1371 General

PROGRAM AND BUDGET PROPOSAL

OPERATING COSTS AND EQUIPMENT

Division of Nuclear Fuel Cycle and Production

189c No. LS15

DATE May, 1976

BUDGET ACTIVITY NO. CK-09-05-00-0

SITE Los Alamos, NM

3. PROJECT TITLE LASL Radioactive Solid Waste Disposal Site Studies

FREQUENCY OF PROGRESS REPORTING
[ ] 1. Monthly [ ] 3. Semi Annual
[ ] 2. Quarterly [X] 4. Annual

5. PERSON IN CHARGE L. J. Johnson

PRINCIPAL INVESTIGATOR(S) Merlin L. Wheeler, M. A. Rogers

CONTRACTOR Los Alamos Scientific Laboratory

10. CONTRACT NO. W-7405-ENG-36

15. LEAD BRANCH WO

WORKING LOCATION Los Alamos, NM

12. WASTE APPLICATION
~~AEC~~ ERDA [XX]
Industry [ ]

18. PROJECT TERM
1. Open [XX]
2. Limited [ ]
From _____ (date)
To _____ (date)
Funding Termination _____ (date)
Reference:

TYPE
1. Industry [ ]
~~AEC~~ Lab ERDA [X]
3. Educational [ ]
4. Government [ ]
5. Other Non-Profit [ ]

13. TYPE OF WASTE
1. High-Level [ ]
2. Solid-Transuranium [XX]
3. Solid-Fission Product [ ]
4. Tritium [ ]
5. Gaseous or Airborne [ ]
6. Other [ ]

	July 1975 thru June 1976	July 1976 thru September 1976	October 1976 thru September 1977	FY 1978
MAN YEARS				
Scientific	0.75	0.2	1.5	1.5
Other Direct	0.75	0.2	3.0	3.0
Total Direct	1.50	0.4	4.5	4.5
COSTS				
a) Direct Salaries	28.5	7.8	85.7	93.0
b) Materials & Services	12.6	3.1	38.9	38.0
c) Subcontracts	60.0	15.0	30.0	30.0
Total Direct Costs	101.1	25.9	154.6	161.0
d) Indirect Costs	14.9	4.1	45.4	49.0
e) Fee				
Total Costs (In Thousands)	116.0	30.0	200.0	210.0
A. Obligational Authority				
EQUIPMENT				
a) Budget Activity No.				
b) Equipment Obligations (In Thousands)	10.0	2.0	15.0	25.0

12114

KEY TO MILESTONE CHART

a. Literature and records search

b. Survey of regional and local geology and hydrology

c. On-site investigation of burial and storage areas

d. Compilation, interpretation of data, and review of results

e. Issue Topical report

f. Review and apply USGS and LASL recommendations - core-drillin

g. Establish preliminary criteria for monitoring

h. Initiate study to develop monitoring techniques to detect radionuclide movement after wastes are buried

i. Determine the efficiency of various monitoring techniques

j. Intensify monitoring net

k. Collection and analyses of data from monitoring net

l. Initiate seismic reflection profile study

26. PUBLICATIONS

"History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T): A Source Document." In final preparation.

"Environmental Geology in Development of Nuclear Energy." Talk for AAPG Section Mtg. in Albuquerque.

Planned

1. Detailed geologic map of area where burial sites are located.
2. Preliminary criteria for monitoring radioactive solid waste disposal sites.
3. Update of "History and Environmental Setting of LASL Near-Surface Land Disposal Facilities for Radioactive Wastes (Areas A, B, C, D, E, F, G, and T): A Source Document."

27. SCOPE

This program is structured to evaluate past and present monitoring practices at the LASL burial ground. The primary goals are determination of the adequacy of these monitoring practices to recognize or predict migration of radioisotopes from the burial grounds and development of recommendation for improvement of monitoring practices. The evaluation of monitoring practices is based upon: (1) field inspections which determined the physical characteristics of the burial facilities and the surface geohydrologic features of each burial site, and (2) literature and record searches plus interviews which determined the adequacy of past and present monitoring systems in relation to the geohydrology

28. RELATIONSHIP TO OTHER PROJECTS

Other programs funded by ERDA/NFCP at the LASL include:

1. TRU Contaminated Solid Waste Disposal and Storage, LS-11-1-7A
2. TRU Solid Waste Research and Development, LS-12-1-7A
3. TRU Solid Waste Reduction and Stabilization, LS-13-1-7A
4. Environmental Evaluation of TRU Waste Burial Sites and Their Ultimate Disposition, LS-14-1-7A

The present study utilizes data from and strongly interacts with all of the above listed efforts. A detailed knowledge of past burial practices and site location is critical to site evaluation. Therefore, the data accrued in the TRU Waste Disposal and Storage work is used for primary background information. The TRU Research and Development studies examine the various chemical and physical reactions among the stored radionuclides and the eventual changes which may take place in the waste matrix. These data provide a valuable projection base for proposed migration mechanisms. Further, the modified final waste forms resulting from treatment and volume reduction processes will undoubtedly react differently than present forms. The theoretical modeling studies will provide a second basis on which to plan the detailed testing and evaluations herein described.

Since personnel of all of these efforts continually interact at the LASL, a productive atmosphere is maintained for current interchange of ideas, concepts, and data. A versatile, multi-disciplined staff in the various programs continually

proximity to the pit bottom, intersect both the pit bottom and the access holes. After location of the fractures is established, techniques will be developed to determine if preferential movement of moisture or radionuclides takes place along the fractures.

Development of equipment for monitoring the presence of selected radionuclides in material surrounding vertical or horizontal access holes will begin. Commercial probes for detecting gamma radiation are available, but no systems have been developed for down-hole detection of low-level beta-gamma or alpha activity. The development of such instrumentation will involve an initial period of design and feasibility studies, followed by a period of construction, calibration and field testing.

Work will be initiated during the year to obtain data on moisture and radionuclide distributions around disposal sites other than Area G. The surface geologic mapping work will continue during the year. Data from mapping, from the gravity survey, from the core drilling project and from additional field studies will be assessed in respect to future development of LASL waste burial site monitoring systems. New monitoring points may be established as a result of these various projects. Extension of the core-drilling of horizontal access holes to other pits in Area G, or to pits in other LASL disposal sites, depends upon the data obtained from this project in FY 77.

A study to date groundwater using isotopic techniques will begin during FY 77. Data on the age of groundwater collected from wells, test holes, springs and seeps will expand the general knowledge of the Los Alamos aquifer. In particular this study will provide information on the rate of groundwater movement, the

32. EXPECTED RESULTS BEYOND FY 78

As the data from the expanded LASL monitoring are reviewed and collected, significantly more reliable predictions will be possible for movement of radionuclides away from a burial pit. These data may be related to other ERDA contractor sites for analogous predictions taking into account the differences in soil types, ground water, etc. The seismic reflection data will augment the immediate results of the LASL work to enable even longer range predictions.

33. DESCRIPTION AND JUSTIFICATION OF MAJOR PROCURMENT ITEMS(78)

Funds will be required for the production of the geologic map of disposal sites. Test drilling and geophysical studies will also be accomplished on a contract basis. A total cost of $30K is anticipated for these projects.

34. DESCRIPTION AND JUSTIFICATION OF MAJOR EQUIPMENT ITEMS

The following items are needed for the subsurface geologic mapping project and its required support instrumentation.

FY 78

Magnetometer - to perform a variety of geologic functions such as magnetic surveys, geologic mapping, and anomaly investigations - $7K.

Resistivity Meter - to obtain information on subsurface formations in soil and rock, location of water tables, and location of fault zones - $4K.

Multi-analyzer systems for monitoring development, $14K.

Total $25K