

COMMENT

432.01
(3.0)*

Your proposed emergency classification/notification/immediate action scheme, presented in Appendix I and II of the WNP-2 Emergency Plans, is not clearly compatible with that of the State of Washington and those of local agencies. Whereas you have established three classes for which offsite notification and/or support would be advisable or necessary, the State has six such classes. Additionally, the affected counties have a priority scheme which your plan does not recognize.

Furthermore, the Benton/Franklin County plan explicitly states that WPPSS will provide specific recommendations for protective action in the event of an emergency and this statement is not acknowledged in your plans.

Accordingly, show how your Emergency Plans are coordinated with the various emergency plans of the state and local agencies. Provide this information in a tabular format using the following column headings: (1) postulated accident(s); (2) probable detection means; (3) emergency classification(s); (4) notification(s) required by WPPSS and expected by the State and the affected counties; and (5) immediate actions planned. Your response in the suggested format will conform to the guidance contained in Section 4.2 of the Guide** as well as most parts of Sections 4.1 and 6.2 of the Guide.

In this regard, we note that the consequences of your Maximum Hypothetical Accident Case (MHA), as described in Table 3.3-1 and Figures 5.4 and 5.5 of

7905110237

your Emergency Plans, could fall into either the Site Accident or the General Accident-Minor class of the State plan for areas beyond your designated "zero population zone." (Refer to page G-8-18 of your proposed Emergency Plans.) Remove this ambiguity.

RESPONSE:

The proposed emergency classification/notification/immediate action schemes presented in Appendix I and II are identical to the State of Washington and local agency plans. Appendix I is the Washington State Plan and Appendix II is the Benton/Franklin County Plan. Both plans use the same emergency classifications as the Hanford Site Plan with the exception of dividing the General Emergency class into major and minor. Although both state and county plans distinguish between an airborne release and a water dispersion release, the emergency classes are compatible.

At present, the State of Washington and Benton/Franklin County are reviewing their plans. The Supply System has discussed with the state and the county the desire to revise the section concerning Protective Action Guides to conform more closely to the EPA Protective Action Guides. The values proposed by the Supply System are given in Table 432.01-1. If these values are accepted by the state and county, they will be incorporated into the Hanford Site Emergency Plan. Meetings are presently underway in this regard.

The Benton/Franklin County plan states that Supply System will provide specific recommendations for protective actions. This will be performed through the use of an information sheet developed and included in the Emergency Plan Implementing Procedures. The

information sheet will be used to ensure all agencies called receive the same basic information and recommendations for protective actions. The Hanford Site Emergency Plan will be revised to include instructions concerning offsite notifications as follows:

Section 5.1.4 Site Emergency page 5-5, rewrite number 7) as follows:*

- 7) Notify the Washington State Department of Emergency Services, Benton/Franklin County Sheriffs, and the City of Richland to attain alert status.

Section 5.1.5 General Emergency page 5-7, add number 7) as follows:*

- 7) Notify the Washington State Department of Emergency Services, Benton/Franklin County Sheriff, and the City of Richland and provide specific recommendations for protective actions.

Table 432.01-1 presents quantitative emergency action levels and recommended actions for plant, site, and general emergencies, which have been proposed to the state and county. The action levels follow the guidance presented in Table 5.2 of document EPA-520/1-75-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents.

In response to the MHA ambiguity with respect to state and local plans, using Table 432.01-1, the MHA would be classified as a General Emergency. Table 432.01-2 shows the coordination of the emergency plan with the state and county plans.

*draft page revisions to the Emergency Plan are attached.

Also included is a draft update to Table 3.3-2, Doses Resulting from WNP-2 Accidents. This table represents updated data from the FSAR and will be incorporated into the Emergency Plan to replace the old table 3.3-2. All of section 3.3 will be revised to reflect the new analysis.

TABLE 432.01-1

PROJECTED EXPOSURE AT EXCLUSION AREA BOUNDARY

<u>Projected Dose To The Public</u>	<u>Emergency Classification</u>	<u>Recommended Actions</u>
<0.1 rem whole body <0.5 rem thyroid	Plant Emergency	1) No protective actions required.
≥0.1 rem whole body ≥0.5 rem thyroid	Site Emergency	1) Notify state and local emergency agencies. 2) Monitor environmental radiation levels.
≥1.0 rem whole body ≥5.0 rem thyroid	General Emergency	1) Control access. 2) Monitor environmental radiation level. 3) For low projected doses (1 to 5 rem whole body and/or 5 to 25 rem thyroid) seek shelter and consider evacuation of children and pregnant women. 4) For high projected doses (>5 rem whole body and/or 25 rem thyroid) conduct mandatory evacuation of affected area.

TABLE 432.01-2
POSTULATED ACCIDENT WHICH COULD RESULT IN RELEASES

FSAR CHAPTER	POSTULATED ACCIDENT	PROBABLE DETECTION MEANS*	EMERGENCY CLASSIFICATION	NOTIFICATIONS	IMMEDIATE ACTIONS
15.4.9	Control rod drop accident	1. Area radiation alarms 2. Main steam line radiation monitoring system 3. Turbine - generator building ventilation release duct radiation monitoring system	Plant	Headquarters	1. Declare plant emergency and initiate Emer- gency Plan Implementing Procedures
15.6.2	Instrument line pipe break	1. Area radiation alarms 2. Radiation monitor in the reactor building exhaust air plenum 3. Release duct - radiation monitor reactor building elevated	Plant	Headquarters	1. Declare plant emergency and initiate Emer- gency Plan Implementing Procedures

FSAR CHAPTER	POSTULATED ACCIDENT	PROBABLE DETECTION MEANS*	EMERGENCY CLASSIFICATION	NOTIFICATIONS	IMMEDIATE ACTIONS
15.6.4	Steam system piping break outside containment	1. Area radiation alarms 2. Main steam line radiation monitoring system 3. Turbine - generator building ventilation release duct radiation	Plant	Headquarters	1. Declare plant emergency and initiate Emergency Plan Implementing Procedures
15.6.5	Loss of coolant accident	1. Area radiation alarms 2. Reactor building elevated release duct radiation monitor	General	1. Headquarters 2. NRC 3. Washington State Dept. of Emergency service 4. Benton County Sheriff 5. Franklin County Sheriff 6. WNP-1/4 Construction site 7. Fast Flux Test Facility 8. FAA 9. U.S. Coast Guard	1. Declare general emergency and initiate Emergency Plan Implementing Procedures 2. Consider evacuation of exclusion area and low population zone based on projected dose and established protective action guides

FSAR CHAPTER	POSTULATED ACCIDENT	PROBABLE DETECTION MEANS*	EMERGENCY CLASSIFICATION	NOTIFICATIONS	IMMEDIATE ACTIONS
				10. Dept. of Energy Patrol Emergency officer 11. City of Richland	
15.6.6	Feedwater line break	1. Area radiation alarms 2. Turbine - generator building ventilation release duct radiation monitoring system	Plant	Headquarters	1. Declare plant emergency and initiate Emer- gency Plan Implementing Procedures

FSAR CHAPTER	POSTULATED ACCIDENT	PROBABLE DETECTION MEANS*	EMERGENCY CLASSIFICATION	NOTIFICATIONS	IMMEDIATE ACTIONS
15.7.1	Radioactive gas waste system leak or failure	1. Area radiation alarms 2. Rad-waste building ventilation release duct radiation monitoring system	Plant	Headquarters	1. Declare plant emergency and initiate Emergency Plan Implementing Procedures
15.7.2	Liquid radioactive system failure	1. Area radiation alarms 2. Rad-waste building ventilation release duct radiation monitoring system	Plant	Headquarters	1. Declare plant emergency and initiate Emergency Plan Implementing Procedures

FSAR CHAPTER	POSTULATED ACCIDENT	PROBABLE DETECTION MEANS*	EMERGENCY CLASSIFICATION	NOTIFICATIONS	IMMEDIATE ACTIONS
15.7.3	Radioactive release due to liquid radwaste tank failure	1. Area radiation alarms	Plant	Headquarters	1. Declare plant emergency and initiate Emergency Plan Implementing Procedures
15.7.4	Fuel handling accident	1. Area radiation alarms 2. Reactor building elevated release duct radiation	Site	1. Headquarters 2. NRC 3. Benton/Franklin County Sheriff 4. Wash. State Dept. of Emergency Services 5. City of Richland 6. DOE-PEO 7. FFTF 8. WNP-1/4 Construction Site	1. Declare site emergency and initiate Emergency Plan Implementing Procedures
15.7.5	Spent fuel cask drop accident	1. Area radiation alarms 2. Reactor building elevated release duct radiation monitor	Plant	Headquarters	1. Declare plant emergency and initiate Emergency Plan Implementing Procedures

* These systems indicate the quantity of material being released.

TABLE 3.3-2.
DOSES RESULTING FROM WNP-2 ACCIDENTS

Accident	Exclusion Area Boundary (Rem)		Low Population Zone Boundary (Rem)	
	Whole Body	Thyroid	Whole Body	Thyroid
1.. Loss of coolant (15.6.5)* Design Basis Analysis Realistic Base	2.49 6.08E-07	6.2 4.44E-07	2.33 1.38E-05	<u>17.2</u> 19.0 1.93E-05
2. Fuel Handling Accident (15.7.4) Design Basis Analysis Realistic Case	0.16 4.9E-04	0.19 9.4E-03	0.06 ¹ 1.3E-03	0.07 2.1E-02
3. Control Rod Drop Accident (15.4.9) Design Basis Analysis Realistic Case	8.6E-03 1.1E-06	8.18E-02 1.3E-05	7.54E-03 4.4E-06	1.77E-01 4.7E-05
4. Steam Line Break Outside Containment (15.6.4) Design Basis Analysis Realistic Case	3.05E-03 4.1E-05	3.00E-01 2.1E-02	1.14E-03 1.9E-05	1.12E-01 7.8E-03
5. Spent Fuel Cask Drop Accident (15.7.5) Design Basis Analysis Realistic Case (considered negligible)	6.6E-07 ---	5.4E-07 ---	1.6E-06 ---	8.7E-07 ---
6. Feedwater Line Break Accident (15.6.6) Design Basis Analysis (Not considered) Realistic Case	--- 1.3E-07	--- 8.3E-05	--- 6.3E-08	--- 3.1E-05
7. Gaseous Radwaste System Failure (15.7.1) Charcoal Absorber Vessel Rupture - Design Basis Analysis	5.2E-03	3.1E-04	1.9E-03	1.2E-04
Delay Line Rupture - Design Basis Analysis	3.3E-02	---	1.2E-02	---
First Charcoal Tank Rupture - Realistic Case	1.6E-03	1.6E-04	5.8E-04	5.8E-05

TABLE 3.3-2
DOSES RESULTING FROM WNP-2 ACCIDENTS

<u>Accident</u>	<u>Exclusion Area Boundary (Rem)</u>		<u>Low Population Zone Boundary (Rem)</u>	
	<u>Whole Body</u>	<u>Thyroid</u>	<u>Whole Body</u>	<u>Thyroid</u>
8. Liquid Radwaste System Failure (15.7.2)				
Design Basis Accident	1.9E-05	1.2E-02	8.8E-06	4.2E-03
Realistic Case	5.4E-07	3.3E-04	3.5E-07	1.2E-04
9. Instrument Line Pipe Break (15.6.2)				
Design Basis Analysis (Not considered)	---	---	---	---
Realistic Case	4.0E-07	4.5E-05	1.9E-07	3.8E-05

*Indicates FSAR Chapter number

NOTE: 4.0E-02 is read as 4.0×10^{-2}

- 1) Severe weather conditions - alerting of plant emergency staff offsite and the WPPSS Emergency Coordination Center.
 - 2) Fire in plant - activation of the plant fire brigade and/or the fire department depending on magnitude of the fire and available plant personnel. A major fire will require activation of all of the plant emergency staff, alerting medical services, notification to the WPPSS Duty Officer, and DOE.
 - 3) In plant flooding - activation of plant emergency staff and notification to the WPPSS Duty Officer and DOE.
 - 4) Explosion or explosive gas release - activation of plant emergency staff, notification to DOE and WPPSS Duty Officer, and activation of fire department.
 - 5) Toxic or noxious gas release inside plant - activation of RHO Fire Department Rescue Squad, plant emergency staff and notification to WPPSS Duty Officer.
 - 6) Radioactive material release or spill within plant - activation of health physics group for evaluation and alerting balance of plant staff. Action level for this type of emergency is determined by direct observation of the occurrence, or an increase in plant radiation monitoring systems.
 - 7) Release of radioactive material with a projected dose at the exclusion area boundary of less than 0.1 rem whole body ~~and~~ or 0.5 rem thyroid
- Any of the above conditions may require evacuation of specific areas or buildings of the plant, and this will be accomplished by use of the evacuation sirens and the public address system, followed by an accountability check of personnel.

5.1.4 Site Emergency

An emergency in this classification involves uncontrolled release of radioactive materials from the plant to an extent that initial assessment indicates ~~small to moderate amounts~~ ^{exposure rates at the exclusion area boundary may range from 0.1 rem to 1.0 rem whole body or 0.5 rem to 5.0 rem thyroid} may reach the exclusion boundary. The Site Emergency may evolve from a Plant Emergency, although this would not be the normal circumstance. Offsite assessment actions may be required. Discovery of this type of emergency is almost cer-

tainly by main control room personnel, since action levels are based on control room instrumentation and alarms. Immediate notification of the Shift Supervisor on-duty by the person discovering this condition is essential. The Emergency Director will initiate the following steps:

- 1) Evacuation of all plant personnel not assigned to the control room to the Primary Emergency Relocation Center by use of the evacuation sirens and public address system..
- 2) Activation of the plant emergency organization to report to their assigned locations. Communications will be activated and maintained between the two centers. Plant emergency staff coming to the plant from offsite will be advised as to where to report.
- 3) Provide notification and action criteria to construction sites of WNP-1/4, *order evacuation*
- 4) Activate WPPSS Emergency Coordination Center personnel by notification to the Duty Officer on call.
- 5) Obtain an accounting of personnel onsite from the Security Station.
- 6) Directly notify FFTF Control Room and the DOE PEO.
- 7) *Notify the Washington State Department of Emergency Services,*
~~Alert the Benton/Franklin County Sheriff's if there is
Benton/Franklin County Sheriff's, and the City of Richland to attain
a potential for the Site Emergency to degenerate into a
alert status.
General Emergency.~~

Action levels for this classification of emergency are determined by an alarm on one of the following effluent monitors and verification by observation of an increase in a redundant or related system by direct sampling or measurement:

- 1) Reactor Building Elevated Release Point Monitor
- 2) Turbine Building Exhaust Monitor
- 3) Radwaste Building Exhaust Monitor

4) Liquid Effluent Monitor.

Alarm settings for these monitors are based on potential dose at the exclusion area boundary, and although this does not indicate an offsite emergency condition, site areas may be severely affected.

5.1.5 General Emergency

This classification of emergency is characterized by offsite consequences which require mobilization of the outside support agencies, as well as the WPPSS emergency organization. Action levels for a General Emergency resulting from airborne releases are determined by the same effluent monitoring instrumentation used for the Site Emergency, and surveys on site and at the exclusion boundary to verify that these conditions exist. Based on recommended protective action levels of the Environmental Protection Agency, a General Emergency will be declared if exposure of the whole body due to noble gases and/or of the thyroid due to the release of radioiodine is projected for members of the general public which exceed the minimum values specified below for Nonessential Personnel:

POPULATION AT RISK	PROJECTED DOSE (Rem)	
	<u>Whole Body</u>	<u>Thyroid</u>
Nonessential Personnel	1 to 5	5 to 25
Emergency Workers	25	125
Lifesaving Activities	75	(a)
(a) No specific upper limit is given for thyroid exposure since in the extreme case, complete surgical or radiological thyroid loss might be an acceptable penalty for a life saved. However, loss should not be necessary if respirators and/or thyroid protection are used.		

The implementing procedures provide guidance to the Plant Emergency Director for making the determinations necessary to give sound recommendations to offsite agencies.

If control room instrumentation indicates that the above conditions might exist or are developing, the on-duty Shift Supervisor will initiate the following communications steps to activate the necessary emergency organization:

- 1) Evacuation of all plant personnel not required in the control room to the Primary Emergency Relocation Center by use of the evacuation siren and public address system.
- 2) Activation of the plant emergency organization to report to the Primary Emergency Relocation Center. They will establish communications back to the control room and prepare to render assistance. Dispatching emergency monitoring teams rapidly has high priority. Plant emergency staff arriving from offsite will be advised to proceed to the Primary Emergency Relocation Center unless stopped at the Backup Emergency Relocation Center.
- 3) Provide notification and action criteria to construction sites of WNP-1/4, *order evacuation.*
- 4) Activate WPPSS Emergency Coordination Center personnel by notification to the Duty Officer on call.
- 5) Request Security Guard provide roster of personnel on site for accountability check.
- 6) Directly notify the FFTF Control Room and the DOE PEO.
- 7) *Notify the Washington State Department of Emergency Services, Benton / Franklin County Sheriff's, and the City of Richland and provide specific recommendations for protective actions.*
The Emergency Coordination Center Director will establish communications back to the WNP-2 Control Room or Emergency Relocation Center and if it has been established that a General Emergency exists or might develop, will notify the affected County Sheriff and any other outside agencies required by the conditions, who have not already been notified by the Plant Emergency Director.

Although highly improbable, ^{an} ~~a~~ General Emergency could be created by release of radioactivity in liquids to the Columbia River. Action levels are based on dose to downstream individuals

COMMENT: 432.02 Identify the value of the potential doses at the
(3.2.4) site boundary, as used in Section 3.2.4.2 of your proposed Emergency Plans, from which you derive emergency action levels for the declaration of a Site Emergency. These dose values should be compatible with the qualitative descriptions of this class of emergency in the State and local plans rather than with your technical specifications. Our concern is that a violation of your technical specifications would not necessarily be sufficient for your declaration of a State or local Site Emergency class.

Accordingly, provide examples of the emergency action levels derived from the dose criteria which are related either to evidence of damage to irradiated fuel (either in the core or in the spent fuel pool) or to an indication of the clear potential for damage.

RESPONSE:

Table I presented in the response to Question 432.01 provides the action levels at the exclusion area boundary for declaring a Site Emergency from an atmospheric release. The answer to Question 432.14 provides the basis for action levels for water releases.

Examples of how the postulated accidents involving fuel damage relate to the emergency action levels are shown in Table 432.02-1. These numbers are from the current FSAR which will be reflected in a future revision of the Hanford Site Plan.



TABLE 1

432-02-1

ACCIDENT CLASS	ACTION LEVEL DOSE	RELATED TO FUEL DAMAGE	NOT RELATED TO FUEL DAMAGE
<u>General</u>	Whole Body >1 rem	Loss of Coolant Accident	Whole Body 2.49 rem
	Thyroid >5 rem		Thyroid 6.2 rem
<u>Site</u>	Whole Body 0.1 to 1.0 rem	Fuel Handling Accident	Whole Body 0.16 rem
	Thyroid 0.5 to 5.0 rem		Thyroid 0.19 rem
<u>Plant</u>	Whole Body <0.1 rem Thyroid <0.5 rem	Control Rod Drop Accident	Whole Body 8.6×10^{-3} rem
			Thyroid 8.18×10^{-2} rem
		Spent Fuel Cask Drop	Whole Body 6.6×10^{-7}
			Thyroid 5.4×10^{-7}
		Instrument Line Pipe Break	Whole Body 4.0×10^{-7}
			Thyroid 4.5×10^{-5}
		Steam System Piping Break Outside Containment	Whole Body 3.05×10^{-3}
			Thyroid 3.00×10^{-1}
		Feedwater Line Break	Whole Body 1.3×10^{-7}
			Thyroid 8.3×10^{-5}
		Radioactive Gas Waste System Leak	Whole Body 5.2×10^{-3}
			Thyroid 3.1×10^{-4}
		Liquid Radwaste System Failure	Whole Body 1.9×10^{-5}
			Thyroid 1.2×10^{-2}

COMMENT: 432.03 (3.2.5) You state in the second paragraph of Section 3.2.5.2 of your proposed Emergency Plans that protective action criteria for long-term hazards are based on action levels determined by the State. However, we find only one action level in the State Plan presented in Appendix II; i.e., the only action level designated by the State is for the release of radioactivity into water. We note that only Protective Action Guides (PAG's) are specified in the State and local plans. Your proposed Emergency Plans should include emergency action levels at which you would recommend protective actions for milk, water, soil and vegetation pathways. For the milk pathway in particular, specify the dose rate (one meter above pasture forage) at which you would recommend that grazing dairy herds be placed on stored feed, assuming that a serious release from the site has actually occurred.

RESPONSE:

The Supply System, the State, and the local emergency planning agency are aware of the need to add protective action guides for milk, soil, and vegetation pathways into the respective emergency plans. The proposed FDA regulations concerning human and animal feeds will be used when promulgated in developing appropriate action levels.

The proposed FDA regulation from the Federal Register (4110-03-M) Docket No. 76N-0050 recommend that when exceeding the preventive PAG, lactating dairy cows should be removed from contaminated pasturage and placed on uncontaminated stored feed. Using the infant as the critical segment of the population an initial

deposition of 0.14 microcuries/meter ² and a peak activity on the pasture of 0.27 microcuries/kg are given as the Preventive PAG.

Attempting to take readings above the pasture forage presents several problems. Mainly, the sensitivity of the GM is too low to detect the Preventive PAG and interference from a passing plume would prevent accurate readings.

Lab analysis will be performed on forage samples from pastures in the downward direction after an accident to ensure that Preventive PAG are not exceeded. The WNP-2 plant and Radiological Services will have analytical capabilities. Since a vegetation sample will be collected for the analysis, a reading can be taken in the field with the GM placed inside the sample bag. Using Table XL, page 75 of IAEA Technical Report 152 Evaluation of Radiation Emergencies and Accidents, one microcurie/kg of I-131 will yield 400 cpm. For the FDA Preventive PAG of 0.27 μ Ci/kg, a GM reading of 100 cpm would be measured. If interference from a passing plume is suspected, the sample can be removed to an area of less background and measured.

COMMENT: 432.04 Your proposed Emergency Plans include provisions for
(3.2.4) evacuating the construction workers at the WNP- 1&4
site. However, some items were not addressed in
your proposed evacuation plan for these workers.
Accordingly, revise your proposed Emergency Plans to
include the following items:

- a. The emergency action levels at which the construction workers at the WNP-1&4 site will be evacuated. While these action levels should be set conservatively, it is important that they not be established in a manner which would result in a high rate of false alarms.
- b. The provision of visual indicators of wind direction at the WNP-1&4 construction site (e.g., flags and windsocks). Workers should be instructed to avoid evacuation routes in the downwind direction, especially while on foot.
- c. Testing should be implemented to provide assurance that an evacuation signal at the WNP-2 site can be observed by the construction workers at the WNP-1&4 site. This testing program should be announced and planned while the construction workers are on the job site.
- d. Inasmuch as there is a potential for the release of significant radioactivity at the Fast Flux Test Facility (FFTF) which would warrant the evacuation of the construction

workers at the WNP-1&4 site, you should establish notification criteria (i.e., emergency action levels) that are mutually agreeable to WPPSS and the management of the FFTF. These criteria should be based on observed parameters in the control room of the FFTF, as well as on the environmental measurements now proposed. Provide a summary of these mutually agreeable notification criteria in your proposed Emergency Plans.

- e. An annual site evacuation drill during peak construction years which we define as those years when there will be more than 500 construction workers on site.

RESPONSE: ---

- a. The WNP-1&4 construction sites were located within the exclusion area boundary of WNP-2. Evacuation of the construction site workers will be conducted for site emergencies and general emergencies. The criteria for a site emergency is a dose potential of 0.1 to 1.0 rem whole body and 0.5 to 5.0 rem thyroid. A General Emergency is declared for dose potentials exceeding 1.0 rem whole body and 5.0 rem thyroid.

The following changes will be made to the Hanford Site Emergency Plan:

Section 5.1.4 Site Emergency page 5-5 *

- 3) Provide notification and action criteria to construction sites at WNP-1/4, order evacuation.

*draft page changes to the Emergency Plan are attached.

Section 5.1.5 General Emergency, page 5-7 *

- 3) Provide notification and action criteria to construction sites of WNP-1/4. Order evacuation.
- b. Presently WNP-1/4 has only one evacuation route away from WNP-2. When considering the time element that a large release capable of exceeding protective action guides is imminent and the release actually occurs, the travel time of the plume, and the width of the plume, the instructions to workers would be to evacuate by automobile using the road system which would provide the fastest means of exiting the area. The parking lots are adjacent to the construction area and evacuation is expected to take approximately 30 minutes.
- c. Evacuation signals at WNP-2 are not designed to be heard at the WNP-1/4 construction area. It is doubtful that with all the construction and machinery noise that a signal at WNP-2 could be produced loud enough to effectively be heard at WNP-1/4 a distance of 1.2 miles away. Evacuation of WNP-1/4 will be initiated by notifying security at WNP-1/4 who will then notify construction crews to evacuate using the portable radio network.
- d. A written agreement is maintained between FFTF and the Supply System which states that direct notification of the other facility will be made if it is determined that the emergency condition may affect the other facility.

During General Emergencies FFTF, will notify the Supply System's WNP-2 facility. The Emergency Control Center Coordinator is given this responsibility in the FFTF Emergency Procedures.

*draft page changes to the Emergency Plan are attached.

As stated in the Hanford Site Emergency Plan, Sections 5.1.4 and 5.1.5, FFTF will be notified in the event of a Site or General Emergency.. This notification requirement will be included into the Emergency Plan Implementing Procedures.

- e. During the construction phase an annual site evacuation drill for the WNP-1/4 construction site will be conducted. The response to Question 432.10 includes this requirement.

tainly by main control room personnel, since action levels are based on control room instrumentation and alarms. Immediate notification of the Shift Supervisor on-duty by the person discovering this condition is essential. The Emergency Director will initiate the following steps:

- 1) Evacuation of all plant personnel not assigned to the control room to the Primary Emergency Relocation Center by use of the evacuation sirens and public address system.
- 2) Activation of the plant emergency organization to report to their assigned locations. Communications will be activated and maintained between the two centers. Plant emergency staff coming to the plant from offsite will be advised as to where to report.
- 3) Provide notification and action criteria to construction sites of WNP-1/4, *order evacuation*
- 4) Activate WPPSS Emergency Coordination Center personnel by notification to the Duty Officer on call.
- 5) Obtain an accounting of personnel onsite from the Security Station.
- 6) Directly notify FFTF Control Room and the DOE PEO.
- 7) Alert the Benton/Franklin County Sheriff's if there is a potential for the Site Emergency to degenerate into a General Emergency.

Action levels for this classification of emergency are determined by an alarm on one of the following effluent monitors and verification by observation of an increase in a redundant or related system by direct sampling or measurement:

- 1) Reactor Building Elevated Release Point Monitor
- 2) Turbine Building Exhaust Monitor
- 3) Radwaste Building Exhaust Monitor

If control room instrumentation indicates that the above conditions might exist or are developing, the on-duty Shift Supervisor will initiate the following communications steps to activate the necessary emergency organization:

- 1) Evacuation of all plant personnel not required in the control room to the Primary Emergency Relocation Center by use of the evacuation siren and public address system.
- 2) Activation of the plant emergency organization to report to the Primary Emergency Relocation Center. They will establish communications back to the control room and prepare to render assistance. Dispatching emergency monitoring teams rapidly has high priority. Plant emergency staff arriving from offsite will be advised to proceed to the Primary Emergency Relocation Center unless stopped at the Backup Emergency Relocation Center.
- 3) Provide notification and action criteria to construction sites of WNP-1/4, *order evacuation*.
- 4) Activate WPPSS Emergency Coordination Center personnel by notification to the Duty Officer on call.
- 5) Request Security Guard provide roster of personnel on site for accountability check.
- 6) Directly notify the FFTF Control Room and the DOE PEO.

The Emergency Coordination Center Director will establish communications back to the WNP-2 Control Room or Emergency Relocation Center and if it has been established that a General Emergency exists or might develop, will notify the affected County Sheriff and any other outside agencies required by the conditions, who have not already been notified by the Plant Emergency Director.

Although highly improbable, a General Emergency could be created by release of radioactivity in liquids to the Columbia River. Action levels are based on dose to downstream individuals

COMMENT: 432.05 Describe the conservative assumptions you mention in
(5.2.5) the first paragraph of Section 5.2.5.1. (Your
response to Item 432.2 may be sufficient to satisfy
this item.)

RESPONSE:

The conservative assumptions for preliminary dose estimates from
short term accidental airborne releases of radioactivity include:

- o Uniform wind direction
- o No allowances for plume depletion (physical or radio-
active) while in transient
- o Conservative dose conversion factors for monitoring gross
radioactivity released

COMMENT: 432.06 You state in Table 2.2-2 of the FSAR that visual approaches by aircraft pass directly over the WNP-2 facility. Provide your proposed plans for appropriate notifications to those responsible for air traffic control in the vicinity of the WNP-2 facility in the event of a General Emergency (i.e., for a severe event involving an atmospheric release). Inclusion of these notifications in the State or local warning "fan-out" system would satisfy us.

RESPONSE:

Air traffic over the Hanford Site will be restricted by notifying the FAA. For the Hanford Site, the Seattle FAA Duty Officer is the initial contact. The Emergency Plan Implementing Procedure will include instructions for notifying the FAA and the phone number. The following addition will be made to the Hanford Site Plan: Section 5.1.5 page 5-7 add*

8) Notify the Coast Guard for river closures and the FAA (airborne releases only) for termination of flights over the Hanford Site.

*See attached draft page.

8) Notify the C-14 Guard for River Closures and the C-14 Airborne releases only for termination of flights over the Hartford Six.

If control room instrumentation indicates that the above conditions might exist or are developing, the on-duty Shift Supervisor will initiate the following communications steps to activate the necessary emergency organization:

- 1) Evacuation of all plant personnel not required in the control room to the Primary Emergency Relocation Center by use of the evacuation siren and public address system.
- 2) Activation of the plant emergency organization to report to the Primary Emergency Relocation Center. They will establish communications back to the control room and prepare to render assistance. Dispatching emergency monitoring teams rapidly has high priority. Plant emergency staff arriving from offsite will be advised to proceed to the Primary Emergency Relocation Center unless stopped at the Backup Emergency Relocation Center.
- 3) Provide notification and action criteria to construction sites of WNP-1/4, *order evacuation.*
- 4) Activate WPPSS Emergency Coordination Center personnel by notification to the Duty Officer on call.
- 5) Request Security Guard provide roster of personnel on site for accountability check.

- 6) Directly notify the FFTF Control Room and the DOE PEO.
- 7) *Notify the Washington State Department of Emergency Services, Benton / Franklin County Sheriff's, and the City of Richland and provide specific recommendations for protective actions.*
The Emergency Coordination Center Director will establish communications back to the WNP-2 Control Room or Emergency Relocation Center and if it has been established that a General Emergency exists or might develop, will notify the affected County Sheriff and any other outside agencies required by the conditions, who have not already been notified by the Plant Emergency Director.

Although highly improbable, a General Emergency could be created by release of radioactivity in liquids to the Columbia River. Action levels are based on dose to downstream individuals

COMMENT: 432.07
(App. III)

In Section 3.a.(1)(c)1, "Sheriff's Dispatcher," of Tab A to Appendix 8 to Annex G (Refer to Page G-8-A-3 of the Benton/Franklin Counties Nuclear Incident Response Plan), you state that the dispatcher must await the sheriff's instructions on further warning actions. Obtain a clarification of this statement from the Sheriff's Office to show that there would be an authority immediately available (i.e., a line of succession) in the event of a General Emergency which, by definition, would warrant initiation of protective actions offsite.

RESPONSE:

The Sheriffs of Benton and Franklin County assign an Undersheriff who will act in their absence. The Undersheriff, as well as any Deputy Sheriff, can act for the Sheriff as specified in the following excerpt from the Revised Code of Washington Title 36:

"36.28.020 Powers of deputies, regular and special. Every deputy sheriff shall possess all the power, and may perform any of the duties, prescribed by law to be performed by the sheriff, and shall serve or execute, according to law, all process, writs, precepts, and orders, issued by lawful authority."

When a call is received by the Sheriff's Dispatcher, the information will be given to the assigned Duty Officer who will notify the Sheriff, if available, or the undersheriff. The Duty Officer is in charge of the sheriff's office and can act in his absence.

COMMENT: 432.08 In Section 5.1.4 of your proposed Emergency Plans,
(5.1.4) you state that you would notify the Sheriff if a Site Emergency were to escalate into a General Emergency. However, it is stated in Appendix II to your proposed Emergency Plans that the Sheriff also expects notification in the event of a Site Emergency. Revise your notification plans to conform to the Sheriff's expectations. The Sheriff should also be notified in the event that a site evacuation is necessary to areas outside the Hanford reservation.

RESPONSE:

The response to question 432.01 satisfies this question. Since a site evacuation to an area outside the Hanford Reservation would be necessary for a Site Emergency or a General Emergency condition, the Sheriff will be notified.

COMMENT: 432.09 In Table 5.1.1 of your proposed Emergency Plans,
(5.1.1) there are three columns which have the same heading;
i.e., "Necessity for Corrective Actions." Revise
these headings to remove this ambiguity.

RESPONSE:

The corrected Table 5.1.1 is the following:*

Emergency Classification	Necessity For Protective Actions Onsite Offsite	Necessity For Corrective Action	Degree of Participation by Various Organizations
-----------------------------	---	------------------------------------	---

*See attached draft page.



EMERGENCY CLASSIFICATIONS AND DEGREE OF
INVOLVEMENT BY PARTICIPATING GROUPS

EMERGENCY CLASSIFICATIONS AND DEGREE OF INVOLVEMENT BY PARTICIPATING GROUPS						
Emergency Classification	<i>Protective</i> Necessity for Corrective Action		Necessity for Corrective Actions	Degree of Participation by Various Organizations		
	Onsite	Offsite		WPPSS		Offsite Agencies
				Plant Staff	Headquarters Staff	
Personnel Emergency*	Possible	Not Req'd	Possible***	Action Req'd	No Action Req'd	No Action Req'd
Emergency Alert**	Not Req'd	Not Req'd	Not Expected	On Alert Status	On Alert Status	No Action Req'd
Plant Emergency	Possible	Not Req'd	Possible***	Action Req'd	On Alert Status	No Action Req'd
Site Emergency	Probable	Possible	Probable***	Action Req'd	Action Req'd	On Alert Status
General Emergency	Probable	Probable	Probable***	Action Req'd	Action Req'd	Action Req'd

* For example, injury to a plant employee

** For example, tornado alert, potential flood, or a bomb threat

*** Such action could involve local firemen, police, ambulance, services, and/or medical facilities.

TABLE 5.1.1

COMMENT: 432.10 Provide a commitment to conduct an announced emergency
(7.1.2) drill involving State and local agencies and local support services, prior to loading fuel into the WNP-2 facility. Additionally, revise the last sentence in the fourth paragraph of Section 7.1.2 of your proposed Emergency Plans to read"... will be tested to demonstrate that the capability for early warning of the public, is maintained."

RESPONSE:

The second paragraph, first sentence of Section 7.1.2, page 7-2 will be replaced with the following:*

"An initial exercise prior to fuel load into WNP-2 shall be conducted involving State and local agencies and local support services. Thereafter, annual exercises shall be conducted which could result in a Site Emergency or General Emergency including the evacuation of WNP-1/4 during the construction phase."

The requested change to the fourth paragraph will be made such that the last sentence of the fourth paragraph reads: *

"As a minimum, the communication links and notification procedures with offsite agencies will be tested to demonstrate that the capability for early warning of the public is maintained."

*See attached draft pages.

- 4) Emergency First Aid and Rescue Teams - This training includes basic medical first aid, cardiopulmonary resuscitation, and use of personal protective equipment. This group includes all personnel directly involved with the operation or maintenance of WPPSS nuclear plants.
- 5) Emergency Medical Support Training - Attempts will be made to conduct training exercises with the agreement hospitals for the handling of contaminated patients. This will be done as hospital work load and schedule permit, and will be done in cooperation with Richland Operations Office, DOE. Hanford Environmental Health Foundation personnel are specialists in handling radiation emergencies, trained by their own staff.
- 6) Emergency Support Agencies Training - This training will be conducted on an annual basis and will include a discussion of: reasons for the need of an emergency plan, explanation of the organization, detailed study of related phases of the plan, areas of responsibility stressed, emergency equipment demonstrated, and basic radiation protection as required.
- 7) WPPSS Headquarters Support Personnel Training - Designated headquarters personnel will be provided training in response and specific duties during a plant emergency.

7.1.2 Drills

All members of the staff must be familiar with their duties and responsibilities in relation to the WPPSS Emergency Plan. This section provides a means for periodic review and exercise of the Emergency Plan from plant-wide as well as an individual standpoint.

~~At least annually, the Operations Services Security and Emergency Planning Analyst and plant management will devise a simulated accident which, were it to occur, could result in a General Emergency.~~ Plans for the scenario will be sufficiently detailed such that simulated locations and extent of damage

An initial exercise prior to fuel load into WNP-2 shall be conducted involving state and local agencies and local 7-2 support services. Thereafter, annual exercises shall be conducted which could result in a Site Emergency or General Emergency including the evacuation of WNP 1/4 during the construction phase.



are described fully enough to enable simulated corrective actions to be taken. Subsequent to the initial planning, meetings will be held with members of each department to review their specific responsibilities. This exercise drill will be expanded to incorporate pertinent comments derived during these discussions.

After incorporation of all comments, the finalized exercise will be presented to the plant staff to provide all members with an overall appreciation of the exercise and to point out individual areas of responsibilities. Segments of the plan may be exercised for this purpose in some cases.

After final approval by the Plant Superintendent, appropriate offsite agencies will be contacted to confirm their level of participation and their agreement upon the date and time of the exercise. As a minimum, the communications links and notification procedures with offsite agencies will be tested. *to demonstrate that the capability for early warning of the public is maintained.*
The responsible individual will assure that, during the conduct of the exercise, an adequate number of observers are stationed at strategic locations to provide information as necessary to drill participants (e.g., radiation and contamination levels) and to evaluate individual and group performance. Evaluation will also be made of the extent and proper employment of emergency equipment including audibility of the evacuation alarms. Equipment not used during the exercise will be inventoried and checked for operability.

Evaluation of personnel performance during the exercise will be conducted in two phases. At the conclusion of the exercise, the responsible individual will meet with all observers to compile and summarize observations and criticisms. This compilation will be reviewed in detail in a meeting with plant management. A general summary of the critique will then be presented to the staff, emphasizing areas of strength and

COMMENT: 432.11
(App. IX)

In Section IV.B of Appendix IX of your proposed Emergency Plans, you describe the duties of your Information Officer. Revise your proposed Emergency Plans to make provisions for the participation of your Information Officer in coordinated drills with State and local agencies. Provide a line of succession of authority from the Managing Director for the purpose of providing news releases which are coordinated with State and local agencies, to the public in the event of an emergency.

RESPONSE:

The following change will be made to Section IV.B of Appendix IX
page -10-*

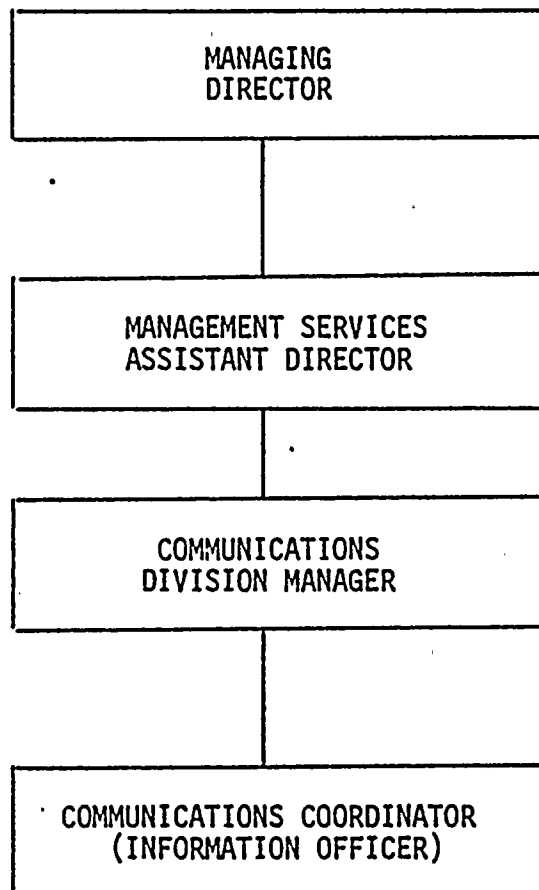
"Planning

Maintains current information on methods to be used in releasing news stories and participate in coordinated drills with state and local agencies."

See the following chart for the line of succession.

*See attached draft page.

ORGANIZATION CHART



Ensures that a periodic review of emergency plans, staff assignments and supplementary instructions are made to maintain them in a current state.

Ensures that all members of the Headquarters Staff and site emergency staff are properly trained and cognizant of their duties.

Provides for a realistic and comprehensive annual drill of the emergency plan.

Performance

Ensures that the Headquarters Staff has been notified.

Receives reports from the Plant Emergency Director and Headquarters Staff. Evaluates and makes recommendations to the site as necessary.

Commits and coordinates the support efforts of Headquarters. Any needs which cannot be fulfilled from within WPPSS shall be requested through prearranged contacts.

Provides assistance as requested by local, State or Federal agencies in movement and evacuation of the public.

B. Information Officer

Planning

Maintains current information on methods to be used in releasing news stories. *and participate in coordinating drills with state and local agencies.*

Performance

Compiles data regarding geographic boundaries affected, general type and cause of accident, approximate restoration time, number of emergency people involved and any unusual conditions.

COMMENT: 432.12 Describe the steps you will take to provide information to plant visitors and to construction workers regarding the notification procedures of your Emergency Plans. Indicate how they can expect to be advised on what to do in the event of an emergency.

(7.1.1)

RESPONSE:

All plant visitors and construction workers will be under escort while at WNP-2. The escort will be a Supply System Employee designated as an escort who is familiar with the proper response for emergencies, the plant alarms, and the location of the assembly area. In addition, each employee, visitor, and construction worker will be given a small card which provides instructions on what to do if an emergency occurs.

COMMENT: 432.13 Revise your proposed Emergency Plans to include a
(7.1.1) description of the specialized initial training and the periodic retraining programs to be provided for each of the categories of emergency personnel listed in Section 8.1.1 of the Guide. References to applicable sections of your FSAR are acceptable if the training is adequately summarized and the average frequencies for training are stated.

RESPONSE:

Section 7.1.1, pages 7-1 and 7-2, will be revised as follows:*

7.1.1 Training

Selected plant operations, technical and maintenance personnel are trained in emergency procedures and monitoring duties. It is the intent of this training to provide an adequate number of emergency personnel sufficiently familiar with nuclear facility emergency planning and procedures so that, in the event of an emergency, the individual can render effective assistance.

The training is divided into seven categories and will be initiated prior to fuel load to prepare Supply System personnel for participation in the pre-fuel load drill. Annually, training classes will be offered as refresher courses and will include review of the initial training course and changes made in the emergency plan or implementing procedures.

The seven categories of emergency training are as follows:

- 1) Emergency Director Training - This training is oriented to supervision of emergency teams and interpretation of data. The course will review the Hanford Site Emergency Plan and plant Emergency Plan Implementing Procedures, the plant and headquarters emergency organizations, offsite assistance, emergency supplies and facilities, and emergency action dose limits. This course will be given to directors and coordinators of the plant emergency organization, personnel responsible for accident assessment including control room personnel, selected headquarters support personnel, and emergency team leaders.
- 2) Emergency Monitoring Training - This training includes operation of portable radiation survey instruments and air sampling equipment, air sampling techniques, "field" air activity determination, emergency action dose limits, and familiarization with the plant emergency monitoring procedures. This course will be given to radiological monitoring teams.
- 3) Emergency Fire Brigade and Damage Control Training - This training includes operation of installed fire protection systems, portable fire extinguishers, life support systems, and techniques employed to limit the damage caused by an incident. This course will be given to fire control team members and repair and damage control teams.
- 4) Emergency First Aid and Rescue Training - This training includes medical first aid, cardiopulmonary resuscitation (CPR), and rescue techniques. Medical first aid and CPR training is given to members of the plant staff and security organization to ensure that there are always adequate personnel on site who are qualified in these skills. Members of the First Aid and Rescue teams are given this training and additional training in rescue techniques.

- 5) Emergency Medical Support Training - Attempts will be made to conduct training exercises with the agreement hospitals for the handling of contaminated patients. This will be done as hospital work load and schedule permit, and will be done in cooperation with Richland Operations Office, DOE. Hanford Environmental Health Foundation personnel are specialists in handling radiation emergencies, trained by their own staff.
- 6) Emergency Support Agency Training - This training will be offered to support agencies who would assist during an emergency. Topics covered include reasons for an emergency plan, the emergency organization, areas of responsibility, emergency equipment demonstrated, and basic radiation protection as required.
- 7) The Supply System Headquarters Support Personnel Training - Designated headquarters personnel will be provided training in response and specific duties during an emergency at a Supply System nuclear plant.

*See attached draft pages.

7.0 MAINTAINING EMERGENCY PREPAREDNESS

To meet the constantly changing conditions, methods have been implemented to ensure the Emergency Plan remains effective over the life of the plant. This section describes the necessary elements to meet this requirement.

7.1 Organization Preparedness

7.1.1 Training

Selected plant operations, technical and maintenance personnel are trained in emergency procedures and monitoring duties. It is the intent of this training to provide an adequate number of emergency personnel sufficiently familiar with nuclear facility emergency planning and procedures so that, in the event of an emergency, the individual can render effective assistance.

The training is divided into six categories:

- 1) Emergency Director Training - This training is oriented to supervision of monitoring teams, interpretation of data, use of map overlays, estimation of radiation dose, etc. This group includes plant management, shift supervisors, and technical staff.
- 2) Emergency Monitoring Training - This training includes operation of portable radiation survey instruments and air sampling equipment, air sampling techniques, "field" air activity determinations, and familiarization with the plant emergency monitoring procedures.
- 3) Emergency Fire Brigade and Damage Control Training - This training includes operation of installed fire protection systems, portable fire extinguishers, life support systems, and techniques employed to limit the damage caused by an incident. This group includes personnel from all plant organizations.

Replace
with words
in response

- 4) Emergency First Aid and Rescue Teams - This training includes basic medical first aid, cardiopulmonary resuscitation, and use of personal protective equipment. This group includes all personnel directly involved with the operation or maintenance of WPPSS nuclear plants.
- 5) Emergency Medical Support Training - Attempts will be made to conduct training exercises with the agreement hospitals for the handling of contaminated patients. This will be done as hospital work load and schedule permit, and will be done in cooperation with Richland Operations Office, DOE, Hanford Environmental Health Foundation personnel are specialists in handling radiation emergencies, trained by their own staff.
- 6) Emergency Support Agencies Training - This training will be conducted on an annual basis and will include a discussion of: reasons for the need of an emergency plan, explanation of the organization, detailed study of related phases of the plan, areas of responsibility stressed, emergency equipment demonstrated, and basic radiation protection as required.
- 7) WPPSS Headquarters Support Personnel Training - Designated headquarters personnel will be provided training in response and specific duties during a plant emergency.

7.1.2 Drills

All members of the staff must be familiar with their duties and responsibilities in relation to the WPPSS Emergency Plan. This section provides a means for periodic review and exercise of the Emergency Plan from plant-wide as well as an individual standpoint.

At least annually, the Operations Services Security and Emergency Planning Analyst and plant management will devise a simulated accident which, were it to occur, could result in a General Emergency. Plans for the scenario will be sufficiently detailed such that simulated locations and extent of damage

replace with
works
in response

COMMENT: 432.14 Your criterion in Section 5.1.5 (Page 5-8) of your
(5.1.5) proposed Emergency Plans for declaring a water
pathway General Emergency, is within the requirement
specified in 10 CFR Part 20. We do not understand
why this condition would be considered an emergency
if it is within the dose limits specified in 10 CFR
Part 20 and it is not clear to us that this parti-
cular criterion has been accepted by cognizant
offsite agencies. (Refer to page G-8-19). Further,
since the Maximum Permissible Concentration (MPC) of
tritium is much larger than those for most other
radionuclides, consider excluding tritium from the
value of 18 curies derived in Section 5.1.5 of your
proposed Emergency Plans. Provide the results of
your reevaluation of these two matters.

RESPONSE:---

A liquid release from WNP-2 will require several hours travel time until released into the Columbia River. Several more hours are required for the liquid plume to reach nearest potable water intake. This time element allows isotopic analysis of the water as it leaves WNP-2. The projected dose will be calculated and appropriate actions taken according to the criteria provided for question 432.01. In the extreme case in which isotopic analysis cannot be performed and only the gross activity reading is available from the liquid effluent monitor, an assumption shall be made that the total activity is due to I-131. The Emergency Plan Implementing Procedures shall include the necessary equations for evaluating the release.

The last paragraph of Section 5.1.5 (page 5-8) will be modified by deleting the following: *

"Assuming the lowest allowable river flow of 36,000 cubic feet per minute and action level used for notification of offsite agencies."

And will be replaced with the following:

"Several hours are available from the time the radioactive liquid leaves WNP-2 and reaches the Columbia River. This allows for time to obtain the isotopic composition of the release and project the dose to individuals from the drinking water. Based upon the projected dose, a Site or General Emergency may be declared according to the PAG's and appropriate protective actions initiated."

*See attached draft page

Several hours are available from the time the radioactive liquid leaves WNP-2 and reaches the Columbia River. This allows for time to obtain the isotopic composition of the release and project the dose to individuals from the drinking water. Based upon the projected dose, a Site or General Emergency may be declared according to the PAG's and appropriate protective actions initiated due to the presence of radioactivity in drinking water supplies. ~~Assuming the lowest allowable river flow of 36,000 cubic feet per second and an unidentified concentration of 1.0×10^{-7} $\mu\text{Ci}/\text{ml}$ (10 CFR 20, Appendix B, Maximum Permissible Concentration), it was determined that 3×10^3 curies could be released on an annual average basis without excessive exposure to members of the general public. This quantity was reduced by an appropriate factor ($\frac{3 \text{ mrem}}{500 \text{ mrem}}$) to remain within the 10 CFR 50, Appendix I criteria of 3 mrem/year to members of the general population through water pathways. The resulting value of eighteen curies as a total or anticipated total accidental release is the action level used for notification of offsite agencies. This type of accident does not require activation of as large an onsite organization as the airborne release category, but will require communication with members of the WPPSS Emergency Coordination Center staff and recommendations to offsite agencies to restrict the intake of contaminated water into domestic systems (Richland, Pasco, and possibly other downstream users).~~

5.2 Assessment Action

5.2.1 Surveillance of Instrumentation

The emergency procedures designate specific personnel to maintain watch on inplant and effluent radiological monitors, as well as meteorological instrumentation. Continuous readout and recording is provided in the Control Room for the following instruments:

- 1) Meteorological - Wind speed, direction, and temperature at the 245 ft. level and the 33 ft. level. This information is also available at the meteorological tower, which is the Backup Emergency Relocation Center site. This data is accumulated and applied in the emergency procedures for determination of the affected area and magnitude of the problem in the event of an uncontrolled release of radioactivity from the plant to the environs.

COMMENT: 432.15 In Section 5.2.1 of your proposed Emergency Plans,
(5.2.1) you state that you will provide for continuous monitoring and recording of particulates, halogens and gases inside the primary containment. Describe this monitoring system with particular emphasis on its ability to identify each type of material and discriminate against the other two types. Indicate the detection sensitivity and the saturation point(s) of this monitoring system.

RESPONSE:

Section 5.2.1 of the Emergency Plans was in error when it referred to continuous monitoring and recording of particulates, halogens, and gases inside the primary containment. Actually, only particulates and gases are continuously monitored and halogens are continuously sampld unless containment isolation has taken place. A description of the monitoring system follows:

"The primary containment monitoring system has two redundant subsystems each having two detectors to individually monitor particulate and noble gas activity. Additionally a charcoal sample cartridge is provided to trap halogen gases. The detectors are housed in divisionally separated cabinets located in the reactor building sample room. The cabinets have incorporated blowers and flow controls to withdraw gas samples from the primary containment atmosphere via stainless steel sampling lines and vent back to the containment. The environment in which the local cabinets are located is maintained to limit upper temperature excursions that may occur in the reactor building during an accident. Associated radiation monitors and recorders are mounted in the main control room along with alarm annunciators.

Gas from the containment atmosphere enters the system at about 3.0 cfm encountering a moving filter (~ 1"/hr) collector assembly for removing particulates. A beta scintillation type detector is positioned near the moving tape with a sensitivity range of about 2×10^{-11} $\mu\text{Ci/cc}$ to 5×10^{-7} $\mu\text{Ci/cc}$ (i.e., determined from Cs-137 gamma and 2 mr/hr background). The count rate meter has a logarithmic scale from 1 to 10^6 cpm. The count rate reading will not decrease upon saturation of the system.

The gas then enters a charcoal cartridge consisting of two cylindrical charcoal cartridge in series each with a size of 2 1/4" in diameter and 1" in thickness. These cartridges remove halogens from the gas stream and are subsequently removed for laboratory analysis.

The gas, following removal of particulates and halogens, passes in front of another beta scintillation type detector providing continuous monitoring of noble gas activity. The noble gas counting system is similar to the counting system for particulates. The sensitivity range is about 4×10^{-7} $\mu\text{Ci/cc}$ to 1.2×10^{-2} $\mu\text{Ci/cc}$ for 85 Kr in the presence of a 2 mr/hr background."

In Section 5.2.1 paragraph 2) page 5-9, the second sentence is changed to the following:**

"Continuous readout and recording is also provided for particulates and gases inside containment."

*See attached draft pages.

- 2) Radiological - Noble gas monitors are provided for the reactor building elevated release point, the post treatment offgas discharge, turbine building effluent, and radwaste building effluent. Continuous readout and recording is also provided for particulates, ~~halogens~~, and gases inside containment. In addition to the continuously monitored gaseous effluents, samplers for particulates and halogens are operated in the same locations and can be used for assessment of releases. The liquid effluent discharge line is also continuously monitored.

In plant continuous air and radiation monitors are also provided in addition to the effluent monitors. These consist of the Area Radiation Monitoring System and air particulate monitors located in each building. Data from this instrumentation is also continuously recorded in the control room and can be used for assessment of inplant conditions and as backup to the effluent monitors.

Continuous air particulate monitors are provided at the Primary Emergency Relocation Center, located in the Service Building and for the Backup Center. Designated personnel will maintain surveillance of these instruments to determine habitability of the emergency centers.

5.2.2 Surveillance of Containment Integrity

Leakage from the reactor vessel or piping into the primary containment structure can be detected by several means. Redundant air monitors continuously sample the primary containment atmosphere. Humidity detectors inside containment are constantly monitored. Temperature and pressure variables are also constantly monitored and recorded in the main control room. In addition, leakage to the sumps from this area is routinely measured. All of these means are available for assessment functions.

2-1-1964

1000



COMMENT: 432.16 Discuss the impact that a severe dust storm could have on your proposed protective actions. In responding to this question, cross-reference your response to Item 372.8 contained in our letter of December 8, 1978.

RESPONSE:

Question 372.8 discusses dust storm climatology and visibility. The protective actions employed during a severe dust storm to minimize exposure to people following an uncontrolled release of radioactive material would be consistent with the present proposed actions. However, because of the rapid movement of the plume during high winds, evacuation of people downwind would likely be abandoned in favor of notifying people to seek shelter until the plume has passed. Evacuation of people from the impacted area may follow depending on the amount of plume deposition which has occurred. The offsite dose impact for radioactive material releases during a severe windstorm would be less than 1% maximum impact postulated for releases occurring during stable conditions and low wind speed, since the downwind concentration is inversely proportional to the product of the wind speed (μ), the standard deviation of the vertical plume growth (σ_z), and the standard deviation of the horizontal plume growth (σ_y) ($V_{10} x/Q \propto (1/\mu) (1/\sigma_z) (1/\sigma_y)$). As the wind speed increases, the particulate burden of the air (dust) increases proportionally. However, the downwind radionuclide concentrations would become significantly less because of changes in μ , σ_z , and σ_y .

.....

The calculated individual dose during a dust storm would be dependent on the X/Q value and the radionuclides released. Noble gases would likely comprise the majority of any significant accidental release. The dispersion of these nuclides would be dependent on the air movement which is described by the wind speed and plume growth characteristics for a given stability class as described above.

