weather...”*

- ✦ Energy Northwest evaluated each impediment and collaborated with OROs on PPM 13.2.2 procedure development



# NUREG-0654 Supp 3 (2011)

## ✦ Evacuation Support

*“Many sites have a low population density within 2 miles, and lack of traffic control may not be considered an impediment. The licensee and OROs should discuss this element and reach an agreement... The licensee would base procedures on the agreement and would not confer with OROs before making the initial PAR notification”*

- ✦ Due to low population density “evacuation support” not a realistic impediment at Columbia. OROs agreed.

# NUREG-0654 Supp 3 (2011)

## ✦ Hostile Action

*“ORO may determine that an initial recommendation to shelter in place (SIP) rather than evacuation is the preferred path. The licensee would discuss this element with OROs and reach an agreement during the development process. The licensee would base procedures on the agreement and would not confer with OROs before making the initial PAR notification.”*

- ✦ Agreement reached with OROs prior to issuance of procedure. PPM 13.2.2 Revision 18 is based on agreement.



# NUREG-0654 Supp 3 (2011)

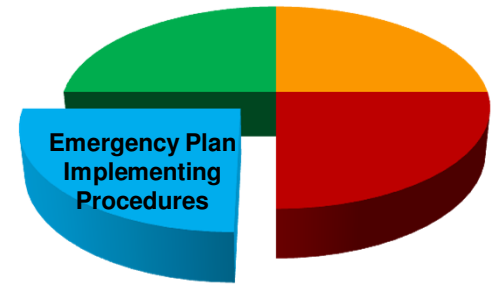
## ✦ Adverse Weather

*“In the event of adverse weather, licensees are not responsible for soliciting information or for making a determination that weather or other impediments (e.g., an earthquake or wildfire) for safe public evacuation exist at the time of the emergency. However, the licensee will consider an impediment to exist if OROs have previously notified it of such an impediment (e.g., roadways are closed because of deep snow). During the planning process, OROs may determine that the licensee does not need to consider adverse weather in its plant PAR procedures.”*

- ✦ Agreement reached with OROs that adverse weather need not be considered in procedure. However, procedure still retains consideration for sheltering in adverse weather conditions during a radiological release.

# Supplement 3 (2011) Summary

- ✦ Supplement 3 encourages licensees to use guidance within it for developing procedures to meet 50.47(b)(10)
- ✦ Supplement 3 identifies evacuation as the most appropriate for rapidly progressing scenarios
- ✦ Energy Northwest collaborated with ORO's in the development of “appropriate” PARs for Revision 18 of PPM 13.2.2
- ✦ Consistent with Emergency Plan section 5.5.2, protective action strategy for shelter and evacuation is based on NUREG-0654 Supplement 3 (2011)



# PPM 13.2.2 Revision 18 Changes

## Inspection Report Cover Letter

*“Specifically, on June 16, 2014, when Columbia Generating Station implemented Revision 18 of...Procedure 13.2.2...it inappropriately*

*(1) removed shelter-in-place as a protective action that can be recommended to offsite authorities, (2) removed the recommendation of protective actions for planned releases of radioactive material during an accident, and (3) limited the ability of the emergency response organization to recommend protective actions outside of the plume exposure emergency planning zone.”*

# PPM 13.2.2 Revision 18 Changes

- ✦ Implemented 2011 version of NUREG-0654 Supplement 3
  - Improved strategies for protection of public health and safety
  - Incorporated results of evaluation of shelter-in-place considerations as described in Supplement 3
- ✦ Formatting improvements

# Initial PAR

## Revision 17

### 4.2 Initial Plant Based PARs for General Emergency Classifications

- 4.2.1 Refer to Attachment 7.1, Decision Guide for Offsite Protective Action Recommendations to ensure appropriate PAR is determined.
- a. Use the "Downwind Sections Table" in attachment to determine appropriate sections.
- 4.2.2 Indicate the PAR on the Classification Notification Form (CNF), Form 24075, and make the required offsite notifications in accordance with PPM 13.4.1, Emergency Notifications.
- 4.2.3 The EOF Manager should ensure the status of PARs is tracked until implementation is complete and status is indicated on the PAR Status Board. Completed PARs are indicated on the PAR status board by the use of colored marker.
- 4.2.4 After making the initial Protective Action Recommendations for the General Emergency classification, continue with event assessment based on available plant, meteorological data, dose projection, and field monitoring information.
- a. Continuing assessments should be used to determine if a protective action should be expanded, with field monitoring data being the preferred basis by which to determine if people should be relocated from sheltered areas.
- b. IF an additional PAR is required, THEN make the required offsite notifications in accordance with PPM 13.4.1, Emergency Notifications.

## Revision 18

### 4.2 Initial Plant Based PARs for General Emergency Classifications

- 4.2.1 **REFER** to Attachment 7.1, Decision Guide for Offsite Protective Action Recommendations to ensure appropriate PAR is determined.
- a. **IF** a dose projection has been made, **THEN DETERMINE** appropriate downwind section(s) based on the dose projection program output.
- b. **IF NO** dose projection is made, **THEN USE** the "Downwind Sections Table" in attachment to determine appropriate sections.
- 4.2.2 **INDICATE** the PAR on the Classification Notification Form (CNF), Form 24075, **AND MAKE** the required offsite notifications in accordance with PPM 13.4.1, Emergency Notifications.
- 4.3 Monitor Conditions for Possible PAR Changes**
- 4.3.1 The EOF Manager should **ENSURE** the status of PARs is tracked until implementation is complete.
- a. **ENSURE** PARs are indicated on the PAR Status Board by the use of colored marker.
- 4.3.2 **CONTINUE** event assessment after making the initial Protective Action Recommendations for the General Emergency classification based on:
- available plant data,
  - meteorological data
  - dose projections
  - field monitoring information



# PAR Update

## Revision 17

### 4.3 Offsite PARs Based On Projected Doses or Offsite Survey Results

**NOTE:** Do not delay recommending offsite protective actions while waiting for field monitoring results to verify the accuracy of the dose projection results.

- 4.3.1 Obtain and review applicable offsite dose projection data.
- 4.3.2 Determine the appropriate offsite PAR by comparing the plume projected dose and/or Field Monitoring Team data with the Protective Action Guidelines (PAGs) and guidance provided in Attachment 7.2, PAGs for the Early Phase of a Nuclear Incident.
- 4.3.3 Based on current meteorological data, determine the affected Plume EPZ sector(s) population centers within those affected areas and estimated plume arrival time in those areas.
- 4.3.4 Based on available weather forecast data, evaluate the potential for wind direction changes during the estimated duration of the release and the potential effect on the identified areas.
- 4.3.5 For a planned Puff Release or known impediment refer to the Summary of Results of Evacuation Times Analysis, Attachment 7.3, for the affected sections to determine if prompt evacuation or sheltering with delayed evacuation is appropriate.
- If there is time to notify the public and evacuate before plume arrival, there are no local constraints (i.e., severe weather), and evacuation appears to offer a significant reduction in dose, recommend evacuation.
  - If travel conditions present extreme hazard or there are local constraints, evaluate the benefits of sheltering vs. evacuation.

## Revision 18

### 4.4 **Updating** Offsite PARs Based on Projected Doses or Offsite Survey Results

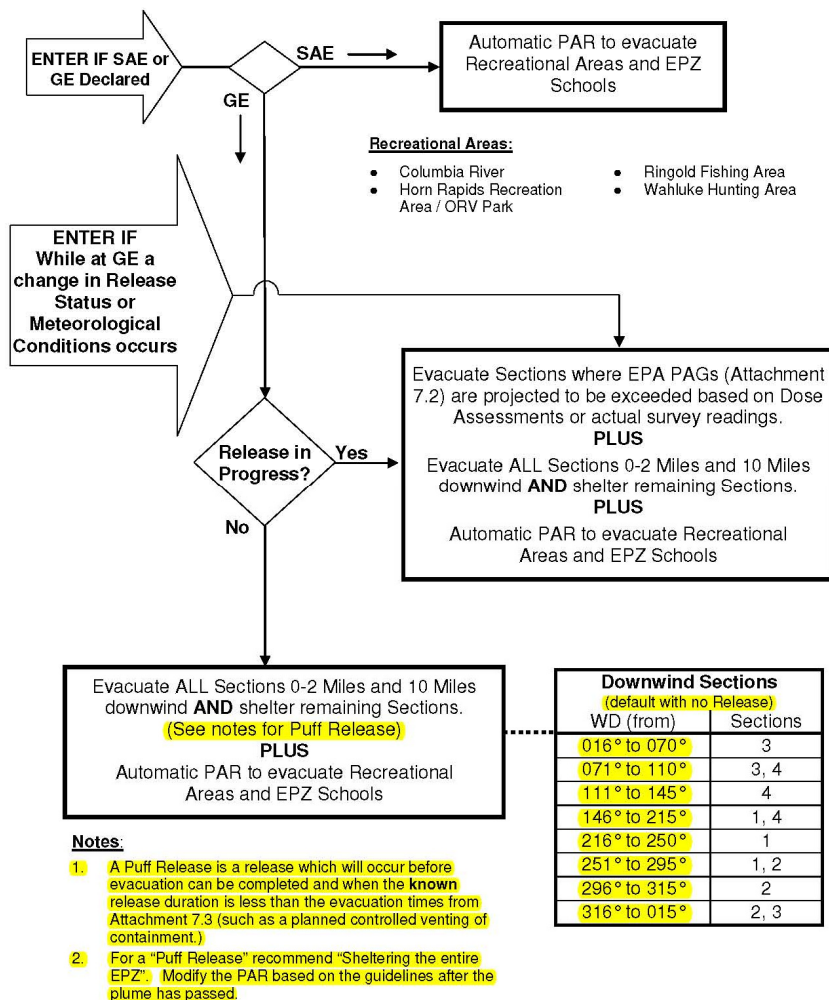
**NOTE:** Do not delay recommending offsite protective actions while waiting for field monitoring results to verify the accuracy of the dose projection results.

- 4.4.1 **OBTAIN AND REVIEW** applicable offsite dose projection **and/or survey data**.
- 4.4.2 **DETERMINE** the appropriate offsite PAR by comparing the plume projected dose and/or Field Monitoring Team data with the Protective Action Guidelines (PAGs) and guidance provided in Attachment 7.2, PAGs for the Early Phase of a Nuclear Incident.
- If review of dose projections or survey results indicate a PAG has been exceeded in any Sections not already evacuated, **THEN ISSUE** a new PAR for additional affected Sections
  - If dose projections or survey results indicate a PAG may be exceeded beyond 10 miles, **THEN REFER** to step 4.5.
- 4.4.3 Updating Offsite PARs Based on Change of Wind Direction with NO PAG exceeded.
- ISSUE** a new PAR **ONLY** if the following conditions are met:
    - The change in wind direction affects a downwind Section (see Attachment 7.1 for downwind Sections) for which an Evacuation PAR has **NOT** been issued. **AND**
    - Containment Radiation Monitor reading GT 14,000 R/hr. **AND**
    - LOSS OR POTENTIAL LOSS** of Primary Containment as indicated by the Fission Product Barrier Degradation Table in PPM 13.1.1, Classifying the Emergency.
- 4.4.4 If there is to be a planned Release (containment venting), **THEN DISCUSS** proposed activity with offsite authorities to assist them with Protective Action implementation.
- 4.4.5 **WHEN** circumstances such as weather, distance or concurrent emergencies may impact specific areas for which PARs are being proposed, **THEN INFORM** the Benton and Franklin County EOCs which sections are most affected so that routes to be taken or avoided may be identified, or other special considerations in the notification to offsite agencies.
- 4.4.6 If any of the above actions result in a change to established PARs, **THEN COMPLETE** the appropriate parts of the CNF, and make the required notifications in accordance with PPM 13.4.1, Emergency Notifications.



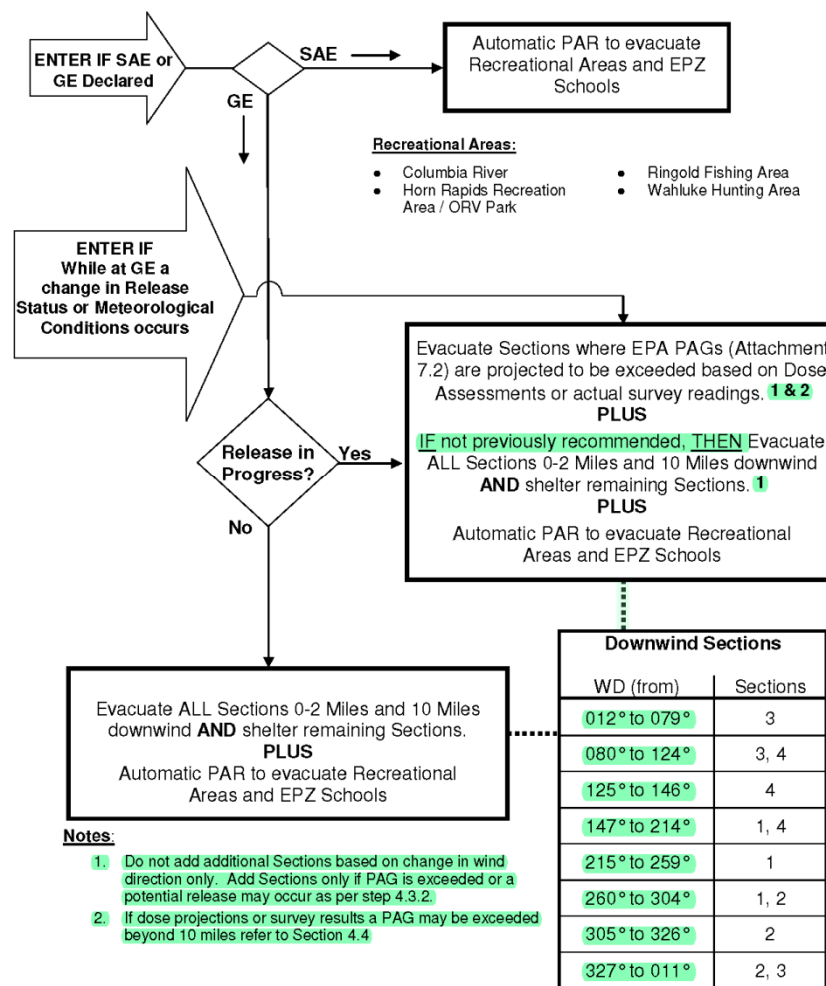
## Attachment 7.1 - Revision 17

### DECISION GUIDE FOR OFFSITE PROTECTIVE ACTION RECOMMENDATIONS



## Attachment 7.1 - Revision 18

### DECISION GUIDE FOR OFFSITE PROTECTIVE ACTION RECOMMENDATIONS







## Attachment 7.2 - Revision 17

### PAGS FOR THE EARLY PHASE OF A NUCLEAR INCIDENT

PROTECTIVE ACTION	PAG (projected dose)	COMMENTS
Evacuation (or sheltering <sup>1</sup> )	1 - 5 Rem TEDE OR 5 - 25 Rem CDE thyroid OR 50 - 500 Rem skin	Evacuation (or, for some situations, sheltering <sup>1</sup> ) should normally be initiated at the lowest level of the range.

From EPA 400, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

<sup>1</sup> Sheltering may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions.

#### Evacuation vs. Sheltering

Because of the higher risk associated with evacuation of some special groups in the population (e.g. those who are not readily mobile), sheltering may be the preferred alternative for such groups as a protective action at projected doses up to 5 Rem TEDE. In addition, under unusually hazardous environmental conditions, use of sheltering at projected doses up to 5 Rem to the general population (and up to 10 Rem to special groups) may be justified.

Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 Rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile, and d) local physical factors which impede evacuation.

## Attachment 7.2 - Revision 18

### PAGS FOR THE EARLY PHASE OF A NUCLEAR INCIDENT

PROTECTIVE ACTION	PAG (projected dose)	COMMENTS
Evacuation (or sheltering <sup>1</sup> )	1 - 5 Rem TEDE OR 5 - 25 Rem CDE thyroid OR 50 - 500 Rem skin	Evacuation (or, for some situations, sheltering <sup>1</sup> ) should normally be initiated at the lowest level of the range.

From EPA 400, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

<sup>1</sup> Sheltering may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions.

#### Evacuation vs. Sheltering

Because of the higher risk associated with evacuation of some special groups in the population (e.g. those who are not readily mobile), sheltering may be the preferred alternative for such groups as a protective action at projected doses up to 5 Rem TEDE. In addition, under unusually hazardous environmental conditions, use of sheltering at projected doses up to 5 Rem to the general population (and up to 10 Rem to special groups) may be justified. **Offsite officials will determine when the use of sheltering is appropriate.**

Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 Rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile, and local physical factors which impede evacuation.



# PPM 13.2.2 Revision 18 Changes

## Inspection Report

*“.. Specifically, Columbia Generating Station revised emergency plan implementing Procedure 13.2.2, “Determining Protective Action Recommendations,” on June 16, 2014, so that it:*

- Removed the responsibility of the emergency coordinator in the control room (shift manager) to make protective action recommendations for areas outside the plume phase (10-mile) emergency planning zone.”*



# PPM 13.2.2 Revision 18 Changes

## Emergency Plan Section 2.1

*“Responsibility for emergency direction and control (i.e., overall direction of the plant's emergency response which must include the non-delegable responsibilities for emergency classification, the decision to notify and to recommend protective actions to authorities responsible for offsite emergency measures) is normally transferred from the Shift Manager to the EOF Manager. However, if the situation dictates, the responsibilities may be transferred from the Shift Manager to the TSC Manager and then to the EOF Manager.”*

## Emergency Plan Section 5.5.2

*“Plant and offsite officials will continue to assess plant conditions to determine additional protective actions. These protective actions should be based on field monitoring data and dose projections that indicate EPA PAGs may be exceeded in areas beyond those that have been evacuated.”*



## Expansion of Initial PARs Revision 17

- 4.3.9 Plume PARs should be considered beyond 10 miles if dose projections indicate PAGs at 10 miles may be exceeded. {5.1.1}
- For the Control Room, notify the offsite agencies via the Crash Phone that dose projections indicate that PAGs beyond 10 miles may be exceeded. Indicate that the TSC or EOF will formulate PARs for affected areas.
  - For the TSC or EOF:
    - Obtain downwind field team readings to verify dose projection results.
    - If time permits, consult with Benton and Franklin County EOCs on the recommendation to evacuate beyond 10 miles.
    - For PARs beyond 10 miles, do not use the 90 degree sector boundaries to define the affected area beyond 10 miles.
    - To define the boundaries of the PAR beyond 10 miles, use geo-political boundaries such as roads, rivers and county lines.
    - The area of the PAR should include those areas downwind where the PAG values are projected to be exceeded.
    - IF plume PARs are issued for areas beyond 10 miles that could affect areas outside Benton and Franklin counties, THEN the Emergency Director should ensure that the State EOC is notified.

- 2.8 Plant and offsite officials should continue assessment actions based on additional plant information, dose projections, and field monitoring results. After performing the initial early evacuation actions near the plant, licensee and offsite officials should modify their protective action recommendations as necessary based on (1) field monitoring to locate areas with high levels of contamination (hot spots) and (2) dose projections which indicate that EPA protective action guide doses may be exceeded in areas beyond those that have been evacuated. On the basis of this information, plant and offsite officials may expand the evacuations to encompass other areas in the plume EPZ and, for the worst case accidents, protective actions may be required beyond the plume EPZ.

## Expansion of Initial PARs Revision 18

- 4.5.1 **CONSIDER** plume PARs beyond 10 miles if dose projections indicate PAGs at 10 miles may be exceeded. {5.1.1}
- For the Control Room, **NOTIFY** the offsite agencies via the Crash Phone that dose projections indicate that PAGs beyond 10 miles may be exceeded. Indicate that the TSC or EOF will formulate PARs for affected areas.
  - For the TSC or EOF:
    - OBTAIN** downwind field team readings to verify dose projection results.
    - IF time permits, **THEN CONSULT** with Benton and Franklin County EOCs on the recommendation to evacuate beyond 10 miles.
    - DO NOT USE** 90 degree sector boundaries to define the affected area beyond 10 miles for PARs beyond 10 miles.
    - USE** geo-political boundaries such as roads, rivers and county lines to define the boundaries of the PAR beyond 10 miles.
    - INCLUDE** those areas downwind where the PAG values are projected to be exceeded.
    - IF plume PARs are issued for areas beyond 10 miles that could affect areas outside Benton and Franklin counties, **THEN** the Emergency Director should **ENSURE** that the State EOC is notified.

- 2.9 Plant and offsite officials should continue assessment actions based on additional plant information, dose projections, and field monitoring results. After performing the initial early evacuation actions near the plant, licensee and offsite officials should modify their protective action recommendations as necessary based on (1) field monitoring to locate areas with high levels of contamination (hot spots) and (2) dose projections which indicate that EPA protective action guide doses may be exceeded in areas beyond those that have been evacuated. On the basis of this information, plant and offsite officials may expand the evacuations to encompass other areas in the plume EPZ and, for the worst case accidents, protective actions may be required beyond the plume EPZ.



# PPM 13.2.2 Rev 18 SIP Guidance

## Inspection Report

*“Specifically, Columbia Generating Station revised emergency plan implementing Procedure 13.2.2, “Determining Protective Action Recommendations,” on June 16, 2014, so that it:*

- No longer provided a mechanism to make a shelter-in-place protective action recommendation;*
- No longer ensured a protective action recommendation in the event of a planned release of radioactive material;”*

Dave Brown (Emergency Director)

# PPM 13.2.2 Rev 18 SIP Guidance

## 4.2 Initial Plant Based PARs for General Emergency Classifications

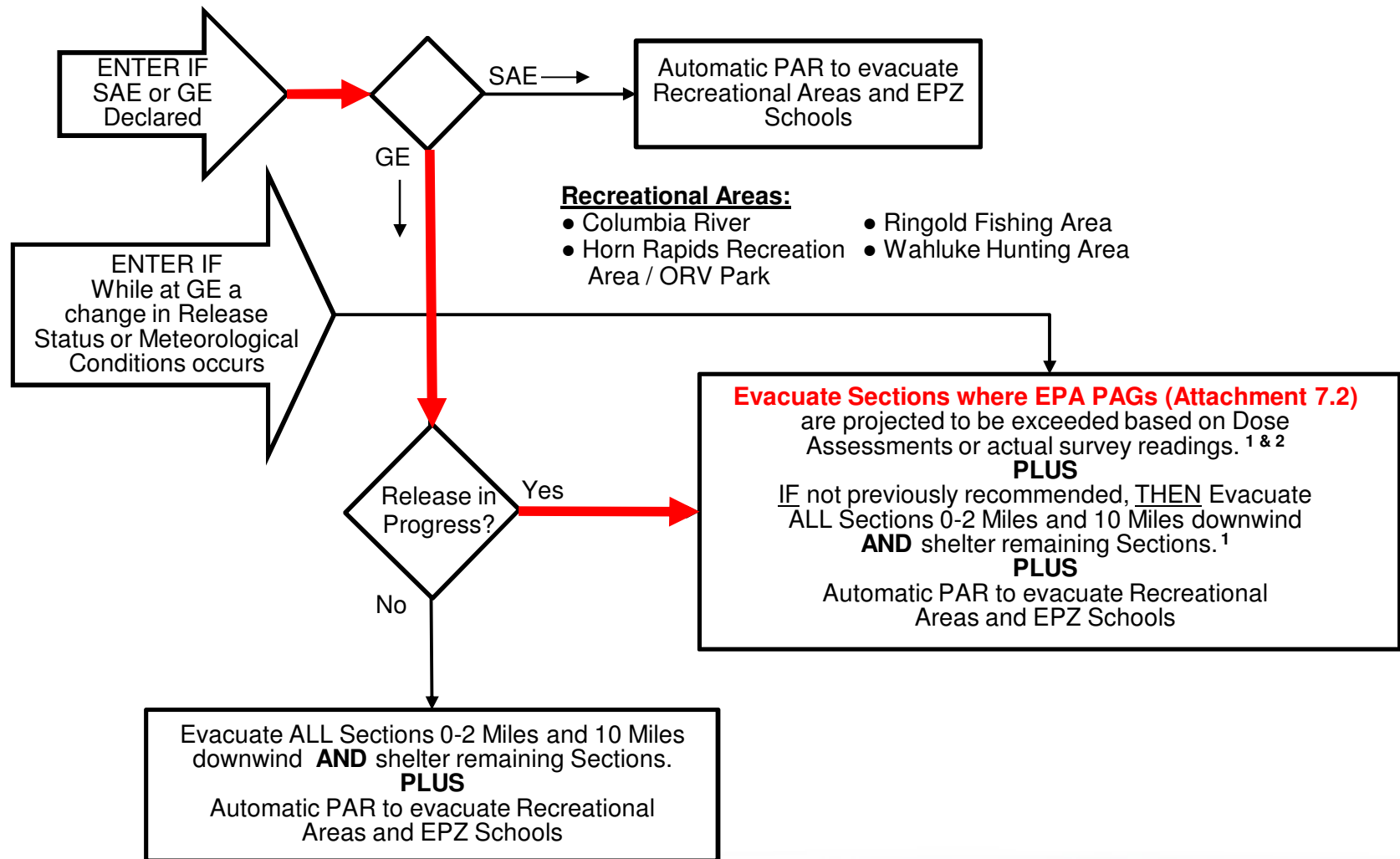
4.2.1 **REFER** to Attachment 7.1, Decision Guide for Offsite Protective Action Recommendations to ensure appropriate PAR is determined.

- a. IF a dose projection has been made,  
THEN DETERMINE appropriate downwind section(s) based on the dose projection program output.
- b. IF NO dose projection is made,  
THEN USE the “Downwind Sections Table” in attachment to determine appropriate sections.

4.2.2 **INDICATE** the PAR on the Classification Notification Form (CNF), Form 24075, **AND MAKE** the required offsite notifications in accordance with PPM 13.4.1, Emergency Notifications.



## Attachment 7.1 – Initial PAR, General Emergency, Release in Progress or Planned Release





## Attachment 7.2 - PAGs for the Early Phase of a Nuclear Incident

PROTECTIVE ACTION	PAG (projected dose)	COMMENTS
Evacuation (or sheltering <sup>1</sup> )	1 - 5 Rem TEDE OR 5 - 25 Rem CDE thyroid OR 50 - 500 Rem skin	Evacuation (or, for some situations, sheltering <sup>1</sup> ) should normally be initiated at the lowest level of the range.

From EPA 400, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents

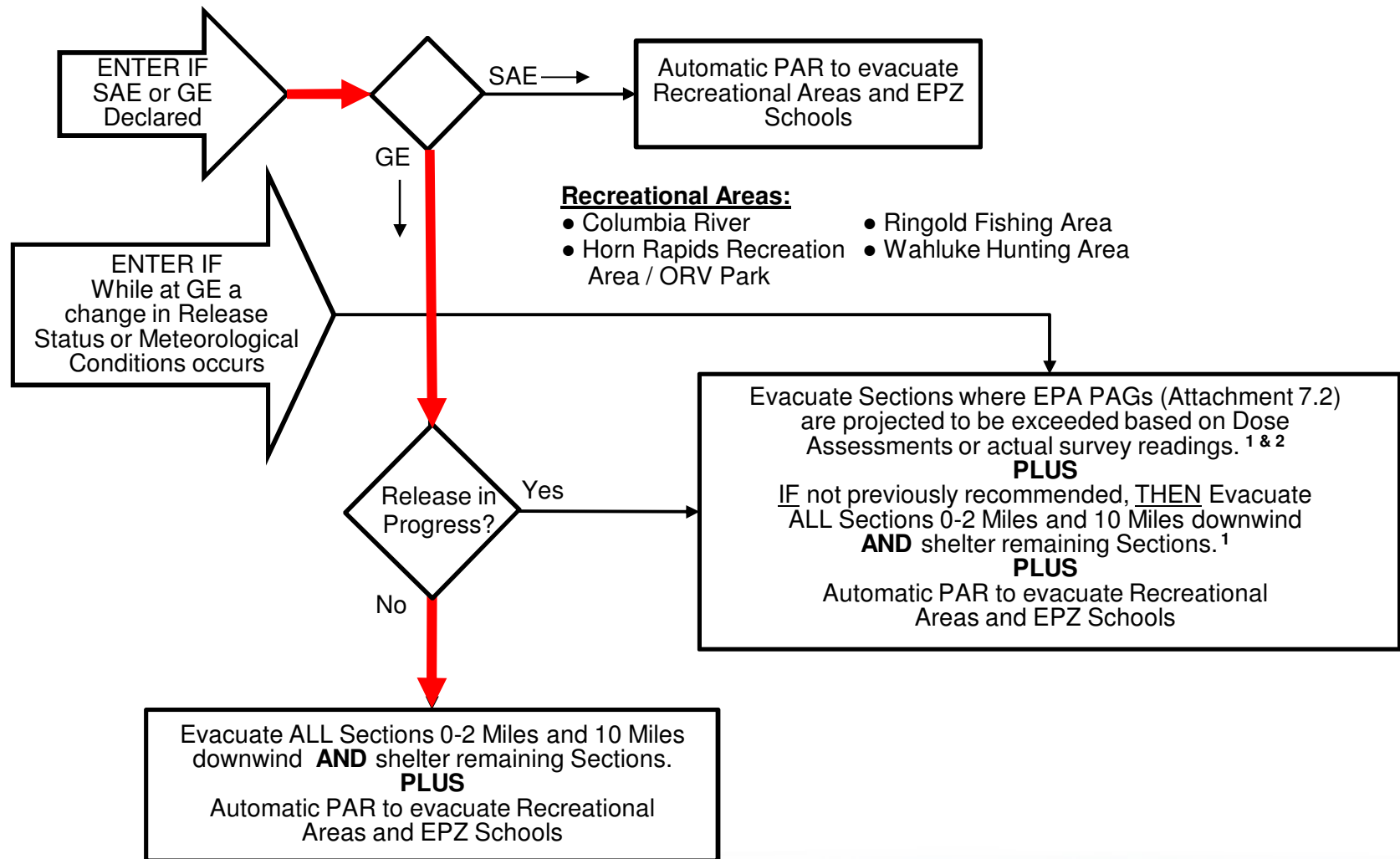
<sup>1</sup> Sheltering may be the preferred protective action when it will provide protection equal to or greater than evacuation, based on consideration of factors such as source term characteristics, and temporal or other site-specific conditions.

### Evacuation vs. Sheltering

Because of the higher risk associated with evacuation of some special groups in the population (e.g. those who are not readily mobile), sheltering may be the preferred alternative for such groups as a protective action at projected doses up to 5 Rem TEDE. In addition, under unusually hazardous environmental conditions, use of sheltering at projected doses up to 5 Rem to the general population (and up to 10 Rem to special groups) may be justified. Offsite officials will determine when the use of sheltering is appropriate.

Illustrative examples of situations or groups for which evacuation may not be appropriate at 1 Rem include: a) the presence of severe weather, b) competing disasters, c) institutionalized persons who are not readily mobile, and local physical factors which impede evacuation.

## Attachment 7.1 – Initial PAR, General Emergency, No Release in Progress





# Updating PARs

## Inspection Report

*“Revision 18, Step 4.4.4, states, in part, “IF there is to be a planned release (containment venting) THEN discuss the proposed activity with offsite authorities to assist them with protective action implementation.”*

*“Revision 18, Step 4.4.5, states, in part, “WHEN circumstances such as weather, distance, or concurrent emergencies may impact specific areas for which PARs are being proposed, THEN inform the Benton and Franklin County EOFs...”*

*The inspectors determined that Revision 17 required the licensee make a protective action recommendation to offsite authorities for planned releases of radioactive material into the environment, while Revision 18 requires the licensee to discuss a planned release with offsite authorities. The inspectors concluded that a discussion intended to assist offsite authorities is not equivalent to a protective action recommendation from the licensee to offsite authorities.”*



# Updating PARs

## 4.4 Updating Offsite PARs Based on Projected Doses or Offsite Survey Results

NOTE: Do not delay recommending offsite protective actions while waiting for field monitoring results to verify the accuracy of the dose projection results.

4.4.1 **OBTAIN AND REVIEW** applicable offsite dose projection and/or survey data.

4.4.2 **DETERMINE** the appropriate offsite PAR by comparing the plume projected dose and/or Field Monitoring Team data with the Protective Action Guidelines (PAGs) and guidance provided in Attachment 7.2, PAGs for the Early Phase of a Nuclear Incident.

- a. IF review of dose projections or survey results indicate a PAG has been exceeded in any Sections not already evacuated,  
THEN ISSUE a new PAR for additional affected Sections
- b. IF dose projections or survey results indicate a PAG may be exceeded beyond, 10 miles,  
THEN REFER to step 4.5.



# Updating PARs

4.4.3 Updating Offsite PARs Based on Change of Wind Direction with NO PAG exceeded.

a. **ISSUE** a new PAR **ONLY** if the following conditions are met:

- The change in wind direction affects a downwind Section (see Attachment 7.1 for downwind Sections) for which an Evacuation PAR has **NOT** been issued.  
**AND**
- Containment Radiation Monitor reading GT 14,000 R/hr.  
**AND**
- **LOSS OR POTENTIAL LOSS** of Primary Containment as indicated by the Fission Product Barrier Degradation Table in PPM 13.1.1, Classifying the Emergency.

4.4.4 IF there is to be a planned Release (containment venting),  
THEN **DISCUSS** proposed activity with offsite authorities to assist them with Protective Action implementation.

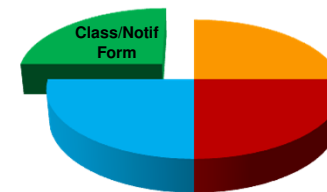


# Updating PARs

- 4.4.5 WHEN circumstances such as weather, distance or concurrent emergencies may impact specific areas for which PARs are being proposed, THEN **INFORM** the Benton and Franklin County EOCs which sections are most affected so that routes to be taken or avoided may be identified, or other special considerations in the notification to offsite agencies.
- 4.4.6 IF any of the above actions result in a change to established PARs, THEN **COMPLETE** the appropriate parts of the CNF, and make the required notifications in accordance with PPM 13.4.1, Emergency Notifications.



# Columbia Electronic Classification Notification Form



Type of Event: <input type="text" value="Drill"/>		COLUMBIA GENERATING STATION EMERGENCY CLASSIFICATION NOTIFICATION		NO: 15180																									
Notification Provided By: <input type="text" value="Select One"/>		Phone No: <input type="text" value="Select One"/>		Date <input type="text" value="06/12/2015"/>																									
		Classification/Status: <input type="text" value="Initial Classification"/>		Time <input type="text" value="HH:MM"/>																									
				<b>General Emergency</b>  <b>Automatic Protective Action Recommendations</b> <b>EVACUATE:</b> Columbia River Horn Rapids Recreation Area/ORV Park Ringold Fishing Area Wahluke Hunting Area Schools in EPZ  <b>Additional Protective Action Recommendations</b> <table border="1"><thead><tr><th rowspan="2">All Sections 0-2 miles</th><th colspan="4">2-10 miles</th></tr><tr><th>Section 1</th><th>Section 2</th><th>Section 3</th><th>Section 4</th></tr></thead><tbody><tr><td><input type="radio"/> No action</td><td><input type="radio"/> No action</td><td><input type="radio"/> No action</td><td><input type="radio"/> No action</td><td><input type="radio"/> No action</td></tr><tr><td><input type="radio"/> Shelter</td><td><input type="radio"/> Shelter</td><td><input type="radio"/> Shelter</td><td><input type="radio"/> Shelter</td><td><input type="radio"/> Shelter</td></tr><tr><td><input type="radio"/> Evacuate</td><td><input type="radio"/> Evacuate</td><td><input type="radio"/> Evacuate</td><td><input type="radio"/> Evacuate</td><td><input type="radio"/> Evacuate</td></tr></tbody></table> <p>Basis for PAR's: <input type="radio"/> Not Applicable <input type="radio"/> Radiological <input type="radio"/> Plant</p> <p>Note: Minimum PAR at General Emergency is: Evacuate All sections 0-2 miles; Evacuate 2-10 miles in downwind section; and Shelter 2-10 miles in remaining sections.</p> <b>Additional Information or Specific Protective Action Recommendations</b> <div><input type="text" value="None"/></div> <b>Security Event:</b> <input checked="" type="radio"/> No <input type="radio"/> Yes		All Sections 0-2 miles	2-10 miles				Section 1	Section 2	Section 3	Section 4	<input type="radio"/> No action	<input type="radio"/> No action	<input type="radio"/> No action	<input type="radio"/> No action	<input type="radio"/> No action	<input type="radio"/> Shelter	<input type="radio"/> Shelter	<input type="radio"/> Shelter	<input type="radio"/> Shelter	<input type="radio"/> Shelter	<input type="radio"/> Evacuate	<input type="radio"/> Evacuate	<input type="radio"/> Evacuate	<input type="radio"/> Evacuate	<input type="radio"/> Evacuate
All Sections 0-2 miles	2-10 miles																												
	Section 1	Section 2	Section 3	Section 4																									
<input type="radio"/> No action	<input type="radio"/> No action	<input type="radio"/> No action	<input type="radio"/> No action	<input type="radio"/> No action																									
<input type="radio"/> Shelter	<input type="radio"/> Shelter	<input type="radio"/> Shelter	<input type="radio"/> Shelter	<input type="radio"/> Shelter																									
<input type="radio"/> Evacuate	<input type="radio"/> Evacuate	<input type="radio"/> Evacuate	<input type="radio"/> Evacuate	<input type="radio"/> Evacuate																									
<b>Meteorological Data:</b> Wind Speed: <input type="text"/> (mph) from <input type="text"/> Precipitation: <input type="text"/> Stability Class: <input type="text"/>																													
<b>Offsite Release?</b> <input type="radio"/> No <input checked="" type="radio"/> Yes <input type="radio"/> Release Terminated  <input type="checkbox"/> Airborne <input type="checkbox"/> Waterborne Start of Release: Date: <input type="text" value="06/12/2015"/> Time: <input type="text"/> Release Terminated: Date: <input type="text"/> Time: <input type="text"/>																													
<b>State Criteria met for administering KI:</b> <input checked="" type="radio"/> No <input type="radio"/> Yes (Information Only) <input type="radio"/> 250 mrem/hr thyroid <input type="radio"/> 1.4 x 10 <sup>-7</sup> micro ci/cc I-131 <input type="radio"/> Unfiltered or unmonitored release from a nuclear power plant																													
EAL #: <input type="text" value="3.4.G.1"/>		DESCRIPTION OF INCIDENT: (Please provide enough detail for understanding.) <div><input type="text" value="Intentional venting of Primary Containment to prevent failure"/></div>																											
<input type="button" value="Exit"/>		<b>Prognosis of Situation:</b> <input type="radio"/> Unknown <input checked="" type="radio"/> Stable <input type="radio"/> Escalating <input type="radio"/> Improving <input type="button" value="Generate Print Copy"/>																											

Kurt Gosney (Acting General Manager Emergency Services)

# Lessons Learned

- ✦ Engagement with NEI EPWG
- ✦ Engagement with NSIR
- ✦ Inspection Interface



Don Gregoire (Manager Regulatory Affairs)



# Summary of Differences

## ✧ Inspection Report

*“Specifically, Columbia Generating Station revised emergency plan implementing Procedure 13.2.2, “Determining Protective Action Recommendations,” on June 16, 2014, so that it:*

- No longer provided a mechanism to make a shelter-in-place protective action recommendation”*

## ✧ Energy Northwest

A mechanism for making a shelter-in-place protective action recommendation is provided via Attachment 7.1 and 7.2 of PPM 13.2.2 Revision 18.





# Summary of Differences

## ✧ Inspection Report

*“Specifically, Columbia Generating Station revised emergency plan implementing Procedure 13.2.2, “Determining Protective Action Recommendations,” on June 16, 2014, so that it:*

- *No longer ensured a protective action recommendation in the event of a planned release of radioactive material”*

## ✧ Energy Northwest

A protective action for planned releases of radioactive materials is developed using Attachment 7.1 and 7.2 of PPM 13.2.2 Revision 18. In addition steps 4.2.2 (initial PAR) and 4.4.6 (updated PAR) ensure that notifications for a planned release of radioactive material are made.



# Summary of Differences

## ✧ Inspection Report

*“Specifically, Columbia Generating Station revised emergency plan implementing Procedure 13.2.2, “Determining Protective Action Recommendations,” on June 16, 2014, so that it:*

- Removed the responsibility of the emergency coordinator in the control room(shift manager) to make protective action recommendations for areas outside the plume phase (10-mile) emergency planning zone.”*

## ✧ Energy Northwest

No responsibility was removed from the shift manager. Step 4.5.1 of PPM 13.2.2 Revision 18 correctly transfers responsibilities to the TSC or EOF for the expansion of PARs beyond the EPZ which requires field monitoring (an augmented function) to support conclusions. This is consistent with section 5.5.2 of the Columbia Emergency Plan.



# Summary of Differences

## ✧ Inspection Report

*“Specifically, the licensee failed to follow Sections 2.1...of Emergency Plan, Revisions 59 through 61...”*

## ✧ Energy Northwest

Energy Northwest complies with Emergency Plan section 2.1 based on taking into consideration the additional text of Section 5.5.2. Specifically,

- Section 5.5.2 states that subsequent protective action for areas beyond those evacuated should be based on both dose monitoring and dose projections. Consistent with federal guidance.
- Dose monitoring is conducted by field teams which is an augmented ERO function. Augmented EROs are led by an Emergency Director in either the TSC or EOF.
- Step 4.5.1 of PPM 13.2.2 Revision 18 requires field team data for PAR determination.



# Summary of Differences

## ✧ Inspection Report

*“Specifically, the licensee failed to follow Sections...5.5 of Emergency Plan, Revisions 59 through 61...”*

## ✧ Energy Northwest

Energy Northwest complies with Emergency Plan section 5.5 based on taking into consideration the entire text of Sections 5.5 and 5.5.2. Specifically:

- Section 5.5 states that protective action guides discussed in section 5.5.2 provide pre-planned guidance for making response decisions
- Section 5.5.2 states that shelter and evacuation guidelines are based on EPA and NUREG-0654 Supplement 3 guidelines
- Protective action recommendation guidance in Attachment 7.1 and 7.2 of PPM 13.2.2 Revision 18 are based on EPA and NUREG-0654 Supplement 3 (2011) recommendations.

# Significance Assessment

## Stated Basis for Significance

*“The planning standard function was degraded because, although the licensee could make appropriate recommendations for evacuation of the public, the licensee could no longer make recommendations for the public to shelter-in-place when appropriate, and limitations could result in delays in making appropriate protective action recommendations for areas outside the emergency planning zone.”*

# Significance Assessment

## Very Low Safety Significance

### 1. (2015) – Region I Plant

- Failure to maintain effectiveness of Emergency Plan
- Procedure changes made to PAR flowchart that would result in “inappropriately recommending evacuation of downwind areas and many more emergency response planning areas (ERPAs) than intended”
- Both downwind and many other areas affected with inappropriate evacuation

# Significance Assessment

## 2. (2012/2011) – 2 Region IV Plants

- Failure to develop and have in place guidelines for the choice of protective actions consistent with federal guidance (procedure did not implement EPA-400-R-92-001)
- Automatic process extended protective action for evacuation based on plant conditions and changes in wind direction without considering radiation dose



# Significance Assessment

## Low to Moderate Safety Significance

### 1. (2015) – Region IV Plant

- Changed PAR procedure to eliminate PARs over the ocean within 10 mile EPZ

### 2. (2012) – Region III Plant

- Changed PAR procedure to eliminate decision-making process for PARs beyond EPZ
- Updated evacuation PAR during drill to Shelter

# Summary of Significance

- ✦ Columbia continues to meet Emergency Plan Commitments
- ✦ All considerations for shelter-in-place found in applicable federal guidance are addressed in PPM 13.2.2 Rev 18
- ✦ Compliance with NUREG-0654 Supplement 3 results in 10 CFR 50.47(b)(10) compliance
- ✦ Public health and safety appropriately protected

# Closing

Grover Hettel  
Vice President Operations