OAK RIDGE NATIONAL LABORATORY

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NUCLEAR DIVISION



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June 19, 1979

NRC Research and Technical Assistance Report

Mr. Gladstone S. Lewis, Jr.
Office of Nuclear Material Safety and Safeguards
Mail Stop SS-881
Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Lewis:

Enclosed is the monthly progress report (May 1 through May 31, 1979) on the NMSS project entitled, "Safeguards Analysis for Byproduct Materials and Small Quantities of SNM" (189 No. B6108).

Sincerely,

Rowena O. Chester

Technology Assessments Section

Howena O. Ches

Health and Safety Research Division

ROC/bv

enclosure

NRC Research and Tec... al Assistance Report

571 031

INTERIM REPORT

ACCESSION NO.	
ORNL/HASRD-40	

Contract Program or Project Title:

Safeguards Analysis for Byproduct Materials and Small Quantities of SNM

Subject of this Document:

Technical Progress

Type of Document:

Monthly Progress Report May 1979

Author(s), Affiliation and Address:

R. O. Chester, K. A. Kirkscey, and M. L. Randolph Health and Safety Research Division*

Date of Document:

June 19, 1979

NRC Individual and NRC Office or Division to Whom Inquiries Should be Addressed:

Mr. Gladstone S. Lewis, Jr. Office of Nuclear Material Safety and Safeguards

This document was prepared primarily for preliminary or internal use. It has not received full review and approval. Since there may be substantive changes, this document should not be considered final.

NRC Research and Technical Assistance Report

Prepared for
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555
Under Interagency Agreement DOE #40-549-75
NRC FIN No. B6108

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Oak Ridge, Tennessee 37830
operated by
Union Carbide Corporation
for the
U. S. Department of Energy

INTERIM REPORT

MONTHLY PROGRESS REPORT FOR May 1979

SAFEGUARDS ANALYSIS FOR BYPRODUCT MATERIALS AND SMALL QUANTITIES OF SNM (189 No. B6108)

> Health and Safety Research Division Oak Ridge National Laboratory

PRINCIPAL SCIENTIST: R. O. Chester

OBJECTIVE:

The principal objective of this analysis is to examine the question of whether the risk and consequences of theft or sabotage of facilities or vehicles containing small quantities of special nuclear materials (SNM), and byproduct materials are such that licensees should be required to adopt further measures to affeguard them. Phase one of this stud was an initial screening of these materials. From this screening, candidates for further consideration were identified. In the course of phase two, a detailed examination will be made of the conditions of possession, use, and shipment of the materials identified in phase one. The characterization of the conditions of possession, use, or shipment will identify any current conditions of the referenced materials that contribute significantly to either the protection from or vulnerability to potential attempts at the t, diversion, or sabotage.

TECHNICAL PROGRESS:

- Subtask la (Calculate health effects for materials identified in Phase 1)

 On schedule. Review of R. K. Mullen's manuscript on health effects completed.
- $\frac{\text{Subtask 1b}}{\text{Phase 1}} \text{ (Detailed description of delivery methods and conditions in }$

On schedule.

Subtask lc (Literature review of acceptability of involuntary risk of cancer induction)

First draft report prepared.

Subtask ld (Description of impact of meteorology on threat)

Consultation with local meteorology specialist initiated.

Subtask le (Table of Phase 1 material screening results)

On original schedule.

Subtask If (Project status reports, quarterly and final)

For this quarter, report is planned in light of June program review meeting by NRC-ORNL staff on topical and technical results.

Subtasks lg, 2a and 2b (Develop plan for obtaining information from sources/ licensees; clearance to contact sources/licensees; prepare list of sources/licensees)

These subtasks are closely interrelated. A preliminary plan and list of sources/licensees was prepared last fall but now needs to be updated and reviewed by NRC before clearances can be processed.

Subtasks 2c, 2d and 2e (Initiate contact with sources/licensees; prepare updated list of materials a be analyzed; and analyze possible threat of materials on updated li c)

These subtasks are not scheduled to start until later.

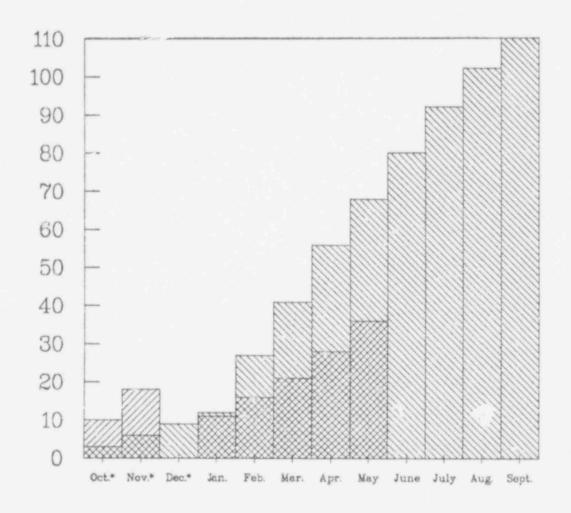
BUDGET AND TECHNICAL MANPOWER EXPENDITURES (FY 1979)

Reporting Period	Project Costs, \$	Technical Support, Man-months			
May 1979	8,064	1.4			
Total to Date	35,678	6.7			
Estimated Cost to Completion	74,322	10.1			

MONTHLY EXPENDITURES FY 1979 (\$1000)

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Monthly Projected:	3	3	3	3	15	14	15	12	12	12	10	8
Monthly Actual:	10*	8*	-18*	11	5	5	7	8				

Total Expenditures** (thousands of dollars)



1978

1979

Months FY 1979

571 036

^{**} Areas with shading sloping downward from left to right represent projected costs; areas with shading sloping upward represent actual costs.



^{*}Project was inadvertently overcharged for October and November. This error was corrected with a credit in December, bringing the total expenditures to 0 as of December 31.

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- 7. Laboratory Records - RC

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EXTERNAL DISTRIBUTION

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