

PROPOSED TASKS FOR
DEVELOPMENT OF A SELF-CONTAINED CURRICULUM FOR THE TOUGH CODE

TASK 1:

Finalize a version of the TOUGH computer code and document. This version of the code should be similar to the code described in the seminar presented to the Nuclear Regulatory Commission in August, 1983. Additional capabilities should include: a) non-linear material properties, b) a scaling factor to adjust the units, and c) an extended library of capillary functions.

Time Schedule

September 1984 - December 1, 1984 -- Finalize version
December 1984 - January 1985 -- Rework final version to be consistent with sample problems developed

TASK 2:

Assist Argonne Software Center in resolving the proprietary claim to the Harwell Subroutine Library MA28 package. This package is in the TOUGH computer code.

Time Schedule

September 1984 - November 31, 1984

TASK 3:

Develop sample problems for the purposes of illustrating capabilities of the TOUGH code. Provide a variety of problems from simple to complex. Consider problems which are meaningful and relevant to the intended use of the code. Include problems to demonstrate the following: 1) 1-D infiltration problem, 2) 2-D infiltration problem, 3) flow to a geothermal well, 4) radial heat flow problem around a canister for purposes of demonstration of code capability for two-component, two-phase fluid and heat flow, 5) similar to problem 4 only for fractured media, 6) demonstration of code capability for two-component, two-phase fluid and heat flow using 2-D stratigraphy from a real site, and 7) 3-D infiltration and heat problem, if feasible.

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Time Schedule

September 1984 - February 28, 1985 -- Complete first four problems.
-- Detailed approach for problems 5 - 7

March 15, 1985 -- Status meeting to discuss problems 5 - 7.

TASK 4:

Draft a self-contained document for the TOUGH code. Include the following topics: 1) physical effects modeled by TOUGH, 2) governing equations, 3) mathematical and numerical methods, 4) architecture of code, 5) preparation of input data, 6) output of code, 7) description of sample problems.

All work performed under this task shall meet the standards of NUREG-0856.

Time Schedule

June 1985 - August 1985

TASK 5:

Revise draft self-contained document incorporating and addressing comments from Sandia National Laboratories and the NRC. Prepare final camera-ready document for publication by the NRC.

Time Schedule

June 1985 - August 1985

TASK 6:

Assist in verification and validation efforts of the TOUGH code. This would include furnishing appropriate analytical problems for purposes of verifying the code and supplying field data, laboratory experiments, etc. for use in validation activities.

NOTE: Tasks 1 - 5 will be funded with a ceiling price of \$80,000 from FIN A-1158.

Task 6 will be funded in FY 85 from FIN A-1166.

Monthly progress reports will be provided to Sandia National Laboratories by the 1st day of the following month.

MAJOR MILESTONES FOR FIN A-1158

(Updated 8/6/84)

Task 1: Repository Site Definition

MILESTONE DESCRIPTION	SCHEDULED START	SCHEDULED COMPLETION	ACTUAL COMPLETION	ESTIMATED COST
RSD for TUFF (1984)	3/84	Continued '85	-	\$240K
RSD for TUFF Continued (1985)	-	2/85	-	35K
SCOPING REPORT - RSD FOR GRANITE	1985	1985	-	10K

Task 2: Technology Transfer

1984

SWIFT II Seminar	11/83	11/83	11/83	15K
SWIFT II Self-Teaching Curriculum	12/83	6/84	8/84	60K

1985

TOUGH Self-Contained Curriculum	9/84	5/85	-	100K (carryover from FY 84)
Scenario Seminar	To Be Scheduled			22K (20K carryover from FY 84)
Scenario Self-Teaching Curriculum	To Be Scheduled			53K (50K carryover from FY 84)
NWFT/DVM Generalized Network and Dual Porosity Self-Teaching Curriculum (Suggested)	To Be Scheduled			70K

MILESTONE DESCRIPTION	SCHEDULED START	SCHEDULED COMPLETION	ACTUAL COMPLETION	ESTIMATED COST
NWFT/DVM Generalized Network and Dual-Porosity Seminar		To Be Scheduled		30K

Task 3: Short-Term Technical Assistance

<u>1984</u>	As Needed			79K
<u>1985</u>	As Needed			40K

FACSIMILE SERVICE REQUEST

A-1158

Date: December 10, 1984

Message to: Dr. Richard Codell

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This message consists of 4 pages
(excluding cover sheet)