

095564

AE # 57

2.12.01



REPORT TO THE CONGRESS

72-0160



20
19
59

Potential For Improved
Effectiveness Of Scientific And
Technical Information
Dissemination Activities B-165117

Atomic Energy Commission

*BY THE COMPTROLLER GENERAL
OF THE UNITED STATES*

095564

~~705698~~

JULY 15, 1971



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-165117

u / To the President of the Senate and the
Speaker of the House of Representatives

This is our report on the potential for improved effectiveness of scientific and technical information dissemination activities by the Atomic Energy Commission.

Our review was made pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the Director, Office of Management and Budget, and to the Chairman, Atomic Energy Commission.

A handwritten signature in cursive script that reads "James B. Stacks".

Comptroller General
of the United States

D I G E S T

WHY THE REVIEW WAS MADE

The Atomic Energy Commission (AEC) supports research and development activities at Government-owned, contractor-operated laboratories and at universities, nonprofit research institutions, commercial organizations, and other Government agencies. Scientific and technical information derived from this original research is disseminated in a variety of ways, such as through articles in scientific journals, reports, oral presentations at meetings and conferences, and information and data centers.

In fiscal year 1969, AEC's Division of Technical Information spent about \$4.6 million to disseminate scientific and technical information. In addition, substantial costs were incurred by AEC's contractor-operated laboratories for similar purposes. The General Accounting Office (GAO) identified costs of about \$7.3 million incurred by four of AEC's contractor-operated laboratories during fiscal year 1969, not including the costs of writing or reviewing information documents within the laboratory divisions. (See pp. 8 to 9.)

In view of these substantial efforts, GAO decided to examine into the manner in which these dissemination activities were being managed by AEC and four of its contractor-operated laboratories.

FINDINGS AND CONCLUSIONS

Publication in scientific journals is the preferred means of information dissemination. Certain material, for reasons of length, originality, limited interest, or partial completion of total research effort, is not appropriate for journal publication. Generally this material is published by the laboratories as "topical reports."

Topical reports, written by scientists, usually present the results of research efforts on a single project. They are distributed to AEC offices and contractors and other Government agencies through AEC's standard distribution system and to other interested persons through supplemental distribution systems of the laboratories. In most cases they are available for purchase by the public.

Articles submitted to scientific journals generally are subjected to critical review and evaluation by the scientists' peers--a procedure commonly known as the referee process--as part of the journals' review procedures. Topical reports, however, are not subjected to the referee process after they are released by the laboratory.

Only six of the 12 laboratory divisions included in GAO's review had formalized review procedures directed toward evaluation of the technical content of topical reports. The scope of these reviews varied considerably. (See p. 12.)

AEC has not established standards regarding the degree of critical evaluation to be given to topical reports. In the absence of personal knowledge of the review procedures followed by the particular laboratory program division from which a report originates, a recipient cannot readily determine the extent to which a topical report received independent critical evaluation prior to its publication. (See p. 15.)

GAO sent a questionnaire to 568 scientists in the laboratory divisions reviewed, to solicit their opinions regarding the usefulness and reliability of topical reports.

Most of those responding to the questionnaire believed that the review and evaluation provided was sufficient. About 45 percent of 418 scientists responding to this question believed, however, that the usefulness of these reports, in general, would be increased if they were given additional critical evaluation. (See p. 15.)

GAO believes that an opportunity exists for AEC to improve the confidence of recipients in topical reports by determining the appropriate degree to which topical reports should receive independent critical evaluation prior to their publication and by publishing the evaluation procedures so that recipients of the reports may be informed of the extent to which the reports have received critical evaluation. (See p. 15.)

At their own discretion, a number of laboratory divisions published periodic reports reflecting the divisions' research activities for the period covered. GAO found that the need for a number of these reports was questionable, because much of the information they contained either had been published previously or was to be published in a journal article or a topical report. Certain of the reports substantially duplicated each other. (See pp. 16 to 22.)

. There is a need for AEC and the laboratories

--to evaluate the current practices related to the preparation and distribution of laboratory division periodic reports,

- to identify the circumstances under which such reports are considered to be necessary, and
- to establish guidelines regarding the content of periodic reports with a view to eliminating any unnecessary, duplicative information. (See p. 27.)

GAO found also that insufficient patent reviews were being made at one laboratory and that a weekly selected-reading list of questionable need was being published by another laboratory. Action was subsequently taken to improve the patent reviews, and publication of the reading list was discontinued. (See pp. 23 to 25.)

There were differences in the amount of management attention which AEC's Division of Technical Information and the various AEC program divisions were directing toward the areas reviewed by GAO. In these circumstances, many decisions regarding the information dissemination activities discussed in this report rested primarily with laboratory divisions and in some cases with the individual scientists.

This method of operation has resulted in insufficient management control over certain information dissemination activities where greater management control could improve their effectiveness.

The process of preparing and disseminating scientific and technical information involves substantial expenditures of Government funds, as well as a great deal of effort by scientists supported under AEC's various research programs. In view of the significant resources invested in these activities, AEC should make every effort to ensure that the information products developed for its various research programs are as informative and useful as possible. (See p. 26.)

RECOMMENDATIONS OR SUGGESTIONS

AEC should:

- Determine the appropriate degree to which topical reports generated in the various AEC programs should receive independent critical evaluation prior to publication.
- Publish the evaluation procedures to be followed at various locations where such procedures are deemed necessary so that recipients may be informed of the extent to which reports have received critical evaluation.
- Identify the circumstances under which division periodic reports are considered to be necessary and desirable.

Tear Sheet

- Establish guidelines regarding the content of periodic reports with a view to eliminating any unnecessary, duplicative information.
- Ensure that distribution lists for reports are kept current through periodic circularization. (See p. 27.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

AEC informed GAO that it would review current procedures and practices relating to the dissemination of scientific and technical information, particularly those relating to topical reports and periodic reports of laboratory divisions. Appropriate changes would be considered, AEC said, if it appeared that greater effectiveness could be achieved. (See p. 27.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

The process of disseminating scientific and technical information involves substantial and increasing expenditures of funds throughout the Federal Government. During fiscal year 1969, Federal obligations for these activities amounted to \$362 million. In addition, scientists receiving support under Federal research programs invest a substantial amount of effort in preparing information on the results of their original research. (See p. 8.)

GAO is reporting this matter to the Congress because of its continuing interest in federally supported research and development activities and because the information contained in the report may be useful to other Government agencies engaged in disseminating scientific and technical information.

C o n t e n t s

	<u>Page</u>	
DIGEST	1	
CHAPTER		
1	INTRODUCTION	5
	Organization	6
	Cost of scientific and technical information activities	8
2	OPPORTUNITY TO INCREASE USEFULNESS OF TOPICAL REPORTS	11
	Conclusions	15
3	QUESTIONABLE NEED FOR PERIODIC REPORTS BY INDIVIDUAL LABORATORY PROGRAM DIVISIONS	16
	Duplication of information in separate reports within specific laboratory divisions	16
	Duplication among division periodic reports, journal articles, and topical reports	19
	Maintenance of supplemental distribution lists	21
	Conclusions	21
4	OTHER MATTERS FOR CONSIDERATION BY AEC	23
	Insufficient patent reviews--LRL	23
	Questionable need for "Weekly Selected Reading List"--Brookhaven	24
5	CONCLUSIONS AND RECOMMENDATIONS	26
	Recommendations	27
6	SCOPE OF REVIEW	28
APPENDIX		
I	Transmittal letter dated December 8, 1969, and questionnaire	33
II	Specified characteristics of scientists included in sample	38

CHAPTER		<u>Page</u>
III	Percent response of all scientists based on a sample of 568 scientists	39
IV	Tabulation of 542 questionnaires returned, arranged by laboratory and program divisions	40
V	Principal management officials of the Atomic Energy Commission responsible for the activities discussed in this report	44

ABBREVIATIONS

AEC	Atomic Energy Commission
DTI	Division of Technical Information
GAO	General Accounting Office
LRL	Lawrence Radiation Laboratory--Berkeley

D I G E S T

WHY THE REVIEW WAS MADE

The Atomic Energy Commission (AEC) supports research and development activities at Government-owned, contractor-operated laboratories and at universities, nonprofit research institutions, commercial organizations, and other Government agencies. Scientific and technical information derived from this original research is disseminated in a variety of ways, such as through articles in scientific journals, reports, oral presentations at meetings and conferences, and information and data centers.

In fiscal year 1969, AEC's Division of Technical Information spent about \$4.6 million to disseminate scientific and technical information. In addition, substantial costs were incurred by AEC's contractor-operated laboratories for similar purposes. The General Accounting Office (GAO) identified costs of about \$7.3 million incurred by four of AEC's contractor-operated laboratories during fiscal year 1969, not including the costs of writing or reviewing information documents within the laboratory divisions. (See pp. 8 to 9.)

In view of these substantial efforts, GAO decided to examine into the manner in which these dissemination activities were being managed by AEC and four of its contractor-operated laboratories.

FINDINGS AND CONCLUSIONS

Publication in scientific journals is the preferred means of information dissemination. Certain material, for reasons of length, originality, limited interest, or partial completion of total research effort, is not appropriate for journal publication. Generally this material is published by the laboratories as "topical reports."

Topical reports, written by scientists, usually present the results of research efforts on a single project. They are distributed to AEC offices and contractors and other Government agencies through AEC's standard distribution system and to other interested persons through supplemental distribution systems of the laboratories. In most cases they are available for purchase by the public.

Articles submitted to scientific journals generally are subjected to critical review and evaluation by the scientists' peers--a procedure commonly known as the referee process--as part of the journals' review procedures. Topical reports, however, are not subjected to the referee process after they are released by the laboratory.

Only six of the 12 laboratory divisions included in GAO's review had formalized review procedures directed toward evaluation of the technical content of topical reports. The scope of these reviews varied considerably. (See p. 12.)

AEC has not established standards regarding the degree of critical evaluation to be given to topical reports. In the absence of personal knowledge of the review procedures followed by the particular laboratory program division from which a report originates, a recipient cannot readily determine the extent to which a topical report received independent critical evaluation prior to its publication. (See p. 15.)

GAO sent a questionnaire to 568 scientists in the laboratory divisions reviewed, to solicit their opinions regarding the usefulness and reliability of topical reports.

Most of those responding to the questionnaire believed that the review and evaluation provided was sufficient. About 45 percent of 418 scientists responding to this question believed, however, that the usefulness of these reports, in general, would be increased if they were given additional critical evaluation. (See p. 15.)

GAO believes that an opportunity exists for AEC to improve the confidence of recipients in topical reports by determining the appropriate degree to which topical reports should receive independent critical evaluation prior to their publication and by publishing the evaluation procedures so that recipients of the reports may be informed of the extent to which the reports have received critical evaluation. (See p. 15.)

At their own discretion, a number of laboratory divisions published periodic reports reflecting the divisions' research activities for the period covered. GAO found that the need for a number of these reports was questionable, because much of the information they contained either had been published previously or was to be published in a journal article or a topical report. Certain of the reports substantially duplicated each other. (See pp. 16 to 22.)

There is a need for AEC and the laboratories

--to evaluate the current practices related to the preparation and distribution of laboratory division periodic reports,

--to identify the circumstances under which such reports are considered to be necessary, and

--to establish guidelines regarding the content of periodic reports with a view to eliminating any unnecessary, duplicative information. (See p. 27.)

GAO found also that insufficient patent reviews were being made at one laboratory and that a weekly selected-reading list of questionable need was being published by another laboratory. Action was subsequently taken to improve the patent reviews, and publication of the reading list was discontinued. (See pp. 23 to 25.)

There were differences in the amount of management attention which AEC's Division of Technical Information and the various AEC program divisions were directing toward the areas reviewed by GAO. In these circumstances, many decisions regarding the information dissemination activities discussed in this report rested primarily with laboratory divisions and in some cases with the individual scientists.

This method of operation has resulted in insufficient management control over certain information dissemination activities where greater management control could improve their effectiveness.

The process of preparing and disseminating scientific and technical information involves substantial expenditures of Government funds, as well as a great deal of effort by scientists supported under AEC's various research programs. In view of the significant resources invested in these activities, AEC should make every effort to ensure that the information products developed for its various research programs are as informative and useful as possible. (See p. 26.)

RECOMMENDATIONS OR SUGGESTIONS

AEC should:

--Determine the appropriate degree to which topical reports generated in the various AEC programs should receive independent critical evaluation prior to publication.

--Publish the evaluation procedures to be followed at various locations where such procedures are deemed necessary so that recipients may be informed of the extent to which reports have received critical evaluation.

--Identify the circumstances under which division periodic reports are considered to be necessary and desirable.

- Establish guidelines regarding the content of periodic reports with a view to eliminating any unnecessary, duplicative information.
- Ensure that distribution lists for reports are kept current through periodic circularization. (See p. 27.)

AGENCY ACTIONS AND UNRESOLVED ISSUES

AEC informed GAO that it would review current procedures and practices relating to the dissemination of scientific and technical information, particularly those relating to topical reports and periodic reports of laboratory divisions. Appropriate changes would be considered, AEC said, if it appeared that greater effectiveness could be achieved. (See p. 27.)

MATTERS FOR CONSIDERATION BY THE CONGRESS

The process of disseminating scientific and technical information involves substantial and increasing expenditures of funds throughout the Federal Government. During fiscal year 1969, Federal obligations for these activities amounted to \$362 million. In addition, scientists receiving support under Federal research programs invest a substantial amount of effort in preparing information on the results of their original research. (See p. 8.)

GAO is reporting this matter to the Congress because of its continuing interest in federally supported research and development activities and because the information contained in the report may be useful to other Government agencies engaged in disseminating scientific and technical information.

CHAPTER 1

INTRODUCTION

Scientific and technical information generally encompasses any information in recorded or other communicable form which presents the status, progress, and results of research and development in science or technology or which has potential use in advancing current and future research and development.

Research and development activities supported by the Atomic Energy Commission are carried out at Government-owned, contractor-operated laboratories and at universities, nonprofit research institutions, commercial organizations, and other Government agencies under contracts with AEC.

A list of the AEC-owned, contractor-operated laboratories included in our review follows.

Argonne National Laboratory, Argonne, Illinois
Brookhaven National Laboratory, Upton, New York
Lawrence Radiation Laboratory (LRL), Berkeley, California
Oak Ridge National Laboratory, Oak Ridge, Tennessee

The contents of this report have been discussed with AEC representatives, and their comments have been incorporated in the report.

The Atomic Energy Act of 1954 (42 U.S.C. 2161) provides that:

"It shall be the policy of the Commission to control the dissemination and declassification of Restricted Data in such a manner as to assure the common defense and security. Consistent with such policy, the Commission shall be guided by the following principles:"

* * * * *

"(b) The dissemination of scientific and technical information relating to atomic energy should be permitted and encouraged so as to provide that free interchange of ideas and criticism which is essential to scientific and industrial progress and public understanding and to enlarge the fund of technical information."

ORGANIZATION

AEC disseminates scientific and technical information resulting from original research in a variety of ways, such as through articles in scientific journals, various types of reports, papers presented orally at scientific meetings and conferences, and information and data centers. This report deals primarily with data disseminated through various types of reports published by AEC's contractor-operated laboratories.

The Division of Technical Information (DTI) at AEC Headquarters, in collaboration with appropriate AEC program division directors, is responsible for developing and administering AEC-wide policies, procedures, and guidelines for reporting results of scientific and technical work supported by AEC. DTI carries out a large part of its information dissemination activities at the Division of Technical Information Extension at Oak Ridge.

The AEC program division directors are responsible for determining the overall program for reporting the results of research work which is funded by their divisions or which is under their program supervision. The directors are responsible also for prescribing the frequency, technical content, and quality standards of informational products which are to be prepared by contractors.

The AEC program division directors and managers of AEC field offices are responsible for ensuring that each contractor under their administrative supervision is informed of and complies with AEC policies and procedures on the reporting of research results.

As a matter of practice, the laboratories, their program divisions, and the individual scientists make many of

the decisions affecting publication, such as determining the frequency and content of the publication, the need for in-house review and evaluation procedures, and the most appropriate means of dissemination.

Laboratory program divisions do not always correspond in name or organization to the AEC Headquarters program divisions which fund their activities. Therefore, to facilitate discussion in this report, we have, in several cases, classified one or more of the laboratory divisions included in our review under the appropriate AEC program divisions as shown below.

Argonne:	LRL:
Biology and Medicine	Biology and Medicine
Chemistry	Nuclear Chemistry
Reactor (note a)	Oak Ridge:
Brookhaven:	Biology and Medicine
Biology and Medicine (note b)	Chemistry
Chemistry	Reactor
Reactor (note c)	Isotopes

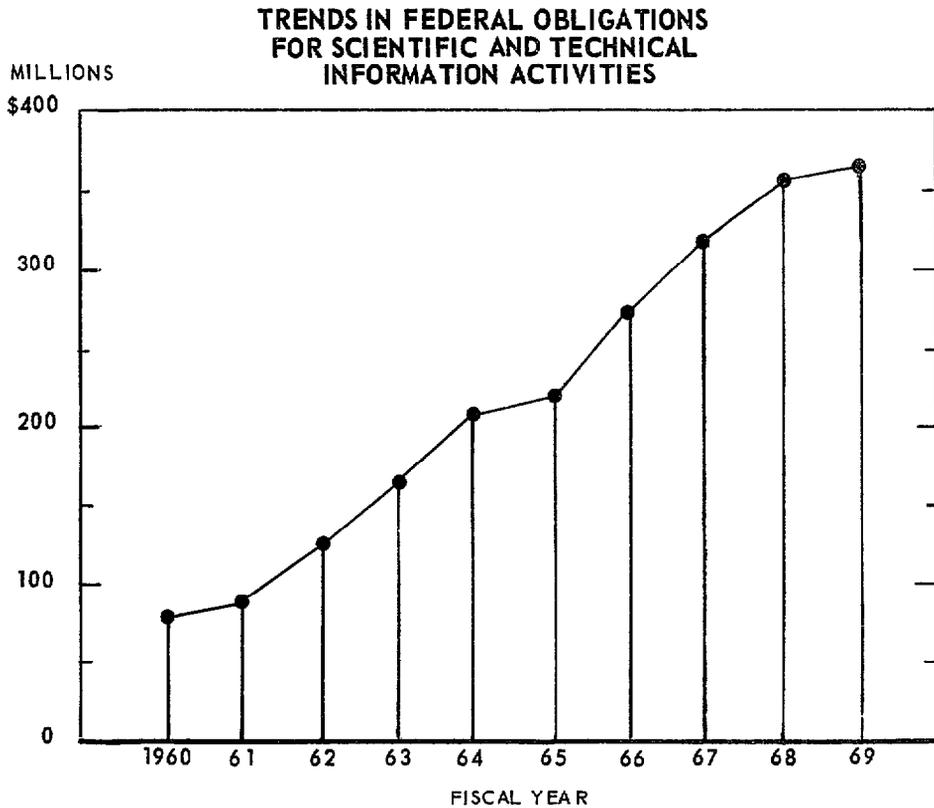
^aIncludes the Materials Science and Chemical Engineering Division.

^bIncludes the Biology Department, Medical Department, and Instrumentation and Health Physics Department.

^cRepresents the Applied Sciences Department.

COST OF SCIENTIFIC AND
TECHNICAL INFORMATION ACTIVITIES

As shown in the chart below, Federal obligations for scientific and technical information activities increased from about \$76 million in fiscal year 1960 to \$362 million in fiscal year 1969. During the same period, AEC obligations, as reported to the National Science Foundation, increased from \$3 million to about \$4.6 million.



The amounts shown in the chart present substantially less than the full view of Federal support in this area, since obligations for information dissemination activities incurred directly by research and development contractors and grantees are not required to be reported to the Foundation, because most agencies do not have the capability to report them. AEC's costs are reported to the Foundation on the same basis as is the data by all other agencies and include only those costs funded by DTI. In accordance with the Foundation's instructions, AEC-reported costs do not

include costs incurred directly by AEC contractor-operated laboratories.

To indicate the magnitude of the activities associated with the dissemination of research results carried out by the laboratories included in our review, we developed estimates of the fiscal year 1969 costs associated with such activities. Because of differences in laboratory record-keeping practices, it was necessary in some cases to develop these estimates, which are shown in the following table, in cooperation with laboratory officials.

Estimated Costs Associated With
Information Dissemination Activities
Fiscal Year 1969

<u>Type of activity</u>	<u>All</u> <u>labora-</u> <u>tories</u>	<u>Argonne</u>	<u>Brook-</u> <u>haven</u>	<u>LRL</u>	<u>Oak</u> <u>Ridge</u>
----- (000 omitted) -----					
Technical informa- tion division ac- tivities (note a)	\$1,383	\$ 181	\$ 119	\$ 290	\$ 793
Page and reprint charges	460	112	92	72	184
Printing of scienti- fic and technical information	711	212	141	105	253
Conferences:					
At the laboratory	118	83	(b)	-	35
Away from labora- tory	377	130	(b)	(b)	247
Information and data center activities	2,465	79	698	235	1,453
Library operations	<u>1,766</u>	<u>697</u>	<u>241</u>	<u>328</u>	<u>500</u>
Total	<u>\$7,280</u>	<u>\$1,494</u>	<u>\$1,291</u>	<u>\$1,030</u>	<u>\$3,465</u>

^aIncludes costs of such activities as graphic arts and re-
production services, information studies, patent reviews,
and photography.

^bCost information was not available.

The differences in the laboratories' costs associated with the operation of their technical information divisions are attributable, in part, to differences in the scope of their activities as well as to the volume of information generated by each of the laboratories. Also the foregoing table does not include any costs associated with the writing or reviewing of information documents within the laboratory program divisions.

Although it was not possible to identify the total amounts being expended by AEC and its contractors, the costs shown in the table, in addition to the \$4.6 million expended directly by AEC, provide an indication of the magnitude of AEC's scientific and technical information dissemination activities.

As a further indication of the magnitude of information dissemination activities, a summary for fiscal year 1969 of the number of journal articles and topical reports published, as well as the number of conference presentations made by scientists from the four laboratories reviewed, follows.

Number of Journal Articles,
Conference Presentations,
and Topical Reports--
Fiscal Year 1969

<u>Method of dissemination</u>	All labora- tories	<u>Argonne</u>	Brook- haven	<u>LRL</u>	Oak Ridge
Journal articles	2,215	616	569	360	670
Conference presen- tations	1,942	507	286	120	1,029
Topical reports	<u>347</u>	<u>89</u>	<u>80</u>	<u>34</u>	<u>144</u>
Total	<u>4,504</u>	<u>1,212</u>	<u>935</u>	<u>514</u>	<u>1,843</u>

CHAPTER 2

OPPORTUNITY TO INCREASE

USEFULNESS OF TOPICAL REPORTS

Although publication in scientific journals is the preferred means of dissemination for the results of original research, certain material, for reasons of length, degree of originality, limited interest, or partial completion of total research effort, is not appropriate for journal publication. Such material is generally published by the laboratories in one or more topical reports.

Topical reports are written by scientists and generally present the results of research efforts on a single project. The reports are distributed to AEC offices and contractors and other Government agencies through AEC's standard distribution system and to other interested persons through the supplemental distribution systems of the laboratories. In most cases they are available for purchase by the public.

Topical reports are used in the applied research areas, such as reactor development, more frequently than in the more basic research areas, such as biology and medicine. During the 10-month period from January through October 1969, about 4,400 individual topical reports were distributed in micronegative form through AEC's standard distribution system. About 1,400 of the 4,400 reports were distributed also in printed form. During this period the following numbers of reports were disseminated by AEC in the programs included in our review. The numbers represent those reports disseminated for all AEC and contractor locations.

<u>Programs</u>	<u>Number of reports distributed</u>	
	<u>Printed</u>	<u>Micronegative</u>
Biology and Medicine	71	374
Chemistry	141	356
Reactor	260	791
Isotopes	<u>72</u>	<u>94</u>
Total	<u>544</u>	<u>1,615</u>

Articles submitted to scientific journals are generally subjected to critical review and evaluation by the scientists' peers, a procedure commonly known as the referee process, as part of the journals' review procedures. Topical reports, however, are not subjected to such a referee process after they are released by the laboratory.

As shown in the table below, six of the 12 laboratory divisions included in our review had formalized in-house review procedures directed toward an evaluation of the technical content of topical reports. A variety of methods was used by the six divisions to accomplish the reviews, and there were substantial variations in the scope of the reviews.

	<u>Argonne</u>	<u>Brookhaven</u>	<u>LRL</u>	<u>Oak Ridge</u>
Biology and Medicine	Yes	No	No	Yes
Chemistry	No	No	No	Yes
Reactor	Yes	No	(a)	Yes
Isotopes	(a)	(a)	(a)	Yes

^aProgram was not carried out at the laboratory.

In a report published in 1963, the President's Science Advisory Committee stated that, because an agency's internal communication system was based largely on topical reports, the dissemination and retrieval of information contained in these reports must be improved. It pointed out that the one essential difference between topical reports and the conventional journal literature was that journal articles, generally speaking, were formally refereed but that topical reports were not. The Committee therefore suggested that each agency handling large numbers of topical reports establish resident referees at the major contractor and in-house sites to review these reports before they are forwarded to the agency's information handling system. No specific action was taken by AEC to implement this recommendation, although copies of the report were sent to the various AEC laboratories.

In view of this recommendation that topical reports be subjected to a review and evaluation process, we sent a

questionnaire to a random sample of 568 scientists in the laboratory divisions included in our review to solicit their opinions regarding the usefulness and reliability of AEC topical reports. We received responses from 542, or 95 percent, of these scientists, although not all the questions on each questionnaire were answered. The results presented in this chapter reflect the opinions of those scientists who responded to the specific questions involved.

A copy of the questionnaire and its accompanying transmittal letter are included as appendix I; specified characteristics, such as age and length of employment, of scientists included in the sample are presented as appendix II; the percent response of all scientists based on a sample of 568 scientists is presented as appendix III; and a tabulation of 542 questionnaires returned, arranged by laboratory and program divisions is presented as appendix IV.

About 80 percent of the scientists responding to our questionnaire used topical reports. An analysis of the purposes for which the reports were used revealed that, of this 80 percent, 62 percent used them in their own research, 16 percent used them for general information purposes, 19 percent used them for both those purposes, and 3 percent used them for other purposes. Further analysis showed that there was little variation in the extent to which the reports were used by the scientists at the laboratories included in our review; however, their use was significantly higher in the more applied research programs.

We asked the scientists to express their opinion of the reliability of topical reports by indicating whether they were more reliable than journals, equally as reliable as journals, less reliable than journals, or not reliable at all.

For all laboratories combined, about two thirds of the scientists' replies indicated that topical reports were at least equal to journal articles in reliability. At Argonne and Brookhaven, however, about 40 percent of the scientists responding to this question believed that the reports were less reliable than journal articles.

The replies of the 451 scientists who responded to this question are shown below in percentage terms.

<u>Scientists' opinions of topical reports</u>	<u>All labora- tories</u>	<u>By laboratory of employment</u>			
		<u>Argonne</u>	<u>Brookhaven</u>	<u>LRL</u>	<u>Oak Ridge</u>
(percent)					
More reliable than journals	5	4	5	-	10
Equally as reliable as journals	63	55	57	75	68
Less reliable than journals	31	41	38	24	21
Not reliable	<u>1</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>1</u>
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

We also asked the scientists their opinion regarding the adequacy of independent critical evaluation given to topical reports prior to their dissemination.

The opinions of the 433 scientists who responded to this question are shown below in percentage terms.

<u>Scientists' opinions of critical evaluation</u>	<u>All labora- tories</u>	<u>By laboratory of employment</u>			
		<u>Argonne</u>	<u>Brookhaven</u>	<u>LRL</u>	<u>Oak Ridge</u>
(percent)					
Too extensive	1	2	-	-	3
Adequate	61	59	51	70	65
Insufficient	31	32	36	24	29
Not performed	<u>7</u>	<u>7</u>	<u>13</u>	<u>6</u>	<u>3</u>
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

We asked the scientists whether additional critical evaluation of topical reports would increase their usefulness to themselves and to scientists in general. The responses of 463 scientists indicated that 31 percent believed that

it would increase the usefulness of the reports to them personally, and responses of 418 scientists indicated that 45 percent believed that it would increase the usefulness to scientists in general. There was little variation in the responses by laboratory or by program.

CONCLUSIONS

Most of the scientists who responded to our questionnaire believed that the review and evaluation currently provided for topical reports was sufficient. A sizable percentage of the scientists responding, however, believed that the usefulness of these reports would be increased if they were given additional critical evaluation.

AEC has not established standards regarding the degree of critical evaluation to be given to topical reports. Therefore, in the absence of personal knowledge of the review procedures followed by the particular laboratory program division from which a report originates, a recipient cannot readily determine the extent to which any given topical report received independent critical evaluation prior to its publication.

We believe that an opportunity exists for AEC to improve the confidence of recipients in topical reports resulting from AEC-supported research by determining the appropriate degree to which topical reports generated in the various AEC programs should receive independent critical evaluation prior to their publication and by publishing the evaluation procedures so that recipients of the reports may be informed of the extent to which they have received such evaluation.

Our recommendations concerning this subject can be found in chapter 5.

CHAPTER 3

QUESTIONABLE NEED FOR PERIODIC REPORTS

BY INDIVIDUAL LABORATORY PROGRAM DIVISIONS

During our review we noted that, at their own discretion, a number of laboratory divisions had issued reports--usually annually, semiannually, or quarterly--reflecting research activities during the period covered. In addition, the laboratories had issued annual reports highlighting the activities of the entire laboratory.

We examined 23 division periodic reports issued by 21 laboratory divisions at the four laboratories included in our review. The need for many of these reports appeared questionable to us in view of the substantial duplication of the information contained in the different reports issued by individual laboratory divisions and in view of the fact that much of the information they contained either had been previously published or was to be published in a journal article or topical report.

DUPLICATION OF INFORMATION IN SEPARATE REPORTS WITHIN SPECIFIC LABORATORY DIVISIONS

The Physics and Chemical Engineering Divisions at Argonne each publish two types of division periodic reports.

The Physics Division publishes a quarterly report and an annual report. According to the division director, the quarterly report is prepared to disseminate current research information to scientists at Argonne and other laboratories. The annual report summarizes the research progress of the division, ensures that scientists summarize their work annually, and is used in connection with the recruiting activities of the division.

With respect to the material included, the foreword to the quarterly report for the period April to June 1967 stated that:

"The research presented in any one issue *** is only a small random sample of the work of the

Physics Division. For a comprehensive overview, the reader is referred to the ANL Physics Division Annual Review ***."

The foreword to the "Physics Division Annual Review" for the period April 1967 through March 1968 stated that:

"*** this issue offers a complete and systematic overview of what is going on [in the Physics Division]. Much of what is indicated briefly here has been described more fully in earlier issues of the Summary [quarterly report]. Most of the rest will appear in forthcoming issues."

The quarterly report stated also that:

"The issuance of these reports is not intended to constitute publication in any sense of the word. Final results will be submitted for publication in regular professional journals or, in special cases presented in ANL Topical Reports."

The Chemical Engineering Division issues an annual report and a research highlights report. The primary objective of the annual report is to provide an industrial audience with a detailed progress report on the research activities of the division. The highlights report is a condensed version of the annual report and is directed more toward a university audience. Our examination of the distribution list for the latest issue of each report showed that Argonne had distributed about 1,030 copies of the annual report and about 1,250 copies of the highlights report. More than one copy was sent to a recipient in some cases. Of the 1,250 copies of the highlights report, 525 copies were distributed to Argonne personnel and 725 were distributed externally. Only about 100 copies of the highlights report were specifically directed to university users, the principal recipients for whom the report had been prepared.

A comparison of the recipients on the distribution lists showed that approximately 600 persons had received the highlights report and that about 340 of these had also received the annual report. Also the division distributed about 75 copies of its special highlights report, which was identical

to the regular highlights report except that it had an acetate cover. We noted that, of the 75 persons who had received the special highlights report, 44 had received also the regular highlights report as well as the annual report.

DUPLICATION AMONG DIVISION PERIODIC REPORTS,
JOURNAL ARTICLES, AND TOPICAL REPORTS

The principal objectives of division periodic reports, as stated by various laboratory program directors, are:

- To fulfill either an AEC program division or a laboratory requirement.
- To provide a progress report on the results of the divisions' research activities to AEC officials, laboratory review committees, and other interested scientists and to provide a means for the scientist to periodically summarize his work.

To evaluate the need for these reports, we examined into the manner in which they were meeting their stated objectives.

Neither DTI, nor AEC program divisions, nor the four laboratories required individual laboratory divisions to prepare division periodic reports. Nevertheless, several laboratory division directors prepared these reports with the understanding that they were to fulfill such a requirement.

Throughout our review, scientists commented that the preferred methods of disseminating research results were articles in scientific journals and, in some cases, topical reports. In a prior report to the Joint Committee on Atomic Energy entitled "Administration and Management of the Biology and Medicine Research Program" (B-165117, April 16, 1969), we mentioned that a number of scientists maintained awareness of current research progress by reading commercial indexing and abstracting services which cover the scientific journals and by reading AEC's "Nuclear Science Abstracts," which indexes both journal articles and topical reports. Another principal method was the exchange of journal article preprints.

Because of the emphasis placed on journal articles, and to some extent topical reports, as preferred methods of dissemination, we asked the directors of the laboratory divisions that issued division periodic reports to estimate the

percentage of information in their latest report which either had been published or was to be published by other means, primarily journal articles or topical reports. About 50 percent of the information in the 23 reports was classified into the above category. The information ranged from zero to 100 percent, as shown by the following table.

Percent of Material in Laboratory
Division Periodic Reports also Found
in Journal Articles and Topical Reports

Laboratory and periodic report	Material essentially identical to that previously published in journal articles or topical reports	Material essentially identical to that to be published in journal articles or topical reports	Abstracts or summaries of material previously published	Abstracts or summaries of material to be published	Total material previously published or to be published	Other information (note a)	Total
Argonne:							
Materials Science	18	76	4	2	100	-	100
Reactor Physics	5	13	1	1	20	80	100
Physics Annual	-	-	20	65	85	15	100
" Quarterly	-	-	35	35	70	30	100
Radiological Physics	5	40	1	1	47	53	100
Applied Mathematics	-	-	-	-	-	100	100
Biology and Medicine	-	34	-	3	37	63	100
Chemical Engineering Annual	15	75	1	1	92	8	100
Chemical Engineering Highlights	10	80	1	1	92	8	100
Brookhaven:							
Applied Sciences	8	27	14	28	77	23	100
LRL:							
Biology and Medicine (note b)	12	35	-	-	47	53	100
Nuclear Chemistry (note b)	-	-	43	7	50	50	100
Inorganic Materials	-	-	21	78	99	1	100
Physics	-	-	17	13	30	70	100
Chemical Bio-Dynamics	-	46	10	30	86	14	100
Oak Ridge:							
Isotopes	-	20	-	10	30	70	100
Biology	-	-	-	10	10	90	100
Chemistry	-	-	-	10	10	90	100
Reactor:							
Nuclear Safety	5	30	-	5	40	60	100
Molton Salt	5	20	-	-	25	75	100
Desalination	-	-	-	5	5	95	100
Gas Cooled	-	-	-	-	-	100	100
Heavy Section Steel Technology	2	75	1	-	78	22	100

^aGenerally represents a report on current research and development progress.

^bPercentages for these two divisions were developed by GAO.

With regard to the need for division periodic reports as a means for scientists to summarize research progress, the director of the Biology and Medicine Division at LRL which published a periodic report stated that the report was not of significant value, since a scientist who obtains significant results from his work will publish those results. Also, the director of the Nuclear Chemistry Division at LRL informed us that he would prefer not to publish the report because of the time and effort involved and that he would have no objection to discontinuing publication.

The directors of several laboratory divisions that did not publish periodic reports generally indicated that the information that would be contained in such reports could generally be found in a variety of other information documents, including journal articles, topical reports, overall laboratory annual reports, budget justifications, and certain required reports of AEC program divisions.

Also we noted that the scientists were required to summarize their work in connection with the preparation of annual budget estimates and certain progress reports specifically required by AEC Headquarters.

MAINTENANCE OF SUPPLEMENTAL DISTRIBUTION LISTS

With regard to the effectiveness of the dissemination of research results which may receive no dissemination other than that provided by the division periodic report, it appears that many laboratory divisions made little or no effort to keep their supplemental distribution lists current. The Technical Publications Department at Argonne maintained distribution lists for all divisions through formal circularization. The Nuclear Chemistry Division at LRL was the only other division included in our review that had such a procedure.

We believe that a list of the recipients of information products disseminated free of charge should be circularized periodically to ensure that only interested persons are receiving the publication. We believe also that the method utilized at Argonne, which required positive confirmation by the recipient, should be considered by other laboratories.

CONCLUSIONS

In view of the duplication among different division periodic reports issued by individual laboratory divisions and in view of the considerable overlap in the information contained in division periodic reports with material published in journal articles and topical reports, we believe that there is a need for AEC and the laboratories to evaluate the current practices related to preparation and distribution of periodic reports and to identify the

circumstances under which such reports are considered to be necessary.

Because of the variations in the extent of records kept by different laboratory divisions, we could not develop the total cost of division periodic reports. As an indication of the cost of these reports, however, about \$58,000 was expended by Argonne to print the latest issues of nine reports published at the time of our review. This amount does not include the costs related to the time and effort associated with writing, reviewing, and editing these reports.

We recognize that, under certain circumstances, it may be desirable for a division to publish a periodic report. Such circumstances may exist in the case of the Applied Sciences Department at Brookhaven, which is a multidisciplinary department composed of nine divisions. Officials of that department indicated that its report was prepared to inform the scientists in each division of the activities of the entire department and that laboratory officials periodically reevaluated the need for the report. We believe that, in those situations where a periodic report is considered necessary, guidelines should be developed regarding their content, in view of other types of dissemination of the information in such reports.

With regard to the distribution of division periodic reports, as well as other laboratory information products, we believe that the applicable distribution lists should be kept current through periodic circularization.

Our recommendations concerning this subject can be found in chapter 5.

CHAPTER 4

OTHER MATTERS FOR CONSIDERATION BY AEC

INSUFFICIENT PATENT REVIEWS--LRL

In fiscal year 1969, 360 journal articles reflecting the results of research work conducted at LRL were published. We noted that 86 articles, or about 24 percent, had not received patent reviews contrary to the provisions of the contract between the laboratory and AEC and to AEC regulations.

An official of LRL's Technical Information Division informed us that this situation was due to the relatively low probability of patentable material's being disclosed in articles resulting from work in certain research fields and to a long-established practice of the University of California, the operating contractor, of allowing the researcher to publish on his own. We found, however, that approximately 81 percent of the articles which had not received patent reviews had originated in laboratory divisions which accounted for about 47 percent of the 60 patent disclosures in fiscal year 1969.

U.S. patent laws provide that a patent may be filed for up to 1 year after disclosure. We are aware of one case at LRL, which occurred in 1965, where AEC was precluded from filing for a patent on a new class of superconducting compounds for use in electrical applications. AEC had prepared and was about to file a patent application when it was discovered that information regarding the invention had been published over a year before without a patent review and clearance.

LRL officials advised us that they had been aware of the patent review problem for some time and agreed to re-examine it when we brought it to their attention in January 1970. In October 1970 they advised us that they had identified the reasons for the lack of patent reviews and had taken action to resolve the matter but expected some continuing problems.

We believe that, as required by AEC regulations, all journal article manuscripts should receive patent reviews prior to being released by the laboratory, to adequately protect the interests of AEC. AEC advised us that it would work with LRL to ensure that the problem received appropriate management attention and that it would keep the situation under surveillance until it was satisfied that the problem had been resolved.

QUESTIONABLE NEED FOR
"WEEKLY SELECTED READING LIST"--BROOKHAVEN

Brookhaven has published the "Weekly Selected Reading List," a current awareness publication, since 1948. The reading list was compiled by scientists of several Brookhaven research departments who had reviewed journal and technical report literature received by Brookhaven's research library.

As of February 1970, approximately 2,000 copies were being distributed free of charge each week. Of these 2,000 copies, about 800 were distributed within the laboratory and about 1,200 were distributed to other locations. The estimated costs associated with the printing and distribution of the reading list in fiscal year 1969 totaled about \$38,000, exclusive of the costs related to the effort expended by the staff members who selected references for the reading list.

The research library received a number of periodic publications which could be used by scientists to maintain current awareness of information being published. Among these was "Current Contents," which provides, on a weekly basis, reprints of the tables of contents from scientific journals in the life, physical, and chemical sciences. At the time of our review, the physical sciences edition covered 700 journals.

Also available in the library was AEC's semimonthly publication, "Nuclear Science Abstracts," which provides indexing and abstracting coverage of journal literature, scientific and technical reports, books, and conference proceedings, on a worldwide basis.

The Biology Department did not participate in the preparation of the reading list. The acting chairman of that department advised us that (1) no one person could select references which took into consideration the interests of everyone in the Biology Department and (2) most scientists preferred to select their own references from a more exhaustive list.

In 1965 Brookhaven made a survey to determine whether publication of the reading list should be discontinued. A questionnaire was sent to about 1,100 recipients at Brookhaven; however, none of approximately 1,300 external recipients at that time were surveyed. The questionnaire stated that:

"It is now proposed to discontinue publication of the WSRL and unless we receive convincing evidence that it is still worth the considerable effort and expense required to publish it, we will be obliged to terminate it six weeks from now."

Of the approximately 1,100 questionnaires sent out, only 190 were returned. The returns represented 17 percent of the persons surveyed and less than 8 percent of the total recipients. Of the 190 responses, 155 favored continued publication and 35 said that it should be discontinued. On the basis of the survey, Brookhaven decided to continue publication.

During our review we indicated to Brookhaven officials that, in our opinion, the decision to continue publication of the reading list was questionable in view of the limited response to the survey questionnaire.

Shortly after the conclusion of our field review, Brookhaven discontinued publication of the reading list. Brookhaven advised us that, although it considered the list worthwhile, it had been discontinued because of budgetary reasons.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

As noted earlier, DTI, in collaboration with program officials, is currently responsible for the development of AEC-wide policies and procedures for reporting on the results of scientific and technical research funded by AEC. The directors of AEC program divisions are currently responsible for determining the overall program for reporting scientific work funded under their programs, including frequency, technical content, and quality standards of information products prepared by contractors.

Prior to June 24, 1968, DTI was solely responsible for developing AEC-wide policies and procedures for the reporting of scientific and technical information and the AEC operations offices, as well as program division officials, were responsible for following contractors' progress on research and development work, to ensure that full reports were promptly prepared and appropriately disseminated.

We found that differences existed in the amount of management attention which DTI and the various AEC program divisions were directing toward the areas we reviewed. In these circumstances, subject to some overall policy guidance from AEC, many decisions regarding information dissemination activities rested primarily with laboratory divisions and in some cases with the individual scientists.

In our opinion, this method of operation has resulted in insufficient management control over certain information dissemination activities where greater management control could improve their effectiveness.

The process of preparing and disseminating scientific and technical information involves substantial expenditures of Government funds, as well as a great deal of effort by scientists supported under AEC's various research programs. In view of the significant resources invested in these activities, we believe that AEC should make every effort to ensure that the information products developed from its various research programs are as informative and useful as possible.

RECOMMENDATIONS

We recommend that, to increase the usefulness of topical reports, AEC together with laboratory officials:

- Determine the appropriate degree to which topical reports generated in the various AEC programs should receive independent critical evaluation prior to their publication.
- Publish the evaluation procedures to be followed at various locations where such procedures are deemed necessary so that recipients of the reports may be informed of the extent to which reports have received such evaluation.

We recommend also that, to eliminate any unnecessary duplicative reporting, AEC:

- Identify the circumstances under which division periodic reports are considered to be necessary and desirable.
- Establish guidelines regarding the content of periodic reports with a view to eliminating any unnecessary, duplicative information.
- Ensure that distribution lists for the reports are kept current through periodic circularization.

AEC informed us that it would review current procedures and practices relating to its entire program for the dissemination of scientific and technical information, particularly those relating to topical reports and periodic reports of laboratory divisions. Appropriate changes would be considered, AEC said, if it appeared that greater effectiveness could be achieved.

CHAPTER 6

SCOPE OF REVIEW

We conducted our review at AEC Headquarters in Germantown, Maryland; at AEC's DTI in Bethesda, Maryland; at the Division of Technical Information Extension at Oak Ridge, Tennessee; and at the following AEC-sponsored research laboratories.

Argonne National Laboratory
Brookhaven National Laboratory
Lawrence Radiation Laboratory
Oak Ridge National Laboratory

Our review was directed primarily toward evaluating selected aspects of the information dissemination activities of AEC and the four laboratories and was limited, for the most part, to laboratory divisions carrying out AEC's biology and medicine, chemistry, reactor, and isotopes development programs. It did not include an evaluation of the quality of the research work performed at the laboratories.

As part of our examination, we reviewed applicable legislative history and AEC's and the laboratories' policies and procedures. We also obtained the views of various AEC and laboratory personnel knowledgeable of and responsible for information dissemination activities.

In conducting our review we concentrated on the following areas.

1. The effectiveness of specific methods used by the laboratories and program divisions in carrying out information dissemination activities.
2. The usefulness and reliability of AEC laboratory topical reports.
3. The need for annual and other periodic reports published by many laboratory program divisions at their own discretion.

To obtain opinions of the usefulness and reliability of AEC laboratory topical reports, we sent a questionnaire to 568 scientists at the laboratories reviewed. A tabulation of the responses is shown in appendixes III and IV.

APPENDIXES



UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

CIVIL DIVISION

DEC 8 1969

Dear Sir:

As part of an overall review of AEC's practices for disseminating scientific and technical information, the General Accounting Office is studying the use currently being made of AEC laboratory topical or technical reports. These reports are similar to journal articles in that they are written by the scientist, present the results of research efforts on a single project, and are disseminated through AEC's standard distribution system as well as the laboratory's own system. They should not be confused with annual or other progress type reports of laboratory divisions which present the status of many research projects at a given point in time. The objective of our efforts with regard to topical reports is to establish whether improvements can be made in their usefulness and manner of distribution. We believe that only you, the scientists, can provide us with this important information, since you are the people for whom the reports are written.

Accordingly, to obtain your opinions on this important matter, we are requesting that you fill in the enclosed questionnaire, answering each question as completely as possible. Please return the completed questionnaire within 5 working days, using the enclosed envelope. You will note that the first section of the questionnaire requests certain background information. This information is necessary to adequately evaluate the results of our survey, so your careful attention to it will be appreciated.

Your replies to the questions will be kept strictly confidential. There is a control number in the upper right hand corner of your questionnaire which will be used to log in those persons responding. Once your questionnaire has been logged in, the control number will be removed and destroyed--thus making it impossible to associate specific questionnaires and respondents. Completed questionnaires will be seen only by employees of the General Accounting Office and the results of the survey will be issued in a manner which will not permit the replies of any one individual to be identified.

We are sending the enclosed questionnaire to a sample of scientists at several AEC laboratories to obtain a cross section of views. Your careful consideration and prompt return of the questionnaire are extremely important and your cooperation will be appreciated.

APPENDIX I

If you have any questions about this survey or about any of the questionnaire items, please call

Sincerely yours,

A handwritten signature in cursive script that reads "Dean K. Crowther". The signature is written in dark ink and is positioned above the printed name.

Dean K. Crowther
Assistant Director

Enclosures - 2

AEC LABORATORY TOPICAL REPORTS
QUESTIONNAIRE

BACKGROUND INFORMATION

1. Age _____
2. Length of employment at this AEC laboratory _____
3. Level of education

_____ Ph. D.	_____ B.S.
_____ M.S.	_____ Other - Please specify
4. Major field of research

_____ Biology	_____ Biochemistry
_____ Medicine	_____ Metallurgy
_____ Chemistry	_____ Physics

- - - - -

QUESTIONS PERTAINING TO USE MADE OF TOPICAL REPORTS

1. Do you personally receive copies of AEC laboratory topical reports originating from other AEC laboratories?

_____ Yes	_____ No
-----------	----------

 If yes, how often do you receive them?

_____ Frequently	_____ Occasionally	_____ Infrequently
------------------	--------------------	--------------------
2. If you do not personally receive these reports, are you notified of the availability of new AEC topical reports?

_____ Yes	_____ No
-----------	----------

 If yes, how are you notified?

_____ Laboratory accessions lists
_____ Personal contact from recipient
_____ Nuclear Science Abstracts
_____ Other - please specify

APPENDIX I

3. Do you use the information presented in AEC topical reports?

Yes No

If yes, how many reports do you estimate you use during a one-year period;

Estimated number used

and which of the following most accurately describes the manner in which they are used?

In connection with your own research

General information

Other - please specify

4. In your opinion, how reliable is the information presented in the AEC topical reports?

More reliable than journals Less reliable than journals

Equal to journals Not reliable

5. To what extent do you believe AEC laboratory topical reports receive independent critical evaluation prior to dissemination?

Too extensively Insufficiently

Adequately Not at all

6. In your opinion, would additional critical evaluation of AEC laboratory topical reports prior to their dissemination increase their usefulness?

To you Yes No

To recipients in general Yes No

If yes, which of the following methods of critical evaluation, in your opinion, is best suited to topical reports?

- In-house review
- Referee process similar to journals
- Other - please specify

7. Which of the following do you believe would increase the usefulness of AEC laboratory topical reports?

- Dissemination on a periodic basis, such as weekly or monthly
- Dissemination in volumes by program rather than individually
- Other - please specify

8. Do you use topical reports as well as the scientific journals for publishing the results of your research?

- Yes No

APPENDIX II

SPECIFIED CHARACTERISTICS OF SCIENTISTS

INCLUDED IN SAMPLE

Scientists' Average Age and Length of Employment
By Laboratory and Program in Terms of Years

	<u>By Laboratory of Employment</u>				
	<u>All laboratories</u>	<u>Argonne</u>	<u>Brookhaven</u>	<u>LRL</u>	<u>Oak Ridge</u>
Average age	43	43	43	41	43
Length of employment	12	12	12	10	14

	<u>All program divisions</u>	<u>By Laboratory Program Division</u>			
		<u>Biology and Medicine</u>	<u>Chemistry</u>	<u>Reactor</u>	<u>Isotopes</u>
Average age	43	44	43	41	43
Length of employment	12	11	14	11	15

Scientists Classified by Highest Degree Earned

<u>Degree</u>	<u>Number</u>	<u>Percent</u>
M.D.	24	5
Ph. D.	345	64
M.S.	61	11
B.S.	81	15
Other	<u>30</u>	<u>5</u>
Total	<u>541</u>	<u>100</u>

Scientists Classified by Major Field of Research

<u>Major field of research</u>	<u>Number</u>	<u>Percent</u>
Biology	72	13
Medicine	23	4
Biology and Medicine	13	3
Chemistry	181	34
Biochemistry	33	6
Physics	87	16
Chemistry and Physics	14	3
Engineering	48	9
Metallurgy	22	4
Other	<u>46</u>	<u>8</u>
Total	<u>539</u>	<u>100</u>

APPENDIX III

PERCENT RESPONSE OF ALL SCIENTISTS
BASED ON A SAMPLE OF 568 SCIENTISTS

<u>Questions</u>	<u>Possible answers</u>	<u>Estimated percent</u>	<u>Sampling error</u>
1. Do you personally receive copies of AEC laboratory topical reports originating from other AEC laboratories?	Yes	35	3.1
	No	61	3.0
	No response	4	1.0
If yes, how often do you receive them?	Frequently	3	(b)
	Occasionally	12	(b)
	Infrequently	10	(b)
	No response	10	(b)
2. If you do not personally receive these reports, are you notified of the availability of new AEC topical reports?	Yes	45	3.0
	No	16	2.0
If yes, how are you notified?	Laboratory accessions lists	17	2.6
	Personal contact from recipient	2	.9
	Nuclear Science Abstracts	4	1.1
	Combination of above	16	2.4
	Other	6	1.7
3. Do you use the information presented in AEC topical reports?	Yes	77	2.2
	No	18	2.1
	No response	5	1.1
If yes, which of the following most accurately describes the manner in which they are used?	In connection with your own research	49	1.0
	General information	12	2.2
	Combination of above	14	2.2
	Other	2	1.1
	No response	(a)	(a)
4. In your opinion, how reliable is the information presented in the AEC topical reports?	More reliable than journals	5	1.6
	Equal to journals	51	3.2
	Less reliable than journals	25	2.8
	Not reliable	-	-
	Not responsive to question	19	2.3
5. To what extent do you believe AEC laboratory topical reports receive independent critical evaluation prior to dissemination?	Too extensively	(a)	(a)
	Adequately	49	3.1
	Insufficiently	23	2.7
	Not at all	5	1.2
	Not responsive to question	22	2.4
6. In your opinion, would additional critical evaluation of AEC laboratory topical reports prior to their dissemination increase their usefulness?	To you		
	Yes	25	2.8
	No	59	3.0
To recipients in general	No response or opinion	16	2.0
	Yes	32	3.0
	No	44	3.2
If yes, which of the following methods of critical evaluation, in your opinion, is best suited to topical reports?	No response or opinion	24	2.6
	In-house review	18	2.5
	Referee process similar to journals	12	2.0
7. Which of the following do you believe would increase the usefulness of AEC laboratory topical reports?	Combination of above	(a)	(a)
	Dissemination on a periodic basis, such as weekly or monthly	18	2.4
	Dissemination in volumes by program rather than individually	30	2.9
	Other	24	2.8
	No response or opinion	28	2.8
8. Do you use topical reports as well as the scientific journal for publishing the results of your research?	Yes	46	2.7
	No	47	2.7
	No response	7	1.4

^aSubject to relatively high sampling error.

^bSampling error not computed.

TABULATION OF 542 QUESTIONNAIRES RETURNED, ARRANGED BY LABORATORY AND PROGRAM DIVISIONS

Questions	Possible answers	ARGONNE NATIONAL LABORATORY							
		Biology and Medicine		Chemistry		Reactor (note a)		Laboratory total	
		Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent
1. Do you personally receive copies of AEC laboratory topical reports originating from other AEC laboratories?	Yes	19	40	22	52	24	41	65	44
	No	29	60	20	48	33	56	82	55
	No response	-	-	-	-	2	3	2	1
If yes, how often do you receive them?	Frequently	-	-	1	4	3	13	4	6
	Occasionally	8	42	9	41	15	62	32	49
	Infrequently	11	58	12	55	6	25	29	45
2. If you do not personally receive these reports, are you notified of the availability of new AEC topical reports?	Yes	17	66	14	70	30	91	61	74
	No	12	34	6	30	3	9	21	26
If yes, how are you notified?	Laboratory accessions lists	7	41	6	43	11	37	24	39
	Personal contact from recipient	-	-	-	-	2	7	2	3
	Nuclear Science Abstracts	-	-	2	14	2	7	4	6
	Combination of above	6	35	5	36	11	37	22	36
	Other	4	24	1	7	4	12	9	16
3. Do you use the information presented in AEC topical reports?	Yes	31	65	33	79	54	92	118	79
	No	17	35	8	19	3	5	28	19
	No response	-	-	1	2	2	3	3	2
If yes, which of the following most accurately describes the manner in which they are used?	In connection with your own research	15	48	22	67	37	69	74	63
	General information	8	26	6	18	12	22	26	22
	Other	8	26	5	15	5	9	18	15
4. In your opinion, how reliable is the information presented in the AEC topical reports?	More reliable than journals	-	-	1	2	4	7	5	3
	Equal to journals	22	46	18	43	26	44	66	44
	Less reliable than journals	15	31	16	38	19	32	50	34
	Not reliable	-	-	-	-	-	-	-	-
	No response	11	23	7	17	10	17	28	19
5. To what extent do you believe AEC laboratory topical reports receive independent critical evaluation prior to dissemination?	Too extensively	-	-	-	-	2	3	2	1
	Adequately	15	31	20	48	33	56	68	46
	Insufficiently	11	23	14	33	12	21	37	25
	Not at all	3	6	3	7	2	3	8	5
6. In your opinion, would additional critical evaluation of AEC laboratory topical reports prior to their dissemination increase their usefulness?	No response	19	40	5	12	10	17	34	23
	To you	Yes	12	25	15	36	19	32	46
To recipients in general	No	25	52	25	60	34	58	84	56
	No response	11	23	2	4	6	10	19	13
	Yes	15	31	19	45	20	34	54	36
If yes, which of the following methods of critical evaluation, in your opinion, is best suited to topical reports?	No	18	38	19	45	29	49	66	44
	No response	15	31	4	10	10	17	29	20
	In-house review	8	53	7	37	9	45	24	44
	Referee process similar to journals	3	20	9	48	10	50	22	41
	Combination of above	3	20	1	5	1	5	5	9
7. Which of the following do you believe would increase the usefulness of AEC laboratory topical reports?	Other	-	-	1	5	-	-	1	2
	No response	1	7	1	5	-	-	2	4
	Dissemination on a periodic basis, such as weekly or monthly	9	19	6	14	12	20	27	18
	Dissemination in volumes by program rather than individually	12	25	13	31	24	41	49	33
8. Do you use topical reports as well as the scientific journals for publishing the results of your research?	Other	11	23	11	26	11	19	33	22
	No response	16	33	12	29	12	20	40	27
	Yes	8	17	13	31	35	59	56	38
No	No	39	81	29	69	20	34	88	59
	No response	1	2	-	-	4	7	5	3

TABULATION OF 542 QUESTIONNAIRES RETURNED, ARRANGED BY LABORATORY AND PROGRAM DIVISIONS

Questions	Possible answers	BROOKHAVEN NATIONAL LABORATORY							
		Biology and Medicine		Chemistry		Reactor (note b)		Laboratory total	
		Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent
1. Do you personally receive copies of AEC laboratory topical reports originating from other AEC laboratories?	Yes	13	33	11	28	22	42	46	35
	No	26	67	28	72	30	58	84	65
	No response	-	-	-	-	-	-	-	-
If yes, how often do you receive them?	Frequently	-	-	1	9	6	27	7	15
	Occasionally	4	31	3	27	14	64	21	46
	Infrequently	9	69	7	64	2	9	18	39
2. If you do not personally receive these reports, are you notified of the availability of new AEC topical reports?	Yes	17	65	21	75	23	77	61	73
	No	9	35	7	25	7	23	23	27
If yes, how are you notified?	Laboratory accessions lists	6	35	10	48	5	22	21	34
	Personal contact from recipient	-	-	-	-	1	4	1	2
	Nuclear Science Abstracts	2	12	3	14	4	18	9	15
	Combination of above	6	35	7	33	12	52	25	41
	Other	3	18	1	5	1	4	5	8
3. Do you use the information presented in AEC topical reports?	Yes	26	67	30	77	43	83	99	76
	No	13	33	9	23	9	17	31	24
	No response	-	-	-	-	-	-	-	-
If yes, which of the following most accurately describes the manner in which they are used?	In connection with your own research	15	58	23	77	27	63	65	66
	General information	5	19	1	3	9	21	15	15
	Other	6	23	6	20	7	16	19	19
4. In your opinion, how reliable is the information presented in the AEC topical reports?	More reliable than journals	1	3	-	-	4	8	5	4
	Equal to journals	21	54	16	41	26	50	63	49
	Less reliable than journals	9	23	17	44	16	31	42	32
	Not reliable	-	-	-	-	-	-	-	-
	No response	8	20	6	15	6	11	20	15
5. To what extent do you believe AEC laboratory topical reports receive independent critical evaluation prior to dissemination?	Too extensively	-	-	-	-	-	-	-	-
	Adequately	12	31	13	33	29	55	54	42
	Insufficiently	14	36	13	33	11	21	38	29
	Not at all	4	10	4	11	6	12	14	11
	No response	9	23	9	23	6	12	24	18
6. In your opinion, would additional critical evaluation of AEC laboratory topical reports prior to their dissemination increase their usefulness?	To you	Yes	12	31	11	28	14	27	28
	No	21	54	21	54	34	65	76	58
	No response	6	15	7	18	4	8	17	14
	To recipients in general	Yes	15	39	17	44	18	35	50
	No	13	33	11	28	24	46	48	37
	No response	11	28	11	28	10	19	32	25
If yes, which of the following methods of critical evaluation, in your opinion, is best suited to topical reports?	In-house review	4	27	8	47	10	56	22	44
	Referee process similar to journals	10	67	9	53	5	28	24	48
	Combination of above	1	6	-	-	-	-	1	2
	Other	-	-	-	-	2	11	2	4
	No response	-	-	-	-	1	5	1	2
7. Which of the following do you believe would increase the usefulness of AEC laboratory topical reports?	Dissemination on a periodic basis, such as weekly or monthly	11	28	8	20	7	13	26	20
	Dissemination in volumes by program rather than individually	13	33	7	18	22	42	42	32
	Other	5	13	7	18	10	44	22	17
	No response	10	26	17	44	13	25	40	31
8. Do you use topical reports as well as the scientific journals for publishing the results of your research?	Yes	4	10	10	26	27	52	41	32
	No	35	90	29	74	25	48	89	68
	No response	-	-	-	-	-	-	-	-

TABULATION OF 542 QUESTIONNAIRES RETURNED, ARRANGED BY LABORATORY AND PROGRAM DIVISIONS

Questions	Possible answers	LAWRENCE RADIATION LABORATORY					
		Biology and Medicine		Chemistry		Laboratory total	
		Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent
1. Do you personally receive copies of AEC laboratory topical reports originating from other AEC laboratories?	Yes	17	40	14	38	31	39
	No	26	60	23	62	49	61
	No response	-	-	-	-	-	-
If yes, how often do you receive them?	Frequently	2	12	5	36	7	23
	Occasionally	5	29	7	50	12	39
	Infrequently	9	53	2	14	11	35
		1	6	-	-	1	3
2. If you do not personally receive these reports, are you notified of the availability of new AEC topical reports?	Yes	13	50	13	57	26	53
	No	13	50	10	43	23	47
If yes, how are you notified?	Laboratory accessions lists	5	39	6	47	11	42
	Personal contact from recipient	1	8	2	15	3	12
	Nuclear Science Abstracts	2	15	2	15	4	15
	Combination of above	3	23	3	23	6	23
	Other	2	15	-	-	2	8
3. Do you use the information presented in AEC topical reports?	Yes	32	74	34	92	66	82
	No	11	26	3	8	14	18
	No response	-	-	-	-	-	-
If yes, which if the following most accurately describes the manner in which they are used?	In connection with your own research	16	50	26	76	42	64
	General information	6	19	1	3	7	10
	Other	10	31	7	21	17	26
4. In your opinion, how reliable is the information presented in the AEC topical reports?	More reliable than journals	-	-	-	-	-	-
	Equal to journals	24	56	27	73	51	64
	Less reliable than journals	11	25	5	13	16	20
	Not reliable	-	-	1	3	1	1
	No response	8	19	4	11	12	15
5. To what extent do you believe AEC laboratory topical reports receive independent critical evaluation prior to dissemination?	Too extensively	-	-	-	-	-	-
	Adequately	23	53	21	57	44	55
	Insufficiently	8	19	7	19	15	19
	Not at all	3	7	1	3	4	5
	No response	9	21	8	21	17	21
6. In your opinion, would additional critical evaluation of AEC laboratory topical reports prior to their dissemination increase their usefulness?							
To you	Yes	10	23	11	30	21	26
	No	23	54	21	57	44	55
	No response	10	23	5	13	15	19
To recipients in general	Yes	14	33	15	40	29	36
	No	16	37	14	38	30	38
	No response	13	30	8	22	21	26
If yes, which of the following methods of critical evaluation, in your opinion, is best suited to topical reports?	In-house review	5	36	12	79	17	59
	Referee process similar to journals	8	57	1	7	9	31
	Combination of above	-	-	1	7	1	3
	No response	1	7	1	7	2	7
	Other	-	-	-	-	-	-
7. Which of the following do you believe would increase the usefulness of AEC laboratory topical reports?	Dissemination on a periodic basis, such as weekly or monthly	9	21	8	22	17	21
	Dissemination in volumes by program rather than individually	12	28	12	32	24	30
	Other	16	37	7	19	23	29
	No response	6	14	10	27	16	20
8. Do you use topical reports as well as the scientific journals for publishing the results of your research?	Yes	22	51	19	51	41	51
	No	15	35	15	41	30	38
	No response	6	14	3	8	9	11

TABULATION OF 542 QUESTIONNAIRES RETURNED, ARRANGED BY LABORATORY AND PROGRAM DIVISIONS

Questions	Possible answers	OAK RIDGE NATIONAL LABORATORY								Laboratory total	
		Biology and Medicine		Chemistry		Reactor		Isotopes		Num-ber	Per-cent
		Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent	Num-ber	Per-cent		
1. Do you personally receive copies of AEC laboratory topical reports originating from other AEC laboratories?	Yes	7	15	13	35	19	35	14	31	53	29
	No	40	85	24	65	35	65	31	69	130	71
	No response	-	-	-	-	-	-	-	-	-	-
If yes, how often do you receive them?	Frequently	1	14	1	8	6	32	1	7	9	17
	Occasionally	3	43	5	38	9	47	7	50	24	45
	Infrequently	3	43	6	46	4	21	5	36	18	34
		-	-	1	8	-	-	1	7	2	4
2. If you do not personally receive these reports, are you notified of the availability of new AEC topical reports?	Yes	17	42	20	83	32	91	27	87	96	74
	No	23	58	4	17	3	9	4	13	34	26
If yes, how are you notified?	Laboratory accessions lists	8	47	4	20	16	50	7	26	35	37
	Personal contact from recipient	1	6	1	5	1	3	3	11	6	6
	Nuclear Science Abstracts	2	11	1	5	-	-	2	7	5	5
	Combination of above	3	18	10	50	9	28	12	45	34	35
	Other	3	18	4	20	6	19	3	11	16	17
3. Do you use the information presented in AEC topical reports?	Yes	17	36	31	84	51	94	44	98	143	78
	No	26	55	6	16	3	6	1	2	36	20
	No response	4	9	-	-	-	-	-	-	4	?
If yes, which of the following most accurately describes the manner in which they are used?	In connection with your own research	10	59	22	71	28	55	23	52	83	58
	General information	3	18	3	10	6	12	7	16	19	13
	Other	4	23	6	19	17	33	14	32	41	29
4. In your opinion, how reliable is the information presented in the AEC topical reports?	More reliable than journals	1	2	-	-	7	13	7	16	15	8
	Equal to journals	13	28	27	73	32	59	32	71	104	57
	Less reliable than journals	10	21	7	19	11	20	4	9	32	18
	Not reliable	1	2	-	-	-	-	1	2	2	1
	No response	22	47	3	8	4	8	1	2	30	16
5. To what extent do you believe AEC laboratory topical reports receive independent critical evaluation prior to dissemination?	Too extensively	-	-	-	-	3	6	1	2	4	2
	Adequately	10	21	26	70	36	67	26	58	98	54
	Insufficiently	12	26	5	14	10	18	16	36	43	23
	Not at all	4	8	-	-	-	-	-	-	4	2
	No response	21	45	6	16	5	9	2	4	34	19
6. In your opinion, would additional critical evaluation of AEC laboratory topical reports prior to their dissemination increase their usefulness?											
To you	Yes	8	17	6	16	10	18	15	33	39	21
	No	17	36	28	76	42	78	29	65	116	64
	No response	22	47	3	8	2	4	1	2	28	15
To recipients in general	Yes	13	28	10	27	12	22	19	42	54	30
	No	10	21	20	54	35	65	22	49	87	47
	No response	24	51	7	19	7	13	4	9	42	23
If yes, which of the following methods of critical evaluation, in your opinion, is best suited to topical reports?	In-house review	9	69	10	100	8	67	11	58	38	70
	Referee process similar to journals	3	23	-	-	4	33	7	37	14	26
	Combination of above	1	8	-	-	-	-	-	-	1	2
	No response	-	-	-	-	-	-	-	-	-	-
	Other	-	-	-	-	-	-	1	5	1	2
7. Which of the following do you believe would increase the usefulness of AEC laboratory topical reports?	Dissemination on a periodic basis, such as weekly or monthly	3	6	7	19	8	15	18	40	36	20
	Dissemination in volumes by program rather than individually	16	34	13	35	9	17	13	29	51	28
	Other	6	13	10	27	27	50	8	18	51	28
	No response	22	47	7	19	10	18	6	13	45	24
8. Do you use topical reports as well as the scientific journals for publishing the results of your research?	Yes	3	6	13	35	48	89	40	89	104	57
	No	40	85	24	65	5	9	3	7	72	39
	No response	4	9	-	-	1	2	2	4	7	4

^aIncludes Materials Science and Chemical Engineering Divisions.

^bApplied Sciences Department.

APPENDIX V

PRINCIPAL MANAGEMENT OFFICIALS
 OF THE
 ATOMIC ENERGY COMMISSION
 RESPONSIBLE FOR THE ACTIVITIES
 DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
CHAIRMAN: Dr. Glenn T. Seaborg	Mar. 1961	Present
GENERAL MANAGER: R. E. Hollingsworth	Aug. 1964	Present
ASSISTANT GENERAL MANAGER FOR ADMIN- ISTRATION: John V. Vinciguerra	May 1966	Present
DIRECTOR, DIVISION OF TECHNICAL IN- FORMATION: Edward J. Brunenkant	Apr. 1961	Present
FIELD OFFICE MANAGERS:		
Chicago Operations Office: Kenneth A. Dunbar	Nov. 1957	Present
New York Operations Office: Wesley M. Johnson	Jan. 1964	Present
Oak Ridge Operations Office: S. R. Sapirie	Feb. 1951	Present
San Francisco Operations Office: Ellison C. Shute	Dec. 1958	Present