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April 28, 2010
GO2-10-066

10 CFR 50.90
10 CFR 50.54(q)

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555-0001

Subject: **COLUMBIA GENERATING STATION, DOCKET NO. 50-397 LICENSE AMENDMENT REQUEST IN SUPPORT OF DEPARTMENT OF ENERGY (DOE) 618-11 WASTE BURIAL GROUND REMEDIATION PROJECT – NON-INTRUSIVE ACTIVITIES**

Dear Sir or Madam:

In accordance with the provisions of Sections 50.90 and 50.54(q) of Title 10 of the Code of Federal Regulations (10 CFR), Energy Northwest is submitting a license amendment request consisting of revisions to the Final Safety Analysis Report (FSAR) and Emergency Plan (EPlan) for Columbia Generating Station (Columbia).

The proposed revisions to the Columbia FSAR and EPlan support Department of Energy (DOE) plans to perform non-intrusive surveillance and characterization activities within the 618-11 Waste Burial Ground, a site wholly located within Columbia's exclusion area and the Security Defined Owner Controlled Area (SDOCA). These non-intrusive activities will obtain data and information necessary for planning future intrusive activities and remediation strategies. Energy Northwest has reviewed the safety analysis and evaluation for the DOE planned activities and has determined that a finding of "no significant hazards consideration" is justified, based on the considerations herein: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the regulations as applicable (identified herein), and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

The enclosure to this letter provides an evaluation of the proposed changes and contains the following attachments:

- Attachment 1 provides the FSAR pages marked up to show proposed changes.
- Attachment 2 provides the EPlan pages marked up to show proposed changes.
- Attachment 3 provides the proposed FSAR changes in final typed format.
- Attachment 4 provides the proposed EPlan changes in final typed format.

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Energy Northwest is seeking Commission approval of the proposed changes because: (1) the FSAR revision modifies the 618-11 Waste Burial Ground assumptions upon which the original license was reviewed and approved, and (2) the EPlan revision has been evaluated and determined to be a Decrease in Effectiveness (DIE). Approval of the proposed changes to the Columbia FSAR and EPlan is requested by October 29, 2010, to support the DOE project schedule for the 618-11 Waste Burial Ground remediation effort. Once approved, the amendment will be implemented within 60 days.

Energy Northwest, DOE, and its 618-11 Waste Burial Ground contractor, Washington Closure Hanford, have informed the Federal Emergency Management Agency (FEMA) and the local emergency planning agencies including Benton County, Franklin County, and the State of Washington as to the scope of the project and agreement that DOE through its contractor would assume lead responsibility for 618-11 site emergencies and abnormal events. Written acknowledgement has been sought.

This letter and its enclosure contain no regulatory commitments.

In accordance with 10 CFR 50.91, a copy of this application, with attachments, is being provided to the designated Washington State Official.

If you should have any questions regarding this submittal, please contact Mr. KD Christianson, Licensing Engineer, at (509) 377-4315.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the date of this letter.

Respectfully,

W.S. Oxenford
Vice President, Nuclear Generation and Chief Nuclear Officer

Enclosure: Evaluation of Proposed Change

cc: NRC RIV Regional Administrator
NRC NRR Project Manager
NRC Senior Resident Inspector/988C
RN Sherman – BPA/1399
WA Horin – Winston & Strawn
JO Luce – EFSEC
RR Cowley – WDOH

Evaluation of Proposed Change

Subject: License Amendment Request in Support of DOE 618-11 Waste Burial Ground Remediation Project – Non-Intrusive Activities

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FIGURES

ATTACHMENTS:

1.0 SUMMARY DESCRIPTION

This evaluation supports a license amendment request to change the Columbia Generating Station (Columbia) Final Safety Analysis Report (FSAR) (Reference 1) and Emergency Plan (EPlan) (Reference 2) which, in turn, supports the intention of the Department of Energy (DOE) through its contractor, Washington Closure Hanford (WCH), to perform non-intrusive surveillance and characterization activities within the 618-11 Waste Burial Ground (herein referred to as the 618-11 site). This site is an eight-acre parcel directly adjacent to Energy Northwest leased land and is located wholly within Columbia's exclusion area (see Figure 1). The site contains low- to high-activity waste, fission products, some plutonium-contaminated waste, and toxicological waste (bounded by beryllium). These non-intrusive surveillance and characterization activities will obtain data and information necessary for planning future intrusive activities and remediation strategies. Energy Northwest has reviewed the safety analysis and evaluation for the activities and determined they will not adversely affect the operation of Columbia, and thus not result in a significant hazard to the health and safety of the public from Columbia's operation.

The proposed changes are as follows:

(1) Modify the FSAR to discuss the non-intrusive surveillance and characterization activities at the 618-11 site, to delineate DOE authority and control for the non-intrusive activities including lead responsibility for abnormal events at the 618-11 site, and to summarize the hazards, describe the design basis event (DBE), and impact to Columbia.

(2) Modify the EPlan to address inter-agency coordination, cooperation, and responsibilities for 618-11 site events and to add project specific Emergency Action Level (EAL) criteria and actions associated with any release from an abnormal event at the 618-11 site that could pose a threat to the health and safety of Energy Northwest personnel and visitors within the Columbia exclusion area.

The Nuclear Regulatory Commission (NRC) is requested to review these licensing bases document changes because:

(1) The FSAR revision modifies the 618-11 site assumptions upon which the NRC reviewed and approved the original license for Columbia (Reference 3).

(2) The EPlan revision has been evaluated and determined to be a Decrease in Effectiveness (DIE) in accordance with 10 CFR 50.54(q).

2.0 DETAILED DESCRIPTION

2.1 618-11 Background and Operating History

The 618-11 site is located 1100 ft west of the Columbia Reactor Building, adjacent to Energy Northwest leased property, and is entirely within Columbia's exclusion area and security barrier. The site is approximately 375 ft north-to-south by 1000 ft east-to-west and consists of 3 slope sided trenches, 50 vertical pipe units (VPUs), and 3 to 5 large caissons (see Figure 2). The trenches are 900 ft long by 50 ft wide and 25 ft deep. The 50 VPUs are 22 in diameter, 15 ft long waste receptacles constructed by welding five 55 gal bottomless drums together and burying them vertically with approximately 10 ft spacing between the units (see Figure 3). The units are open to the soil at the bottom. The large diameter caissons are constructed of 8 ft diameter corrugated metal pipe, 10 ft long, with the top of the caissons being 15 ft below grade and connected to the surface by an offset 36 in diameter pipe with a domed cap lid (see Figure 4). These units were buried with approximately 15 ft of space between them. The caisson bottoms are open to the soil. The number of caissons is uncertain due to discrepancies in site documentation.

The 618-11 site has a number of aliases including Wye Burial Ground, "Y" Burial Ground, 300 Wye Burial Ground, and 318-11. This site received low- to high-activity radioactive waste from the Hanford 300 Area laboratories and fuels development facilities from March 1962 to December 1967. The waste includes fission products, byproduct material (thorium and uranium), plutonium, and numerous known or suspected toxicologically hazardous materials. Low- to moderate-activity dry solid wastes were disposed in the trenches and moderate- to high-activity wastes were disposed in the VPUs and caissons. The estimated radionuclide inventory at the site is 1000 Ci of Sr-90, 1000 Ci of Cs-137, and 10 kg (622 Ci) of Pu-239 and the estimated non-radiological hazardous material inventory is 91.4 kg of beryllium per caisson. These inventories are based on available information and are bounding for the purposes of hazard categorization and determination of potential radiological and toxicological dose consequences.

The 618-11 site was permanently closed on December 31, 1967. Final site closure occurred in 1968 and the burial ground was covered with a minimum of 2 ft of soil. All metal storage units that were used are capped with a concrete plug. Perimeter concrete posts fitted with stamped brass radiation hazard markers were installed. Due to unauthorized entries and contamination spread by plants and wind, the site was enclosed with an 8 ft chain-link fence in 1974. The site continued to be plagued by plant and wind erosion contamination problems, which led to a final stabilization effort completed in 1982. An additional 2 ft of topsoil was added and seeded with crested wheat grass. Subsequent surveys indicate the soil overburden is intact with no detectable radiation levels above background, and the crested wheat grass has adapted well.

2.2 DOE Driving Agreements and Schedule

The Hanford Federal Facility Agreement and Consent Order, or Tri-Party Agreement, (Reference 4) between the DOE, U.S. Environmental Protection Agency (EPA), and the State of Washington Department of Ecology is the legal document that binds DOE to

actions to comply with the Resource Conservation and Recovery Act (RCRA) (Reference 5), the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Reference 6), and the State of Washington Hazardous Waste Management Act (HWMA) (Reference 7). This agreement:

- Defines and ranks CERCLA and RCRA cleanup commitments.
- Establishes responsibilities.
- Provides a basis for budgeting.
- Reflects a concerted goal of achieving full regulatory compliance and remediation, with enforceable milestones.

The milestones represent the actions necessary to ensure acceptable progress toward Hanford Site compliance with RCRA, CERCLA, and HWMA. The schedule for the proposed 618-11 site non-intrusive surveillance and characterization activity is from February 2011 through February 2012 in order to support the final remediation milestone on or before September 2018. The DOE has requested Energy Northwest provide a notice to proceed by December 29, 2010 to facilitate mobilization at the 618-11 site.

2.3 DOE Regulatory Comparison

1) DOE Responsibility, Authority, and Regulations

The Atomic Energy Act of 1954 (Reference 8) as amended (the Act), Chapter 9, Section 91 gives DOE the authority to provide for safe storage, processing, transportation, and disposal of hazardous waste (including radioactive waste) resulting from nuclear materials production, weapons production, and surveillance programs. DOE is responsible for assuring that efforts under this authority are compliant with the regulations set forth in 10 CFR Chapter III (Reference 9). Specifically, 10 CFR 830 addresses Nuclear Safety Management, and 10 CFR 835 addresses Occupational Radiation Protection. These regulations are implemented through DOE Standards, Orders, and Guidance, which are administered through its contractors by contract. Prior to any activities dealing with potentially radioactive material, regulations require that an Authorization Basis (AB) be approved and in place before commencing any operations. The AB, as a minimum, usually consists of a documented safety analysis (DSA), a Safety Evaluation Report (SER), and an Operational Readiness Statement.

The DOE system of regulations, orders, standards and guidelines is similar in content to NRC regulations, General Design Criteria, Regulatory Guides, and NUREG documents.

2) Energy Northwest Responsibility, Authority, and Regulations

Energy Northwest has been granted a license (Reference 10) by the NRC to operate Columbia in conformity with the application for license as amended, the provisions of the Act, and the regulations of the Commission. The primary regulations impacting this activity within 10 CFR Chapter I (Reference 11) include 10 CFR 50.54, 10 CFR 72.44, 10 CFR 100.3 and 10 CFR 100.10.

10 CFR 50.54 and 10 CFR 72.44 reviews were conducted in the areas of Security and Emergency Planning to determine if a DIE exists due to the new activities.

To meet 10 CFR 100.3 requirements, the licensee must demonstrate its authority to determine all activities including exclusion or removal of personnel and property from the exclusion area. NUREG-0800 (Reference 12), Standard Review Plan 2.2.3, states that offsite hazards which have the potential for causing onsite accidents leading to the release of significant quantities of radioactive fission products, and thus pose an undue risk of public exposure, should have a sufficiently low probability of occurrence and be within the scope of the low probability of occurrence criterion of 10 CFR Part 100, §100.10. Energy Northwest has the obligation to evaluate the planned activities' hazards for their impact on Columbia.

3) Summary of Energy Northwest Approach to Analyzing Impacts

An evaluation was conducted to determine if any gaps existed at a regulation level or implementation level for the proposed activity as described in the DOE approved DSA (References 13 and 14) and controlled by the Technical Safety Requirements (TSRs) (Reference 15). This was done by functional area in order to ensure comprehensive review and engage functional area experts in the process. The gap analysis included the following functional areas as providing enveloping coverage: Licensing, Legal, Emergency Preparedness, Security, Radiation Protection, Operations/Work Control, Nuclear Safety, Engineering/Analysis, Fire Protection, Training, Industrial Safety, and Environmental. Regulations, processes, and implementing procedures between WCH and Columbia were compared within each functional area to determine degree of reliance Columbia could place on WCH procedures in support of Columbia activities.

The analysis found a strong correlation between Columbia and WCH procedures and processes. Identified weaknesses were generally addressed by Columbia procedure revisions or development of new procedures to encompass the new activity. In two cases, Security and Emergency Preparedness, experts from both organizations conducted tabletop scenario discussions to identify gaps and agreed on the changes necessary to correct them. The evaluation further determined that the DOE standard for atmospheric dispersion modeling takes exception to NRC criteria. To assess this impact, Columbia calculated the DOE source-term dispersion using Columbia meteorological data and NRC methodology. The calculation determined that the sensitivity to the different parameters was minimal.

Several potential gaps were resolved by development of a Memorandum of Understanding (MOU) between WCH and Energy Northwest to ensure that credited actions would be taken. The relevant portions are reflected in later sections of this enclosure.

2.4 Description of 618-11 Site Remediation Effort

The phases for reaching compliance with the Tri-Party Agreement are identified in three parts:

- Non-intrusive Surveillance and Characterization Activities
- Intrusive Sampling Activities
- Final Cleanup/Removal Activities

This license amendment request addresses only non-intrusive surveillance and characterization activities. Future intrusive sampling activities and final cleanup/removal activities will be based on the data and information obtained by the DOE and their contractors from the non-intrusive activities.

Several types of non-intrusive surveillance and characterization activities will be utilized at the 618-11 site. Currently, once per year, a Rad Rover is driven over the site. This mobile vehicle, equipped with radiological survey detectors, determines whether any contamination has risen to the surface of the 618-11 site or has blown in from other areas. Use of the Rad Rover does not constitute a change to the existing FSAR. The following additional non-intrusive activities not currently addressed in the FSAR will be conducted to provide data and information for planning future intrusive activities and remediation strategies:

- Ground-penetrating radar utilizing electromagnetic energy which detects and maps shallow subsurface features.
- Geophysical delineation of the VPUs and caissons.
- In-situ radionuclide characterization using a multi-detector probe (MDP) assembly that is inserted inside of cone penetrometers located around the perimeter of each VPU and caisson and along the approximate centerline of each trench. The MDP assemblies consist of gross gamma activity, low-level gamma isotopic activity, high-level gamma isotopic activity, and neutron detection probes.
- Soil samples adjacent to and below the base elevations of the VPUs and caissons.
- Soil vapor sampling outside of VPUs and caissons.

2.5 Circumstances Necessitating FSAR and EPlan Changes

The remediation of the 618-11 site is a new activity within the Columbia exclusion area. These efforts were not considered during initial licensing of the plant and are not addressed in the FSAR. This activity modifies the 618-11 site assumptions upon which the NRC reviewed and approved the original license for Columbia. Additionally, changes to the EPlan with regards to events surrounding the 618-11 site remediation activities constitute a DIE that must be reviewed and approved by the NRC.

2.6 Detailed Description of Proposed Columbia FSAR Changes

A comprehensive review of the FSAR was conducted with the following FSAR sections requiring amendment: Geography and Demography (Section 2.1), Nearby Industrial, Transportation, and Military Facilities (Section 2.2), and Missile Protection (Section 3.5).

1) Section 2.1 – Geography and Demography

Section 2.1.2.2, Control of Activities Unrelated to Plant Operation, is being revised to identify the planned DOE 618-11 site non-intrusive surveillance and characterization activities within the Columbia exclusion area and to delineate DOE authority and control for the non-intrusive activities including lead responsibility for abnormal events at the 618-11 site.

2) Section 2.2 - Nearby Industrial, Transportation, and Military Facilities

Section 2.2.2.1, Description of Facilities, is being revised to expand the discussion of the activities of the DOE facilities within a 5 miles radius of the Columbia site. The 618-11 site is discussed in some detail.

Table 2.2-1, Hanford Site Nuclear Facilities, is being revised to update the status of DOE facilities within a 5 mile radius of the Columbia site. For the 618-11 site, significant revisions to the table are needed to describe the new activity, identify the hazard, provide the DBE, and describe the impact on Columbia as follows:

- Reference to the Basis for Interim Operation (BIO) has been added to the facility description.
- The hazard now identifies radioactive waste hazards bounded by Cs-137, Sr-90, and Pu-239, and non-radiological hazards bounded by beryllium.
- The DBE is listed as caisson penetration with fire.
- The impact is discussed as particulate release effectively mitigated by soil overburden and project controls. No missiles are postulated.

3) Section 3.5 – Missile Protection

Section 3.5.1.5, Missiles Generated by Events Near the Site, is being revised for consideration of missiles generated from the 618-11 site activities. Missiles from DOE facilities on the Hanford site are currently discounted due to distance from Columbia.

2.7 Detailed Description of Proposed Columbia EPlan Changes

The DOE will assume the lead responsibility for any 618-11 site events and implement any required actions, including notifications and protective action recommendations. Energy Northwest will remain responsible for all operational decisions concerning safe operation of Columbia. The following changes to the Columbia EPlan are necessary to implement this arrangement:

1) Section 1.6 - Assigned Authorities

Section 1.6.5, Emergency Plan Interrelationships, is being revised to ensure 618-11 site emergency plans (Reference 16) and procedures are coordinated with the Columbia EPlan.

2) Section 3.1 – Coordination of Support Organizations

An MOU delineating coordination between Energy Northwest and WCH, the DOE contractor responsible for the 618-11 site project activities within the Columbia exclusion area, has been established. Reference to this agreement is being added to this section of the EPlan.

3) Section 4 - Emergency Classification and Notification

Section 4.1, Emergency Classification, is being revised to add a paragraph describing how events at the 618-11 site will be classified for toxic, flammable, and radioactive material releases.

Section 4.6.2, Nearby Facilities Notification, is being revised to include notification protocols for 618-11 site personnel of Columbia events and Energy Northwest personnel of 618-11 site events.

Table 4-1, Emergency Classification Initiating Conditions, is being revised to include two new 618-11 site specific Emergency Action Levels (EALs). The Unusual Event EAL addresses impacts due to any release from an abnormal event at the 618-11 site that is deemed potentially detrimental to the health and safety of Energy Northwest personnel and visitors within the Columbia exclusion area. The Alert EAL represents an escalation if an explosion and/or fire involving or suspected to involve the waste buried within the 618-11 site is reported. Mobilization of Energy Northwest Emergency Response Organization (ERO) would occur. These 618-11 site specific EALs will be removed upon termination of activities at the site.

4) Section 5.5 - Protective Action and Responsibilities

A new section 5.5.1, 618-11 Waste Burial Ground Protective Actions, is being added. The 618-11 site is within the Columbia exclusion area and subject to Protective Action Decisions (PADs) made by the Energy Northwest Emergency Director as a result of events associated with Columbia plant operation. Per MOU agreement, 618-11 site project personnel must notify the Energy Northwest control room in the event of an emergency at the 618-11 site.

5) Appendix 2 - Emergency Plan Implementing Procedures

A new Volume 13 procedure is being created to address emergency plan considerations associated with the 618-11 site and is being added to the list of Emergency Plan Implementing Procedures.

3.0 TECHNICAL EVALUATION

3.1 Safety Analysis Summary

The DOE, through WCH, intends to conduct non-intrusive surveillance and characterization activities in support of eventual remediation efforts to bring the 618-11 site into compliance with RCRA, CERCLA, and HWMA by September 2018. Prior to conducting these activities, a DSA is required to be performed and TSR prepared. Based upon an acceptable DSA and TSR, the DOE issues an SER stating the acceptability of the proposed activities and includes any limitations.

WCH prepared a BIO using DOE-STD-3011-2002 (Reference 17), Guidance for Preparation of Basis for Interim Operation (BIO) Documents, in accordance with 10 CFR 830 requirements for a DSA and DOE-STD-1027-92 (Reference 18), Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23 (Reference 19), Nuclear Safety Analysis Reports. The BIO is developed from a hazards evaluation matrix. Known hazards were identified based on the best historical documentation available. Sr-90, Cs-137, and Pu-239 were determined to be the bounding radionuclides for determination of potential dose consequences, while beryllium was determined to be the bounding element for determination of potential toxicological consequences. Hazard egress and dispersion methodologies were used in accordance with DOE guidance to determine on-site (100 m) and off-site (Columbia River) doses. The soil overburden was credited and included in the TSR as a passive safety feature. The TSR specifically prohibits removal of existing soil overburden.

3.2 Detailed Description of the 618-11 Site Design Basis Event

The 618-11 site DBE for the non-intrusive activities is a caisson penetration with fire accident. A cone penetrometer inadvertently penetrates into a caisson and is assumed to induce an explosion in a waste package can located within the caisson. This explosion is assumed to pressurize the caisson and cause a release of radioactive material. The material remaining in the caisson is assumed to be exposed to a fire and produce an additional release. The overall release is a combination of an explosion and fire.

The DOE calculated radiological dose consequences are 4.45×10^{-2} rem (44.5 mrem) on-site (100 m) and 5.10×10^{-5} rem off-site (Columbia River). The dose consequences credit the soil overburden and consider the torturous path presented by the penetrometer within the puncture hole in the caisson.

The bounding toxicological consequences for the 618-11 site DBE were determined by evaluating potential beryllium concentrations. Of the non-radiological hazardous materials potentially disposed in the 618-11 site, beryllium has the lowest exposure limits by a significant margin. The calculated beryllium oxide release concentration (4.6×10^{-3} mg/m^3) is lower than its DOE Protective Action Criteria (PAC-1) concentration (1.39×10^{-2} mg/m^3) and requires no controls.

3.3 Energy Northwest Evaluation

A top-down review was conducted to ascertain the characteristics of the new activity. The activities are dealing with materials under the responsibility and control of DOE, not NRC. Accident Analyses per FSAR Chapter 15 are not applicable because these activities are not internal, Light Water Reactor, NRC regulated processes. This is an external event evaluated in accordance with 10 CFR 100.10 to assure that no safety-related or important to safety Structures, Systems, or Components (SSCs) are impacted, and that no credited operator actions are affected. In this manner, no new accident is postulated, and the mitigation of an analyzed event remains unaffected.

The BIO radiological dose consequence calculation for the 618-11 site DBE did not use Columbia meteorological data to compute dispersions. Energy Northwest prepared a calculation (Reference 20) utilizing Columbia meteorological data and FSAR dispersion methodology which results in a calculated radiological dose consequence of less than 0.1 rem at the Exclusion Area Boundary (EAB) and at the closest control room intake, 300 meters from the source. This dose consequence does not pose challenges to any Columbia SSCs, their operation, or any credited operator actions.

The BIO toxicological dose consequence for the 618-11 site DBE (4.6×10^{-3} mg/m^3) is significantly less than the NRC toxicity limits for beryllium and its compounds (4 mg/m^3) specified in Regulatory Guide 1.78 (Reference 21) and NUREG/CR-6624 (Reference 22). The consequences were calculated at 100 m from the source and will be further reduced by distance to the closest control room intake, 300 meters from the source. The postulated chemical release will not result in any significant concentration in the control room and does not pose challenges to any Columbia SSCs, their operations, or any credited operator actions.

3.4 Impacted Columbia FSAR Sections

1) FSAR Chapter 2, Site Characteristics

FSAR Section 2.1.2.1, Exclusion Area Authority and Control, Authority, presently does not require change because it references and excerpts directly from the lease agreement and MOU between the Administration [Energy and Research Development Administration (ERDA) - now DOE] and the Supply System [now Energy Northwest] stipulating that Energy Northwest has the authority to determine all activities within the exclusion area within the meaning of 10 CFR Section 100.3 (a), including the authority to remove all personnel and property from the area. The reference to 10 CFR Section 100.3 (a) requires modification because 10 CFR Section 100.3 no longer includes a subsection (a). However, the FSAR cannot be changed until the MOU is revised. This editorial change is of minor consequence and will be addressed outside of this license amendment request.

FSAR Section 2.1.2.2, Control of Activities Unrelated to Plant Operation, does not presently define the 618-11 site non-intrusive surveillance and characterization activities. Section 2.1.2.2 will be revised to specifically include these activities as defined within the DOE approved safety basis documentation provided per the BIO.

FSAR Section 2.2.2.1 provides a description of facilities and includes a general statement that Hanford facilities currently operating, recently operating, or with the potential for operating were screened. The safety analysis reports and accident analyses for those believed to pose the most risk to the safe operations of Columbia were reviewed. The current FSAR concludes that no accidents evaluated present a physical challenge to the Columbia buildings [SSCs]. Radioactive particulate releases with the potential to impact the operation of Columbia were found to be effectively mitigated by their distance from Columbia. The discussion concludes by stating that the specific facilities are discussed in Table 2.2-1.

FSAR Section 2.2.3.1 states that Table 2.2-1 summarizes the potential events at the Hanford Site facilities that could present a radiological or chemical hazard or hazardous situation to the continued safe operation of Columbia. The BIO indicates that a reasonably conservative estimate of the bounding toxicological consequences of the DBE can be determined by evaluating potential beryllium concentrations. Beryllium has the lowest exposure limits, by a significant margin, of the non-radiological materials that have the potential to have been disposed in the burial grounds. The estimated beryllium oxide concentration for a caisson explosion with fire is calculated to be 4.6×10^{-3} mg/m^3. This is slightly lower than the PAC-1 concentration of beryllium oxide of 1.39×10^{-2} mg/m^3, the threshold for mild, transient health effects.

The BIO further states that the radiological and non-radiological toxicological hazards do not require safety-class or safety-significant controls to protect the public. The soil overburden covering the VPUs and caissons in the 618-11 site is credited for reducing releases (leak path factor) and is designated as a passive design feature important to safety to mitigate consequences at Energy Northwest's Columbia Generating Station.

Minor changes are required to FSAR Section 2.2.2.1 in order to properly characterize the new activity. FSAR Table 2.2-1 includes the 618-11 site and requires update to reflect the DOE intent to initiate surveillance and characterization activities at the 618-11 site.

2) FSAR Chapter 3, Design Criteria – Structures, Components, Equipment, and Systems

Section 3.5.1.5, Missiles Generated by Events Near the Site, provides the evaluation for missiles generated by events near the site. No missile hazards have been postulated for the 618-11 site DBE. There is insufficient pressure developed to create or expel missiles. This section will be revised to account for nearby facilities.

3.5 <u>Impacted Columbia EPlan Sections</u>

1) Columbia EPlan Section 1.6, Assigned Authorities

Section 1.6.5, Emergency Plan Interrelationships, discusses the interrelationships of this plan with procedures, other plans, and emergency arrangements. This section will be revised to include coordination between Columbia and the 618-11 site emergency plans.

2) Columbia EPlan Section 3.1, Coordination of Support Organizations

The MOU is being documented in this section of the EPlan as evidence of coordination between Energy Northwest and WCH for the 618-11 site activities. The MOU describes interrelationships between Columbia and 618-11 site emergency plans and assures that changes are identified and communicated for appropriate emergency planning response.

3) Columbia EPlan Section 4.1, Emergency Classification

A new paragraph is being added describing how events at the 618-11 site will be classified for toxic, flammable, and radioactive material releases. This addition is necessary to address emergency response to on-site facility events involving releases other than those associated with the operation and maintenance of Columbia.

4) Columbia EPlan Section 4.6, Notification Methods and Procedures

Section 4.6.2, Nearby Facilities Notification, presently does not contain notification protocols for 618-11 site personnel of Columbia events and Columbia personnel for 618-11 site events. This section will be revised to document that notification protocols are established for communication of events and protective actions for the health and safety of Columbia personnel, 618-11 site personnel, and the public.

5) Columbia EPlan Table 4-1, Hazards – Man-Made Events

The NRC approved EAL structure only considers radioactivity from the reactor which is a source of activity that is much larger and contains far greater energy for dispersion than the 618-11 site. As such, this table will be revised to add two new 618-11 project specific EALs. These EALs are being added to address any release from an abnormal event at the 618-11 site that could be detrimental to the health and safety of personnel within the exclusion area, impede Columbia access, or impede mobilization of the Energy Northwest ERO. A release from the 618-11 site would not have a significant impact beyond the site boundary nor adversely affect the operation of Columbia. At the conclusion of activities at the 618-11 site, these EALs would no longer be necessary and will be removed.

6) Columbia EPlan Section 5.5, Protective Action and Responsibilities

The 618-11 site is within the Columbia exclusion area and thus subject to PADs made by the Energy Northwest Emergency Director. A new section 5.5.1, 618-11 Waste Burial Ground Protective Actions, is being added to document that 618-11 site personnel are responsible to comply with PADs made by the Energy Northwest Emergency Director for events at Columbia. In addition, 618-11 site personnel will notify the Columbia control room in the event of an emergency at the 618-11 site. Energy Northwest personnel, contractors, and visitors will be instructed by Columbia control room personnel to respond to notification of a 618-11 site emergency as required by Energy Northwest procedures developed to implement protective action recommendations of the 618-11 site emergency plan.

7) Columbia EPlan Appendix 2, Emergency Plan Implementing Procedures

Detailed emergency procedures required to implement emergency plans are listed in Appendix 2. An Emergency Plan Implementing Procedure prescribes the appropriate course of action necessary to activate the emergency response organizations and minimize the consequences of an incident. The list of Emergency Plan Implementing Procedures is updated to include a new 618-11 site implementing procedure. This new procedure will instruct Energy Northwest personnel on how to respond to an emergency at the 618-11 site in accordance with the WCH 618-11 site emergency plan.

3.6 Licensing Bases Documents Analyzed but not Impacted

1) FSAR Chapter 6, Engineered Safety Features

FSAR Section 6.4 provides the design basis of the main Control Room Envelope Habitability (CREH) systems. The CREH systems ensure the Control Room Envelope occupants can control the reactor safely under normal conditions and maintain it in a safe condition following a radiological event, a hazardous chemical release, or a smoke challenge. The postulated 618-11 site DBE results in a radiological dose consequence of 44.5 mrem and a toxicological dose consequence of 4.6×10^{-3} mg/m^3 for beryllium, both at a distance of 100 m from the release point. These dose consequences are significantly below the NRC radiological exposure regulatory limit of 5 rem and the NRC toxicity limit for beryllium and its compounds of 4 mg/m^3. The closest control room intake (Remote-1 intake) is 300 m from the 618-11 site which will further reduce the dose consequences. The conclusion is that there is no adverse impact on the CREH systems because the doses are well below regulatory limits.

No changes are required to FSAR Sections 6.4.1 or 6.4.2.

2) FSAR Chapter 9, Auxiliary Systems

Sections 9.4.1.2 and 9.4.1.3 provide additional main control HVAC system description and safety evaluation details. The 618-11 site DBE will result in radiological and toxicological dose consequences within regulatory limits at the closest control room intake to the release point. It is not necessary to credit the Control Room Emergency Filtration (CREF) system to mitigate the effects of the 618-11 site DBE.

No changes are required to FSAR Sections 9.4.1.2 and 9.4.1.3.

3) FSAR Chapter 11, Radioactive Waste Management

Independent of and not related to FSAR design basis requirements, Columbia environmental monitoring personnel will monitor external (out-of-fence) radiation before, during, and after 618-11 site operations. Continuous air samplers have been installed to detect potential 618-11 site releases within the Energy Northwest owner controlled area for radiological effluent monitoring purposes.

No changes are required to FSAR Chapter 11.

4) FSAR Chapter 12, Radiation Protection

Independent of and not related to FSAR design basis requirements, Columbia radiation protection personnel will monitor external (out-of-fence) contamination before, during, and after 618-11 site operations. Continuous air monitors will be installed in selected, inhabited areas for personnel and public protection.

As detailed in the BIO, DOE and their contractors are responsible for the implementation of 10 CFR 830, Subpart B, Safety Basis Requirements, and 10 CFR 835, Occupational Radiation Protection, to establish and maintain the safety basis and establish hazard controls to ensure adequate protection of the public from the potential radioactive releases due to activities at the 618-11 site.

No changes are required to FSAR Chapter 12.

5) Columbia Physical Security Plan

A security tabletop session was conducted between DOE and Energy Northwest that discussed a security threat to the 618-11 site. The 618-11 site is wholly located within the Security Defined Owner Controlled Area (SDOCA) and existing Energy Northwest protocol will be followed for incidents at the 618-11 site. Activation of the Benton County Sheriff may occur upon determination of Energy Northwest security management to involve Local Law Enforcement with the Sheriff becoming incident commander upon arrival at Columbia.

No changes are required to the Columbia Physical Security Plan.

6) Independent Spent Fuel Storage Installation (ISFSI)

The 618-11 site DBE fire would occur approximately 300 m southwest of the ISFSI. No oxygen supply is available to support a large, underground fire. In the unlikely event that the fire would propagate beyond the 618-11 site as a range fire, it is reasonable that the distance between the 618-11 site and the Columbia protected area (ISFSI storage area), which is comprised mostly of roadway and parking lot area, would limit propagation and permit mitigation prior to presenting a challenge to the credited design basis functions. The Columbia IFSFI Fire Hazard Analysis (Reference 23) has determined that a range fire would not pose a significant threat to the casks. Additionally, the ISFSI FSAR (Amendments 1 and 2) (References 24 and 25), Section 11.2.4, discusses fire accidents.

Although the probability of a fire accident affecting a HI-STORM 100 System during storage operations is low due to the lack of combustible materials within the ISFSI and adjacent to the overpacks, a conservative fire which would bound the 618-11 site DBE fire has been assumed and analyzed. The analysis shows that the HI-STORM 100 System continues to perform its structural integrity, confinement, thermal, and subcriticality functions.

No changes are required to either the Columbia IFSFI Fire Hazard Analysis or 10 CFR 72.212 Report (Reference 26).

7) Technical Specifications

No changes are required to the Columbia Technical Specifications (Reference 27).

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

1) 10 CFR 100.3 (10 CFR 50.2)

The lease agreement (References 28 and 29), as amended, between Energy Northwest [then Supply System] and DOE [then ERDA], acknowledges that Energy Northwest "...has the authority to determine all activities within the exclusion area within the meaning of 10 CFR Section 100.3, including the authority to remove all personnel and property from the area."

2) 10 CFR 100.10

A review of the hazards presented in DOE safety analysis and safety evaluations for the proposed activities found that there were no hazards of significant consequence to impact SSCs or operators necessary for the safe operation of Columbia. The hazards presented do not have the potential for causing onsite accidents, and thus do not pose an undue risk of increasing the probability of public exposure from an event at Columbia.

3) 10 CFR 50.54(q)

Currently, Energy Northwest is the sole agency responsible for public health and safety, protective action recommendations, and notifications for events within the Columbia exclusion area. The material-at-risk within the 618-11 site is DOE responsibility. As such, the DOE will assume the lead responsibility for any 618-11 site events and implement any required actions, including notifications and protective action recommendations. Energy Northwest will remain responsible for all operational decisions concerning safe operation of Columbia. The Columbia EPlan is being revised to provide two new EALs for proper responses and actions due to a release of radioactive material from a source that is separate and unique from that analyzed for Columbia. Evaluation of this change to the Emergency plan has determined it is a DIE.

4) 10 CFR 50.54(p)

The 618-11 site and its planned activities are all within the Columbia security barrier. Personnel engaged in these activities will be badged or escorted under the Columbia Physical Security Plan. No changes are required to the Columbia Physical Security Plan.

5) 10 CFR 72.48

A review of the hazards presented in DOE safety analysis and safety evaluations for the proposed activities found that there were no hazards of significant consequence to impact the safe operation of the ISFSI at Columbia.

6) 10 CFR 51.22(c)

The DOE is responsible for all environmental considerations relating to non-intrusive characterization and surveillance activities for the 618-11 site. The required license document changes to support the DOE activities meet the criteria for categorical exclusion and do not require an environmental assessment or environmental impact statement. Further discussion is provided in Section 5.0.

4.2 Precedence

A review found no precedent for a DOE hazardous activity being conducted within an exclusion area. This activity is considered to be first-of-a-kind.

4.3 Significant Hazards Consideration

The proposed changes to the Columbia FSAR and EPlan would permit the DOE to conduct non-intrusive surveillance and characterization activities at its 618-11 site. This site is adjacent to Columbia and within its exclusion area.

Energy Northwest has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1) Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   Normal and postulated activities at the 618-11 site do not serve as initiators of any Columbia accident previously evaluated, nor do they require reassessment of the previously evaluated accidents. The accident probabilities are unaffected and the outcomes remain unchanged.

   Therefore there is no significant increase in the probability or consequences of an accident previously evaluated.

2) Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously analyzed?

   Response: No.

   The only hazard postulated beyond the 618-11 site and onto the Columbia facility is a release of 44.5 mrem at 100 m. This level of exposure does not impact the design function or operation of any Columbia SSCs. The protected area of the facility that encloses the safety related SSCs is greater than 300 m from the postulated release point. The calculated dose at 300 m is 3 mrem. This level of exposure does not cause any new or different kind of accident.

   Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3) Does the proposed amendment involve a significant reduction in a margin of safety?

   Response: No.

   The only hazard postulated beyond the 618-11 site and onto the Columbia facility is a release of 44.5 mrem at 100 m. This level of exposure does not impact the design function or operation of any Columbia SSCs. The protected area of the facility that encloses the safety related SSCs is greater than 300 m from the postulated release point. The calculated dose at 300 m is 3 mrem. This level of exposure does not impact the equipment qualification of SSCs and is well within the mild environment range for SSCs. It does not exceed or alter a design safety limit.

   Therefore, the proposed change does not involve a significant reduction in the margin of safety.

Based on the above, Energy Northwest concludes that the proposed changes do not involve significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

Based on the considerations discussed above: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the applicable regulations as identified herein, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The 618-11 site non-intrusive surveillance and characterization is a new activity within Columbia's exclusion area. Energy Northwest has reviewed the activity and identified the required licensing bases document changes. These changes are necessary to document the scope of the DOE proposed activity.

The DOE, in accordance, with 10 CFR Part III and its commitments under CERCLA, RCRA, and the Tri-Party Agreement is responsible for all environmental considerations. The DOE environmental activities are not controlled under 10 CFR Chapter I.

The proposed amendment would not change any requirements with respect to installation or use of a facility component located within Columbia's restricted area, as defined in 10 CFR 20. Accordingly, the proposed amendment does not involve: (1) a significant hazards consideration, (2) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (3) a significant increase in individual or cumulative occupational radiation exposure. The proposed amendment meets the criteria for categorical exclusion in accordance with 10 CFR 51.22(c) and no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. Columbia Generating Station, Final Safety Analysis Report, as amended through Amendment 60, December 2009
   a. Section 2.1.2, Exclusion Area Authority and Control
   b. Section 2.2.2.1, Description of Facilities
   c. Section 2.2.3, Evaluation of Potential Accidents
   d. Section 3.5.1.5, Missiles Generated by Events Near the Site
   e. Section 6.4, Habitability Systems, Design Basis
   f. Section 9.4.1.2, System Description, Main Control Room
   g. Section 9.4.1.3, Safety Evaluation, Main Control Room
   h. Section 11.5, Process and Effluent Radiological Monitoring and Sampling Systems
   i. Section 12.1, Radiation Protection
   j. Section 13.2, Training
   k. Section 13.3, Emergency Planning
   l. Section 13.6, Industrial Security
   m. Chapter 15, Accident Analyses
2. Energy Northwest, Emergency Plan Columbia Generating Station, Rev. 50
3. US NRC Final Safety Evaluation Report for WNP-2, NUREG-0892
   a. Section 2
   b. Section 3
4. Tri-Party Agreement, Hanford Federal Facility Agreement and Consent Order by Washington State Department of Ecology, United States Environmental Protection Agency, and United States Department of Energy, as amended through August 25, 2009.
5. 42 USC § 6901, et seq., Resource Correction and Recovery Act (RCRA), 1971.
6. 42 USC § 9601, et seq., Comprehensive Environmental Response, Compensation, and Liability Act, 1980.
7. Washington State, Revised Code Washington (RCW) 70.105 Hazard Waste Management Act (HWMA).
8. 42 USC § 3022, et seq., Atomic Energy Act
9. 10CFR Chapter III, Department of Energy
   a. 830, Nuclear Safety Management
   b. 835, Occupational Radiation Protection
10. License No. NPF-21, Energy Northwest Docket No. 50-397, Columbia Generating Station Facility Operating License, Amendment 169.
11. 10CFR Chapter I, Nuclear Regulatory Commission
    a. 50.54, Conditions of Licenses
    b. 51.22, Criterion for Categorical Exclusion; Identification of Licensing and Regulatory Actions Eligible for Categorical Exclusion or Otherwise Not Requiring Environmental Review
    c. 72.44, License Conditions
    d. 100.3, Definitions
    e. 100.10, Factors to be Considered When Evaluating Sites
12. US NRC, NUREG-0800, Standard Review Plan,
    a. 2.2.1 – 2.2.2, Identification of Potential Hazards in Site Vicinity, Rev. 2
    b. 2.2.3, Evaluation of Potential Accidents, Rev. 2

13. WCH-183, River Corridor Closure Contract, 618-10 and 618-11 Waste Burial Grounds Basis for Interim Operation, Rev. 1, August 2009
14. Safety and Engineering Division, U.S. Department of Energy, Richland Operations Office, Safety Evaluation Report for 618-10 and 618-11 Waste Burial Grounds Safety Basis, June 2009
15. WCH-184, River Corridor Closure Contract, Technical Safety Requirements for 618-10 and 618-11 Burial Sites, Rev. 1, August 2009
16. EPHA 618-10/11, River Corridor Closure Contract, 618-10 and 618-11 Burial Ground Remediation Project Emergency Planning Hazards Assessment, Rev. 2, September 2009.
17. DOE-STD-3011-2002, Guidance for the Preparation of Basis for Interim Operation (BIO) Documents, U.S. Department of Energy, Washington, D.C.
18. DOE-STD-1027-92, Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports, U.S. Department of Energy, Washington, D.C.
19. DOE Order 5480.23, Nuclear Safety Analysis Reports, Change 1, 4/30, 1992, U.S. Department of Energy, Washington, D.C.
20. Energy Northwest, Calculation No. NE-02-09-06, Accident Analysis for Phase 1 of Burial Ground 618-11 Remediation Activities, Rev. 0, October 28, 2009
21. Regulatory Guide 1.78, Evaluating the Habitability of a Nuclear Power Plant Control Room during a Postulated Hazardous Chemical Release, Revision 1, December 2001.
22. NUREG/CR-6624, Recommendations for Revision of Regulatory Guide 1.78, November 1999.
23. Columbia Generating Station Independent Spent Fuel Storage Installation Fire Hazards Analysis, Revision 5, January 15, 2004.
24. HI-STORM 100 Cask System Final Safety Analysis Report, Revision 1, September 6, 2002.
25. HI-STORM 100 Cask System Final Safety Analysis Report, Revision 4, April 10, 2006.
26. Energy Northwest Independent Spent Fuel Installation 10 CFR 72.212 Evaluation, Revision 5, March 2008.
27. Columbia Generating Station, Technical Specifications:
    a. TS 3.7.3, Control Room Emergency Filtration (CREF) System, Amendment 199
    b. TS 3.7.4, Control Room Air Conditioning (AC) System, Amendment 199
    c. TS Bases 3.7.3, Control Room Emergency Filtration (CREF) System, Revision 49
    d. TS Bases 3.7.4, Control Room Air Conditioning (AC) System, Revision 25
28. Contract No. AT(45-1)-2269 between the United States of America represented by United States Atomic Energy Commission [now DOE] and Washington Public Power Supply System [now EN], December 10, 1971.
29. Letter, US Energy Research and Development Administration (now DOE) to Washington Power Supply System (now EN) submitting Contract No. EY-77-A-06-1062, Supplement No. 1- Memorandum of Understanding Dated October 16, 1975, September 30, 1977

Figure 1 – Columbia Generating Station Exclusion Area

Note: The Columbia exclusion area boundary is a circle with its center at the reactor and a radius of 1950 meters.

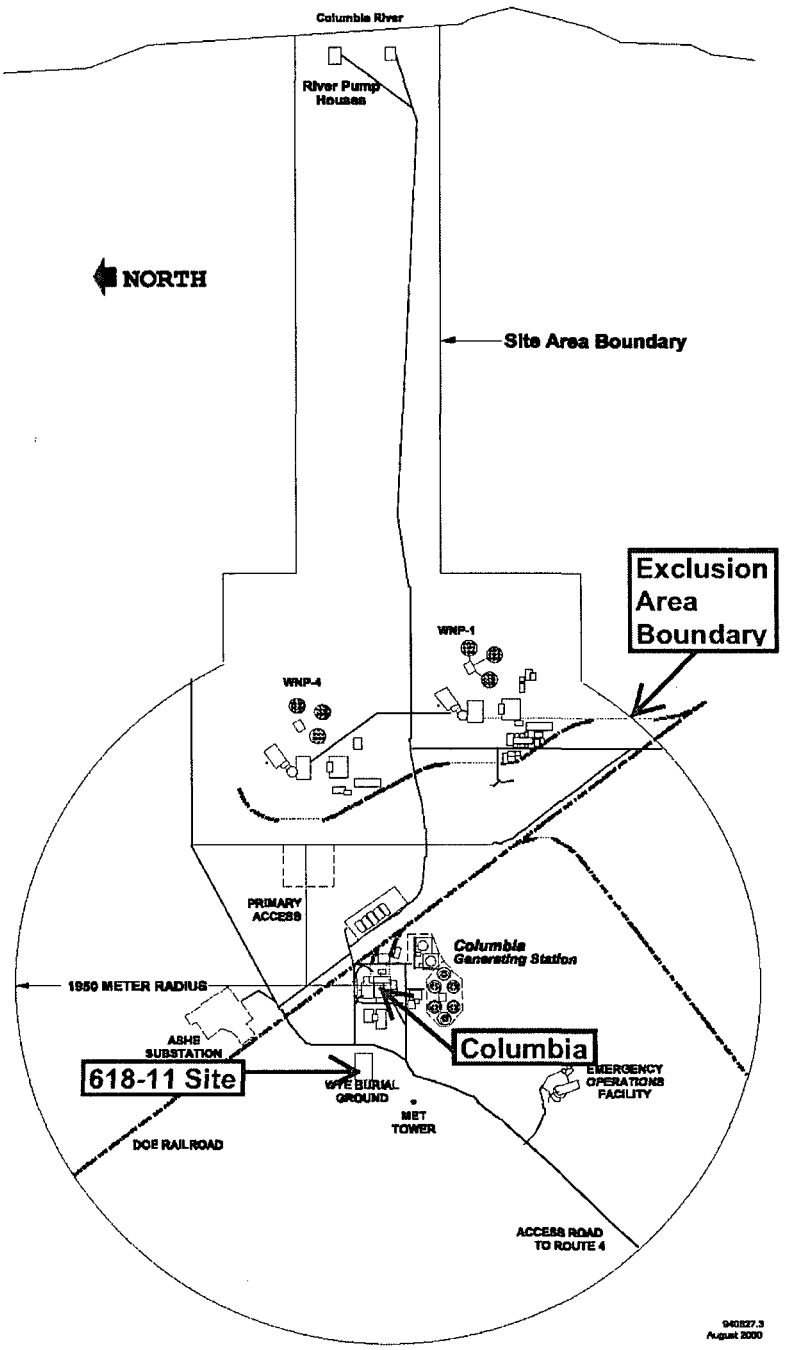


Figure 2 – 618-11 Site

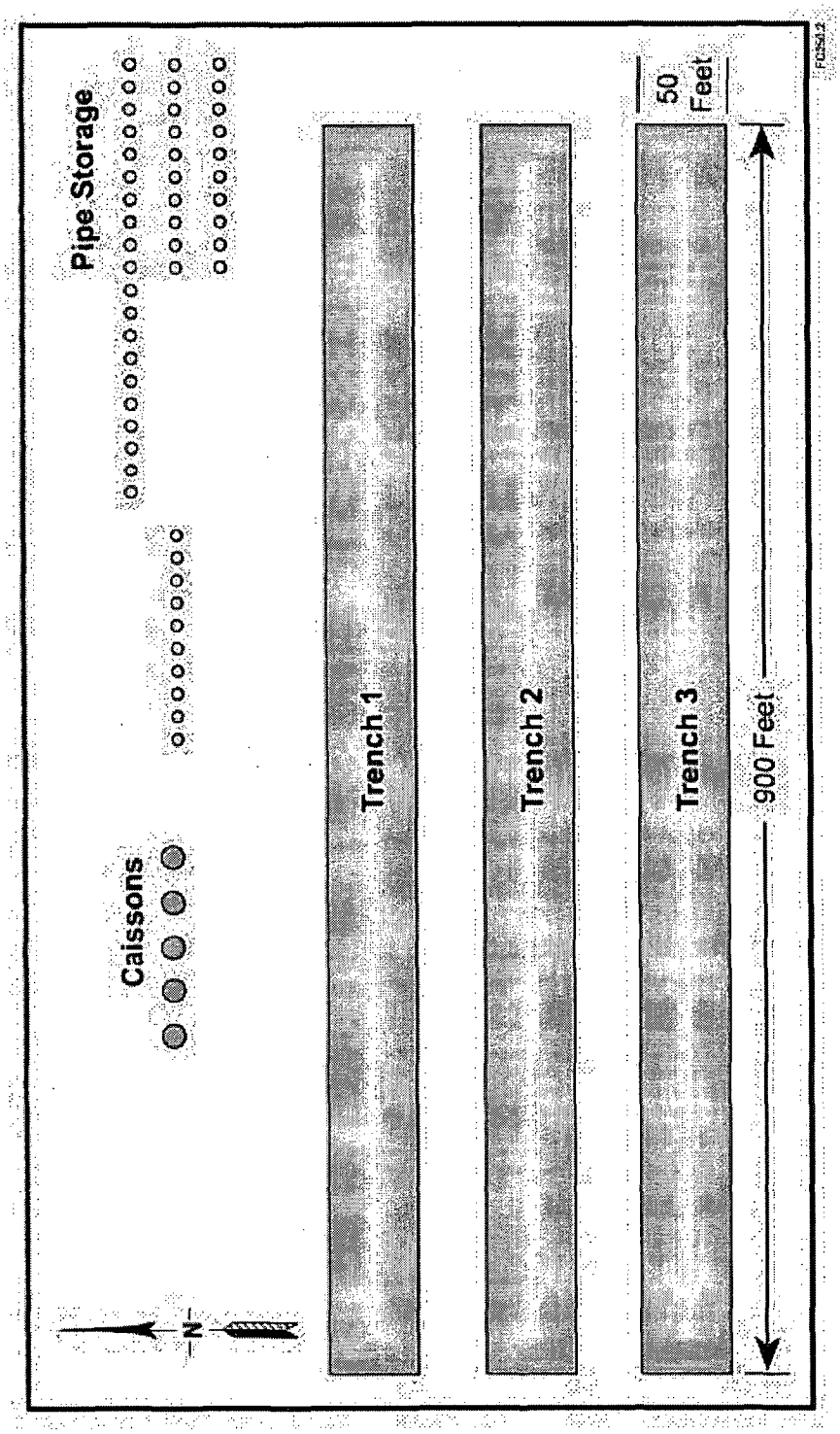


Figure 3 – 618-11 Site Vertical Pipe Units (VPUs)

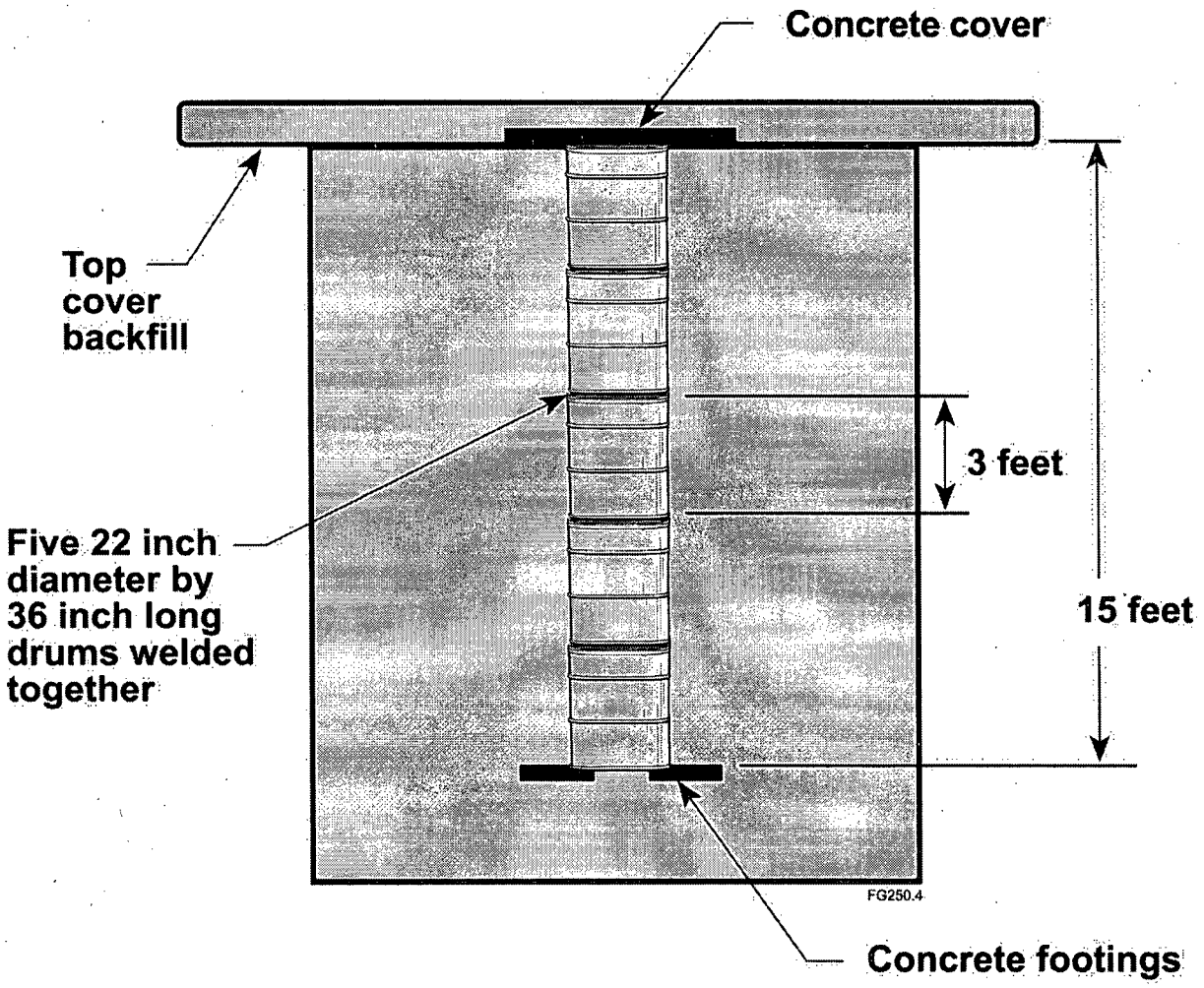
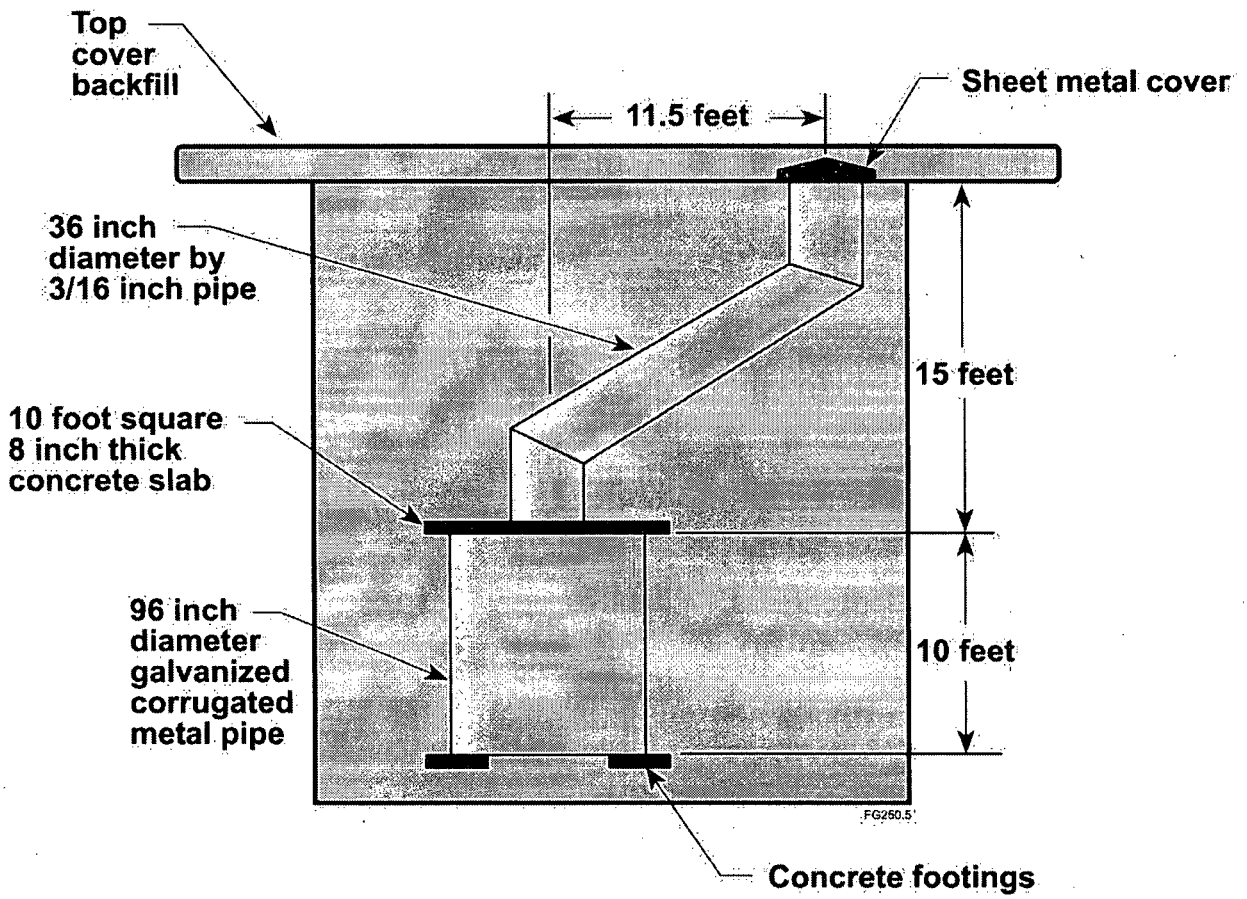


Figure 4 – 618-11 Site Caissons



Proposed Columbia Final Safety Analysis Report Changes (Mark-Up)

1. Proposed Changes to FSAR Paragraph 2.1.2.2 (Mark-Up) (2 Pages)
2. Proposed Changes to FSAR Paragraph 2.2.2.1 (Mark-Up)
3. Proposed Changes to FSAR Table 2.2-1 (Mark-Up)
4. Proposed Changes to FSAR Paragraph 3.5.1.5 (Mark-Up)

Proposed Changes to FSAR Paragraph 2.1.2.2 (Mark-Up)(Page 1 of 2)

Replace with text of Insert 1 on next page

2.1.2.2 Control of Activities Unrelated to Plant Operation

~~There are no activities unrelated to plant operation within the exclusion area except site restoration and economic development (such as leasing of excess facilities for office space and manufacturing) activities at the WNP-1 and WNP-4 sites (the WNP-1 and WNP-4 sites are also leased from the DOE and controlled by Energy Northwest). The number of personnel at the WNP-1 and WNP-4 sites varies. However, coordination of activities within the exclusion area is under the control of Energy Northwest and the CGS emergency plan. This includes notification and evacuation considerations in the event of an emergency at CGS.~~

2.1.2.3 Arrangements for Traffic Control

The only roads within the exclusion area are the Energy Northwest access roads. These roads are normally used only by employees and visitors associated with the CGS, WNP-1, and WNP-4 facilities, DOE, and DOE contractors. The security force, with offsite assistance as required, controls traffic during emergencies.

2.1.2.4 Abandonment or Relocation of Roads

There were no public roads transversing the exclusion area that had to be abandoned or relocated as a result of the construction of CGS.

2.1.3 POPULATION DISTRIBUTION

Table 2.1-1 presents the compass sector population estimates for 1980 and the forecasts for the same compass sectors by decade from 1990 to 2030.* Cumulative totals are also shown in Table 2.1-1. This table may be keyed to Figures 2.1-4 and 2.1-5, which show the sectors and major population centers within 10 and 50 miles of the site. As can be seen in Figure 2.1-6, population centers, within 50 miles of the site include the Tri-Cities area of Richland, Pasco, and Kennewick; Moses Lake; Hermiston; and the communities lying along the Yakima River from Prosser to Toppenish. Figure 2.1-4 shows that there are no towns located within 10 miles of the site, with the exception of a small part of Richland.

The 1990 to 2030 forecasts presented here (Reference 2.1-2) are based on

---

* Population estimates out to 50 miles were derived to serve the licensing requirements of WNP-1, CGS, and WNP-4. Therefore, estimates were made relative to the centroid of the triangle formed by the three reactors. This point is located 2800 ft east of CGS and has coordinates longitude 119° 19' 18" west, latitude 46° 28' 19" north. This shift does not affect the overall accuracy or applicability of the population distribution projections.

Proposed Changes to FSAR Paragraph 2.1.2.2 (Mark-Up)(Page 2 of 2)

INSERT 1

2.1.2.2 Control of Activities Unrelated to Plant Operation

In accordance with, and as defined by 10 CFR 100.3, Energy Northwest has the authority to determine all activities within the exclusion area, including the authority to remove all personnel and property from the area. The following activities unrelated to plant operation are permitted within the exclusion area:

2.1.2.2.1 Industrial Development Complex

Energy-Northwest is conducting site restoration and economic development (such as leasing of excess facilities for office space and manufacturing) activities at the WNP-1 and WNP-4 sites (the WNP-1 and WNP-4 sites are also leased from the DOE and controlled by Energy Northwest). The number of personnel at the WNP-1 and WNP-4 sites varies. However, coordination of activities within the exclusion area is under the control of Energy Northwest and the CGS emergency plan. This includes notification and evacuation considerations in the event of an emergency at CGS.

2.1.2.2.2 618-11 (Wye) Waste Burial Ground

The 618-11 site is a DOE waste burial ground, encompassing an eight-acre parcel directly adjacent to Energy Northwest leased land (see Figure 2.1-3) and located wholly within the CGS exclusion area. The DOE and its site contractor are approved to perform non-intrusive surveillance and characterization activities to obtain data and information necessary for planning future intrusive activities and remediation strategies. These activities are necessary to meet the 618-11 site remediation and closeout milestone of September 2018 as delineated in the Hanford Federal Facility Agreement and Consent Order. All 618-11 site activities are controlled by DOE in accordance with 10 CFR Chapter III. DOE has responsibility for the 618-11 site documented safety analysis (DSA) in accordance with 10 CFR 830.204. The currently approved DSA and its associated technical safety requirements (TSR) establish the safety basis and assess the environmental impact of the non-intrusive activities within the site. The soil overburden covering the caissons and vertical pipe units at the 618-11 site is identified as a passive design feature that serves a mitigative function. Existing soil overburden shall not be removed.

A memorandum of understanding (MOU) has been established between the DOE 618-11 site contractor and Energy Northwest for communication and mutual support for the non-intrusive activities at the site. The MOU delineates the requirements for the site contractor to inform Energy Northwest of plans, schedules, manning, and other matters pertaining to the non-intrusive site activities. In addition, the MOU defines Energy Northwest requirements for contractor notification of CGS events with the potential to affect the 618-11 site operation and/or personnel. Communication includes notification and evacuation considerations in the event of an emergency at CGS.

In the event of a 618-11 site emergency, including the 618-11 site design basis event, the 618-11 site is subject to control by the DOE. Control includes notifications, implementation of required actions, and communication of recommendations to protect the health and safety of CGS personnel and the public within and beyond the Hanford reservation boundaries.

The non-intrusive activities, analyzed 618-11 site events, and the design basis event associated with the non-intrusive activities, have been assessed and approved by DOE. In addition, Energy Northwest has performed an evaluation of the 618-11 site releases that would occur from the postulated design basis event. The evaluation, using NRC radionuclide transport methodology and CGS meteorological data, has confirmed that the potential 618-11 site releases will not adversely impact Structures, Systems, and Components or credited operator actions. Implementation of DOE approved non-intrusive activities at the 618-11 site will not affect the operation of CGS, and thus, will not result in a significant hazard to the health and safety of the public from CGS's operation.

Proposed Changes to FSAR Paragraph 2.2.2.1 (Mark-Up)

and the 222-S Laboratory were considered but not included. These facilities have insufficient radiological or toxicological inventories in a dispersible form to represent a risk to CGS operation. The specific facilities included are discussed in Table 2.2-1.

~~Three DOE facilities are located within a 5-mile radius of the plant site, the Fast Flux Test Facility (FFTF) and two radioactive waste burial grounds. The 618-11 (Wye) Burial Ground is immediately due west of the plant site. The other, 618-10 (300 North) Burial Ground, is approximately 3.5 miles south. FFTF is about 3 miles southwest of CGS.~~

The DOE 300, 200 East, and 200 West Areas are located within a 10-mile radius of the site. The current waste management activities (storage, disposal, and treatment) conducted in these areas are discussed in Table 2.2-1. ~~The 300 Area is approximately 7 miles southeast of CGS.~~

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Three DOE facilities are located within a 5-mile radius of the plant site. These are the Fast Flux Test Facility (FFTF) and two radioactive waste burial grounds. The specific hazards associated with these facilities are summarized in Table 2.2-1 and the specific activities are listed below:

- The FFTF is a deactivated sodium cooled breeder reactor located approximately 3 miles southwest of CGS. All fuel has been removed and shipped to the Idaho National Laboratory. All sodium has been removed, solidified, and is stored on-site. The facility has been placed in a long-term, low-cost surveillance and maintenance condition.
- The 618-10 (300 North) Waste Burial Ground is approximately 3.5 miles south of CGS. DOE has initiated surveillance and characterization activities at the site to obtain data and information for planning remediation strategies.
- The 618-11 (Wye) Waste Burial Ground is directly west of CGS, outside of Energy Northwest leased land, but within its 1950-meter exclusion area radius and security perimeter. The site received low- to high-activity waste, fission products, some plutonium-contaminated waste, and non-radiological hazardous waste from March 1962 to December 1967 from the Hanford 300 Area. The waste is buried in 3 trenches, 50 Vertical Pipe Units (VPUs), and 3 to 5 caissons. The site was covered with an overburden of soil when it was closed. The surface was stabilized in 1982 with an additional 2 ft of soil. Since surface stabilization, activities at the site have been limited to monitoring and surveillance. DOE will initiate non-intrusive surveillance and characterization activities at the site in 2011 to obtain data information and information for planning intrusive characterization activities.

Proposed Changes to FSAR Table 2.2-1 (Mark-Up)

Hanford Site Nuclear Facilities

Table 2.2-1

Facility	Description	Hazard	Design Basis Event	Impact on CGS
Fast Flux Test Facility (FFTF) Ref: FFTF Final Safety Analysis Report, Amendment 76, HHDL-11-75001	~~Sodium cooled breeder reactor, in standby, with fuel removed for storage~~ Remove	~~Activated liquid sodium~~ ~~Stored irradiated fuel~~	~~1) 180,000 lb sodium spill - 2-hr dose at 1.5 mi = 0.015 mrem, 24-hr dose at 4.5 mi = 0.26 mrem~~ ~~2) Damage to spent fuel storage container - 4.0 mrem at site boundary~~ Remove	Particulate release, effectively mitigated by distance Particulate release, effectively mitigated by distance (>5 km)
DOE 618-10 (300 North) Burial Ground Ref: 618-10 and 618-11 Waste Burial Grounds Basis for Interim Operation, Rev. 1, WCH-183	Disposal site with broad spectrum of low- to high-level solid radioactive wastes buried in caissons or pipe Add "Waste" in front of "Burial Ground" - 2 places		Caisson penetration with fire – mitigated dose at 1m = 10.2 mrem	
DOE 618-11 (Wye) Burial Ground Ref: Waste Information Data System	Disposal site with broad spectrum of low- to high-level solid radioactive wastes buried in caissons or pipe	~~Radioactive waste~~	~~Site was stabilized in 1983 and ground water monitoring well was added in 1995. No credible hazard or hazardous event to impact CGS.~~ None	
B Plant Ref: B Plant Basis for Interim Operation, March 6, 1997, HNF-SD-BI-[illegible] Add "and non-radiological hazardous materials"	Process to remove cesium and strontium from radioactive waste.	Residual inventory of ^{137}Cs, [illegible]	Caisson penetration with fire and explosion: control room doses are less than 0.1 rem; beryllium oxide concentration of 4.6×10^{-3} mg/m^3 at 100 m from 618-11 site boundary. Replace with:	
Replace with: Ref: 618-10 and 618-11 Waste Burial Grounds Basis for Interim Operation, Rev. 1, WCH-183	Replace with: Radioactive waste inventories, primarily Cs-137, Sr-90, and Pu-239 and non-radiological hazardous materials bounded by beryllium		Replace with: Particulate release, effectively mitigated by credited 618-11 Waste Burial Ground project controls. The soil overburden covering the VPUs and caissons in the 618-11 Waste Burial Ground is credited for reducing releases and is designated as a passive design feature. No missiles are postulated for this event.	

Replace with: Deactivated sodium cooled breeder reactor

Replace with: Activated solid sodium

Replace with: Ref: Surveillance and Maintenance Plan for FFTF, Rev. 0, DOE/RL-2009-26

Proposed Changes to FSAR Paragraph 3.5.1.5 (Mark-Up)

3.5.1.4.2 Tornado-Generated Internal Missiles

The tornado-generated internal missiles as mentioned in Section 3.5.1.4 are materials and/or items attached to or found inside a building, but subjected to the design basis tornado described in Section 3.3.2 as a result of a loss of a building exterior wall or roof. The materials and/or items considered as potential tornado-generated internal missiles are discussed below.

a. The reactor building steel framed superstructure uses girts and roof purlins fastened to the building frame by means of controlled release fasteners. The steel girts and purlins are considered to become free falling tornado-generated internal missiles which can strike the roof of the diesel generator building, the radwaste and control building, and main steam corridor slabs, in the event a tornado blows the roofing and/or siding off of the building frame. Structures housing safety-related systems, equipment, and components are designed to withstand the effects of these missiles.

b. In the event that a tornado blows the roof purlins, roof decking, girts, and siding panels off the reactor building frame, the reactor building crane is then exposed to the design basis tornado. The reactor building crane is designed with provisions which preclude it, or any part thereof, from becoming a missile (see Section 3.3.2.3).

3.5.1.4.3 Flood Generated Missiles

The design basis flood el. discussed in Section 3.4 and defined in Section 2.4, exceeds the flood levels associated with breaches of the Grand Coulee Dam. The final plant grade level is higher than the design basis flood. Therefore, flood-generated missiles are not considered in the design of the Seismic Category I safety-related structures and installations.

3.5.1.4.4 Protection and Design

Systems protected from missiles generated by natural phenomena, and barrier design are described in Sections 3.5.2 and 3.5.3 respectively.

3.5.1.5 Missiles Generated by Events Near the Site

Add "can be discounted"

Hazards due to missiles postulated in the design basis explosions or accidents at nearby industrial plants, military facilities, pipe lines, or storage facilities as discussed in Section 2.2 ~~can be discounted because of their remote relationship to the CGS plant.~~

Remove/delete

The Hydrogen Storage and Supply Facility (HSSF) contains a liquid hydrogen storage tank, ASME tubes (gaseous hydrogen), trailer tubes (gaseous hydrogen) and a hydrogen pipeline to the plant. An analysis shows that an explosion and subsequent missile generation from a

Proposed Columbia Emergency Plan Changes (Mark-Up)

1. Proposed Changes to EPlan Table of Contents (Mark-Up)
2. Proposed Changes to EPlan Paragraph 1.6.5 (Mark-Up)
3. Proposed Changes to EPlan Paragraph 3.1 (Mark-Up)
4. Proposed Changes to EPlan Paragraph 4.1 (Mark-Up)
5. Proposed Changes to EPlan Paragraph 4.6.2 (Mark-Up)
6. Proposed Changes to EPlan Table 4-1 (Mark-Up)
7. Proposed Changes to EPlan Paragraph 5.5 (Mark-Up) (2 Pages)
8. Proposed Changes to EPlan Appendix 2 (Mark-Up)

Proposed Changes to EPlan Table of Contents (Mark-Up)

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Add:

5.5.1 618-11 Waste Burial Ground Protective Actions

Proposed Changes to EPlan Paragraph 1.6.5 (Mark-Up)

1.6.4 Ingestion Exposure Pathway Emergency Planning Zone

The Ingestion Exposure Pathway Emergency Planning Zone (EPZ) as shown in Figure 1-2 extends into the Yakama Indian Nation, eight counties within the State of Washington and two counties in the State of Oregon. These are Benton, Franklin, Yakima, Kittitas, Grant, Adams, Walla Walla and Klickitat in the State of Washington[1], and Morrow and Umatilla Counties in the State of Oregon. The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk, fresh vegetables or aquatic foodstuffs.

The State of Washington maintains communication with the Washington counties in the Ingestion Exposure Pathway EPZ. The State of Oregon does the same for Morrow and Umatilla Counties. Communications with the Yakama Indian Nation are handled by Yakima County. Dose projections and environmental sampling are also the responsibility of the States and will be coordinated from Energy Northwest's Emergency Operations Facility by State representatives. Support to the States of Washington and Oregon is provided by Energy Northwest through the sharing of field team data and other resources.

1.6.5 Emergency Plan Interrelationships

Interrelationships of this plan with procedures, other plans and emergency arrangements are summarized as follows:

- Detailed actions to be taken by individuals in response to onsite emergency conditions are described in the Emergency Plan Implementing Procedures.
- The Columbia Generating Station Physical Security Plan and Procedures and this plan are coordinated to ensure that appropriate emergency actions can be taken. For example, the Physical Security Plan and Procedures contain provisions for emergency response personnel and vehicle access when required by the Emergency Plan Procedures.
- Site construction groups at the Industrial Development complex and the maintenance contractors at Columbia Generating Station that develop emergency procedures for their personnel are tasked with coordinating their procedures with this plan.
- Formal agreements have been negotiated to define the coordination and interface between onsite and offsite organizations and agencies having related radiological emergency planning responsibilities. Continuing liaison with the offsite organizations ensures compatibility and proper interfacing with this plan. Section 3 of this plan further describes those agencies' activities with respect to an emergency at Columbia Generating Station.

Add: • The 618-11 Waste Burial Ground emergency plans and procedures are coordinated with the CGS Emergency Plan.

[1] Kittitas and Klickitat Counties do not actively participate in radiological emergency preparedness efforts. The State of Washington has established measures to ensure that appropriate actions will be taken for these two counties. Refer to the State of Washington Emergency Response Plan.

Proposed Changes to EPlan Paragraph 3.1 (Mark-Up)

SECTION 3
EMERGENCY RESPONSE SUPPORT AND RESOURCES

3.1 COORDINATION OF SUPPORT ORGANIZATIONS

The Energy Northwest individual assigned the Emergency Director function is responsible for coordinating the use of emergency response resources available from outside Energy Northwest. These external resources are available through formal agreements referenced in Appendix 4 or in the emergency plans referenced in Appendix 1. Figure 3-1 shows the relationship between Energy Northwest emergency centers and the various outside response agencies. The Shift Manager/Emergency Director can call on any or all of these resources for support during an emergency.

A letter of agreement with Industrial Development Management is in place to assure changes in tenant or lessee occupancy are identified to assure an appropriate emergency planning response.

The Energy Northwest Emergency Operations Facility contains provisions for outside organizations to coordinate actions with Energy Northwest. Specific areas in the Emergency Operations Facility and Energy Northwest Office Complex (ENOC) are designated in the Emergency Plan Implementing Procedures to be utilized by various offsite response organizations.

Energy Northwest representatives will normally be dispatched to the Benton and Franklin County Emergency Operations Centers at the Alert or higher emergency classification. The Energy Northwest representative to the state will normally report to the EOF at the Alert level, and be dispatched to the Washington State Emergency Operations Center at Site Area Emergency to assist. Energy Northwest representatives will assist in providing clarification of information and data.

The Site Support Manager in the EOF will provide necessary support to responding agencies.

Figure 3-1 illustrates the various assistance organizations which may respond to the Emergency Operations Facility.

Add:

A Memorandum of Understanding is in place delineating coordination between Energy Northwest and Washington Closure Hanford (WCH) regarding 618-11 Waste Burial Ground activities within the CGS exclusion area. The agreement defines interrelationships between CGS and 618-11 Waste Burial Ground emergency plans and procedures including communication methods, and participation in training and drills. This agreement includes assurance that changes in the 618-11 Waste Burial Ground Remediation Project scope of work or emergency procedures are identified and communicated to Energy Northwest for appropriate emergency planning response.

Proposed Changes to EPlan Paragraph 4.1 (Mark-Up)

SECTION 4
EMERGENCY CLASSIFICATION AND NOTIFICATION

4.1 EMERGENCY CLASSIFICATION

The Emergency Plan provides for four classes of emergency to cover a spectrum of plant events that could lead to a loss of control over radioactive materials which could result in the need to initiate protective measures for the public. These four classes, in order of increasing severity of plant conditions, are Unusual Event, Alert, Site Area Emergency and General Emergency. The basic regulatory premise for these classifications is found in 10 CFR 50 Part 47, with further guidance in NUREG-0654/FEMA-REP-1, Rev. 1, Appendix 1, where example initiating conditions are provided for each emergency classification. The Columbia Emergency Plan was converted to NESP-007, Revision 2 in 1994. This approved change to the EAL scheme does not include some of the Initiating Conditions that are contained in NUREG-0654, Appendix 1.

The initiating conditions (ICs) form the basis for establishing specific indications, i.e., plant instrument readings or personal observations, which would indicate that a given initiating condition had been met and thus an emergency classification must be declared. These instrument readings and personal observations are known as Emergency Action Levels (EALs).

Classifying an event based on plant abnormal conditions is the responsibility of the Emergency Director. Initiating events or conditions are included in this section, and implemented by Emergency Plan Implementing Procedure EPIP 13.1.1, Classifying the Emergency.

A conservative philosophy for emergency classification is used to declare the highest category for which an EAL has been met. For example, a Site Area Emergency would be declared directly if a Site Area Emergency EAL is met. This would be done without having first declared the Unusual Event or Alert emergency classifications. Also, if two or more EALs have been met, the EAL representing the highest emergency classification would be used to declare the emergency to ensure that appropriate notifications and actions are taken.

The initiating conditions presented in Table 4-1 are all inclusive of EALs and demonstrate how the EPIP 13.1.1 EALs are arranged. Due to the comprehensive nature of the initiating conditions, however, all postulated accidents in the Final Safety Analysis Report (FSAR) for Columbia Generating Station are fully covered and could be classified, when necessary, by using this scheme. Since some FSAR accidents are not representative of a significant plant event and do not pose a challenge to the fission product barriers, not all FSAR accidents would require declaration of an emergency classification.

Events occurring offsite at nearby nuclear facilities or transportation accidents involving hazardous materials, such as chemicals or nuclear fuel, will only be classified under the Columbia Generating Station EALs when conditions onsite are changed by the event to where they meet the criteria in EPIP 13.1.1. Columbia Generating Station actions will be based on the significance of these events. A transportation accident that does not directly impact the Plant site will be categorized as a Transportation Emergency.

Add Here:

Events occurring onsite at 618-11 Waste Burial Ground involving hazardous materials, such as chemicals or radioactive waste, will only be classified under the Columbia Generating Station EALs when conditions onsite meet the criteria in EPIP 13.1.1, EAL Series 9.0, Category "Man-Made Events," for releases at the 618-11 Waste Burial Ground. Columbia Generating Station response to events at 618-11 Waste Burial Ground will consider the significance of these events and protective action recommendations made by 618-11 Waste Burial Ground contractors or DOE.

Proposed Changes to EPlan Paragraph 4.6.2 (Mark-Up)

4.6 NOTIFICATION METHODS AND PROCEDURES

The Energy Northwest notification process for activating the emergency organizations includes notification of emergency response personnel and assistance organizations, who are notified when an emergency is declared. Initial communication links between the Energy Northwest Emergency Director and the duty officers of Benton and Franklin Counties, and the state of Washington are available on a 24-hour per day basis. The extent of notification will depend upon the emergency classification. A means for verifying the authenticity of all initial offsite notifications is established.

Communication links are established among the various on-site and offsite emergency centers. Descriptions of the emergency response positions at each center include responsibilities for communications with specific positions or other emergency response facilities. Those communication responsibilities are further specified in the EPIPs.

4.6.1 Energy Northwest Emergency Organization Notification

The in-plant paging system, high noise area paging devices, a radio paging system and an Automated Notification System will be used to notify Energy Northwest ERO personnel. Instructions will be provided if protective measures are required.

Activation of response teams will be via the ERO paging system, Auto-dialer telephone system, and the in-plant public address system. The automatic notification system will normally be initiated by the Security Communication Center Duty Officer. The Emergency Director will direct the Duty Officer to make the notifications. The Duty Officer is able to manually activate the radio paging system, and this system will serve as a backup notification method.

On-duty Energy Northwest personnel will notify Washington Emergency Management, Benton County Emergency Management, Franklin County Emergency Management and the Department of Energy.

The extent of the notification will depend upon the emergency classification. However, the Emergency Director may call anyone deemed necessary to support the emergency effort. Table 4-2 outlines the response organizations that will be notified by Energy Northwest for each emergency class. The above scheme is established in procedures.

4.6.2 Nearby Facilities Notification

Initial emergency notification to nearby facilities will be made. Instructions will be provided if protective measures are required.

The Department of Energy is responsible for notifying facilities on the Hanford Reservation during an Energy Northwest emergency; however, Energy Northwest will notify the Fast Flux Test Facility (FFTF) control room when a Site evacuation is implemented. DOE notifies Energy Northwest in the event of a sodium oxide release from FFTF.

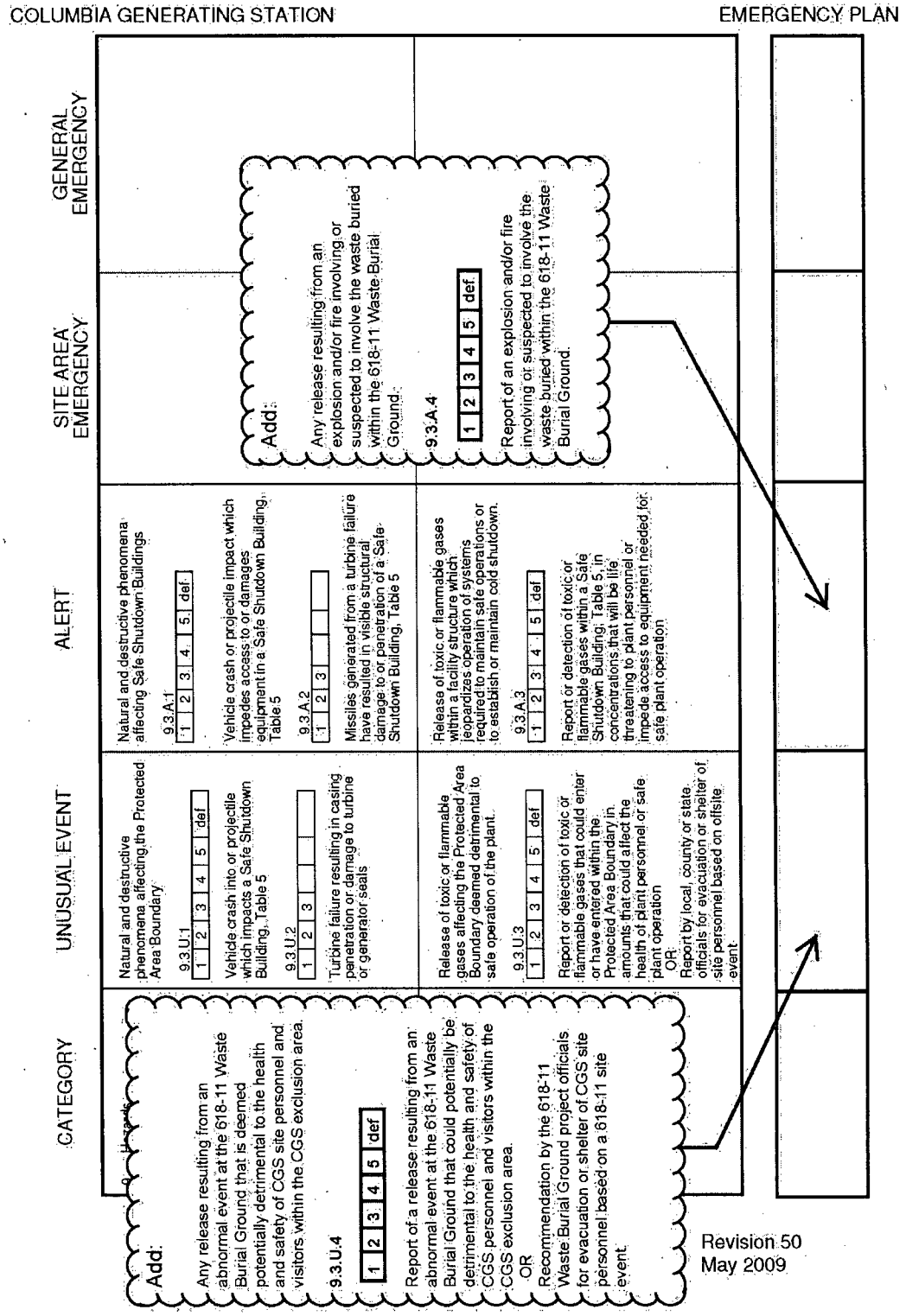
Add:

and 618-11 Waste Burial Ground project personnel

Add:

618-11 Waste Burial Ground project personnel notify Columbia Generating Station control room personnel in the event of a toxic, flammable, or radioactive material release from the 618-11 site.

Proposed Changes to EPlan Table 4-1 (Mark-Up)



Proposed Changes to EPlan Paragraph 5.5 (Mark-Up) (Page 1 of 2)

5.4.5 Laboratory Capability

The Applied Process Engineering Laboratory (APEL) provides backup radiological analyses for the plant and state laboratories. If the plant analytical laboratory becomes unusable, plant samples can be transported to the APEL facility or another support agency laboratory for analysis. Oregon and Washington maintain laboratories under the direction of their respective Departments of Health. These laboratories have the capability to identify, both qualitatively and quantitatively, the constituent elements that might be contained in radiological releases from Columbia Generating Station during a nuclear incident. Following such an event, samples of air, drinking water, milk, pasture and other agricultural products would be obtained by field teams and brought to the labs for analysis. The results of this analysis would then be used to determine the existence of radiological hazards in food products. The specific capabilities of the state laboratories are evaluated by FEMA.

5.5 PROTECTIVE ACTION AND RESPONSIBILITIES

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General Emergency
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Add:

5.5.1 618-11 Waste Burial Ground Protective Actions

a. Protective Actions Associated with a CGS Event:

The 618-11 Waste Burial Ground is within the CGS exclusion area and thus subject to Protective Action Decisions (PADs) made by the Energy Northwest Emergency Director in response to an event connected with the nuclear plant. Site evacuation is a pre-established PAD associated with a Site Area Emergency; however, travel conditions could present extreme hazards that may prompt the Emergency Director to issue a PAD for sheltering until conditions improve. Within the CGS exclusion area, all protective action responses required by events connected with plant operation are decisions (PADs) made by the CGS Emergency Director and must be followed as directed.

In the event of an emergency at Columbia Generating Station, 618-11 Waste Burial Ground project personnel and visitors will be promptly notified of the emergency. Notification may consist of a variety of methods, such as sirens, public address messages, phone calls, or personal contact.

b. Protective Actions Associated with a 618-11 Waste Burial Ground Event:

In the event of an emergency at the 618-11 Waste Burial Ground project site, designated 618-11 Waste Burial Ground project personnel will promptly notify Energy Northwest of the event in accordance with established protocols. Notification may consist of a variety of methods, such as phone call, pager notification, radio, or personal contact. Energy Northwest personnel, contractors, and visitors will be instructed by Control Room personnel to respond to notification of a 618-11 Waste Burial Ground site emergency as required by the Energy Northwest procedures developed to implement protective action recommendations of the 618-11 site emergency plan.

Proposed Changes to EPlan Paragraph 5.5 (Mark-Up) (Page 2 of 2)

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

The preferred initial action to protect the public from a severe reactor accident is to evacuate immediately about two miles around the plant and 10 miles downwind unless other conditions make evacuation dangerous. Persons in the remainder of the plume zone should be directed to stay indoors and listen to EBS/EAS broadcasts while the situation is evaluated further.

Travel conditions that may present extreme hazard may prompt offsite officials to recommend shelter until conditions improve. Shelter may also be appropriate for special, transit-dependent populations, or during controlled, short duration releases of radioactivity. Specific protective actions are prescribed by procedure for Industrial Development area tenants and contractors at Site Area Emergency.

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.

5.5.~~2~~3 Energy Northwest Responsibilities

Primary responsibilities of Energy Northwest associated with offsite area protective actions are to:

a. Provide the best possible effort to resolve the emergency onsite, thus alleviating the offsite condition.

b. Notify the affected county, DOE and state officials responsible for Protective Action Decisions of the emergency condition and provide the best possible information, recommendations and support services.

c. Coordinate Energy Northwest actions with those of Federal, state and local agencies involved in implementing protective actions.

d. Ensure that all required agencies are advised of the protective actions recommended and provided periodic updates.

e. Upon declaration of a Site Area Emergency at Columbia Generating Station, all nonessential personnel will be evacuated from Columbia Generating Station and the Owner Controlled Area, to include the Protected Area.

All evacuees will be directed to report to the offsite assembly and decontamination area for monitoring and decontamination. If no radiological hazard was present at the time of the evacuation, as determined by the REM, evacuees may be released to go home. If a radiological hazard was present at the time of the evacuation, evacuees will be monitored for contamination and released after successful decontamination.

Proposed Changes to EPlan Appendix 2 (Mark-Up)

APPENDIX 2

EMERGENCY PLAN IMPLEMENTING PROCEDURES
Index for Implementation of
Emergency Plan Sections

Procedure	Title	Implemented
13.1.1	Classifying the Emergency	4.1 thru 4.4
13.1.1A	Classifying the Emergency - Technical Bases	4.2
13.2.1	Emergency Exposure Level/Protective Action Guides	5.9
13.2.2	Determining Protective Action Recommendations	5.5
13.4.1	Emergency Notifications	4.6, Table 4-2
13.5.1	Evacuation	5.5.~~2~~ 3 ~~5.7.2, 5.7.3~~
13.5.5	Personnel Accountability/ Search and Rescue	5.7.5
13.5.7	Industrial Development Authority Duties	2.4.2.1, 5.5.~~1~~ 2
Add:		
13.5.8	618-11 Waste Burial Ground Project Responsibilities and Accident Response	1.6.5, 3.1, 4.1, 4.6.2, 5.5.1

Proposed Columbia Final Safety Analysis Report Changes (Re-Typed)

1. Proposed Changes to FSAR Paragraph 2.1.2.2 (Re-Typed) (2 Pages)
2. Proposed Changes to FSAR Paragraph 2.2.2.1 (Re-Typed)
3. Proposed Changes to FSAR Table 2.2-1 (Re-Typed)
4. Proposed Changes to FSAR Paragraph 3.5.1.5 (Re-Typed)

Proposed Changes to FSAR Paragraph 2.1.2.2 (Re-Typed)(Page 1 of 2)

2.1.2.2 Control of Activities Unrelated to Plant Operation

In accordance with, and as defined by 10 CFR 100.3, Energy Northwest has the authority to determine all activities within the exclusion area, including the authority to remove all personnel and property from the area. The following activities unrelated to plant operation are permitted within the exclusion area:

2.1.2.2.1 Industrial Development Complex

Energy Northwest is conducting site restoration and economic development (such as leasing of excess facilities for office space and manufacturing) activities at the WNP-1 and WNP-4 sites (the WNP-1 and WNP-4 sites are also leased from the DOE and controlled by Energy Northwest). The number of personnel at the WNP-1 and WNP-4 sites varies. However, coordination of activities within the exclusion area is under the control of Energy Northwest and the CGS emergency plan. This includes notification and evacuation considerations in the event of an emergency at CGS.

2.1.2.2.2 618-11 (Wye) Waste Burial Ground

The 618-11 site is a DOE waste burial ground, encompassing an eight-acre parcel directly adjacent to Energy Northwest leased land (see Figure 2.1-3) and located wholly within the CGS exclusion area. The DOE and its site contractor are approved to perform non-intrusive surveillance and characterization activities to obtain data and information necessary for planning future intrusive activities and remediation strategies. These activities are necessary to meet the 618-11 site remediation and closeout milestone of September 2018 as delineated in the Hanford Federal Facility Agreement and Consent Order. All 618-11 site activities are controlled by DOE in accordance with 10 CFR Chapter III. DOE has responsibility for the 618-11 site documented safety analysis (DSA) in accordance with 10 CFR 830.204. The currently approved DSA and its associated technical safety requirements (TSR) establish the safety basis and assess the environmental impact of the non-intrusive activities within the site. The soil overburden covering the caissons and vertical pipe units at the 618-11 site is identified as a passive design feature that serves a mitigative function. Existing soil overburden shall not be removed.

A memorandum of understanding (MOU) has been established between the DOE 618-11 site contractor and Energy Northwest for communication and mutual support for the non-intrusive activities at the site. The MOU delineates the requirements for the site contractor to inform Energy Northwest of plans, schedules, manning, and other matters pertaining to the non-intrusive site activities. In addition, the MOU defines Energy Northwest requirements for contractor notification of CGS events with the potential to affect the 618-11 site operation and/or personnel. Communication includes notification and evacuation considerations in the event of an emergency at CGS.

In the event of a 618-11 site emergency, including the 618-11 site design basis event, the 618-11 site is subject to control by the DOE. Control includes notifications, implementation of required

Proposed Changes to FSAR Paragraph 2.1.2.2 (Re-Typed)(Page 2 of 2)

actions, and communication of recommendations to protect the health and safety of CGS personnel and the public within and beyond the Hanford reservation boundaries.

The non-intrusive activities, analyzed 618-11 site events, and the design basis event associated with the non-intrusive activities, have been assessed and approved by DOE. In addition, Energy Northwest has performed an evaluation of the 618-11 site releases that would occur from the postulated design basis event. The evaluation, using NRC radionuclide transport methodology and CGS meteorological data, has confirmed that the potential 618-11 site releases will not adversely impact Structures, Systems, and Components or credited operator actions. Implementation of DOE approved non-intrusive activities at the 618-11 site will not affect the operation of CGS, and thus, will not result in a significant hazard to the health and safety of the public from CGS's operation.

2.1.2.3 Arrangements for Traffic Control

The only roads within the exclusion area are the Energy Northwest access roads. These roads are normally used only by employees and visitors associated with the CGS, WNP-1, and WNP-4 facilities, DOE, and DOE contractors. The security force, with offsite assistance as required, controls traffic during emergencies.

2.1.2.4 Abandonment or Relocation of Roads

There were no public roads transversing the exclusion area that had to be abandoned or relocated as a result of the construction of CGS.

2.1.3 POPULATION DISTRIBUTION

Table 2.1-1 presents the compass sector population estimates for 1980 and the forecasts for the same compass sectors by decade from 1990 to 2030.* Cumulative totals are also shown in Table 2.1-1. This table may be keyed to Figures 2.1-4 and 2.1-5, which show the sectors and major population centers within 10 and 50 miles of the site. As can be seen in Figure 2.1-6, population centers, within 50 miles of the site include the Tri-Cities area of Richland, Pasco, and Kennewick; Moses Lake; Hermiston; and the communities lying along the Yakima River from Prosser to Toppenish. Figure 2.1-4 shows that there are no towns located within 10 miles of the site, with the exception of a small part of Richland.

The 1990 to 2030 forecasts presented here (Reference 2.1-2) are based on

* Population estimates out to 50 miles were derived to serve the licensing requirements of WNP-1, CGS, and WNP-4. Therefore, estimates were made relative to the centroid of the triangle formed by the three reactors. This point is located 2800 ft east of CGS and has coordinates longitude 119° 19' 18" west, latitude 46° 28' 19" north. This shift does not affect the overall accuracy or applicability of the population distribution projections.

Proposed Changes to FSAR Paragraph 2.2.2.1 (Re-Typed)

and the 222-S Laboratory were considered but not included. These facilities have insufficient radiological or toxicological inventories in a dispersible form to represent a risk to CGS operation. The specific facilities included are discussed in Table 2.2-1.

Three DOE facilities are located within a 5-mile radius of the plant site. These are the Fast Flux Test Facility (FFTF) and two radioactive waste burial grounds. The specific hazards associated with these facilities are summarized in Table 2.2-1 and the specific activities are listed below:

- The FFTF is a deactivated sodium cooled breeder reactor located approximately 3 miles southwest of CGS. All fuel has been removed and shipped to the Idaho National Laboratory. All sodium has been removed, solidified, and is stored on-site. The facility has been placed in a long-term, low-cost surveillance and maintenance condition.

- The 618-10 (300 North) Waste Burial Ground is approximately 3.5 miles south of CGS. DOE has initiated surveillance and characterization activities at the site to obtain data and information for planning remediation strategies.

- The 618-11 (Wye) Waste Burial Ground is directly west of CGS, outside of Energy Northwest leased land, but within its 1950-meter exclusion area radius and security perimeter. The site received low- to high-activity waste, fission products, some plutonium-contaminated waste, and non-radiological hazardous waste from March 1962 to December 1967 from the Hanford 300 Area. The waste is buried in 3 trenches, 50 Vertical Pipe Units (VPUs), and 3 to 5 caissons. The site was covered with an overburden of soil when it was closed. The surface was stabilized in 1982 with an additional 2 ft of soil. Since surface stabilization, activities at the site have been limited to monitoring and surveillance. DOE will initiate non-intrusive surveillance and characterization activities at the site in 2011 to obtain data information and information for planning intrusive characterization activities.

The DOE 300, 200 East, and 200 West Areas are located within a 10-mile radius of the site. The current waste management activities (storage, disposal, and treatment) conducted in these areas are discussed in Table 2.2-1. The 300 Area is approximately 7 miles southeast of CGS. The only hazard presented to CGS from this site is from the spent nuclear fuel and other radioactive material stored there. There is an unknown quantity of miscellaneous reactor fuel material in the 300 Area. This quantity is not publicly available information.

The DOE 200 East and 200 West Areas are approximately 10 miles northwest of CGS. Originally these facilities were constructed to support the extraction of weapons grade plutonium for the defense program. However, as the Hanford mission has changed from production to environmental cleanup, so has the purpose of the facilities discussed. This change in mission has, in some cases, resulted in a change in the hazards presented to CGS plant site and personnel.

Proposed Changes to FSAR Table 2.2-1 (Re-Typed)

Table 2.2-1

Hanford Site Nuclear Facilities

Facility	Description	Hazard	Design Basis Event	Impact on CGS
Fast Flux Test Facility (FFTF) Ref: Surveillance and Maintenance Plan for FFTF, Rev. 0, DOE/RL-2009-26	Deactivated sodium cooled breeder reactor	Activated solid sodium	180,000 lb sodium spill - 2-hr dose at 1.5 mi = 0.015 mrem, 24-hr dose at 4.5 mi = 0.26 mrem	Particulate release, effectively mitigated by distance
DOE 618-10 (300 North) Waste Burial Ground Ref: 618-10 and 618-11 Waste Burial Grounds Basis for Interim Operation, Rev. 1, WCH-183	Disposal site with broad spectrum of low- to high-level solid radioactive wastes buried in caissons or pipe	Radioactive waste	Caisson penetration with fire — unmitigated dose at 5 km = 10.2 mrem	Particulate release, effectively mitigated by distance (>5 km)
DOE 618-11 (Wye) Waste Burial Ground Ref: 618-10 and 618-11 Waste Burial Grounds Basis for Interim Operation, Rev. 1, WCH-183	Disposal site with broad spectrum of low- to high-level solid radioactive wastes and non-radiological hazardous materials buried in caissons or pipe	Radioactive waste inventories, primarily Cs-137, Sr-90, and Pu-239 and non-radiological hazardous waste bounded by beryllium	Caisson penetration with fire and explosion: control room doses are less than 0.1 rem; beryllium oxide concentration of 4.6×10^{-3} mg/m^3 at 100 m from 618-11 site boundary.	Particulate release, effectively mitigated by credited 618-11 Waste Burial Ground project controls. The soil overburden covering the VPUs and caissons in the 618-11 Waste Burial Ground is credited for reducing releases and is designated as a passive design feature. No missiles are postulated for this event.
B Plant Ref: B Plant Basis for Interim Operation, March 6, 1997, HNF-SD-BIO-003	Process to remove cesium and strontium from radioactive waste, deactivated, currently in surveillance and maintenance mode	Residual radionuclide inventories on cell filters (^{137}Cs, ^{90}Sr, and ^{241}Am)	Flooding cell 291-B HEPA filters - 0.368 rem max. public dose	Particulate release effectively mitigated by distance

Proposed Changes to FSAR Paragraph 3.5.1.5 (Re-Typed)

3.5.1.4.2 Tornado-Generated Internal Missiles

The tornado-generated internal missiles as mentioned in Section 3.5.1.4 are materials and/or items attached to or found inside a building, but subjected to the design basis tornado described in Section 3.3.2 as a result of a loss of a building exterior wall or roof. The materials and/or items considered as potential tornado-generated internal missiles are discussed below.

a. The reactor building steel framed superstructure uses girts and roof purlins fastened to the building frame by means of controlled release fasteners. The steel girts and purlins are considered to become free falling tornado-generated internal missiles which can strike the roof of the diesel generator building, the radwaste and control building, and main steam corridor slabs, in the event a tornado blows the roofing and/or siding off of the building frame. Structures housing safety-related systems, equipment, and components are designed to withstand the effects of these missiles.

b. In the event that a tornado blows the roof purlins, roof decking, girts, and siding panels off the reactor building frame, the reactor building crane is then exposed to the design basis tornado. The reactor building crane is designed with provisions which preclude it, or any part thereof, from becoming a missile (see Section 3.3.2.3).

3.5.1.4.3 Flood Generated Missiles

The design basis flood el. discussed in Section 3.4 and defined in Section 2.4, exceeds the flood levels associated with breaches of the Grand Coulee Dam. The final plant grade level is higher than the design basis flood. Therefore, flood-generated missiles are not considered in the design of the Seismic Category I safety-related structures and installations.

3.5.1.4.4 Protection and Design

Systems protected from missiles generated by natural phenomena, and barrier design are described in Sections 3.5.2 and 3.5.3 respectively.

3.5.1.5 Missiles Generated by Events Near the Site

Hazards due to missiles postulated in the design basis explosions or accidents at nearby industrial plants, military facilities, pipe lines, or storage facilities can be discounted as discussed in Section 2.2.

The Hydrogen Storage and Supply Facility (HSSF) contains a liquid hydrogen storage tank, ASME tubes (gaseous hydrogen), trailer tubes (gaseous hydrogen) and a hydrogen pipeline to the plant. An analysis shows that an explosion and subsequent missile generation from a

Proposed Columbia Emergency Plan Changes (Re-Typed)

1. Proposed Changes to EPlan Table of Contents (Re-Typed)
2. Proposed Changes to EPlan Paragraph 1.6.5 (Re-Typed)
3. Proposed Changes to EPlan Paragraph 3.1 (Re-Typed)
4. Proposed Changes to EPlan Paragraph 4.1 (Re-Typed)
5. Proposed Changes to EPlan Paragraph 4.6.2 (Re-Typed)
6. Proposed Changes to EPlan Table 4-1 (Re-Typed)
7. Proposed Changes to EPlan Paragraph 5.5 (Re-Typed) (2 Pages)
8. Proposed Changes to EPlan Appendix 2 (Re-Typed)

Proposed Changes to EPlan Table of Contents (Re-Typed)

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Proposed Changes to EPlan Paragraph 1.6.5 (Re-Typed)

1.6.4 Ingestion Exposure Pathway Emergency Planning Zone

The Ingestion Exposure Pathway Emergency Planning Zone (EPZ) as shown in Figure 1-2 extends into the Yakama Indian Nation, eight counties within the State of Washington and two counties in the State of Oregon. These are Benton, Franklin, Yakima, Kittitas, Grant, Adams, Walla Walla and Klickitat in the State of Washington[1], and Morrow and Umatilla Counties in the State of Oregon. The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk, fresh vegetables or aquatic foodstuffs.

The State of Washington maintains communication with the Washington counties in the Ingestion Exposure Pathway EPZ. The State of Oregon does the same for Morrow and Umatilla Counties. Communications with the Yakama Indian Nation are handled by Yakima County. Dose projections and environmental sampling are also the responsibility of the States and will be coordinated from Energy Northwest's Emergency Operations Facility by State representatives. Support to the States of Washington and Oregon is provided by Energy Northwest through the sharing of field team data and other resources.

1.6.5 Emergency Plan Interrelationships

Interrelationships of this plan with procedures, other plans and emergency arrangements are summarized as follows:

- Detailed actions to be taken by individuals in response to onsite emergency conditions are described in the Emergency Plan Implementing Procedures.
- The Columbia Generating Station Physical Security Plan and Procedures and this plan are coordinated to ensure that appropriate emergency actions can be taken. For example, the Physical Security Plan and Procedures contain provisions for emergency response personnel and vehicle access when required by the Emergency Plan Procedures.
- Site construction groups at the Industrial Development complex and the maintenance contractors at Columbia Generating Station that develop emergency procedures for their personnel are tasked with coordinating their procedures with this plan.
- Formal agreements have been negotiated to define the coordination and interface between onsite and offsite organizations and agencies having related radiological emergency planning responsibilities. Continuing liaison with the offsite organizations ensures compatibility and proper interfacing with this plan. Section 3 of this plan further describes those agencies' activities with respect to an emergency at Columbia Generating Station.
- The 618-11 Waste Burial Ground emergency plans and procedures are coordinated with the CGS Emergency Plan.

[1]Kittitas and Klickitat Counties do not actively participate in radiological emergency preparedness efforts. The State of Washington has established measures to ensure that appropriate actions will be taken for these two counties. Refer to the State of Washington Emergency Response Plan.

Proposed Changes to EPlan Paragraph 3.1 (Re-Typed)

SECTION 3
EMERGENCY RESPONSE SUPPORT AND RESOURCES

3.1 COORDINATION OF SUPPORT ORGANIZATIONS

The Energy Northwest individual assigned the Emergency Director function is responsible for coordinating the use of emergency response resources available from outside Energy Northwest. These external resources are available through formal agreements referenced in Appendix 4 or in the emergency plans referenced in Appendix 1. Figure 3-1 shows the relationship between Energy Northwest emergency centers and the various outside response agencies. The Shift Manager/Emergency Director can call on any or all of these resources for support during an emergency.

A letter of agreement with Industrial Development Management is in place to assure changes in tenant or lessee occupancy are identified to assure an appropriate emergency planning response.

A Memorandum of Understanding is in place delineating coordination between Energy Northwest and Washington Closure Hanford (WCH) regarding 618-11 Waste Burial Ground project activities within the CGS exclusion area. The agreement defines interrelationships between CGS and 618-11 Waste Burial Ground emergency plans and procedures including communication methods, and participation in training and drills. This agreement includes assurance that changes in the 618-11 Waste Burial Ground Remediation Project scope of work or emergency procedures are identified and communicated to Energy Northwest for appropriate emergency planning response.

The Energy Northwest Emergency Operations Facility contains provisions for outside organizations to coordinate actions with Energy Northwest. Specific areas in the Emergency Operations Facility and Energy Northwest Office Complex (ENOC) are designated in the Emergency Plan Implementing Procedures to be utilized by various offsite response organizations.

Energy Northwest representatives will normally be dispatched to the Benton and Franklin County Emergency Operations Centers at the Alert or higher emergency classification. The Energy Northwest representative to the state will normally report to the EOF at the Alert level, and be dispatched to the Washington State Emergency Operations Center at Site Area Emergency to assist. Energy Northwest representatives will assist in providing clarification of information and data.

The Site Support Manager in the EOF will provide necessary support to responding agencies.

Figure 3-1 illustrates the various assistance organizations which may respond to the Emergency Operations Facility.

Proposed Changes to EPlan Paragraph 4.1 (Re-Typed)

SECTION 4
EMERGENCY CLASSIFICATION AND NOTIFICATION

4.1 EMERGENCY CLASSIFICATION

The Emergency Plan provides for four classes of emergency to cover a spectrum of plant events that could lead to a loss of control over radioactive materials which could result in the need to initiate protective measures for the public. These four classes, in order of increasing severity of plant conditions, are Unusual Event, Alert, Site Area Emergency and General Emergency. The basic regulatory premise for these classifications is found in 10 CFR 50 Part 47, with further guidance in NUREG-0654/FEMA-REP-1, Rev. 1, Appendix 1, where example initiating conditions are provided for each emergency classification. The Columbia Emergency Plan was converted to NESP-007, Revision 2 in 1994. This approved change to the EAL scheme does not include some of the Initiating Conditions that are contained in NUREG-0654, Appendix 1.

The initiating conditions (ICs) form the basis for establishing specific indications, i.e., plant instrument readings or personal observations, which would indicate that a given initiating condition had been met and thus an emergency classification must be declared. These instrument readings and personal observations are known as Emergency Action Levels (EALs).

Classifying an event based on plant abnormal conditions is the responsibility of the Emergency Director. Initiating events or conditions are included in this section, and implemented by Emergency Plan Implementing Procedure EPIP 13.1.1, Classifying the Emergency.

A conservative philosophy for emergency classification is used to declare the highest category for which an EAL has been met. For example, a Site Area Emergency would be declared directly if a Site Area Emergency EAL is met. This would be done without having first declared the Unusual Event or Alert emergency classifications. Also, if two or more EALs have been met, the EAL representing the highest emergency classification would be used to declare the emergency to ensure that appropriate notifications and actions are taken.

The initiating conditions presented in Table 4-1 are all inclusive of EALs and demonstrate how the EPIP 13.1.1 EALs are arranged. Due to the comprehensive nature of the initiating conditions, however, all postulated accidents in the Final Safety Analysis Report (FSAR) for Columbia Generating Station are fully covered and could be classified, when necessary, by using this scheme. Since some FSAR accidents are not representative of a significant plant event and do not pose a challenge to the fission product barriers, not all FSAR accidents would require declaration of an emergency classification.

Events occurring offsite at nearby nuclear facilities or transportation accidents involving hazardous materials, such as chemicals or nuclear fuel, will only be classified under the Columbia Generating Station EALs when conditions onsite are changed by the event to where they meet the criteria in EPIP 13.1.1. Columbia Generating Station actions will be based on the significance of these events. A transportation accident that does not directly impact the Plant site will be categorized as a Transportation Emergency.

Events occurring onsite at 618-11 Waste Burial Ground involving hazardous materials, such as chemicals or radioactive waste, will only be classified under the Columbia Generating Station EALs when conditions onsite meet the criteria in EPIP 13.1.1, EAL Series 9.0, Category "Man-Made Events," for releases at the 618-11 Waste Burial Ground. Columbia Generating Station response to events at 618-11 Waste Burial Ground will consider the significance of these events and protective action recommendations made by 618-11 Waste Burial Ground contractors or DOE.

Proposed Changes to EPlan Paragraph 4.6.2 (Re-Typed)

4.6 NOTIFICATION METHODS AND PROCEDURES

The Energy Northwest notification process for activating the emergency organizations includes notification of emergency response personnel and assistance organizations, who are notified when an emergency is declared. Initial communication links between the Energy Northwest Emergency Director and the duty officers of Benton and Franklin Counties, and the state of Washington are available on a 24-hour per day basis. The extent of notification will depend upon the emergency classification. A means for verifying the authenticity of all initial offsite notifications is established.

Communication links are established among the various on-site and offsite emergency centers. Descriptions of the emergency response positions at each center include responsibilities for communications with specific positions or other emergency response facilities. Those communication responsibilities are further specified in the EPIPs.

4.6.1 Energy Northwest Emergency Organization Notification

The in-plant paging system, high noise area paging devices, a radio paging system and an Automated Notification System will be used to notify Energy Northwest ERO personnel. Instructions will be provided if protective measures are required.

Activation of response teams will be via the ERO paging system, Auto-dialer telephone system, and the in-plant public address system. The automatic notification system will normally be initiated by the Security Communication Center Duty Officer. The Emergency Director will direct the Duty Officer to make the notifications. The Duty Officer is able to manually activate the radio paging system, and this system will serve as a backup notification method.

On-duty Energy Northwest personnel will notify Washington Emergency Management, Benton County Emergency Management, Franklin County Emergency Management and the Department of Energy.

The extent of the notification will depend upon the emergency classification. However, the Emergency Director may call anyone deemed necessary to support the emergency effort. Table 4-2 outlines the response organizations that will be notified by Energy Northwest for each emergency class. The above scheme is established in procedures.

4.6.2 Nearby Facilities Notification

Initial emergency notification to nearby facilities will be made. Instructions will be provided if protective measures are required.

The Department of Energy is responsible for notifying facilities on the Hanford Reservation during an Energy Northwest emergency; however, Energy Northwest will notify the Fast Flux Test Facility (FFTF) control room and 618-11 Waste Burial Ground project personnel when a Site evacuation is implemented. DOE notifies Energy Northwest in the event of a sodium oxide release from FFTF. 618-11 Waste Burial Ground project personnel notify Columbia Generating Station control room personnel in the event of a toxic, flammable, or radioactive material release from the 618-11 site.

Proposed Changes to EPlan Table 4-1 (Re-Typed)

CATEGORY	UNUSUAL EVENT	ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
9. Hazards 9.3 Man-Made Events (Continued)	Any release resulting from an abnormal event at the 618-11 Waste Burial Ground that is deemed potentially detrimental to the health and safety of CGS site personnel and visitors within the CGS exclusion area. 9.3.U.4 1 | 2 | 3 | 4 | 5 | def Report of a release resulting from an abnormal event at the 618-11 Waste Burial Ground that could potentially be detrimental to the health and safety of CGS personnel and visitors within the CGS exclusion area. OR Recommendation by the 618-11 Waste Burial Ground project officials for evacuation or shelter of CGS site personnel based on a 618-11 event.	Any release resulting from an explosion and/or fire involving or suspected to involve the waste buried within the 618-11 Waste Burial Ground. 9.3.A.4 1 | 2 | 3 | 4 | 5 | def Report of an explosion and/or fire involving or suspected to involve the waste buried within the 618-11 Waste Burial Ground.		

Table 4-1

Proposed Changes to EPlan Paragraph 5.5 (Re-Typed) (Page 1 of 2)

5.4.5 Laboratory Capability

The Applied Process Engineering Laboratory (APEL) provides backup radiological analyses for the plant and state laboratories. If the plant analytical laboratory becomes unusable, plant samples can be transported to the APEL facility or another support agency laboratory for analysis. Oregon and Washington maintain laboratories under the direction of their respective Departments of Health. These laboratories have the capability to identify, both qualitatively and quantitatively, the constituent elements that might be contained in radiological releases from Columbia Generating Station during a nuclear incident. Following such an event, samples of air, drinking water, milk, pasture and other agricultural products would be obtained by field teams and brought to the labs for analysis. The results of this analysis would then be used to determine the existence of radiological hazards in food products. The specific capabilities of the state laboratories are evaluated by FEMA.

5.5 PROTECTIVE ACTION AND RESPONSIBILITIES

The appropriate protective actions for an airborne release of radioactive material are evacuation and sheltering. The decision to evacuate or shelter is based on the dose to be avoided by the protective action relative to the risk associated with implementing a protective action. Dose to be avoided by a protective action can be affected by duration and quantity of radioactive release as well as time of release relative to time of implementation of the protective action. 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. Specifically:

a. Evacuation - evacuation and control of access to an affected area can be the most effective protective action for reducing the dose to the public. However, constraints such as severe weather conditions, obstruction of roads and limited time may impact the benefits of evacuation.

b. Sheltering - sheltering in buildings with windows and doors closed and ventilation turned off can provide partial protection from a passing radioactive plume. The extent of the protection depends on the duration and isotopic mixture of the release and the type of building.

The provisions for relating measured parameters to dose rates for key isotopes and for estimating integrated dose from projected and actual dose rates shall be described in procedures.

5.5.1 618-11 Waste Burial Ground Protective Actions

a. Protective Actions Associated with a CGS Event:

The 618-11 Waste Burial Ground is within the CGS exclusion area and thus subject to Protective Action Decisions (PADs) made by the Energy Northwest Emergency Director in response to an event connected with the nuclear plant. Site evacuation is a pre-established PAD associated with a Site Area Emergency; however, travel conditions could present extreme hazards that may prompt the Emergency Director to issue a PAD for sheltering until conditions improve. Within the CGS exclusion area, all protective action responses required by events connected with plant operation are decisions (PADs) made by the CGS Emergency Director and must be followed as directed.

In the event of an emergency at Columbia Generating Station, 618-11 Waste Burial Ground project personnel and visitors will be promptly notified of the emergency. Notification may consist of a variety of methods, such as sirens, public address messages, phone calls, or personal contact.

Proposed Changes to EPlan Paragraph 5.5 (Re-Typed) (Page 2 of 2)

b. Protective Actions Associated with a 618-11 Waste Burial Ground Event:

In the event of an emergency at the 618-11 Waste Burial Ground project site, designated 618-11 Waste Burial Ground project personnel will promptly notify Energy Northwest of the event in accordance with established protocols. Notification may consist of a variety of methods, such as phone call, pager notification, radio, or personal contact. Energy Northwest personnel, contractors, and visitors will be instructed by Control Room personnel to respond to notification of a 618-11 Waste Burial Ground site emergency as required by the Energy Northwest procedures developed to implement protective action recommendations of the 618-11 site emergency plan.

5.5.2 Recommendations to Counties, States and Department of Energy-Richland Operations (RL)

Energy Northwest will make prompt recommendations for protective actions to state, county and DOE-RL officials. These officials will make decisions on the specific actions to be implemented in their jurisdiction.

Protective Action Recommendations (PARs) will be made based on plant or radiological conditions. Recommendations for evacuation and sheltering of certain areas are required upon classification of a General Emergency without regard to whether a radiological release is occurring. If plant conditions and a radiological release both warrant PARs, the most conservative recommendation will be made.

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

The preferred initial action to protect the public from a severe reactor accident is to evacuate immediately about two miles around the plant and 10 miles downwind unless other conditions make evacuation dangerous. Persons in the remainder of the plume zone should be directed to stay indoors and listen to EBS/EAS broadcasts while the situation is evaluated further.

Travel conditions that may present extreme hazard may prompt offsite officials to recommend shelter until conditions improve. Shelter may also be appropriate for special, transit-dependent populations, or during controlled, short duration releases of radioactivity. Specific protective actions are prescribed by procedure for Industrial Development area tenants and contractors at Site Area Emergency.

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.

5.5.3 Energy Northwest Responsibilities

Primary responsibilities of Energy Northwest associated with offsite area protective actions are to:

a. Provide the best possible effort to resolve the emergency onsite, thus alleviating the offsite condition.

b. Notify the affected county, DOE and state officials responsible for Protective Action Decisions of the emergency condition and provide the best possible information, recommendations and support services.

c. Coordinate Energy Northwest actions with those of Federal, state and local agencies involved in implementing protective actions.

Proposed Changes to EPlan Appendix 2 (Re-Typed)

APPENDIX 2

EMERGENCY PLAN IMPLEMENTING PROCEDURES
Index for Implementation of
Emergency Plan Sections

Procedure	Title	Implemented
13.1.1	Classifying the Emergency	4.1 thru 4.4
13.1.1A	Classifying the Emergency - Technical Bases	4.2
13.2.1	Emergency Exposure Level/Protective Action Guides	5.9
13.2.2	Determining Protective Action Recommendations	5.5
13.4.1	Emergency Notifications	4.6, Table 4-2
13.5.1	Evacuation	5.5.3 5.7.2, 5.7.3
13.5.5	Personnel Accountability/ Search and Rescue	5.7.5
13.5.7	Industrial Development Authority Duties	2.4.2.11, 5.5.2
13.5.8	618-11 Waste Burial Ground Project Responsibilities and Accident Response	1.6.5, 3.1 4.1, 4.6.2, 5.5.1