



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

March 13 1980

The Honorable Morris K. Udall, Chairman
Committee on Interior and Insular Affairs
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

I apologize for the delay in responding to your letter of October 11, 1979 to then Chairman Hendrie concerning the seismological review of the proposed Skagit Nuclear Power Project. Since the Commissioners may have to review the record and the decision in this proceeding, it would be inappropriate for the Chairman or any one of the Commissioners to reply to your letter. Accordingly, this matter has been referred to me for reply.

We share your conviction that the review for nuclear power plant siting should be comprehensive and reflect a broad range of seismological expertise. To that end, the NRC has contractually engaged the expertise of the U. S. Geological Survey and other experts in the scientific community. The USGS has sought to reflect, in its review of the Skagit project, the broad and comprehensive range of expertise (geologists, geophysicists, and seismologists) available in the ranks of the USGS as well as other expertise in the university community. In addition to the USGS, the NRC has contracted with authorities in private industry in the areas of geophysics and seismology in its review of the Skagit application.

Since seismology is an inexact science there will always be some uncertainty related to specification of the appropriate earthquake(s) for design of critical projects such as dams, LNG storage, and nuclear power plants. The NRC attempts to compensate for these uncertainties by incorporating conservative assumptions into the structural and system design engineering aspects of the nuclear power plant under consideration. The information available from both the scientific and engineering disciplines must be synthesized to arrive at the engineering methodology that will yield optimum design parameters for the plant in question.

Both the NRC Staff and the U.S. Geological Survey agree that the proposed site for the Skagit project is in a region of complex geology. This fact is reflected in the extensive review and assessment of the Skagit application for more than five years; greatly in excess of the average 12 to 18 month period required for most nuclear reactor sites. The U. S. Geological Survey is continuing a geologic mapping program for this region and we strongly endorse this effort. NRC Staff geoscientists maintain awareness of these mapping efforts and constantly review all new information in order to assess any impact on siting decisions being made for the Skagit Nuclear Power Project.

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The continuing review process has led to several recent developments. As noted in the transmittal letter for the USGS supplemental report on the Skagit project (H. Menard to H. Denton, September 17, 1979) certain proprietary seismic profiles that could bear on the final outcome of the review had not at that time been received by the Survey. These profiles were subsequently received and on October 18, 1979, the USGS provided the NRC Staff with additional information developed from a preliminary review of the recently received seismic profiles in conjunction with previously available seismic profiles and continued field mapping in Skagit County. The NRC Staff determined that the new information could potentially affect the Staff's safety evaluation for the Skagit Nuclear Power Project and immediately requested a delay in the hearings scheduled to begin on October 25, 1979 before the Atomic Safety and Licensing Board (ASLB) for the Skagit project. The final staff evaluation will await a more thorough review of the new information by the USGS and will reflect our full evaluation of the significance of this information.

More recent developments include receipt of Dr. H. William Menard's (Director of the U. S. Geological Survey) letter of January 18, 1980. A copy of this letter is attached. In his letter Dr. Menard clarified the overall intent of the December 14, 1979 USGS questions which had been submitted to the NRC for transmittal to the Skagit applicant (Puget Sound Power and Light Company). Dr. Menard indicated that because of the possibility of recent undefined (and probably undefinable) fault movement near the site, the USGS can no longer support a Safe Shutdown Earthquake of 0.35g for the Skagit site. The USGS conclusions, and the basis for their conclusions, were reiterated and elaborated upon by USGS representatives at the January 22, 1980 ASLB Conference in Seattle.

The above described review process and the development of new information with regard to the Skagit application has raised certain concerns with respect to the availability and comprehensiveness of geophysical data. The Nuclear Regulatory Commission has previously recognized the need for the formulation of requirements which will mandate a comprehensive and systematic search for pertinent geophysical data. We have discussed this subject with the U. S. Geological Survey and we both agree that further attention be given to this matter. Changes to our seismic and geologic siting criteria (Appendix A of Part 100) are currently being considered.

I trust that the above is responsive to your concerns. If you desire further information on this matter, please do not hesitate to call upon us.

Sincerely,



William J. Dircks
Acting Executive Director for Operations

Enclosure:
Ltr fm Menard to Jackson
dtd 1/18/80



United States Department of the Interior

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In Reply Refer To:
Mail Stop 905

Dr. Robert Jackson
Chief, Geosciences Branch
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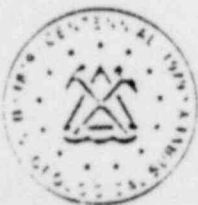
Dear Bob:

This is in response to your letter of January 4, 1980, concerning the Skagit Nuclear Power Project, in which you ask for clarification of the intent of our questions contained in our letter of December 10, 1979.

I trust that the intent of each question, in and of itself, is understood but the reason for our requesting such information as a whole is not stated. As we have indicated to you at the various meetings to which you refer in your letter, we have become increasingly concerned, as more new data are analyzed, that the Neogene and Quaternary deformation of the area north of the Devils' Mountain fault including the proposed site area and further north has not been determined adequately. Consequently, the possibility of capable faulting that could generate ground motion and deformation in excess of the amounts proposed for use in the design of the facility has not been precluded.

The justification for our concerns result from several sources; namely, detailed analysis of recently obtained seismic profiles, continued geologic mapping in the Clear Lake 15 minute quadrangle and reanalysis of aeromagnetic data in light of the latest geologic mapping.

Analysis of the seismic profiles (e.g. Mobil lines) has indicated offsets of horizons of very young age. We feel that the most probable interpretation of these offsets is that they represent high angle faults and probably connect from profile to profile to represent faults with general northwest-southeast strike and that the area of data collection contains many such NW-SE high angle faults. Since some of these structures must be considered to be capable, as indicated by offsets at or very near the sea floor, the possibility that all similar structures are capable must be considered unless there are data to demonstrate noncapability.



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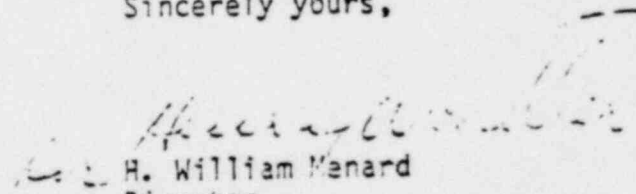
The mapping onshore by Professor J. Whetten and others indicate or postulate several NW-SE high angle faults in the general area around Clear Lake and Walker Valley. Due to the difficult terrain and dearth of appropriate stratigraphic markers, it has not been possible to determine the length, throw, direction of movement, or the age of last movement of most of the structures. But there are indications that at least two are several kilometers in length. However, due to the similarity of the onshore and offshore data as interpreted by Survey researchers, we believe that the recent displacements offshore represent faulting that could be very similar to the faulting onshore and consequently represent similar earthquake generating and fault displacement potential.

However, since the demonstration of noncapability of the onshore faults will be very difficult at best and likely impossible in many instances, it is our judgment that the impact of these features on the proposed Skagit Nuclear Generating Station is unknown, could be severe, and will be extremely difficult to determine with the degree of certainty necessary. Consequently, we believe that an extensive and time-consuming field program would be needed to address these issues and even then, may not be successful because 1: there are few stratigraphic horizons of appropriate age and distribution in the region, and 2: the possibility that the onshore structures have, indeed, experienced recent movement.

Finally, prior to the Skagit application the geologic data base in this extremely complicated region of the country was extremely poor, relative to what is needed to arrive at a position with the level of confidence required by the Nuclear Regulatory Commission. In addition, this data base has been developed very slowly and with great difficulty and expense (one point with which I'm certain the applicant could agree). Consequently, the potential for significant new findings that could affect a nuclear facility license is relatively high.

It was with the consideration that no geologic structure, closer to the proposed site than the Devils' Mountain fault, need be considered to be capable by NRC criteria that we agreed to the proposed use of a bedrock acceleration value of 0.35g as the Safe Shutdown Earthquake. However, since we now believe that the site region may contain young faulting whose lengths, throws, distributions and ages are not known, there is not, in our judgment, assurance that the proposed acceleration values are sufficiently conservative to meet the requirements of the Nuclear Regulatory Commission.

Sincerely yours,


H. William Menard
Director

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COMMITTEE ON INTERIOR AND INSULAR AFFAIRS
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WASHINGTON, D.C. 20515

October 11, 1979

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The Honorable Joseph Hendrie
Chairman, Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Chairman:

I have recently received an unusually large number of complaints about the adequacy of the seismological review of the Skagit project. In order to minimize the likelihood of costly and time consuming appeals based on an inadequate seismological review, I think it important that the Commission take immediate action to determine whether this review did in fact reflect the views of a broad range of seismological expertise, whether the review was comprehensive, and whether it took full account of uncertainties in the seismological data.

Thank you for your attention to this matter.

Sincerely,

M. K. Udall
MORRIS K. UDALL
Chairman

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