

# PUGET POWER

February 15, 1980  
PLN-227

Director of Nuclear Reactor Regulation  
Attention: John F. Stolz, Chief  
Light Water Reactor Branch 2-1  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

Subject: Puget Sound Power & Light Company  
Skagit Nuclear Power Project, Units 1 & 2  
Docket Numbers 50-522 and 50-523  
Requests for Additional Information,  
No's. 323.86 through 323.95, dated  
January 8, 1980, (John F. Stolz, NRC  
to J. E. Mecca, Puget Power)

Dear Mr. Stolz:

We have reviewed the above subject "Requests for Additional Information", and as a result of that review conclude we require some clarification in order to respond appropriately. Accordingly, we are submitting the following comments and requests for clarification.

323.86:

This question renews discussion of the shearing at and near the contact of the Chuckanut formation with the older metamorphic rocks at the Plant Site. As discussed in the PSAR, shearing occurs on the contact northeast of the principal plant structures. This contact has been investigated with geophysical surveys, core holes, and trenches. The results were reported in the PSAR, and were discussed with NRC and USGS reviewers on several occasions. The reviewers examined cores and trenches crossing the contact. In their report of February 23, 1978, the USGS notes the "...sheared but essentially depositional contact between the Chuckanut formation and the Shuksan schists...". The October 3, 1979 Final Supplement to the Staff's Safety Evaluation Report concludes "At the site minor faulting consisting of adjustments within the Chuckanut as well as along the Chuckanut-Shuksan contact undoubtedly accompanied the Tertiary folding." This contact between the Chuckanut formation and the older rocks should logically be expected to be sheared and locally faulted, due solely to the adjustments necessary to accommodate steep folding of rock units which have greatly different mechanical properties.

To our knowledge, there is no new data which should revise that interpretation. If the USGS or NRC has such data, we request that it be provided to us.

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Additionally, we request clarification of the basis for inferring that the contact exposed in Loretta Creek should or might revise the previously accepted interpretation of the contact at the Plant Site. If the USGS or NRC has any data on the Loretta Creek contact that indicates the contact at the Plant Site is not as interpreted in the PSAR and in the NRC and USGS site review reports, we request that that data be provided to us.

There is no doubt shearing occurs in the coaly sediments near the Chuckanut-phyllite contact. It is to be expected this incompetent material will absorb the stress during the folding that resulted in steep dips. The presence of shearing or faulting at the contact will not answer the question posed in regard to a high angle major fault. The type of studies suggested in these requests for information are, for all practical purposes, the same as those that have already been used to evaluate the contact. Evidence from the suggested additional studies to further evaluate the contact should not be expected to be more or less incontrovertible than the evidence previously provided and considered.

A high angle fault extending to the northwest of the site should show some deviation from the trace of the curved Chuckanut-phyllite contact. Plotted foliation and schistosity show no indication of a linear trend nor does the aeromagnetic or gravity data. If a major structure exists there should be some expression of it both to the northwest and to the southeast. Using the existing mapping and geophysics no such trend is identifiable to us. If the NRC or USGS has evidence to the contrary, the Applicant would appreciate receiving the information so that it can be thoroughly investigated.

323.87:

The Applicant has carefully examined the glacial deposits near the projection of the faults referred to in the request for information and has found no evidence of tectonic disruption of the deposits. This supports the other data which indicates there is no evidence that the faults are or may be capable. If the NRC or USGS has any data that indicate or suggest capability of these features, we would appreciate receiving this information so any and all suspect features can be thoroughly investigated.

323.88:

In order for the Applicant to evaluate any interpretation of tectonic structures "that are or might reasonably be inferred from study of the profiles", we would like to consider all available interpretations. Therefore, the Applicant requests that it be provided with interpretations in the subject area which have been developed by the USGS/NRC, especially those maps and interpretations displayed by Mr. James Devine (UGGS) during the ASLB conference of January 22, 1980.

There seems to be a wide difference of opinion regarding the picks by Dr. Wagner of USGS on the seismic profiles. Do they represent actual offsets due to tectonic forces, or are they caused by marine sediment slumps, gas pockets or are they artifacts of the recording? It is important to know if any of these suspected offsets connect directly to a fault in the basement rocks. If several tens or over a hundred picks have been plotted then the probability of a pick falling over a bedrock fault is enhanced. It has yet to be demonstrated that any series of picks in these young marine sediments is directly related to a basement fault. Until these issues are resolved it seems inappropriate to make assumptions that all Northwest trending faults may be active. The geologic grain of this entire area is to the northwest and all of these faults and folds could be millions of years old; this grain was developed more than 40 million years ago.

323.89:

No clarification required.

323.90:

USGS/NRC Requests for Information 323.84 and 323.85, dated June 16, 1978, listed specific methods of investigation in order to determine thrust fault relationships in the Cultus-Haystack Mountains study area. The Applicant's response, was submitted on May 10, 1979 after exhaustive field studies. The response to the questions was contained in three (3) ring binders and entitled, "Report of Geologic Investigations in 1978-1979". The report included those studies specified as well as mapping, further drilling and ground magnetic surveys deemed appropriate to respond completely.

The question of thrust fault relationship is still not resolved to the extent that there is a consensus on the attitude of the thrust. However, the thrust fault relationship need not be resolved in order to evaluate structures significant or possibly significant to site safety. Mapped or inferred structures can be adequately evaluated by considering both interpretations; this has been done in our Report of Geologic Investigations in 1978-1979, and in the NRC and USGS prefiled testimony of October 3, 1979. Consequently, it is not clear to us why the question of the attitude of the thrust fault needs to be resolved.

We request that we be advised as to what, if any, structures or inferred structures cannot be adequately evaluated in terms of site safety without agreement between the Applicant and the Reviewers on the attitude of the Haystack or Shuksan thrust fault.

323.91:

This Request for Information asks the Applicant to evaluate USGS mapping not available to it, specifically, "Whetten, Dethier, and Carroll, in press," for the Northwest and Southeast 7-1/2' Clear Lake quadrangles.

We request that these publications and any other forthcoming related USGS publication be provided to the Applicant so it may be fully responsible to the request for information.

Relative to part d of 323.91, the Report of Geologic Investigations in 1978-1979 presents the detailed evidence, including core-drilling, geologic mapping and aeromagnetic modeling, for identifying the fault along the flank of Cultus Mountain as the east-dipping Shuksan thrust fault. In the interest of re-evaluating an alternate geological model for this area, such as that suggested by Dr. John Whetten, January 22, 1980 at the ASLB Conference, the Applicant requests it be provided with the evidence the USGS has which may support the existence of a high-angle fault zone at the contact of the Shuksan metamorphic rocks between the Table Mountain vicinity and Mundt Creek.

323.92:

The question appears to imply that the Applicant's interpretation of the features on Coal Mountain is inconsistent with what is known about comparable features in other locations. However, the Applicant's interpretation of gravity spreading at Coal Mountain is consistent with the literature. (See Section 3.4.3 of the Report of Geologic Investigations in 1978-1979.) These data, as well as the physical evidence at Coal Mountain, indicate a gravitational origin for features of this type. Therefore, in order to respond to USGS/NRC question 323.92, the Applicant requests that the reference "similar features elsewhere are interpreted to indicate recent movement on faults" be clarified.

323.93:

The question tends to imply a supposition regarding the distribution of certain deposits, the basis of which is not readily apparent to the Applicant. We do not know what deposits are being referred to by the term "older nonglacial deposits"; nor do we understand why the mouth of Gilligan Creek was selected as the basis for reference.

323.94:

We do not understand the last part of the question, which states "...since such a fault does not appear to be part of the thrust plate..." The minor faulting in Loretta Creek cannot be part of the Shuksan thrust fault (we do not understand the reference to "part of the thrust plate"), since faulting in Loretta Creek post-dates deposition of the Chuckanut formation and the Chuckanut formation was not deposited until movement of the Shuksan thrust had ceased. As described in the Report of Geologic Investigation, we believe the "Gilligan fault" is a segment of the Shuksan thrust fault.

We will discuss the faulted contact exposed in Loretta Creek and its relationship to regional tectonics.

323.95

No clarifications required.

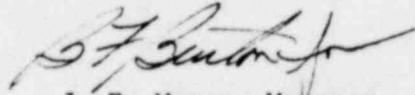
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We urge due consideration to our comments and requests for clarification be given in a timely manner so that appropriate direction for responding to the requests for additional information can be provided to our experts and consultants. We will be at your disposal at any time for telecon discussions or meetings with the NRC/USGS if it is deemed the appropriate mechanism to expedite resolution.

Very truly yours,



J. E. Mecca, Manager  
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