

INTERIM REPORT

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Contract Program or Project Title: Safeguards Analysis for Byproduct Materials and Small Quantities of SNM

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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.

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Oak Ridge, Tennessee
operated by
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for the
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INTERIM REPORT

NRC Research and Technical
Assistance Report

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MONTHLY PROGRESS REPORT
FOR MAY 1980

SAFEGUARDS ANALYSIS FOR BYPRODUCT MATERIALS
AND SMALL QUANTITIES OF SNM

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 safeguard them. Phase 1 of this study was an initial screening of these materials. From this screening, candidates for further consideration were identified. In the course of Phase 2, a detailed examination will be made of the conditions of possession, use, and shipment of the materials identified in Phase 1. 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 theft, diversion, or sabotage.

TECHNICAL PROGRESS:

Subtask 1.a(1) Description of various possible delivery methods. This subtask has been completed.

Subtask 1.a(2) Description of adversary capabilities and resources. Work on this subtask is scheduled to start in November 1980.

Subtask 1.a(3) Analysis and description of the material conditions and processing operations necessary. This subtask has been completed. Typing and review at ORNL of formal documentation on this topic is nearing completion.

Subtask 1.a(4) Analysis and description of the impact of meteorology. This subtask has been completed.

Subtask 1.b Perform a literature review of the acceptable/unacceptable threshold level of consequences. This subtask has been completed. Related to this subtask is a current analysis of lifetime excess of cancer mortality from low levels of gamma radiation.

Subtask 1.c. Project status reports, monthly, interim and final. This series of reports is up-to-date.

Subtask 2.a. Update the material screening list of Phase 1 using the results of Task 1. This subtask is complete with ORNL review of formal documentation nearing completion.

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Subtask 2.b. Develop a plan to obtain the necessary information for characterizing the conditions of possession and shipment of potentially hazardous radionuclides. This subtask has been completed.

Subtask 2.c. Upon NRC approval or modification of the plan developed in subtask 2.b., gather the needed data from the docket files. Data gathered during visits by ORNL staff to NRC docket files is being assessed in preparation for finishing this subtask in June. An agenda and arrangements for another visit of M. L. Randolph and D. L. Anderson to NRC early in June have been developed.

Subtask 2.d. Prepare a list of industry contacts for formal survey and specify information to be collected.

Subtask 2.e. Upon NRC approval of contacts, obtain the information.

Subtask 2.f. Analyze results of information gathering effort and produce an updated list of hazardous radionuclides.

Discussions of these subtasks with George Gardes (NRC Project Officer) is planned for the June meeting there.

Subtasks 2.g. and 2.h. These subtasks are not scheduled to start until later.

Subtasks 3.a. and 3.b. These subtasks are not scheduled to start until later.

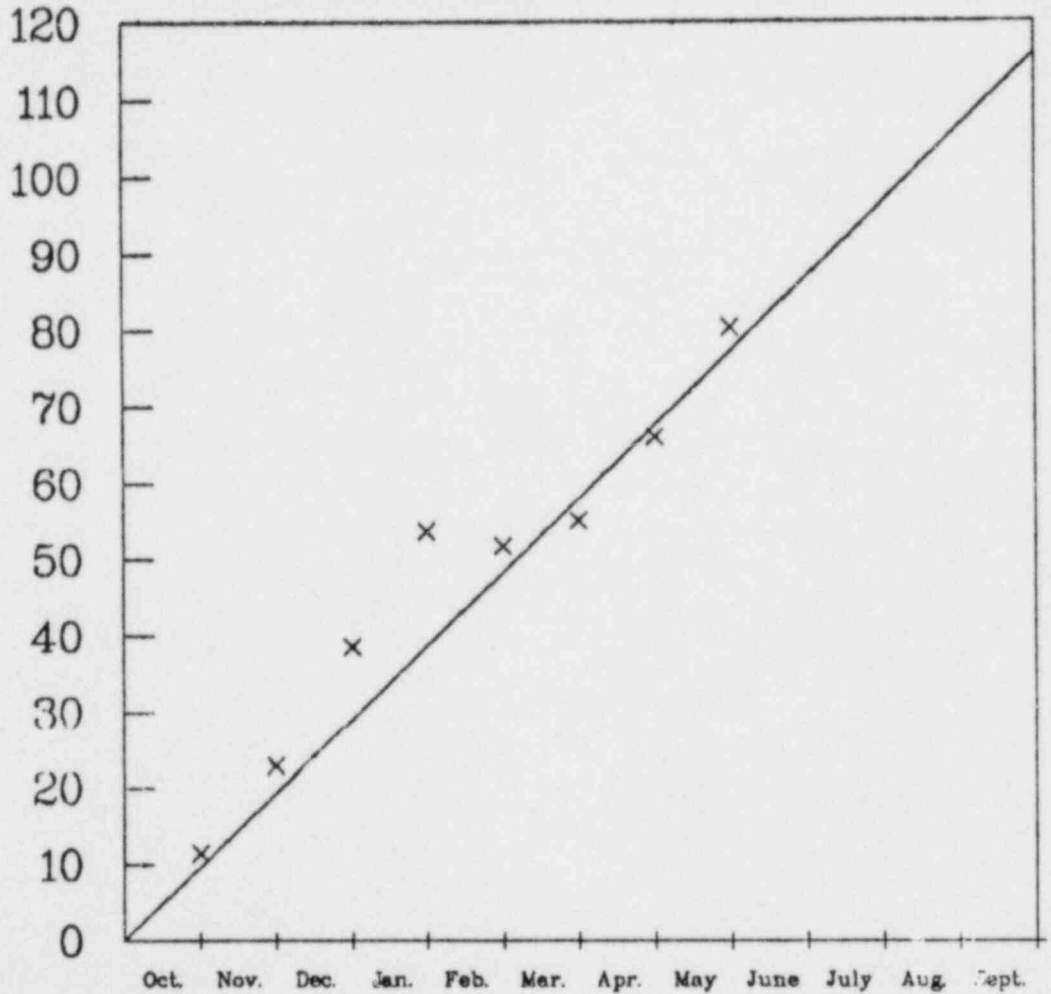
BUDGET AND TECHNICAL MANPOWER EXPENDITURES (FY 1980)

<u>Reporting Period</u>	<u>Project Costs, \$</u>	<u>Technical Support, Man-months</u>
May 1980	14,092	1.9
Total to Date	80,315	9.7
Estimated Cost to Completion	35,685	8.8

MONTHLY EXPENDITURES FY 1980 (\$1,000)

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
Monthly Projected:	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.7
Monthly Actual:	11	11	16	15	-2*	3	11	14				

Total Expenditures**
(thousands of dollars)



1979

1980

Months FY 1980

*Inadvertent overcharges were corrected with a credit in February.

**Solid line represents projected costs; x marks represent actual costs.

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