APR 11 1994

MEMORANDUM FOR: Mike Bell, Branch Chief
                 Engineering and Geosciences Branch/DWM

THRU: Keith McConnell
                 Geosciences and Geotechnical Engineering Section
                 Engineering and Geosciences Branch/DWM

FROM: Abou-Bakr Ibrahim
                 Geosciences and Geotechnical Engineering Section
                 Engineering and Geosciences Branch/DWM

SUBJECT: TRIP REPORT OF THE VISIT WITH B. DAVIS, LLNL, TO DISCUSS
                 PROBLEMS WITH THE CODE SEISM1

    Attached please find the trip report for the above subject matter. I
attended the visit along with Renner Hofmann of the CNWRA. Also, during the
visit we talked with D. Bernreuter and J. Savy of LLNL. If you have any
questions please contact Bakr Ibrahim at 504-2523.

                          Abou-Bakr Ibrahim
                          Geosciences and Geotechnical Engineering Section
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Enclosure: As stated

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April 7, 1994

TRIP REPORT

SUBJECT: DISCUSS SEISM1 CODE WITH LLNL STAFF

DATE/PLACE: March 7, 1994, Livermore, California

AUTHOR: A. K. Ibrahim

PURPOSE OF MEETING: Visit Ms. Barbara Davis of LLNL and discuss problems with the code SEISM1.

BACKGROUND: The Center for Nuclear Waste Repository Analysis (CNWRA) acquired the program SEISM1 from LLNL. The program was developed by LLNL staff for NRR to estimate the seismic hazard for nuclear power plant sites east of the Rocky Mountains. The CNWRA has tried to modify the program to make it workable for the Yucca Mountain site. Specifically, some functions of SEISM1 had to be modified to be compatible with the software and hardware available at the CNWRA. After the necessary modifications were made to the SEISM1 code, attenuation functions for the western US were incorporated in the code. A trial run was made, but the resultant output did not seem reasonable. Several attempts have been made by the Center to discover the cause of the problems, but no solution has been found. As a result, I suggested that while we are in San Francisco attending the NWTRB meeting, Mr. R. Hofmann and I visit Ms. Barbara Davis of LLNL to discuss the problem and try to find a solution.

SUMMARY OF PERTINENT POINTS:

o Based on the information provided by the Center to Ms. Davis, she could not pin point the cause of the problem.

o Ms. Davis suggested that the input parameters used by the Center may have been inappropriate for this particular run and as a result the output was incorrect.

o Ms. Davis provided the Center with a diskette and recommended that it be run and compare the outputs with some plots she provided with the diskette.

o Mr. Don Bernreuter, former staff member of LLNL, indicated that due to modifications of expert attenuation functions, large values of acceleration may be expected in the output.

o Dr. J. Savy, Ms. Davis's supervisor, suggested that LLNL staff, if provided with a contract, are willing to support the Center in implementing SEISM1 code for western US sites.

CONCLUSIONS:

o In my opinion, the meeting was enlightening and provided some insights and answers to some of the Center's problems with SEISM1.

PROBLEMS: Since SEISM1 code does not have official documentation or a QA pedigree, the Center must to go through the process of qualifying the code. How much effort this process will require is not known at this time.

RECOMMENDATIONS:

o Follow the progress on the development of SEISM1 code and provide as much support as possible to ensure a workable version of SEISM1 code is available to estimate the seismic hazard at Yucca Mountain.

o Examine if the Center output using Ms. Davis's diskette is in agreement with the plot provided with the diskette.

o The Center should decide if they need LLNL staff support.

SIGNIFICANCE TO THE HIGH-LEVEL WASTE PROGRAM: The code SEISM1 can be used by the Center and staff to estimate the seismic hazard at Yucca Mountain. It will provide the Center and staff with the capabilities to perform sensitivity analyses and examine the input parameters that have the most contribution to the hazard estimates. The code can also be included as a part of the total system performance code developed by the Center to evaluate repository performance.