

ITASCA TOPICAL REPORTS

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MAR 28 1988

Mr. Roger Hart
Itasca Consulting Group
P.O. Box 14806
Minneapolis, Minnesota 55414

Dear Mr. Hart:

ITASCA should perform the following work under task order 001 and 006 of the contract NRC-02-85-002 in support of the Geotechnical Engineering / Design section's ongoing work by the staff. These activities involve the preparation of topical reports. ITASCA should be prepared to discuss the topical reports during meetings to be held in Rockville, Md. at NRC headquarters after outlines and preliminary work are completed. ITASCA should prepare a draft topical report for the following topics.

- 1) Analyses of alternative waste emplacement concepts on performance of drifts and boreholes. This topical report should consider the alternative of horizontal versus vertical emplacement for waste canisters for a repository at Yucca Mountain. Analyses should be performed as the basis for conclusions in the topical report. This effort should take no more than 6 person weeks.
- 2) Sensitivity study of variations of heat loading for a repository at Yucca Mountain. This topical report should discuss the impacts on stability of the openings during operation/retrieval and the effects of varying the areal heat loading on stability. This effort should take no more than 6 person weeks and should be backed up by analyses.
- 3) Stability of openings during retrieval. This topical report should discuss the stability of openings for retrieval for both horizontal and vertical emplacement. Analyses should also be performed to investigate the effects of heating / cooling a repository and the effect on retrieval. This effort should take no more than 6 person weeks.
- 4) Emplacement Borehole Liner Stability analyses. This topical report should analyse the effects of rock movement and heat on the stability of the borehole liner and the subsequent effect on maintaining the retrieval option. In addition the work performed on this topical report should provide the basis for review of DOE's similar analyses. This effort should take no more than 6 person weeks.
- 5) Disturbed zone. This topical report should provide the basis for review of the disturbed zone proposed by DOE for a potential repository at Yucca Mountain from the thermomechanical point of view. The NRC GTP on the Disturbed zone should be used as a basis for the topical report. Analyses should be performed to back up any conclusions made in the topical report. This effort should take no more than 6 person weeks.

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6) Borehole and Shaft Seals in the Unsaturated Zone. This topical report should discuss the unique needs for borehole and shaft seals in the unsaturated zone. The NRC GTP on borehole and shaft seals should be used as a guide for this topical report. In addition, current concepts of free drainage proposed in the CDSCP by DOE should also be covered in the topical report. This effort should take no more than 6 person weeks.

7) Material selection for sealing materials for a repository at Yucca Mountain. This topical report should discuss the methodology, basis and testing needs for material selection for seals for a repository in the unsaturated zone. This effort should take no more than 4 person weeks.

8) Performance confirmation test needs for seals. This topical report should discuss what tests are needed during the performance confirmation period for seals in the unsaturated zone. This effort should take no more than 4 person weeks.

9) Extrapolation of short term test data for long term seal performance. This topical report should discuss how data which will be obtained during a relatively short period of time may be extrapolated for the post closure period of performance. This effort should take no more than 4 person weeks.

10) Exploratory shaft facility design. This topical report should discuss construction monitoring that should take place during ESF construction, construction specifications, and evaluation of adverse impacts of construction on repository construction. This effort should take no more than 6 person weeks.

11) Discontinuum vs. Continuum analyses for NNWSI. This topical report should investigate the use of continuum and discontinuum analyses for NNWSI. The document that was prepared for BWIP should be used as a basis for this topical report. This effort should take no more than 4 person weeks.

Other work to be performed by ITASCA is as follows:

1) Document review of the MUDEC code and the applicability of using an implicit thermal calculation scheme. This review should take no more than 10 person days.

2) Review of the draft of the NRC GTP on Anticipated and Unanticipated Events and processes. This review should take no more than 5 person days.

3) Prior approval was given for a senior consultant to attend a QA review meeting for the CDSCP draft comments in Rockville, Md. held in late February, 1988.

4) Two senior engineers should attend a one day workshop on the CDSCP draft comments which will be held in Washington, D.C. in late March, 1988.

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The action taken by this letter is considered to be within the scope of the current contract NRC-02-85-002. No changes to costs or delivery of contracted products are authorized. Please notify me immediately if you believe this letter would result in changes to costs or delivery of contracted products. I can be reached on (301) 492-0534.

Sincerely,

1/81

David H. Tiktinsky
Technical Review Branch
Division of High-Level Waste Management
Office of Nuclear Material Safety
and Safeguards

cc: E. Knox, NRC

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MAR 28 1988

OFFICIAL CONCURRENCE AND DISTRIBUTION RECORD

LETTER TO: Mr. Roger Hart
Itasca Consulting Group
P.O. Box 14806 Minneapolis, Minnesota 55414

FROM: David Tiktinsky
Technical Review Branch Division of High-Level Waste
Management Office of Nuclear Material Safety
and Safeguards

SUBJECT: ITASCA Assignments

DATE: March 17, 1988

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