

DEC 31 1986

426.1/PB/86/12/31 ?

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MEMORANDUM FOR: John D. Evans, Director
 Planning and Program Analysis Staff, NMSS

FROM: Joseph O. Bunting, Chief
 Policy and Program Control Branch
 Division of Waste Management, NMSS

SUBJECT: REQUEST FOR PROCUREMENT ACTION FOR FIN B-6985
 (NRC-02-81-026)

The Waste Management Review Group (WMRG) has reviewed the Statement of Work (SOW) and enclosed Project Descriptive Summary (PDS) of Contract NRC-02-81-026 (FIN B-6985), entitled "Benchmarking of Computer Codes and Licensing Assistance" for the extension of time and funds to allow the contractor to complete projects currently underway. Approval of the funded extension was obtained through telephone concurrence by December 24, 1986. In addition, the Waste Management branches have found the extension to complete on-going tasks acceptable. Minor corrections to the PDS have been made in response to their comments. The Division of Waste Management has allocated \$264,000 for completion of the work, which, with available carryover funds will be sufficient.

Please initiate a request for procurement action to extend the period of performance to July 1987 and provide additional funding of \$264,000.

15/
for *J. J. Surmeier*

Joseph O. Bunting, Chief
 Policy and Program Control Branch
 Division of Waste Management, NMSS

Enclosure:
 PDS

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work continued in all areas and technology transfer task was initiated. FY87 funding will allow completion of benchmarking of waste package codes and repository design codes under Tasks 4 and 5 and preparation of master tapes of the codes as verified and annotated user's manuals under the technology transfer task (Task 6). Interpretation of the results of the codes exercised by the contractor is the responsibility of the NMSS staff.

USER NEED:

This project is necessary to provide NRC with an independent review of model and computer code reliability, accuracy and applicability. The project will also provide the skill and manpower required to assist in reviewing pre-licensing documents in a timely manner. If this study is not undertaken, the NRC would be remiss by not fully understanding the limitations of a major licensing tool.

PRODUCTS:

The following reports are being provided for repository siting, radiological assessment, repository design, waste packages, and overall systems: model summary report, report on parameters and variables used in the models, benchmark problems, and benchmark problem solutions, analysis, and results. Examples of reports already published include: "A Summary of Computer Codes for Radiological Assessment" (NUREG/CR-3209), "A Summary of Repository Design Models" (NUREG/CR-3450), "Benchmark Problems for Repository Siting Models" (NUREG/CR-3097), and "Parameters and Variables Appearing in Repository Siting Models" (NUREG/CR-3066). In addition, master tapes containing the versions of computer codes as tested and the inputs for test problems and annotated user's manuals will be provided to the NRC for its use in independently assessing DOE's analyses.

CONTINUATION OF PROJECTS:

This project is not a continuation of any previous project.

PRIOR AND CURRENT RELATED NRC PROJECTS:

Other work sponsored by NRC primarily involves code development rather than benchmarking. Computer codes were being developed and verified at SNLA (FIN A-1166). This work is now being done under FIN A-1158. If modifications appear to be necessary as a result of work under FIN B-6985 they will be incorporated into SNLA's codes under their code maintenance task.

When the TOUGH code was redefined and verified at the University of California at Berkeley (FIN B-3109), two of the problems used for verification were taken from the FIN B-6985 benchmark problem set. Under FIN A-1166, (successor to FIN A-1192), "Development of a Methodology for Risk Assessment of Nuclear Waste Isolation in Alternate Geologic Media" codes are being developed. These were assessed under FIN B-6694, "Waste Management Technical Review." This work is not being duplicated.

PROJECT DESCRIPTIVE SUMMARY

OFFICE: NMSS

DATE: 86/12/30
PPSAS NO.: 5134
PRIORITY: 1

PROJECT TITLE: Benchmarking for Computer Codes and Licensing Assistance

FIN NO.: B6985

TYPE OF CONTRACT: Competitive

CONTRACTOR: CorSTAR, Research, Inc. (formerly Teknekron Research, Inc.)

ESTIMATED PERIOD OF PERFORMANCE: 9/15/81 - 7/31/87

PROJECT MANAGER: Pauline P. Brooks

<u>FY BUDGET (\$K):</u>	<u>FY82</u>	<u>FY83</u>	<u>FY84</u>	<u>FY85</u>	<u>FY86</u>	<u>FY87</u>
<u>PRIOR:</u>	1002.8	600	750	0	0	0
<u>OPERATING:</u>	0	0	0	400	80	264
<u>FOLLOW-ON:</u>	0	0	0	0	0	0

SCOPE OF WORK:

The contractor will provide independent evaluation of models and codes beginning with those involved in the NRC assessment of DOE pre-licensing documents, (e.g., environmental assessments). The models and codes also include those which DOE proposes to use in preparing their license application, and those which will be exercised by the NRC in evaluating DOE's submissions. The code evaluation will include the quality of the physical models which drive the code, and the limitations of both these physical models and the mathematical techniques by which the code uses the models to predict long-term repository performance.

The contractor will establish a method for performing the code evaluations, including development of benchmark problems with known solutions, learn to operate appropriate codes, and then conduct the benchmarking evaluations. Following their successful evaluation, the codes may be transferred to the NRC (at the NRC's option) for use by the staff. In FY84 major emphasis was on evaluating waste package codes. This work was continued in FY85 and work on evaluating repository design codes and waste package codes was begun. In FY86,

*The Benchmarking contract is scheduled to end in CY86, following the DOE schedule for SCR. Work may continue beyond this date as an option, but at a greatly reduced cost. The total approved funding for this contract is \$3,750 K. The budgeted funding by year has been increased in early years to reduce funding requirements after 1982.

PROJECT DESCRIPTIVE SUMMARY

DATE: 86/12/30

JUSTIFICATION FOR SOURCE SELECTED AND DISCUSSION OF ALTERNATIVES:

N/A This is a competitive contract.

INTERAGENCY COORDINATION AND INTEREST

See memorandum from Hubert J. Miller to Donna Mattson dated December 19, 1985.

NRC OFFICE/REGION COORDINATION:

This project will continue to be coordinated with the Office of Research.

*Rush: H. [unclear] by P. Brooks
to E. Davis
12/31/86*

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OFFICIAL CONCURRENCE AND DISTRIBUTION RECORD

MEMORANDUM FOR: John D. Evans, Director
PPAS, NMSS

FROM: Joseph O. Bunting, Chief
WMPC, DWM

SUBJECT: REQUEST FOR PROCUREMENT ACTION FOR FIN B-6985
(NRC-02-81-026)

DATE: DEC 31 1986

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CONCURRENCES

ORGANIZATION/CONCUREE	INITIALS	DATE CONCURRED
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