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JUN 13 1986

Mr. Vincent J. Murphy, Project Manager
Weston Geophysical Corporation
P.O. Box 551
Westboro, MA 01581

Dear Mr. Murphy:

I have received Weston's draft report, "Survey of Geophysical Techniques for Site Characterization in Basalt, Salt and Tuff."

I hoped, I would have received a complete draft report. I do not believe you can finalize this report until I review the section on magnetic methods.

In general, I would like to say that a good effort was spent on discussions of the seismic reflection, electrical, electromagnetic and borehole geophysical methods. The other methods were briefly discussed in the report.

I consider the report as it stands now, covers Subtask 1.1 of Task 1 of the contract Statement of Work (SOW). The other subtasks under Task 1 of the contract SOW have to be addressed fully. For example, in Chapters 2, 3, 4, and 5, modifications to the geophysical methods which would render these methods more useful in site characterization were not discussed under each method, such discussions are needed.

The following are general comments which you should take into consideration in addressing Chapters 2, 3, 4 and 5 for each geophysical method:

1. If possible and to the best of your judgement, provide recommendations on:

   a. Source of energy to be used (if applicable),
   b. Receiver configurations (if applicable),
   c. Type of corrections to be applied to the data,
   d. Type of processing and parameters to be used for rendering the data useable for interpretation,
   e. Type of resolution expected,
   f. Modeling, and
   g. Pitfalls to be avoided.

2. Any modification to each method which would render it applicable for site characterization.

Specific comments are:

1. Add an executive summary to the report.

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2. In Section 1.2, Subsection 1.2.2: It is stated that, it is possible to resolve bed thicknesses of the order of 1/6 of the minimum wave length of the seismic pulse. I believe it is 1/4 not 1/6.

3. In Figure 1.9B, would you expect any reflection from the lower fracture zone? How this would complicate your interpretation if it exists?

4. Expand on the reasons for the differences in amplitude between the tube waves generated from the two fracture zones.

5. Figure 10.B needs more clarification. Please, indicate by an arrow where the pipe is located.

6. Section 1.9, Subsection 1.9.1: It is indicated that Self-Potential and Telluric methods are not reviewed because they have little or no application to site characterization. The report BMI-OCRD-22, June 1985, indicates that the Telluric method is applicable and could be used for discontinuity locations. Please comment.

7. Section 2.2: Is the source of Figure 2.5, RHO-BWI-ST-14 or RHO-BWI-ST-4?

8. Section 2.3: Discuss the long refraction line shot by the USGS.

9. The reflection coefficients (p. 2.2) are in the range of 0.1-0.3 not 0.1-0.2.

10. The reflection coefficients mentioned in Figure 2.5 do not coincide with the synthetic seismogram in Figure 2.6.

11. I think an explanation as to why refraction results do no agree very well with structures inferred from borehole logs will help the reader to understand the reasons.

12. Discuss remote sensing method.

13. The reference, Adam, A, et al, 1986. Physics of the Earth Planetary Interiors, 42(3), 165 - 177, may be of interest to you.

Finally, I recommend that the report should go through quality assurance procedure.

After I receive your draft report, I may have more comments to send you.

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Action taken by this letter is considered to be within the scope of the current contract (NRC-02-84-001). No changes to costs or delivery of contracted products is authorized. Please notify me immediately if you believe this letter would result in a change to cost or delivery of contract product.

ORIGINAL SIGNED BY

Abou-Bakr Ibrahim, Project Officer
Geology-Geophysics Section
Geotechnical Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

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DESCRIPTION (Must Be Unclassified)

Survey of Geophysical Techniques for Site Characterization in Basalt, Salt and Tuff

ENCLOSURES

Ticket closed out by letter to Mr. Vincent Murphy on June 13, 1986

REFERRED TO	DATE	RECEIVED BY	DATE
PJustus	5/9	[illegible]	5/1
Albrahim			

REMARKS

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