

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

PORTLAND GENERAL ELECTRIC  
COMPANY, ET AL.

(Pebble Springs Nuclear Plant,  
Units 1 and 2)

}  
Docket Nos. 50-514  
50-515

ANSWERS OF THE NRC STAFF TO "FORELAWS  
ON BOARD'S INTERROGATORIES \* \* \* DATED JULY 8, 1981"

The NRC Staff herewith files its answers to "Forelaws on Board's Interrogatories to NRC Staff \* \* \* Dated July 8, 1981." Intervenors' interrogatories were propounded, and these answers provided, pursuant to the Atomic Safety and Licensing Board's "Order Relative to Stipulation Regarding Contentions and Scheduling" dated June 19, 1981.

1. Elisabeth Ann Stull, Division of Environmental Impact Studies, Building 10, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439, prepared the responses to all interrogatories except No. 16. These responses were prepared after consultation with Paul H. Leech, the present NRC Project Manager, Division of Licensing, Office of Nuclear Reactor Regulation, 7920 Norfolk Avenue, Bethesda, Maryland 20814 and Bernard M. Bordenick, Counsel for NRC Staff, Hearing Division, Office of the Executive Legal Director, 7735 Old Georgetown Road, Bethesda, Maryland 20814. The response to Interrogatory 16 was prepared by D. A. Brodnick (same address as E. A. Stull). In addition

E. A. Stull consulted with Dr. Robert P. Geckler prior to preparing responses to Interrogatories 4, 6, 7, 8, 9, and 12. Dr. Geckler's address is Division of Engineering, Office of Nuclear Reactor Regulation, Air Rights Building No. 3, Bethesda, Maryland 20814. (Dr. Geckler was the Environmental Project Manager at the inception of the Staff's revised alternative sites study for Pebble Springs).

2. Preparers of Supplement No. to the Final Environmental Statement Related to Construction of Pebble Springs Nuclear Plant Units 1 and 2 are listed below together with the Sections to which they made contributions. Professional Qualifications Statements for each listed person are attached in response to the additional information requested in the Interrogatory.

1. Dr. Charles Luner, Project Leader, Division of Environmental Impact Studies, Argonne National Laboratory, 9700 S. Cass Avenue, Argonne, IL.

Prepared introductory material, descriptions of methodology and applicants site selection process: See, Sec. 1; Sec. 2; Sec. 2.2.1, Sec. 2.3.1, Sec. 2.4.1, Sec. 2.5 (in part).

2. Dr. D. A. Brodnick, Team member, same address as Dr. Luner.

Prepared socioeconomic parts of Sec. 2.2, Sec. 2.3, Sec. 2.4, Sec. 2.5, Sec. 2.6 (in part).

3. Barbara Ann Lewis, Team member, same address as Dr. Luner until 9/79. Current address: Department of Civil Engineering, Northwestern University, Evanston, IL.

Prepared terrestrial resources parts of Sec. 2.3, Sec. 2.3, Sec. 2.4, Sec. 2.5, Sec. 2.6 (in part).

4. Deborah Mabels, Team member, same address as Dr. Luner until 6/79. Current address: Deborah Crist, 8339 W. Cottontail, Lakewood, Colorado.

Prepared geohydrology parts of Sec. 2.2, Sec. 2.3, Sec. 2.4, Sec. 2.5, Sec. 2.6 (in part).

5. Dr. Elisabeth Ann Stull, Team member, address as above.

Prepared aquatic resources parts of Sec. 2.2, Sec. 2.5, Sec. 2.4, Sec. 2.5, Sec. 2.6 (in part).

6. Richard W. Froelich, NRC Environmental Project Manager at the time FES Supplement 1 was issued. Same address as Paul Leech except Mr. Froelich is in Division of Human Factors.

7. Robert Eastvedt, Systems Planner, Bonneville Power Administration, Portland, Oregon. Appendices C and D.

3. Attached is a copy of a list of materials (dated December 6, 1978) used as references in connection with the preparation of FES Supplement No. 1. The materials listed take up approximately six 12" X 15" cardboard cartons. The contents of these cartons and related materials (e.g., maps) are available for inspection and copying by Intervenors during normal business hours at the Argonne National Laboratory (located at 9700 South Cass Avenue, Argonne, Illinois). Please contact NRC Staff Counsel to make the necessary arrangements for inspection and copying (including costs). In addition, many of the materials should be available in general reference libraries and/or at the local public document room for Pebble Springs. The NRC Staff and its consultants have not separated the material by individual and the corresponding portion of (FES) Supplement No. 1 that each individual is responsible for.

4. There is no written description or outline. Supplement No. 1 was prepared in draft by the five ANL project team members. The four technical team members, Brodnick, Mabes, Lewis and Stull reported to the Project Leader, Charles Luner. All work by the team members was reviewed by the ANL division of Environmental Impact Studies (as a peer review) for technical sufficiency. The activities of the ANL team were guided by the ANL Project Leader in close cooperation with the NRC Environmental

Project Manager. All ANL team members accomplished their work at Argonne National Laboratory and on the site visits (See No. 5 below). Work on Supplement No. 1 began on or about November 1, 1978. The ANL analysis was finished on June 15, 1979, when a draft copy was sent to the NRC Staff.

5. Listed below are the potential sites analyzed in Supplement No. 1 with the dates of the site visited, Staff members visiting each site, and work accomplished at the sites.

11/13/78. Lebanon Site, visited by R. Geckler, C. Luner, D. A. Brodnick, D. Mabes, E. A. Stull. Work accomplished was 1-2 hour visual inspection of the site and S. Santiam River.

11/14/78. Big Creek, Daley Lake, Miles Lake, Watseco Quarry, and Jetty Creek Sites. Visited by R. Geckler, C. Luner, D. A. Brodnick, D. Mabes, E. A. Stull. Work accomplished was 30 minute to 1 hour visual inspection of each site, including possible water intake/outfall locations.

11/15/78. Trojan, Deer Island, Maygar, Beaver, Bradwood and Warrenton Sites. Visited by R. Geckler, C. Luner, D. Brodnick, D. Mabes, E. Stull. Work accomplished was 30 minute to 1 hour visual inspections of each site, including possible water intake/outfall locations.

11/15/78. Ryderwood Site. Visited by R. Geckler, C. Luner, D. Brodnick, D. Mabes, E. Stull. 30 minute inspection of the Cowlitz River valley near proposed water intakes for the site.

5/11/78. Ryderwood Site. Visited by E. Stull. Work accomplished was a 2-3 hour visual inspection of the Ryderwood site, Village of Ryderwood and Cowlitz River Valley.

11/16/78. Pebble Springs, Fulton Ridge and Boardman Sites. Visited by R. Geckler, C. Luner, D. Brodnick, D. Mabes and E. Stull. Work accomplished was 30 minute to 1-1/2 hour inspection of each site, including the possible water intake locations.

5/7/79 and 7/15/81. Skagit Site. Visited by E. Stull. Work accomplished included 2-3 hour visual inspections of the site and the Skagit River Valley.

8/13/78. Hanford site. Visited by E. Stull. Work accomplished included 3-4 hour visual inspection of the Hanford site and Columbia River near the WNP-2 water intakes and outfalls.

5/7/81. Cherry Point Site. Visited by E. Stull. Work accomplished was a visual inspection of the site during a low altitude overflight.

6. Attached find copies of the following documentation, rationale, and supporting information for the origin and application of the methodology(ies) used in the preparation of the site alternative analysis conducted by the individuals listed in (response) to Interrogatory No. 1.

NUREG-0499, Supplement 1: "General Considerations And Issues Of Significance On The Evaluation Of Alternative Sites for Nuclear Generating Stations Under NEPA - Supplement No. 1 to the Preliminary Statement on General Policy for Rulemaking to Improve Nuclear Power Plant Licensing" dated December 1978

Argonne National Laboratory Intra-Laboratory Memo from R. A. Zussman to Palo Verde Distribution Re: Environmental Standard Review Plan (ESRP) 9.2 dated October 2, 1978

NUREG-0099, Regulatory Guide 4.2, Revision 2: "Preparation of Environmental Reports for Nuclear Power Stations" dated July 1976

General Staff/OELD Comments Evaluation of Need for Reanalysis of Alternate Sites for Pebble Springs

Nuclear Regulatory Commission Statement of Policy:  
The Evaluation of Alternative Sites for Nuclear  
Generating Stations Under the National Environ-  
mental Policy Act [7590-01]

Premises and Assumptions Related to Review of  
Alternative Sites, and Procedures For Screening,  
Identification, Evaluation and Selection of Nuclear  
Plant Sites

The other NRC site alternative analyses which have used the same or similar methodology as applied for the Pebble Springs FES Supplement No. 1 are as follows:

Skagit (Supplemental Testimony, July, 1979)

Pilgrim Unit 2 (NUREG-0549, May, 1979)

Seabrook (NUREG-0501, December, 1978)

Allens Creek (NUREG-0470, Supp. 2, March, 1981)

Perkins (Supplemental Testimony, October 1978)

Copies of the above listed alternative sites analyses are available in the Public Document Room (or at the Argonne National Laboratory).

7. To the best of our present knowledge and recollection the following persons were responsible for the decision to use the overall methodology contained in Supplement No. 1 for site alternative review as well as the methodologies used in the evaluation of each of the four sub-categories of comparison, terrestrial resources, aquatic resources, geological and hydrological resources:

a. As to overall methodology

Voss A. Moore (NRC)  
Ronald L. Ballard (NRC)  
Robert P. Geckler (NRC)

b. As to methodology used for resource categories



Barbara Ann Lewis (ANL)  
Elisabeth Ann Stull (ANL)  
Deborah Mabes (ANL)  
D. A. Brodnick (ANL)

8 and 9. See attached copy of the letter dated November 17, 1978 from NRC (Voss A. Moore) to ANL (Dr. Phillip F. Gustafson). (Total ANL expenditure was 2.5 man years and \$124,000.)

10. At the present time, the NRC Staff contemplates that the following named persons will be utilized as witnesses in the upcoming evidentiary hearings:

D. A. Brodnick  
Elisabeth Ann Stull

Both their addresses are Division of Environmental Impact Studies, Building 10, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439.

11. As requested, a copy of the whole "Notice of Proposed Rule Making -- Revision of 10 C.F.R. Part 51 and related conforming amendments, 45 F.R. 13739 at 13740, March 31, 1980" is attached. (Please note that the notice is dated March 3, 1981).

12. Previous to the Seabrook decision, ALAB-471, the Staff utilized many methodologies based on the general guidance set forth in Reg. Guides 4.2 and 4.7. Subsequent to Seabrook, the methodology set forth in the documents provided in response to Interrogatory No. 6 above is the only one currently utilized by NRC. Since there is only one general methodology, there are no documents in existence demonstrating other methodologies.

13. An additional resource category that could have been used in addition to aquatic resources, biologic and hydrologic resources, socio-economic resources and terrestrial resources was meteorologic resources.

However, the Staff did not identify any clear environmental impact differences that would be added to the analysis by the inclusion of this resource category. Impacts of cooling tower drift and fugitive dust generation on terrestrial habitats would have been compared under terrestrial resources if the Staff had concluded such inclusion would help distinguish between the sites.

14. Detailed site monitoring for the purposes of characterizing alternative sites is normally outside the scope of an alternative site review for a construction permit, as discussed in the documents attached in answer to number 6.

15. (a) Elisabeth Ann Stull.

(b) See answer to Interrogatory 3 above.

16. (a) A socioeconomic analysis of a proposed nuclear site may also include an assessment of the following indicators:

- land use of area around the site
- settlement patterns
- population parameters (e.g. ethnic and racial composition, transient population)
- financial inflow from project
- community lifestyle and values
- community well-being (e.g. lack of crime and delinquency, alcohol and drug abuse)
- public awareness and attitudes about project

(b) and (c) Table 2.8 of the FES Supplement identifies the potential sites where insufficient data prevented assignment of a



rating to various factors. The reasons for insufficient data are the following:

- Cultural, Historical and Recreational sites: Only those sites which had previously been assessed for recreational opportunities or had an archaeological survey conducted at the site were rated. These types of information were not available about the other sites.

- Esthetics: The applicant had a preliminary siting study conducted of the coastal sites. Information was thus available on these sites and the developed sites (Boardman and Hanford). The potential for adverse impact was determined during the visit to the Columbia River valley in the vicinity of the proposed West Roosevelt site. The visibility of the other potential sites could not be determined during the site visits and studies have not been conducted of these sites.

- Labor Supply: Only those potential sites which were within commuting distance of a large metropolitan area or sites under development had sufficient information to allow them to be rated. Reliable information was not available for the other sites about the breakdown of skills and manpower for the years 1985-1995.

- Community Infrastructures: Rural areas have insufficient information about their communities' infrastructure. Except for the siting study completed by the applicant,<sup>\*/</sup> areas near developing

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<sup>\*/</sup> "Site Comparison Study, Oregon Coastal Nuclear Power Plant Sites for Portland General Electric Company," Stevens, Thompson and Runyan, Inc., February 1973.

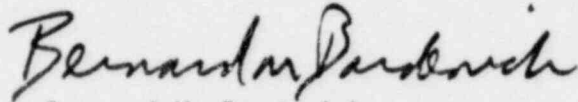
sites, and adjoining metropolitan areas, sufficient information was not available about the other sites.

- The Warrenton site was not evaluated relative to access and transmission facility impacts because the exact location and design of the site had not been developed. Without this information, the Staff cannot make a determination about the impacts. An alternative siting analysis requires the Staff to gather information already generated about a site, evaluate its adequacy, and verify or supplement any information by site visits. The site visits conducted for this study only provided a reconnaissance level of information for certain socioeconomic factors and are completely unacceptable to assess other factors (such as site archaeology). Certain types of data can be collected only by longer site visits (e.g. one week), but this type of site visit is conducted only after a site has been selected due to the cost and time required for such an investigation.

The Staff has visited all the sites.

17. The Staff was endeavoring to identify sites that were clearly environmentally preferable to Pebble Springs: that is sites in which environmental advantages were not accompanied by environmental disadvantages. The quoted statement reports decisions made by the Staff using their best professional judgment of the uncertainty of using reconnaissance level information. The Staff was reasonably confident that an excess of two pluses over minuses would indicate a clearly environmentally preferable site within a resource category.

18. (a) Elisabeth Ann Stull.  
(b) See answer to Interrogatory 3 above.



Bernard M. Bordenick  
Counsel for NRC Staff

Dated at Bethesda, Maryland  
this 29th day of July, 1981.

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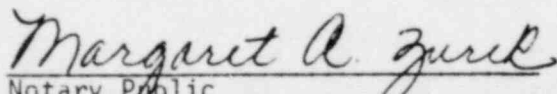
AFFIDAVIT OF ELISABETH ANN STULL

Now comes Elisabeth Ann Stull, and being duly sworn, deposes and says as follows:

1. I am employed by the Argonne National Laboratory as an Environmental Project Leader.
2. I am duly authorized to answer Questions 1-15, 17 and 18 and I hereby certify that the answers given are true and correct to the best of my knowledge and belief.

  
Elisabeth Ann Stull

Subscribed and sworn to before me  
this 27 day of July, 1981.

  
Notary Public

My Commission expires:                     MY COMMISSION EXPIRES                      
                    FEBRUARY 12, 1982

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

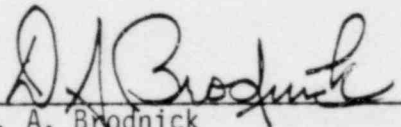
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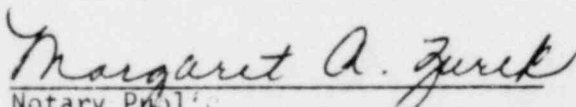
AFFIDAVIT OF D. A. BRODNICK

Now comes D. A. Brodnick, and being duly sworn, deposes and says as follows:

1. I am employed by the Argonne National Laboratory as a Socioeconomics Group Leader.
2. I am duly authorized to answer Question 16 and I hereby certify that the answer given is true and correct to the best of my knowledge and belief.

  
D. A. Brodnick

Subscribed and sworn to before me  
this 27 day of July, 1981.

  
Notary Public

My Commission expires: MY COMMISSION EXPIRES  
FEBRUARY 13, 1983

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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In the Matter of

PORTLAND GENERAL ELECTRIC  
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(Pebble Springs Nuclear Plant,  
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Docket Nos. 50-514  
50-515

CERTIFICATE OF SERVICE

I hereby certify that copies of "ANSWERS OF THE NRC STAFF TO "FORELAWS ON BOARD'S INTERROGATORIES \* \* \* DATED JULY 8, 1981," "AFFIDAVIT OF ELISABETH ANN STULL," AND "AFFIDAVIT OF D. A. BRODNICK" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or, as indicated by an asterisk, through deposit in the Nuclear Regulatory Commission's internal mail system, this 29th day of July, 1981:

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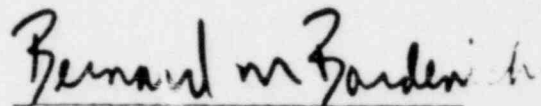
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