



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

PDR-016

OCT 26 1984

Ms. Nina Bell
Assistant Director
Nuclear Information and Resource Service
1346 Connecticut Avenue, NW, 4th Floor
Washington, DC 20036

IN RESPONSE REFER
TO FOIA-84-795

Dear Ms. Bell:

This is in response to your letter dated October 9, 1984, in which you requested, pursuant to the Freedom of Information Act (FOIA), four categories of documents regarding the Diablo Canyon Nuclear Power Plant.

Copies of the documents listed on enclosed Appendix A are being placed in the NRC (PDR).

Documents 1 through 3 listed on enclosed Appendix B contain the predecisional legal analyses, opinions, and recommendations of the Office of the General Counsel for the Commissioners' consideration of the effects of earthquakes on emergency planning for the Diablo Canyon Nuclear Power Facility. These documents are being withheld from public disclosure pursuant to Exemption (5) of the FOIA (5 U.S.C. 552(b)(5)) and 10 CFR 9.5(a)(5) of the Commission's regulations. Document 4 of Appendix B, contains the predecisional advice, opinions, and recommendations of the Office of Policy Evaluation to the Commissioners regarding the effects of earthquakes on emergency planning for the Diablo Canyon Nuclear Power Plant and is being withheld from public disclosure pursuant to Exemption (5) of the FOIA (5 U.S.C. 552(b)(5)) and 10 CFR 9.5(a)(5) of the Commission's regulations. The withheld documents do not contain any reasonably segregable factual portions, and their release would tend to inhibit the open and frank exchange of ideas essential to the deliberative process. The documents are being withheld in their entirety.

Pursuant to 10 CFR 9.15 of the Commission's regulations, it has been determined that the information withheld is exempt from production or disclosure and that its production or disclosure is contrary to the public interest. The person responsible for the denial of documents 1 through 3 is Mr. James A. Fitzgerald, Assistant General Counsel, Office of the General Counsel. The person responsible for the denial of document 4 is Mr. John E. Zerbe, Director, Office of Policy Evaluation.

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PDR FOIA
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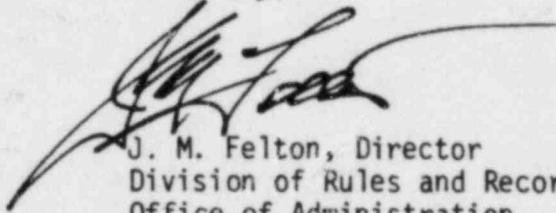
Ms. Nina Bell

-2-

This denial may be appealed to the Commission within 30 days from the receipt of this letter. Any such appeal must be in writing, addressed to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, and should clearly state on the envelope and in the letter that it is an "Appeal from an Initial FOIA Decision."

The NRC has not completed its review of the documents subject to items 1 and 4 of your request. We will respond as soon as that review is completed.

Sincerely,

A handwritten signature in black ink, appearing to read "J. M. Felton", is written over the typed name and title.

J. M. Felton, Director
Division of Rules and Records
Office of Administration

Enclosures: As stated

Appendix A

1: Attachments A - H to SECY-84-291

- Attachment A - 11/3/80 Memo for John McConnell from Brian K. Grimes re: Request for FEMA Assistance to Review Effects of Earthquake and Volcanic Eruption on State/Local Emergency Plans
- Attachment B - 11/24/80 Letter to Bart D. Withers from R. A. Clark re: Effect of Volcanic Eruption on Emergency Responses at Trojan Nuclear Plant
- Attachment C - 12/23/80 Letter to Bart D. Withers from Neale V. Chaney re: Revise Emergency Plan with Respect to the Effects of Volcanic Eruptions from Mount St. Helens
- Attachment D - 2/7/83 Letter to Bart D. Withers from Robert A. Clark re: Volcanic Eruptions Around Trojan
- Attachment E - 4/23/81 Letter to Robert A. Clark from Bart D. Withers re: Trojan Radiological Emergency Plan Evacuation Analysis Report
- Attachment F - 9/83 Various Tables--Initiating Condition and Emergency Action Levels
- Attachment G - Letter to William Dircks from Lee M. Thomas re: Local Plans Related to the Trojan Commercial Nuclear Power Station dated 7/6/82
- Attachment H - 2/23/83 Memo for Dave McLoughlin from W. H. Mayer re: Findings and Determinations for Portland General Electric's Trojan Nuclear Power Plant

APPENDIX B

1. February 10, 1984

SECY-84-70, February 10, 1984 memorandum to the Commissioners from H. Plaine, General Counsel, Subject: Consideration of the Complicating Effects of Earthquakes on Emergency Planning at Diablo Canyon, 6 pp.; Attachment 1, paper entitled "OGC Analysis," 9 pp; Attachment 2, June 22, 1982 memorandum to the Commissioners from W. Dircks, EDO, Subject: Emergency Planning and Natural Hazards, 2 pp.; enclosure to Attachment 2, paper entitled "Basis for Consideration of Natural Hazards in Emergency Planning," 5 pp.; Attachment 3, January 13, 1984 memorandum to N. Palladino from W. Dircks, EDO Subject: Emergency Planning and Seismic Hazards, 6 pp.; Attachment 4, draft commission order, 3 pp.

2. July 18, 1984

SECY-84-291, July 18, 1984 memorandum to the Commissioners from H. Plaine, General Counsel, Subject: Diablo Canyon - Commission Decision on the Need to Consider the Complicating Effects of Earthquakes on Emergency Planning, 13 pp.; Attachment 1, paper entitled "Analysis, Views of the Parties and OGC's Analysis of Them," 24 pp.

3. August 3, 1984

Memorandum to the Commissioners from M. Malsch, Deputy General Counsel, Subject: Diablo Canyon - Order on Effects of Earthquakes on Emergency Planning, 1 p; Attachment, draft commission order, 11 pp.

4.

Attachment 2 to SECY-84-291, OPE comments regarding consideration of earthquake effects on emergency planning for the Diablo Canyon facility, 3 pp.

ATTACHMENT A



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NOVEMBER 2 1980

MEMORANDUM FOR: John McConnell, Assistant Associate Director for
Population Preparedness, FEMA

FROM: Brian K. Grimes, Program Director, Emergency Preparedness
Program Office, NRR

SUBJECT: REQUEST FOR FEMA ASSISTANCE TO REVIEW EFFECTS OF
EARTHQUAKE AND VOLCANIC ERUPTION ON STATE/LOCAL
EMERGENCY PLANS

As we have discussed, in the course of our review of licensed utility emergency plans, volcanic eruptions and catastrophic earthquakes have emerged as two issues of high public interest. To insure that these issues are being adequately addressed, we request that FEMA review the State and local planning efforts for the areas around California nuclear power plant sites and the Trojan site with respect to the complications which might arise in the event of extreme natural phenomena and how these can best be addressed in the planning process.

In conjunction with the Trojan plant evaluation for compliance with the new NRC emergency planning regulations, the Commission has directed that the problems of effective protective measures and evacuation during or soon after volcanic eruption (giving due consideration to the possible effects of severe ashfall, mudflows, floods, and landslides) be closely examined. In this regard, we are requesting the licensed utility to revise its emergency plan to explicitly address the possible problems associated with an eruption. This will include considerations of site access during an emergency, assured communications and appropriate revision of the evacuation time estimates used in protective action determinations. The Oregon State Department of Energy, has already addressed the feasibility of implementing effective protective measures during an eruption (enclosure 1).

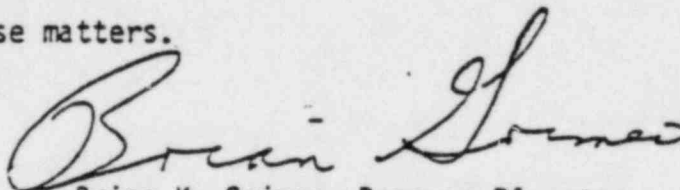
The earthquake issue has particular relevance to nuclear plants in California (i.e., Diablo Canyon, Humboldt Bay, Rancho Seco and San Onofre). We understand from the FEMA news release of September 29, 1980 that FEMA will lead a team consisting of personnel from Federal, State and local agencies to accelerate efforts toward improving the state of readiness to cope with potential major earthquakes in California. In this regard, request that FEMA include in its evaluation of offsite emergency plans, a qualitative evaluation of complicating factors which might be caused by earthquakes for California nuclear power reactor sites. Specifically,

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such evaluation should include the impacts on State/local emergency plans due to potential disruption of communications networks and evacuation routes. In this regard, we are requesting the affected licensees to revise their emergency plans to explicitly address the possible problems associated with an earthquake to include the type of potential complications discussed above for the Trojan facility.

Thank you for your assistance in these matters.



Brian K. Grimes, Program Director
Emergency Preparedness Program Office
Office of Nuclear Reactor Regulation

Enclosure:
Oregon DOE Study
Report Measures

ATTACHMENT B



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NRC PDR

November 24, 1980

Docket No. 50-344

1980 DEC 2 11 11 19

REGISTRATION

TELEPHONE SERVICES

Mr. Bart D. Withers
Vice President Nuclear
Portland General Electric Company
121 S.W. Salmon Street
Portland, Oregon 97204

Dear Mr. Withers:

SUBJECT: EFFECT OF VOLCANIC ERUPTION ON EMERGENCY RESPONSES AT TROJAN
NUCLEAR PLANT

As part of our continuing review of the Trojan Site Emergency Plan dated May 1980, and in consideration of the strong possibility of continued volcanic activity at Mount St. Helens, we request that the Trojan Site Emergency Plan be revised to address volcanic activity. In particular, the evacuation time estimates should be revised to consider adverse conditions resulting from volcanic activity such as severe ashfall, mudflows, floods or landslides; the procedures used to determine the protective actions recommended to offsite authorities should be revised to incorporate consideration of volcanic activity; and the impact of volcanic activity on the augmentation of site emergency personnel and offsite emergency assistance and transit to and among emergency response facilities and communication with offsite authorities should be addressed.

The revisions to the protective action determination methods and evacuation time estimates should be revised in coordination with offsite officials responsible for protective action decisionmaking and implementation.

The response to this concern should be incorporated in a revised Trojan Site Emergency Plan submitted in accordance with the provisions of the revised 10 CFR Part 50 of the Commission's regulations.

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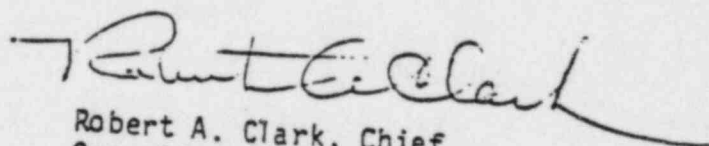
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r. Bart D. Withers
Portland General Electric Company

- 2 -

We are requesting FEMA to review the adequacy of State and local capabilities with respect to response during volcanic activity. A copy of our memorandum to FEMA is enclosed.

Sincerely,



Robert A. Clark, Chief
Operating Reactors Branch #3
Division of Licensing

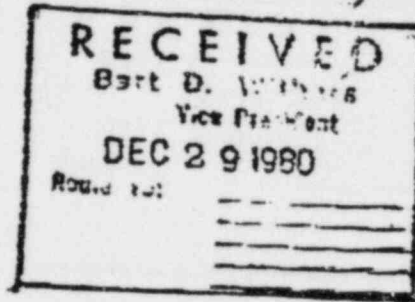
Enclosure:
Memo, NRC (Grimes) to FEMA (McConnell)
dated November 3, 1980

cc: w/enclosure
See next page

ATTACHMENT C



FEDERAL EMERGENCY MANAGEMENT AGENCY
Region X Federal Regional Center Bothell, Washington 98011



DEC 23 1980

344F

Mr. Bart D. Withers
Vice President Nuclear
Portland General Electric
121 S.W. Salmon Street
Portland, Oregon 97204

Dear Mr. Withers:

Portland General Electric has been requested by the Nuclear Regulatory Commission (NRC) (Docket No. 50-344) to revise your Emergency Plan with respect to the effects of volcanic eruptions from Mount St. Helens.

FEHA Region X has been requested by the NRC to consider the effects of earthquakes and volcanic eruptions on the communication networks and evacuation plans around the Trojan site. In addition, we are to consider the qualitative evaluation of the complicating factors which might require special preparedness if such events occur in parallel with a radiological emergency or are involved in their initiation.

We have requested the Corps of Engineers, Weather Service, and Geological Survey (Volcanic and Water Resources) to give us their event scenario(s), risk assessment, and review of your Evacuation Analysis Report (October 1980). Please see enclosed copies of correspondence.

In addition, we have awarded a contract to Professor Thomas Dunn, University of Washington, to revise the various estimates per flood threats, pyroclastic flows, and concerns over Coldwater Creek and South Castle Creek impoundments.

We plan to award a contract with our Earthquake Consultant to perform an analysis of critical facilities (EOC's and communications components) and the main evacuation routes per a design basis earthquake.

Mr. Donovan will keep Mr. Walt of your staff informed as our evaluation develops. If you have any questions, please contact him at (206) 481-8800.

Sincerely yours,

Neale V. Chaney
Regional Director

NOTES
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inclosures

ATTACHMENT D

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et No. 50-344

Mr. Bart D. Withers
 Vice President Nuclear
 Portland General Electric Company
 21 S.W. Salmon Street
 Portland, Oregon 97204

Dear Mr. Withers:

Your letter to me, dated July 30, 1982, requested NRC's assistance in correcting FEMA's misinterpretation of the NRC November 3, 1980 request to FEMA. The intent of the original NRC request to FEMA was to have FEMA examine only the effects of volcanic eruptions on State and local emergency planning around Trojan. The NRC staff did not intend that any special investigation of the impacts of earthquakes on emergency planning for Trojan be conducted, nor is there such an intent now.

The NRC staff has discussed this matter with Mr. Richard W. Krimm, Assistant Associate Director, Office of Natural and Technological Hazards, Federal Emergency Management Agency (Headquarters), and has requested that he clarify the December 1, 1980, FEMA Headquarters instructions to FEMA, Section X. Documentation will be furnished when available.

Sincerely,

Original signed by
 Robert A. Clark

Robert A. Clark, Chief
 Operating Reactors Branch #3
 Division of Licensing

See next page

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2/4/83	2/7/83				

ATTACHMENT E

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Portland General Electric Company
SECRETARY
D.C.

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APR 27 1981
U.S. NUCLEAR REGULATORY COMMISSION

April 23, 1981

Trojan Nuclear Plant
Docket 50-344
License NPF-1

Director of Nuclear Reactor Regulation
ATTN: Mr. Robert A. Clark, Chief
Operating Reactors Branch No. 3
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Sir:

Attached is a copy of the revised section of the Trojan Radiological Emergency Plan Evacuation Analysis Report which addresses the potential effects of a future eruption of Mt. St. Helens as requested by your letter of November 24, 1981.

The analysis included two postulated flooding and mudflow scenarios and one postulated ashfall scenario which were conservatively based on a potential future eruption equivalent to the May 18, 1980 Mt. St. Helens eruption. However, the assumed river flows and wind direction at the time of the postulated eruption were used to maximize the impact of the eruption on evacuation routes. The flood scenarios postulated the loss of some or all of the northbound evacuation routes out of the plume exposure EPZ. The ash scenario postulated extreme reduced visibility due to resuspended ash under dry road conditions, or reduced road speeds due to the reduction in vehicle traction from ash deposition coincident with precipitation.

The conclusions of the analysis were as follows:

1. The two flooding scenarios resulted in no significant increases in evacuation time estimates over those calculated for normal and adverse weather conditions when I-5 South, which was not previously used for northbound traffic, is used as an alternate evacuation route.
2. The ashfall scenario resulted in evacuation times that were similar to those previously calculated for adverse weather conditions.

Under the postulated flooding and mudflow scenarios the routes that Plant workers use to drive to the Plant site would not be affected. Ashfall conditions could decrease road speeds and therefore increase driving

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Portland General Electric Company

Mr. Robert A. Clark
April 23, 1981
Page two

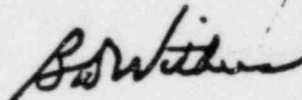
times to the Plant. In any case, the on-shift Plant staff would be capable of handling emergencies in the short term even if augmentation times for off-duty personnel were increased. Therefore, changes in notification or augmentation procedures for Plant personnel to account for the effect of volcanic eruptions are not required.

The analysis of the impact of volcanic activity on evacuation plans has been reviewed by Columbia County and Cowlitz County emergency planning officials and their comments have been incorporated.

The Evacuation Analysis Report has also been revised to include additional discussion of the evacuation of the transient population within the plume exposure EPZ. The small transient population due primarily to tourists or similar visitors has no effect on evacuation plans.

The analysis results indicated that there are no immediate changes required to the current Appendix 1-E. Therefore, this information will be incorporated into Amendment 1 to the Trojan Radiological Emergency Plan, to be issued in June 1981.

Sincerely,



Bart D. Withers
Vice President
Nuclear

Attachment

c: Mr. Lynn Frank, Director w/attach
State of Oregon
Department of Energy

Hugh Fowler, Director w/attach
State of Washington
Department of Emergency Services

Mr. Ben Bena w/attach
Cowlitz County
Emergency Services Coordinator

Mr. John DeFrance w/attach
Columbia County
Director of Emergency Services

ATTACHMENT F

Initiating Condition	Emergency Action Levels
11. Fire lasting more than 10 min within the Control, Fuel, Auxiliary, Turbine or Containment Buildings which may affect safety-related equipment.	Determination by Shift Supervisor or fire detection device alarm with confirming observation indicating a fire lasting more than 10 min in an area affecting safety-related equipment.
12. In-Plant security alert.	Requirements for declaring security alert determined to exist (as defined in the Trojan Nuclear Plant Security Plan).
13. <u>Natural phenomena or other hazards being experienced or projected beyond usual levels:</u>	
a. <u>Any earthquake observed by Shift Supervisor or detected on Plant seismic instrumentation.</u>	a. Same as initiating condition as determined by Shift Supervisor.
b. One hundred year flood, low water, tsunami, hurricane surge or seiche.	b. Flood or wave surge greater than 27 ft MSL but less than 40 ft MSL.
c. Any tornado onsite.	c. Same as initiating condition as determined by Shift Supervisor.
d. Any high winds onsite.	d. Sustained wind speed greater than 75 mph but less than 90 mph as indicated by meteorological instrumentation readout in the control room.
e. <u>Any volcano-related event (such as heavy ashfall or mud flow) which is sufficiently severe to cause the Plant to shut down.</u>	e. Same as initiating condition as determined by the Shift Supervisor.
f. Onsite aircraft crash that does not involve a Plant structure.	f. Determination of initiating condition by Shift Supervisor.

(3)

(1)

(2) (1)

(2)

(3)

Initiating Condition	Emergency Action Levels
7. Failure of a pressurizer or steam generator safety or relief valve to reseal (exceeding normal weepage) following reduction of applicable pressure.	Pressurizer or steam generator relief valve opens and then fails to reset as indicated by: 1) Pressurizer relief valve indicates open as indicated by symptoms listed in ONI-36; <u>or</u> 2) Visual and/or audible indication at vent stacks of open steam generator safety or relief valve; <u>or</u> Excess feedwater flow and steam flow to affected generator.
8. Total loss of offsite power <u>or</u> loss of onsite a-c power capability below Technical Specification allowable number of power sources.	1) Undervoltage alarms on 12.47-kV <u>and</u> 4.16-kV buses; <u>and</u> loss of control room normal lighting; <u>or</u> 2) Inability to energize 4.16-kV buses from diesel generators (breakers stay open).
9. Loss of Containment integrity requiring shutdown by Technical Specifications.	Same as initiating condition.
10. Loss of ESF or fire protection system functions requiring shutdown by Technical Specifications (eg, because of malfunction, personnel error, or procedural inadequacy) while in Mode 1 or 2.	Same as initiating condition.

(3)

(3)

(4)

(4)

Initiating Condition	Emergency Action Levels	
16. e. Any volcano-related event (such as heavy ashfall or mud flow) which is sufficiently severe to adversely affect a safety system.	e. Same as initiating condition as determined by Shift Supervisor.	(2)
f. Aircraft crash on facility.	f. Aircraft crash into Plant structures.	(2)
g. Missile impacts on facility with resultant major damage.	g. Determination by Shift Supervisor of missile impacts on Plant structures or components.	(3)
h. Known explosion at facility resulting in major damage to Plant structures or equipment.	h. Determination by Shift Supervisor of damage by explosion.	(3)
i. Entry of toxic or flammable gases into facility vital area that threatens to render safety-related equipment inoperable.	i. Observation or warning from outside the Plant; <u>or</u> Detection of gases in a vital area in concentrations which could potentially exceed either the limits of flammability or toxicity.	(3)
j. Turbine failure causing casing penetration.	j. Turbine trip and observation of casing penetration.	(1)
k. Other Plant conditions exist that warrant precautionary activation of the Technical Support Center and Emergency Operations Facility and placing headquarters support personnel on standby at the discretion of the Plant General Manager.	k. Same as initiating condition.	(1)
17. Evacuation of control room required with control of shutdown systems established from local stations.	Same as initiating condition.	(2)

Initiating Condition	Emergency Action Levels
15. Ongoing severe security threat involving a physical attack on the facility.	<p><u>or</u> f) PRM-10: 3.7E 4 cpm above background while steam generator blowdown is directed to the river, and isolation valves fail to close.</p> <p><u>or</u> 2) I-131 concentration in effluent for longer than 15 min which is determined by analysis to be greater than 10 times Technical Specification limits (1.2E-6 μCi/cc for Containment purge; 5.8E-7 μCi/cc for Auxiliary Building vents);</p> <p><u>and</u> 3) Which are due to radioactivity releases to the environment.</p> <p>Ongoing physical attack on the protected area as determined by the Shift Supervisor or the Security Watch Supervisor.</p>
16. Severe natural phenomena or other hazards being experienced or projected:	<p>a. OBE alarms on triaxial acceleration sensor(s) <u>and</u> occurrence of earthquake confirmed by observation <u>or</u> offsite agency.</p> <p>b. Flood or wave surge within 5 ft of grade level and rising (approximately 40 ft MSL but less than 45 ft MSL).</p> <p>c. Same as initiating condition as determined by Shift Supervisor.</p> <p>d. Sustained wind speed greater than 90 mph but less than 105 mph as indicated by meteorological instrumentation readout in the control room.</p>
a. Earthquake greater than OBE levels but less than SSE levels.	
b. Flood, low water, or wave surge near design levels.	
c. Any tornado striking facility.	
d. Extreme winds near design basis level.	

(4) (2)(3) (4)
(4) (3)(2)
(2)
(2) (2)

Amendment 4
(March 1984)

TABLE 4.1-3

Initiating Condition	Emergency Action Levels
	or
	2) Field team measures whole body dose rates greater than 50 mrem/hr for 0.5 hr or greater than 500 mrem/hr for 2 min at the exclusion area boundary;
	or
	3) ARM-22 (north site boundary) or ARM-23 (south site boundary) reads greater than 50 mR/hr (alert) for 0.5 hr or 500 mR/hr for 2 min;
	or
	4) Field team measures thyroid dose rates (equivalent I-131 concentrations) at the exclusion area boundary greater than:
	a) 250 mrem/hr (1.0×10^{-7} μ Ci/cc) for 0.5 hr; or
	b) 2500 mrem/hr (1.0×10^{-6} μ Ci/cc) for 2 min.
c. EPA Protective Action Guidelines are projected to be exceeded beyond the exclusion boundary.	Integrated doses projected to be greater than or equal to 1-rem whole body or 5-rem thyroid beyond the exclusion area boundary.
13. Security threat involving imminent loss of physical control of the Plant.	Physical attack on the Plant involving imminent adversary penetration of control room and occupation of auxiliary shutdown panels area.
14. Severe natural phenomena or other hazards beyond design levels being experienced or projected with Plant not in cold shutdown.	
a. <u>Earthquake greater than SSE levels.</u>	1) SSE alarms on the triaxial acceleration sensor(s).
b. Flood, low water, wave surge, greater than design levels, or loss of all vital equipment at lower levels.	2) a) Flood or wave surge exceeding grade level (45 ft MSL); or Low water less than 1 ft MSL;

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(4)

Initiating Condition	Emergency Action Levels
b. Above dose rates at the exclusion area boundary are projected based on area radiation monitor (ARM) readings and/or Plant parameters (based on Pasquill F stability, 1-m/sec wind velocity) or are measured at the exclusion area boundary.	$\frac{\text{or}}{3}$) PRM-1 (pressure relief mode): a) 1D: greater than $3.7E5$ cpm ($7.9E4$ cpm when new PRM is operational) for 0.5 hr; <u>or</u> offscale high (greater than $7.9E5$ cpm when new PRM is operational) for 2 min;
	$\frac{\text{or}}{b}$) 1E[a]: greater than 0.15 mR/hr for 0.5 hr; <u>or</u> greater than 1.5 mR/hr for 2 min.
	4) PRM-2: a) 2C: off-scale; $\frac{\text{and}}{b}$) 2D: greater than $2.3E2$ cpm ($1.1E2$ cpm when new PRM is operational) for 0.5 hr; <u>or</u> greater than $2.3E3$ cpm ($1.1E3$ cpm when new PRM is operational) for 2 min.
	$\frac{\text{or}}{5}$) PRM-6: 6B: greater than $4.1E5$ cpm ($1.8E5$ cpm when new PRM is operational) for 0.5 hr; <u>or</u> off-scale for 2 min (confirmed by analysis);
	$\frac{\text{or}}{6}$) 6C[a]: greater than $1.2E1$ mR/hr for 0.5 hr; <u>or</u> greater than $1.2E2$ mR/hr for 2 min.
	1) ARM-15A or ARM-15B reading or dose rate outside Containment coupled with Containment leak rate results in calculated dose rate at exclusion area boundary greater than 50 mrem/hr whole body for 0.5 hr; <u>or</u> 500 mrem/hr whole body for 2 min based on Pasquill F stability and 1-m/sec wind velocity;

(4)

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[a] Once permanent monitors are installed.

ATTACHMENT G



Federal Emergency Management Agency

Washington, D.C. 20472

RECEIVED

6 JUL 1982

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OFFICE OF THE SECRETARY
D.C.

344 F

Mr. William Dircks
Executive Director for Operations
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Dircks:

On December 9, 1980, in accordance with the proposed Federal Emergency Management Agency (FEMA) Rule, 44 CFR 350, the State of Oregon submitted its Plan and associated local plans related to the Trojan commercial nuclear power station to the Regional Director of FEMA Region X for review and approval. The State of Washington submitted like plans on March 29, 1981, and Cowlitz County in December 1980. The Regional Director forwarded an evaluation, dated January 19, 1982, to this Headquarters in accordance with Section 350.11 of the proposed rule. His submission included a critique of the joint exercises conducted on March 4, 1981, and November 17 and 19, 1981, and a review by the Regional staff and Regional Assistance Committee of the offsite plans in support of the Trojan nuclear power plant. Included in the findings was an evaluation of the potential effects upon response capabilities with respect to volcanic activity such as ashfall, mudflow, floods, landslides, earthquakes, and future eruptions. Enclosed is that part of the Region X evaluation.

Some observed minor deficiencies which need the following improvements are: an increased capability to coordinate public news releases during an emergency; prompt activation of Emergency Operation Centers upon declaration of an Alert, Site Area or General Emergency; reentry after an evacuation should be recognized as a major event and thus receive more attention from State and local managers; and radiological monitoring teams need to conduct frequent and periodic drills to maintain proficiency, especially where team participants are not normally field monitors on a daily or weekly basis.

Work and progress are continuing on plan improvement. The plan or capability weakness should be reevaluated during the next joint exercise. The current status of previously scheduled corrective actions along with the status of recommendations resulting from a health physics drill are being ascertained.

Based on an overall evaluation, the States' of Oregon and Washington and Cowlitz County's plans and preparedness for the Trojan facility are adequate to provide reasonable assurance that appropriate offsite protective measures can and will be taken in the event of a radiological emergency.

Sincerely,

Lee M. Thomas
Associate Director
State and Local Programs and Support

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TROJAN FACILITY

NATURAL HAZARDS

Special Circumstances.

a. Geographical

- (1) Situation - The Trojan plant site is located in the Oregon Coast Range. The Coast Range is bordered on the north by the Olympic Range and on the south by the Klamath Mountains.

The Coast Range section is approximately 250 miles long (running along N-S axis) and averages 50 miles wide. In the vicinity of the site, altitudes are generally below 2,000 feet. The area is drained by the Columbia River and by numerous small tributaries. West of the site, there is an abrupt rise in elevation to approximately 1,500 feet along a north-south axis. Several streams have their headwaters along this divide, and they flow easterly or northeasterly to the Columbia River. Stream gradients are high until they reach the flood plain of the Columbia River. Valley profiles are V-shaped.

The Cascade Range east of the facility is marked by a chain of volcanic cones. The closest cone is Mount St. Helens, approximately 36 miles from the site. It is an active volcano exhibiting a variety of volcanic hazards. Over the last two years the nature of the volcanic activity spans the range from earthquakes and ash emission to several major explosive eruptions (May 18, 25, and June 12, 1980) and series of non-explosive eruptions.

The climate around Trojan is typical of the Pacific Northwest Coast and is characterized by wet winters and dry summers with mild temperatures all year long. There is a low probability of snowfall (greater than one inch is less than one percent) or heavy fog (visibility less than one-quarter mile is less than two percent).

- (2) Evaluation - The Region has been requested to consider, in its evaluation, the degree of planning for and potential effects upon response capabilities with respect to volcanic phenomena (ashfall, mudflows, floods, and landslides). The Region approached this evaluation along three separate routes.

- (a) Short-Term Hazards - The Region hired Thomas Dunn and Luna B. Leopold (both hydrologists) to conduct a study of the flood and sedimentation hazards in the Toutle and Cowlitz Rivers. The report was published in January 1981. It reviewed the potential for: 1) Catastrophic breaching of Coldwater and Castle Creek Lakes, 2) mudflows and floods generated by pyroclastic flows, 3) rain and snowmelt floods, and 4) sediment transport, deposit, and channel changes

This study was made available to Portland General Electric which utilized portions of it in revising their evacuation analysis report and the various procedures for evacuation.

The U.S. Army, Corps of Engineers, performed emergency work to mitigate the potential for catastrophic breaching of Coldwater and Castle Creek Lakes. The Corps performed several other projects to enhance the dike system of the Cowlitz and improve the ability of the hydrologic system to hold snow and rain floods. Revisions were made to flood plain maps and detailed flood evacuation plans/procedures were developed for Cowlitz County. Other work was performed to enable the river system to more effectively handle the sediment transport and potential for channel changes.

(b) Risk Assessment

- (1) Automotive - The Region received opinions from the U.S. Department of Transportation, Research and Special Programs Administration; Ford Motor Company, Car Service Engineering Department; General Motors, Service Section; and the U.S. Army, Tank Automotive Command. The general consensus was that a normal vehicle could be driven at least 50 miles before failure under volcanic ash fallout conditions of amounts up to one inch in depth. Amounts of ash in the range of two to four inches could be expected to cause catastrophic failure of passenger vehicles within ten to twenty miles of road travel under these conditions.

This information was made available to the utility for use in their revision of the evacuation analysis report.

- (2) Volcanic eruption and related hazards - The Region received opinions from the U.S. Geological Survey, Reston, Virginia, and the U.S. Geological Survey, Cascade Volcano Observatory. Major conclusions are hereby summarized.

The percent of ashfall which might affect the plume EPZ is two percent to five percent. Also, the plume EPZ could be affected by ashfall from eruptions on Mt. Hood, which is considered dormant at this time. Percent of ashfall is based upon the direction of prevailing winds and ash production by the volcano.

Mudflows and floods could eliminate the I-5 bridge across the Toutle River and several other minor roads. PGE's revised evacuation analysis and the county's flood plan recognize the possibility of this bridge and other roads being eliminated.

The current level of risk as assessed for Mount St. Helens is much lower than it was in 1980. Risk effects of those hazards on man are even lower because the USGS prediction capability is improving. The mountain is considered to be in a period of episodic dome growth.

This non-explosive dome growth could be marked by small ashfalls, and relatively small pyroclastic flows. It is important to realize that there is virtually no chance of another equivalent eruption like that of May 18, 1980, occurring within the next few years because of the now none existent earth mass that was the mountain top prior to that date. Since the last explosive eruption (October 1980) all volcanic related potentially lethal effects have been confined to the crater and immediate vicinity. Since October 1980 the USGS has been able to predict all dome-building eruptions two to four weeks in advance of their occurrence. If another explosive eruption were to occur, the USGS believes that monitoring would detect the buildup in time to make a variety of preparations. It is important to note that dome growth can be a long drawn out phenomenon. Activity associated with the Goat Rocks dome at St. Helens probably will continue for more than a decade in the mid-1980's.

3) Non-volcanic hazards - The Region received an opinion from the Department of the Army, U.S. Corps of Engineers, U.S. Department of Interior, Geological Survey, Water Resources Division; and the U.S. Weather Service. The consensus is that floods and risk of serious floods are much higher as a result of the May 18, 1980, eruption. Despite the concluded mitigation efforts, the potential will remain very high through the next decade. The evacuation analysis report, prepared by Portland General Electric, was adopted by Cowlitz County. The evacuation procedures for Cowlitz County, and the related flood plain, clearly recognize these risks and have considered the implication of the potential damage/destruction to northern egress routes.

(c) Long-Term Mitigation/Warning

The Region has been active on two fronts in regard to the evolving problems associated with Mount St. Helens.

(1) The Region chairs an interagency committee under the auspices of the Federal Coordinating Officer for the Mount St. Helens disaster. This committee consists of FEMA; USGS, Cascade Volcano Observatory and Water Resources Division; U.S. Weather Service (Regional, Service and Soil Conservation Service) and; U.S. Army, Corps of Engineers. This committee meets several times a year to insure coordination with respect to data collection, risk assessment, mitigation measures and warning procedures.

(2) The Region chairs the nonstructural Hazard Mitigation Task Force, as specified under Section 406 of the Public Law 93-288. This committee consists of FEMA; USDA; U.S. Army; U.S. Weather Service; DHUD; USGC; Cascade Volcano Observatory and Water Resources Division; DOC; DOT; Small Business Administration; State of Washington; and Cowlitz County, Washington. The task force prepared an interagency flood hazard mitigation report (11/13/81). The report was aimed at mitigating

future public and private damages from potential flooding along the Toutle and Cowlitz Rivers. Funding of many of the recommendations will be dependent upon National action and will be one of the decision items of the National Hazard Mitigation Task Force.

Socio-Economic Factors.

The Trojan Nuclear Power Plant is located in the northwestern section of the State of Oregon on the Columbia River which is the border between the State of Oregon and Washington. In Columbia County the economy is geared to the timber industry. Its population is approximately 35,000 with 9,000 located in the plume emergency planning zone. In Cowlitz County, the economy is a mix of heavy and light industrial processes, port operations, and timber-related harvest and manufacturing industries. Its population is approximately 80,000 with 59,000 located in the plume emergency planning zone.

Volcanic Contingencies.

The State of Oregon's Trojan Response contains a volcanic eruption contingency whereby the Oregon Emergency Operations Plan would be implemented. Damage assessment information would be relayed to Trojan and Columbia County, or if Columbia County's Emergency Operations Center was made inoperative, the State would assume complete responsibility. If key elements essential for execution of the Trojan response are made inoperative due to a volcanic eruption or its affects, Oregon would restore those elements as soon as possible or arrange for other compensatory measures.

The State of Washington has made a commitment to include similar contingencies in their next Fixed Nuclear Facility Plan review.

Cowlitz County has developed a contingency plan separate from their Trojan Response Plan.

Please note that Portland General Electric has arranged for representation at the Federal Volcanic Coordinating Center.

(Prepared by FEMA Region I, Richard Donovan, ONTH.)

ATTACHMENT H



Federal Emergency Management Agency **COPY**

Region X Federal Regional Center Bothell, Washington 98011

February 23, 1983

MEMORANDUM FOR DAVE MCLOUGHLIN, ACTING ASSOCIATE DIRECTOR
STATE AND LOCAL PROGRAMS AND SUPPORT

FROM: Wm. H. Mayer
Regional Director

SUBJECT: Findings and Determinations for Portland General Electric's
Trojan Nuclear Power Plant

Last January we forwarded to you our findings (44 CFR 350.11) for the Trojan site (States of Oregon and Washington), with our recommendation that FEMA approval be granted. On July 6, 1982, your office granted approval in accordance with 44 CFR 350.12.

Although our approval process allows for withdrawal of approval (44 CFR 350.13), it does not call for reaffirmation of adequate offsite preparedness. It has been the position of our Chairman of the Regional Assistance Committee (RAC) that an annual reaffirmation should be made. I support this position and this letter with attachment serves that purpose.

Following is a brief summary of activities that the Region and the RAC has either monitored or observed, evaluated, and critiqued since our findings statement of last winter.

1. Activities related to Mount St. Helens/Spirit Lake Disaster and Emergency Declaration.
2. Training activities of both States, counties, and the licensee as they relate to offsite preparedness.
3. Public education program for permanent and transient adults.
4. Second annual Trojan Siren Test (Alert and Notification System).
5. Health Physics Drill and Exercise of the Near-Site Emergency Operations Facility - September 16, 1982.
6. Full-scale Trojan Exercise - November 28, 1982.
7. Media Orientation Program.
8. Monthly Communications Drills.
9. Review of Draft and Promulated Changes to Plans/Procedures.

The RAC Chairman prepares a monthly list of significant events. The majority of the significant events are corrective action items resulting from reviews of the exercise or drill critiques and plans or procedures. Correspondence over my signature forwards these schedules to the designated heads of each State, county, and the licensee each month.

COPY

Last month the RAC updated the individual review and evaluation documents for each set of plans and procedures (as called for in Guidance Memorandum No. 16).

The RAC updated the findings statement. The Region updated that portion of the findings statement related to the volcanic phenomenon in parts requested by the Nuclear-Regulatory Commission (NRC). The Region has received commitments for corrective action as called for in our critiques of the small-scale and full-scale exercise conducted in 1982.

It is the Region's and the RAC's opinion that no major deficiencies exist in either the preparedness posture or response posture of the States and local governments for the Trojan site. We believe that the plans and implementing procedures are adequate on the basis of the criteria documents (REP-1 and -2). We believe that the response capabilities exist among the designated agencies within both States and local governments, and that these agencies have demonstrated their ability to implement the plans.

In view of the continuing NRC interest in the volcanic and related natural hazards assessments, we suggest that the revised Part I be forwarded to them since it is significantly different from that submitted by us in January 1982.

In summary, we believe that the plans/procedures, preparedness posture, and response capabilities of the States of Oregon and Washington, and affected local governments, are adequate to protect the health and safety of the public in the vicinity of the Trojan Nuclear Power Plant. The States and local governments have demonstrated continued improvement in all areas. It is the RAC's position that no significant deficiencies exist. In the Region's opinion, there is reasonable assurance that appropriate protective measures can and will be taken offsite in the event of a radiological incident at the Trojan Nuclear Power Plant.

If you or your staff have any questions, please direct them to Richard Donovan, RAC Chairman.

Attachment

B. General Background:

1. Plans. The title of Oregon State's plan is "Oregon State Trojan Emergency Response Plan." It was issued in November of 1980, implemented in January 1981, and updated September 1981 and August 1982. It was submitted to FEMA on December 9, 1980. The Plan was developed by the Department of Energy.

The title of Washington State's plan is "Washington State Fixed Nuclear Facility Emergency Response Plan." It was issued in March 1981, and implemented in March 1981. It was submitted to FEMA on March 29, 1981. The Plan was developed by the Washington Department of Emergency Services.

The title of the Cowlitz County plan is "Cowlitz County Trojan Emergency Response Plan." It was issued in December 1980, implemented in April 1981, and updated in September 1981 and August 1982. It was submitted to FEMA in December 1980.

2. Special Circumstances.

a. Geographical Situation. The Trojan plant site is located in the Oregon Coast Range. The Coast Range is bordered on the north by the Olympic Range and on the south by the Klamath Mountains.

The Coast Range section is approximately 250 miles long (running along north-south axis) and averages 50 miles wide. In the vicinity of the site, altitudes are generally below 2,000 feet. The area is drained by the Columbia River and by numerous small stream tributaries. West of the site, there is an abrupt rise in elevation to approximately 1,500 feet along the north-south axis. Several streams have their headwaters along this divide, and they flow easterly or northeasterly to the Columbia River. Stream gradients are high until they reach the floodplain of the Columbia River. Valley profiles are V-shaped.

The Cascade Range east of the site is marked by a chain of volcanic cones. The closest cone is Mount St. Helens, approximately 36 miles from the site. It is an active volcano with a variety of activity. Over the last 2 years the nature of the activity spans the range from earthquakes and ash emission to several major explosive eruptions (May 18, 25, and June 12, 1980), and a series of non-explosive eruptions.

The climate of the plume exposure EPZ around Trojan is typical of the Pacific Northwest coast and is characterized by wet winters and dry summers with mild temperatures all year long. There is a low probability of snowfall (greater than 1 inch is less than 1 percent) or heavy fog (visibility less than 1/4 mile is less than 2 percent).

b. Evaluation. The Region has been requested to consider, in its evaluation, the degree of planning for and potential effects upon response capabilities with respect to volcanic phenomena (ashfall, mudflows, floods, and landslides). The Region approached this evaluation along three separate routes.

(1) Short-term Hazards. The Region hired Thomas Dunn and Luna B. Leopold (both hydrologists) to conduct a study of the flood and sedimentation hazards in the Toutle and Cowlitz Rivers. The report was published in January 1981. It reviewed the potential for: 1) catastrophic breaching of Coldwater and Castle Creek Lakes; 2) mudflows and floods generated by pyroclastic flows; 3) rain and snowmelt floods; and 4) sediment transport, deposit, and channel changes.

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(a) Automotive. The Region received opinions from the U.S. Department of Transportation, Research and Special Programs Administration; Ford Motor Company, Car Service Engineering Department; General Motors, Service Section; and the U.S. Army, Tank Automotive Command. The general consensus was that a normal vehicle could be driven at least 50 miles before failure under volcanic ash fallout conditions of amounts up to 1 inch in depth. Amounts of ash in the range of 2 to 4 inches could be expected to cause catastrophic failure of passenger vehicles within 10 to 20 miles of road travel under these conditions.

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Mudflows and floods could eliminate the I-5 bridge across the Toutle River and several other minor roads. PGE's revised evacuation analysis and the county's flood plan recognize the possibility of this bridge and other roads being eliminated.

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(c) Non-volcanic hazards. The Region received an opinion from the Department of the Army, U.S. Corps of Engineers; U.S. Department of Interior, Geological Survey, Water Resources Division; and the U.S. Weather Service. The consensus is that floods and risk of serious floods are much higher as a result of the May 18, 1980, eruption. Despite the concluded mitigation efforts, the potential will remain very high through the next decade. The evacuation analysis report, prepared by PGE, was adopted by Cowlitz County. The evacuation procedures for Cowlitz County, and the related floodplain, clearly recognize these risks and have considered the implication of the potential damage/destruction to northern egress routes.

(d) Spirit Lake Hazards. A Presidential emergency declaration (8/19/82) establishes in part that the threat to lives and property due to the volcanic eruption and resulting potential for catastrophic flooding from Spirit Lake is of sufficient severity and magnitude that it warrants an emergency declaration under Public Law 93-288. Under authorities of this Act, the U.S. Department of Interior, Geological Survey, Water Resources Division has completed a hazard assessment report "Mudflow Hazards along the Toutle and Cowlitz Rivers from a hypothetical failure of Spirit Lake Blockage." Narrative and map portions of this report clearly show that major and minor Cowlitz County transportation routes will be destroyed or otherwise blocked should short-term mitigation measures for the Spirit Lake hazard fail. Disruption would result in short- and long-term impact on the ability to execute a Trojan evacuation as currently planned in both Washington and Oregon. An evacuation for a Spirit Lake event would create a short-term conflict with a Trojan evacuation. Long-term impact would be from the radically revised transportation routes and traffic load required to bypass blocked routes.

The Geological Survey report addresses only the mudflow hazard to the Toutle and Cowlitz Rivers. The report states that a Spirit Lake breach can be expected to deliver 1.09 million cubic feet per second of mudflow at 65% sediment loading by volume to the Columbia River.

Technical data supporting the report shows that mudflows will be maintained at close to peak flows for several hours. Experience of Columbia River blockage resulting from flood/mudflows generated by the Mount St. Helens volcanic eruption of May 18, 1980, infers that the much greater mudflow possible from a Spirit Lake event may have disruptive impact to Trojan evacuation routes in the vicinity of the Columbia River and to the Trojan site. The Geological Survey, at the request of the Federal Coordinating Officer for the Spirit Lake Emergency Declaration, is preparing a technical proposal to evaluate the hydrologic hazards of a Spirit Lake event to the Columbia River. The National Weather Service, Pacific Northwest River Forecast Center is expected by March 1983 to release combined hazard guidance for floods and mudflow contingencies from a Spirit Lake breach.

(3) Long-term Mitigation/Warning. The Region has been active on several fronts in regard to the evolving problems associated with Mount St. Helens:

(a) The Region chairs an interagency committee under the auspices of the Federal Coordinating Officer for the Mount St. Helens disaster and the Spirit Lake emergency. This committee consists of FEMA; USGS, Cascade Volcano Observatory and Water Resources Division; U.S. Weather Service (Regional, River Forecast Center, Washington and Oregon State Offices); USDA (Forest Service and Soil Conservation Service); and U.S. Army, Corps of Engineers. This committee meets several times a year to ensure coordination with respect to data collection, risk assessment, mitigation measures, and warning procedures.

(b) The Region chairs the nonstructural Hazard Mitigation Task Force, as specified under Section 406 of the Public Law 93-288. This committee consists of FEMA; USDA; U.S. Army; U.S. Weather Service; DHUD; USGS; Cascade Volcano Observatory and Water Resources Division; DOC; DOT; Small Business Administration; State of Washington; and Cowlitz County, Washington. The task force prepared an interagency flood hazard mitigation report (11/13/81). The report was aimed at mitigating future public and private damages from potential flooding along the Toutle and Cowlitz Rivers. Funding of many of the recommendations will be dependent upon National level action and will be one of the decision items of the National Hazard Mitigation Task Force.

(c) With Regional assistance and coordination, Cowlitz County has implemented a recommendation of the Hazard Mitigation Task Force by initiating the Toutle-Cowlitz Rivers Watershed Management Plan. The Plan is to consolidate a number of Cowlitz County community development issues and provide policy for future use of the basins of the Toutle and Cowlitz Rivers (post Mount St. Helens). The Plan incorporates subjects related to emergency planning, including hazard assessment, operational capacity, and alert-notification requirements to deal with Mount St. Helens and Spirit Lake related hazards. The Plan represents an interactive process so as to develop emergency preparedness capacity integrated and supportive of preparedness for preexisting Cowlitz County hazards.

(d) Regional coordination of specific actions taken to mitigate the Spirit Lake hazard include:

1) The Department of Army, Corps of Engineers, has undertaken a two element program of structural measures for mitigating the Spirit Lake hazard. The first element is the now implemented short term pumping system designed to maintain the annual average level of Spirit Lake below an established critical level. The second element is to determine and implement a solution or program of solutions to achieve long term mitigation of the Spirit Lake hazard. The U.S. Army, Corps of Engineers, is scheduled to complete, by November of 1983, a report of alternatives and recommendation for a long term solution.

2) A joint initiative of Federal, State, and local governments has implemented a warning system to deal with a Spirit Lake breach. That portion of the warning system for alert and notification of the resident and transient population of Cowlitz County, within the Spirit Lake hazard area, has been integrated with and extends the existing Trojan alert notification system.

3. Socio-Economic Factors.

The Trojan Nuclear Power Plant is located in the northwestern section of the State of Oregon on the Columbia River which is the border between the States of Oregon and Washington. In Columbia County the economy is geared to the timber industry. Its population is approximately 35,000 with 9,000 located in the plume EPZ. In Cowlitz County, the economy is a mix of heavy and light industrial processes, port operations, and timber-related harvest and manufacturing industries. Its population is approximately 80,000 with 59,000 located in the plume EPZ.

4. Volcanic Contingencies.

The State of Oregon's Trojan Response contains a volcanic eruption contingency whereby the Oregon Emergency Operations Plan would be implemented. Damage assessment information would be relayed to Trojan and Columbia County, or if Columbia County's EOC was made inoperative, the State would assume complete responsibility. If key elements essential for execution of the Trojan response are made inoperative due to a volcanic eruption or its affects, Oregon would restore those elements as soon as possible or arrange for other compensatory measures.

The State of Washington has made a commitment to include similar contingencies in their next Fixed Nuclear Facility Plan review.

Cowlitz County has developed a contingency plan separate from their Trojan Response Plan.

Please note that PGE has arranged for representation at the Federal Volcanic Coordinating Center.

C. Materials Available for Examination:

In addition to the State and local plans/procedures, we have had access to evaluations by the Region and the Regional Assistance Committee.