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MASTER

DECOMMISSIONING HANDBOOK

FIRST QUARTERLY PROGRESS REPORT

REPORT PERIOD: MAY 1 - AUGUST 27, 1978

Prepared for the

U.S. DEPARTMENT OF ENERGY

Under Contract No. EP-78-02-4775

by

Nuclear Energy Services, Inc.

Danbury, Connecticut 06810

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PROGRAM MANAGEMENT SUMMARY

Division of Environmental Control Technology

Program Title:

DOE Decommissioning Handbook

Reporting Date:

9-5-78

Contractor: Nuclear Energy Services

Reporting Period: May 1 - August 27, 1978

Contract Number: EP-78-C-02-4775

Anticipated Expenditures to Date:

Contract Amount: \$162,230.

Actual Expenditures to Date: \$52,200.

Objectives for this reporting period:

To develop data on facilities and equipment at typical DOE owned/operated sites, and contact individuals and organizations with decommissioning experience to explore state-of-the-art equipment and methods for decontamination and dismantling.

Accomplishments and key findings for this reporting period:

NES has scheduled meeting in September at the DOE Richland office to meet with other contractors and discuss D&D methods and equipment available. NES will also tour the Hanford facilities to review unique characteristics which may require special treatment or handling. NES has schedule a tour of the West Valley, NY Reprocessing Plant. During this report period, NES prepared drafts of handbook chapters which will be submitted to DOE by September 30, 1978.

Issues to be resolved and target date for resolution:

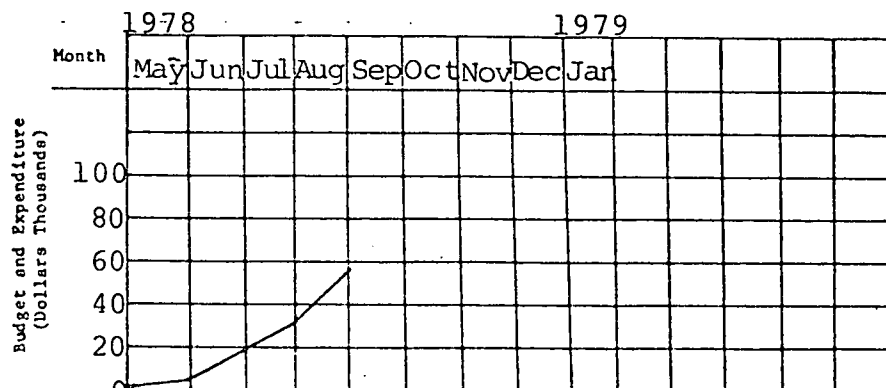
Results of discussions above will be factored into the draft handbook chapters on metal cutting equipment, concrete demolition methods and decontamination processes.

Major action items and responsible party for next report period:

NES will submit drafts of four handbook chapters to DOE by September 30, 1978.

1. Estimation of radioactive inventory
2. Removal of radioactive metals
3. Removal of radioactive concrete
4. Cost estimating procedure

Budget and expenditures:



Task 100 - Introduction (Handbook Chapter 1)

Scope

The major objectives of the Decommissioning Handbook and the unique characteristics to be considered in a typical decommissioning program will be defined. All facility characteristics and pertinent parameters such as operating history, materials of construction, plant arrangements and geometry will be defined. The Handbook chapter will identify the users of the guide, and will provide general instructions for application of the principles and methodology in a decommissioning program.

Status

During the first quarter of this program, NES established sources of information on decommissioning programs for power reactors, test reactors and reprocessing plants. NES met with Dr. A. Kluk and Mr. R. Ramsey to discuss the program objectives and to identify individuals who may be contacted for site specific information. A visit to the DOE Richland, WA field office is planned for September, 1978 to meet with other DOE D&D contractors to discuss D&D methods and equipment. A tour of the Hanford facilities is also planned to review typical facility characteristics that may pose unique decommissioning problems. This tour will include a discussion with the Hanford staff of state-of-the-art methods for decontamination and dismantling. A second tour is planned of the Nuclear Fuel Services West Valley Reprocessing plant for review of the decontamination problems associated with the mechanical and chemical reprocessing systems.

Preparation of the Introduction chapter of the Handbook is scheduled for February, 1979.

Task 101 - Description of Decommissioning Options (Handbook Chapter 2)

Scope

To provide definitions of the three primary decommissioning alternatives and combinations thereof. The typical application of each mode to each facility type will be defined by major system.

Status

No work was performed on this task. Preparation of the Handbook Chapter is scheduled for December, 1978.

Task 102 - Selection of Decommissioning Option
(Handbook Chapter 3)

Scope

To identify a sequential procedure which will define the factors to be considered in selection of a decommissioning mode for a facility. A general procedure will be provided for the development of preliminary radiation data important to activity complexity and post-decommissioning duration. Relative cost information will be developed to permit accomplishment of a cost benefit analysis as part of the selection process.

Status

No work was performed on this task. Preparation of the Handbook chapter is scheduled for October, 1978.

Task 103 - Estimation of Radioactive Inventory
(Handbook Chapter 4)

Scope

To develop a guide for the calculation of neutron activation by-product inventory, estimation of system contamination, calculation of surface dose levels and estimation of work area dose levels. The guide will provide calculational techniques as well as direct measurement methods.

Status

The draft of this Handbook Chapter is being reviewed at NES for technical content and Handbook format. The guide will provide methods for estimating neutron activation in both known composition materials (ferrous and non-ferrous metals with material certifications) and unknown composition materials (concrete or other materials without certifications).

A review and comment draft of this chapter will be submitted to DOE by September 30, 1978.

Task 104 - Decontamination (Handbook Chapter 5)

Scope

To summarize the state-of-the-art capabilities of decontamination processes and to show potential applications for each method. Both non-destructive and destructive methods will be considered. Expected decontamination factors (dF's) will be reported based on actual experience where possible.

Status

NES contacted J. Graves, Project Manager at Commonwealth Edison Company for the Dresden Unit 1 decontamination program, to discuss primary objectives and process expectations. Additional discussions will be held with Dow Chemical Company for details of the process and application to other facility types.

NES also contacted Mr. Steve McKay, Project Manager at Virginia Electric Power Company for replacement of the steam generators. Mr. McKay provided valuable guidance on decontamination measures to be used and on costs for each phase of the replacement program.

Task 105 - Removal of Radioactive Metals (Handbook Chapter 6)

Scope

To identify the general approach and procedures available for the segmenting and handling of highly radioactive metals. The state-of-the-art equipment and techniques available to segment metals will be identified as a function of material composition, thickness, and configuration; cutting speeds; and special equipment and consumables.

Status

A draft of this Handbook Chapter is being reviewed at NES for scope of cutting methods, applicability to facility types and Handbook format. A meeting is scheduled at Hanford on September 13, 1978 with Mr. Kussler to discuss cutting methods and capabilities. A meeting is also scheduled with Mr. Dave Warren of Retech to discuss the capabilities of the arc saw. Results of these discussions will be included in this Handbook Chapter.

A review and comment draft of this chapter will be submitted to DOE by September 30, 1978.

Task 106 - Removal of Radioactive Concrete and Structures (Handbook Chapter 7)

Scope

To develop the general approach and procedures for fracturing segmenting and rebar-cutting of activated concrete. The techniques will include rockjacking, controlled blasting and torch cutting, and will describe special equipment and consumables, contamination control and personnel protection.

Status

Initial discussions were held with equipment vendors and considerable descriptive information was provided NES for conventional demolition methods (rock jacking, pneumatic hammers, etc.). The meeting scheduled at Hanford on September 13, 1978 will include discussion of concrete demolition methods.

A review and comment draft of this chapter will be submitted to DOE by October 30, 1978.

Task 107 - Removal of Contaminated Systems (Handbook Chapter 8)

Scope

To identify state-of-the-art equipment and procedures for manual and remote cutting and removal of contaminated systems. The guide will include cutting rates as a function of material and size, special equipment and consumables, and contamination control. Optimum length and component sizes for handling and shipping will also be tabulated.

Status

This task has recently been initiated and no significant progress can be reported.

Task 108 - Disposition of Waste (Handbook Chapter 9)

Scope

To identify methods for estimation of volumes and compositions of waste, and methods of disposition. The task will include non-radioactive liquids and solids, low-level radioactive liquids and solids, and high specific activity materials.

Status

No work was performed on this task during the first quarter.

Task 109 - Environmental Impact Assessments (Handbook Chapter 10)

Scope

To identify the major environmental effects of concern, and to assess the impacts relative to each decommissioning alternative.

Status

No work was performed on this task during the first quarter.

Task 110 - Cost Estimating Procedure
(Handbook Chapter 11)

Scope

To develop a guide for estimating the cost of decommissioning activities of all major decommissioning alternatives. The guide will identify the elements comprising each cost including labor, materials and equipment, for each unit cost factor of activity dependent and period dependent costs.

Status

The unit cost factors used in the AIF Study (AIF-NESP-009) were revised to 1978 cost data based on the Bureau of Labor Statistics labor and material prices. Unit cost factors were modified to account for activities pertinent to other reactor and facility types. Representative cost factors such as vessel and internals cutting will be explicitly identified in detail with all cost elements clearly shown.

A review and comment draft of this Chapter will be submitted to DOE by September 30, 1978.



NUCLEAR ENERGY SERVICES, INC.

NES DIVISION

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September 6, 1978
Reference No. 5305-4

Dr. Anthony F. Kluk
Division of Environmental Control
Technology
U.S. Department of Energy
Washington, DC 20545

Subject: DOE Handbook First Quarterly
Progress Report

Dear Tony:

Enclosed is the First Quarterly Progress Report for the Decommissioning Handbook project. The report provides the scope and status of each task for the work completed during the report period of May through August, 1978. I have included the DOE Program Management Summary which shows major accomplishments and actual expenditures during the period.

If you have any questions, please call me.

Very truly yours,

NUCLEAR ENERGY SERVICES, INC.
NES Division

T. S. LaGuardia

T. S. LaGuardia, P.E.
Mgr. Engineering Support Services

TSL/jam

Enclosure

cc: H. N. Miller - COO

bcc: W. Manion



Department of Energy
Chicago Operations Office
9800 South Cass Avenue
Argonne, Illinois 60439

September 11, 1978



Arthur A. Churm, Director
Patent Division, CH

CONTRACT EP-78-C-02-4775, NUCLEAR ENERGY SERVICES, INC.

We are transmitting copies of documents submitted in accordance with
our requirements under the subject contract.

Harold N. Miller, Director
Contracts Management Office

CMO: JRB

Enclosures:

Quarterly Progress Report No. COO-4775-1 (1)

cc: ~~CH PATENT DIVISION~~
Technical Information Center, Oak Ridge, Tenn.
(THRU CH PATENT DIVISION), w/encl. (1)

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