PROCEEDINGS OF CONFERENCE ON

the literature of nuclear science

its management and use

September 11-13

1962

UNITED STATES
ATOMIC ENERGY COMMISSION

Division of
Technical Information Extension
Oak Ridge, Tennessee

THE LITERATURE OF NUCLEAR SCIENCE:

ITS MANAGEMENT AND USE

Proceedings of Conference Held at
Division of Technical Information
Extension, Oak Ridge, Tennessee,
September 11-13, 1962

Issuance Date: December 1962

U. S. ATOMIC ENERGY COMMISSION
Division of Technical Information Extension
Oak Ridge, Tennessee

PREFACE

The U. S. Atomic Energy Commission recognizes that technical library service is one of the most important means for effectively carrying out the AEC's mission of disseminating scientific and technical information as prescribed by the Atomic Energy Act. Although other means of making technical information available to scientists are employed by the AEC, the well-managed library with "service" as its operating philosophy, is still, and will continue to be, the primary storehouse for scientists in their quest for information.

Specialized library services have been an integral part of the technical information program of AEC contractors since the Manhattan Engineer District days. The AEC Depository Library Program was inaugurated in 1949 as another means of making available the vast amount of research and development information generated under AEC sponsorship.

The Division of Technical Information (DTI) considered from the beginning that it should not be satisfied with a passive philosophy which assumes that its obligations under the Atomic Energy Act were discharged after the AEC research and development reports were made available through the contractor and depository libraries and through sale by the Office of Technical Services, U. S. Department of Commerce. DTI has continued to provide supplemental services that facilitate the use of the nuclear energy information. Abstract journals, bibliographies, request service for reports, and other supporting activities were put into operation in the latter part of the 1940's. All these services are intended to make it possible to bibliographically control, retrieve, and exploit the information readily when the working scientist needs it.

This meeting of AEC contractor and depository librarians was the result of the belief by DTI and the AEC's Technical Information Panel that a meeting of working librarians would be highly beneficial. It was the consensus that these librarians should meet periodically to exchange ideas, to hear papers on new developments, and to get a better idea of the overall objectives of the AEC's technical information program.

It is regretted that it was not practical to invite to this meeting all non-AEC organizations that use DTI services.

DTI urges any participant who has not returned a copy of the questionnaire that is found in the appendix to do so. If there are others who would be willing to offer suggestions they are also urged to return the questionnaire.

The success of the meeting is attributed to the support given by the AEC's Technical Information Panel, the cooperation of the speakers, and the enthusiastic participation by all who attended.

These proceedings include: (1) speeches presented, (2) materials used in support of speeches, and (3) discussions that followed each session.

Paul E. Postell

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INTRODUCTION

The scientific and technological data, knowledge, and understanding developed by this country's atomic energy program is a great national resource. Unless this resource is available for use, and used by men and women of talent, education, energy, and imagination, a great national investment will be lost, and the rate of scientific and economic growth will falter.

We, at the AEC, recognize the increasingly important role the science librarians must play in the handling of nuclear information. That is why we're delighted to cosponsor in cooperation with a great national scientific institution, the Oak Ridge National Laboratory, this three-day meeting and workshop.

Congress gave the AEC a clear and wise information charter: ".... The dissemination of scientific and technical information...should be permitted and encouraged so as to provide that free interchange of ideas and criticism---essential to scientific and industrial progress and public understanding..."

We, in the information business, must hang reality and substance to the spirit and intent of that charter.

Edward J. Brunenkant

Director

AEC Division of Technical Information

THE AEC TECHNICAL INFORMATION PROGRAM

Robert L. Shannon

Division of Technical Information Extension
U. S. Atomic Energy Commission

I should like to extend to each of you a most cordial welcome to Oak Ridge and to the Division of Technical Information Extension.

The responses to our invitations to this meeting were so enthusiastic that we were forced to limit the attendance. We regret this very much, but we will have printed proceedings available for you and for those who could not attend, and we hope to schedule another meeting for the benefit of those who could not attend today.

I have always enjoyed the story that the late Vice President Barkley used to tell. In one election, Senator Barkley learned that one of his constituents hadn't voted for him, so the next time he was in the hill country, he stopped by to see the old farmer. "Jake," he said, "I heard you didn't vote for me and I just can't understand you. Why, back in the depression I got you and two of your brothers on relief and later on I got two of your boys jobs on the WPA. And that time your hay fields burned up, I helped you get credit to buy feed for your stock. One time I personally loaned you $500 to build a new barn and you never did pay it back, but I didn't press you. I got your tobacco allotment raised and helped get a new hard-top road in to your place. I just don't understand why you wouldn't vote for me after all I've done for you." The old farmer looked Barkley square in the eye and said, "I'll tell you, Senator, it's because you ain't done nothin' for me lately."

I think we find ourselves in a similar situation that requires us to keep doing things for you folks "lately." But on the other hand, I don't believe that you've forgotton what we've done in the past.

I'd like to set the tenor and atmosphere for this meeting right now. We want it to be a down-to-earth, working-level, shirt-sleeves session. We want you to know us, know what we are doing, and perhaps in some instances to know how we do it. Please feel free to ask questions. If we don't know the answer offhand, we'll get it.

We've got a big job here and a big mission to accomplish.

Certainly we're in business primarily for the benefit of the Atomic Energy Commission and its contractors, and for other Government agencies and their contractors. Representatives of these groups are here. At the same time, the Atomic Energy Act itself specifies what we must do for the international scientific community. You representatives of the various depository libraries certainly can be proud of the way you have helped us discharge this obligation.

I am impressed by the size of this group here today, and by the number of organizations you represent. We hear a lot these days about the Atomic Energy Program's glamour being lost to our partners in the Space Program, etc. Perhaps this is true. We admit that the Commission's Programs and missions are essentially earth-bound. I'd like to turn this around a bit and say that the Commission's Technical Information Program is down to earth. We hear a lot about technical and scientific information these days. Regardless of who is generating it, it has emerged as a great and glamorous and, ostensibly, a brand new thing, a fertile field, etc. We hear how information is a monstrous, untamable thing that is going to gobble us all up.

It's a stylish topic for the sophisticated, a profit motivation for machine makers, and a way of life for the big thinkers. From pole to pole, nowadays, the big thing is information. There are societies and corporations, companies, committees, consultants, agencies, federations, and confederations. There are courses, orientations, schools, cooperators, and operators--all willing to outline the PROBLEM (in capital letters) and perhaps the solution. You will forgive me for being a little facetious here, but the point I'm trying to make is whether or not our solution is glamorous, our system for the acquisition, dissemination, control, and retrieving information <u>works</u>. I am not certain that everyone who should know this does know <u>this</u>. I can't help but quote Sir Humphry Davy who once said, "The greater the circle of light, the greater the boundary of darkness surrounding it."

A week ago today, this room contained one copy each of something less than a half-million unclassified scientific and technical reports. The vault behind me still contains one copy each of a very large number of classified reports. This collection represents the sum total of nuclear science and technology, the research, development, and technological data developed by the Manhattan District; the AEC; certain Department of Defense, and other Government agencies; foreign nations with which the AEC has agreements for technical cooperation; and of many private research organizations. All of this information has been properly disseminated, and the means for retrieval is available. That

sounds like a simple statement. It probably is one of the most significant statements that I or anyone in the AEC Technical Information Program could make. I don't think any other U. S. Government agency can yet make that statement, and I sincerely wish them God-speed.

I am impressed that so many of you came today to share with us some of the things that make up the management and use of the literature of nuclear science. You have a big part in this and our purpose is to help you in any way we can.

Before I conclude, I would like to tell you a little about our organization here. I believe you picked up an organization chart on your way in--if you wish to refer to it.

We report to the Headquarters Division of Technical Information--or rather, we are an Extension of the Headquarters Division of Technical Information. Mr. Brunenkant, the Director of the Division of Technical Information, is my boss. Mr. Richard Berg, Deputy Director of DTI, and I take up the next two lines in that top box. Dick, will you stand, please.

Then we split, as you see, and I wear another hat as Manager of the Extension. Bill Vaden is my Deputy.

Our organization is divided into five functional branches--John Norris is the Chief of our Cataloging Branch--John. Paul Postell, who has put a good many hours as coordinator of the meeting, is Chief of our Reference Branch--Paul.

We have a distinction between our Publishing and Printing Branches which I want to point out. Publishing gets material ready for printing in the form of repro copy, and the Printing Branch takes the material which is ready for photography, etc.

Some of the products of the Publishing Branch are not printed by our printing plant. Nuclear Science Abstracts is one example; other items go to the Government Printing Office. On the other hand, our Printing Branch is able to handle a great deal of material without any appreciable handling by Publishing.

Charlie Bruce, Chief of our Publishing Branch, and Ed Schulte, Chief of our Printing Branch.

Tom Laughlin, Chief of our Document Management Branch, has a tremendous housekeeping and services function to perform. He runs a post office and express agency, keeps all our document files, handles all distribution, handles the majority of requests for documents, operates IBM equipment, etc.

Currently, we have 220 people working in DTIE. If you are interested in numbers--we print 80 million pages annually; we distribute 3 million Microcards and 3 million full-size reports; handle 100,000 requests. We catalog 40,000 reports and journal articles and spend more than one-third of all the postage paid by the entire Atomic Energy Commission! We operate a small railroad about 500 yards long, and we all work as if we owned this factory!

If you are wondering what happened to those half-million reports that were here last week, we moved them over to the next bay--because we were going to do that anyhow.

I hope by now you're relaxed and comfortable--all set to enjoy the first session which is being chaired by Walter Kee, Chief of our Headquarters Library in Washington. Walt.

SESSION I

A. ACQUISITION, SELECTION, AND DISSEMINATION IN DTI

ACQUISITION AND DISSEMINATION PROCEDURES

Robert C. Kelly

Division of Technical Information Extension
U. S. Atomic Energy Commission

This session of the program deals with the acquisition, evaluation, and dissemination services of the Division of Technical Information. I'm Chief of the Evaluation Section here at DTI Extension. Our responsibilities include the evaluation and descriptive cataloging of all reports and published literature processed for announcement in our abstract journals. The following two speakers will cover the evaluation function of both classified and unclassified technical information in greater detail. I would like to discuss generally our acquisition and dissemination programs.

ACQUISITION OF TECHNICAL INFORMATION

We consider the acquisition of technical information to be of special importance. This is true in any organization whose mission is the collection, cataloging, and dissemination of technical information.

Much of our information does not have to be acquisitioned, but comes to us automatically via the AEC's standard distribution system. In addition, we receive regularly many reports from the Department of Defense, the National Aeronautics and Space Administration and their contractors, and from other government agencies and their contractors. For example, we have for years received the reports of the Naval Research Laboratory, the Naval Radiological Defense Laboratory, the Army Medical Research Laboratory, and various categories of reports from the Aeronautical Systems Division of the Air Force, and the National Bureau of Standards. We have also received reports from the United Kingdom and Canada for many years, and are receiving in increasing numbers the reports and journals of several other countries as a result of our exchange program. We constantly strive to obtain on an automatic basis as much as possible of the world's literature on nuclear science and technology.

The fluid nature of the field of nuclear science dictates that we must conduct a vigorous positive acquisition program. I would like to point out here that each of you can help this effort by sending materials to us automatically which you feel will be of interest and value to the international atomic energy programs. We find that to reach or closely approximate complete coverage of the world's literature we must constantly be on the alert for new sources or leads to new sources of technical information. These sources usually emanate from the following: (1) announcements of new contracts or studies by the AEC or other government agencies from which we feel reports of interest will ensue, (2) announcements of scientific meetings or symposia, (3) announcements of new books in journals regularly scanned or via publisher's lists, (4) announcements of new scientific or technical journals, and (5) requests from AEC and/or DOD offices and contractors for reports not in our files. I will have more to say about this in a moment.

We select material for much of our acquisitioning by scanning such well-known sources as the ASTIA Technical Abstract Bulletin, the Technical Publications Announcements of the National Aeronautics and Space Administration, Research Proposals of the Office of Aerospace Research, cumulated price lists and daily flyers of the Office of Technical Services, etc. We also receive and scan accession lists from many of our contractors, Department of Defense Agencies, the International Atomic Energy Agency, the United Kingdom and other countries.

Despite our scanning efforts, we are unable to acquire beforehand, or for that matter anticipate, everything that might be of interest to the users of our services. Therefore, a good portion of our acquisitioning is in response to requests for both AEC and non-AEC reports not in DTI Extension files. If the request is justified, in the sense that the item requested should be obtained through DTI Extension, an effort is made to get it. Acquisitioning in response to direct requests serves to increase our report holdings considerably.

When a request for a report is received, we make a check of our card catalog to determine whether or not we have the report. This involves a check of the report number, personal author, and possibly the corporate author sections of the catalog. When we determine that we do not have the report, the necessary forms are prepared to initiate the acquisition action. Despite our efforts to avoid requesting reports which have already been sent to us, we may occasionally

request one which is a duplicate of one we already have. This occurs because we get a request for a report which is already here but which is not under bibliographic control due to its recent receipt.

In requesting AEC reports, we ask for sufficient copies to fill the request, to provide a master copy for DTI Extension files, and to send a copy to the Office of Technical Services for public sale. We do the same for non-AEC reports except that they are not sent to OTS.

Fortunately, we get good cooperation in our acquisition program and it is the exception rather than the rule where we do not get either the report or a satisfactory answer as to the reasons for withholding it. We, of course, do not always get the item requested, but the answers we get enable us to know what further action to take. I might add that a copy of the request is filed in the Receiving Section along with a copy of the acquisition form to assure that the report is sent to the requester as soon as possible once the report is in hand. When the report is received, it is sent to the Evaluation Section where it is evaluated for inclusion in our abstract journals.

Now, let us turn to the dissemination of technical information.

DISSEMINATION OF TECHNICAL INFORMATION

One of the major programs of the AEC under the Atomic Energy Act is the dissemination of unclassified scientific and technical information and the control, dissemination, and declassification of Restricted Data, subject to appropriate safeguards, so as to encourage scientific and industrial progress. The Division of Technical Information has the responsibility for the administration of the technical information programs of the AEC. These include (a) the dissemination of classified and unclassified scientific and technical information; (b) the administration of the operation of DTI Extension which provides central publishing, reference, document collection, and standard and special distribution services; and (c) the development of AEC-wide policies, standards, and procedures for technical information services and the appraisal of the technical information programs of the operations offices.

As a part of our total information dissemination program, I would like to discuss the standard distribution system. I will also talk briefly about what we at DTI Extension call

positive distribution. We maintain the standard distribution system to promote the broadest and most expeditious dissemination of technical reports to authorized official recipients in the national nuclear energy effort. This system provides for the direct distribution of technical reports by the issuing organizations to installations that have an official requirement for the information. A stock of full size copies is also provided DTI Extension at the same time to fill other requests and to sell to participants in the Civilian Applications Program. The system is used for the distribution of both classified and unclassified reports. In the case of classified information, however, distribution must be made consistent with the requirements of national security. Distribution of a sufficient number of copies of unclassified reports is made to DTI Extension to send to the AEC's domestic and foreign depository libraries, to provide copies to those domestic and foreign organizations with which we have exchange agreements, for distribution to other organizations which have a short-term need for the information and therefore not listed in the standard distribution lists, and to provide us with a small stock to fill future requests for eye-legible copies.

As most of you know, in the standard distribution system we use a number of subject categories, along with scope notes that describe each category. The scope notes enable the originator to quickly categorize and distribute his report. Most of the subject categories are rather broad in scope. For example, Category UC-4, "Chemistry" in TID-4500, includes all reports on fundamental chemistry, physical chemistry, analytical chemistry, radiochemistry and tracer chemistry. It is necessary, therefore, for the site which is interested only in radiochemistry to take all reports in the category if standard distribution is desired. We have endeavored to develop a balanced system of categories; one that does not attempt to divide the total technical information output of the AEC too finely with the attendant problems of categorization and maintenance of the distribution lists. On the other hand, we want the scope of the categories to be well defined but limited enough to permit a degree of selectivity so that the majority of sites will not need to take large numbers of reports they do not need.

Now, let us look at the standard distribution lists and examine them in more detail.

USAEC Standard Distribution Lists for Classified Scientific and Technical Reports (M-3679)

Classified reports are distributed in accordance with

the distribution lists contained in M-3679. This publication, prepared and issued periodically by DTI Extension, contains three principal parts: (1) a listing of the subject categories, along with scope notes that describe each category, (2) a listing of organizations approved to receive reports in each category, and (3) a list of current Transfer and Accountability Stations and other security cleared addresses. In addition, M-3679 contains pricing and sales information pertinent to classified reports releasable to holders of access permits in the Civilian Application Program.

The standard distribution lists contained in M-3679 are revised semiannually to incorporate changing organizational interests and needs. Revisions in the category definitions necessitated by changes in the emphasis or scope of the atomic energy programs are also included.

To be eligible to receive classified reports on standard distribution, AEC offices and contractors must either be appointed Transfer and Accountability Stations by the manager of the Operations Office or the responsible program division in Washington, or they must be an Accountability Station and receive classified reports through the responsible T-A station.

Some of the classified distribution categories contain sensitive production or reactor information. Before access to reports in these categories may be granted, we must have the concurrence of the cognizant Washington program division. Lee Thompson will discuss this in greater detail in a few minutes.

Department of Defense and National Aeronautics and Space Administration Offices may obtain classified AEC reports for themselves and their contractors only on the basis of a certification of security clearance and need-to-know. This certification must be in writing and signed by, or in the name of, one of the DOD or NASA officials listed in AEC Manual Appendix 2318-03.

Other government agencies may obtain classified information from the AEC under the provisions of Executive Order 10501 provided that there is a valid need and the recipient has a Q clearance. Here, also, the need for the sensitive categories must be supported by the appropriate Washington program division.

USAEC Standard Distribution Lists for Unclassified Scientific and Technical Reports (TID-4500)

Unclassified reports are distributed in accordance with the distribution lists contained in TID-4500. This publication,

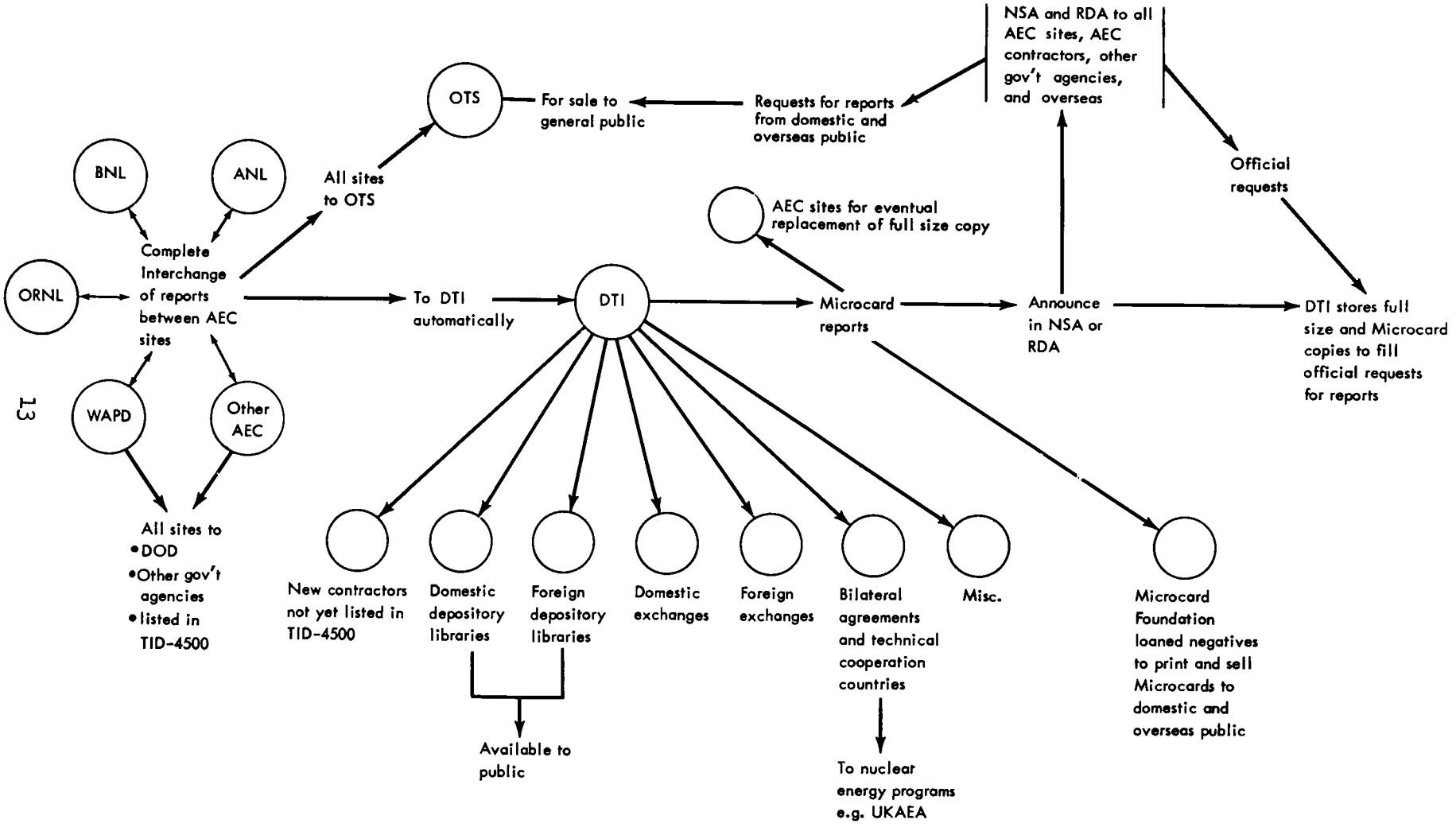
also prepared and issued periodically by DTI Extension, contains scope notes which describe the subject categories and lists of organizations permitted to receive such reports on an official basis. They further allow an organization, although eligible to receive all categories, to control their receipt of unclassified reports on a selective basis. Each succeeding edition adjusts the distribution lists according to current needs. TID-4500 contains information on the categorization of reports, use of the Publication Release Form, AEC-426, use of the administrative marking "Official Use Only", imprinting instructions, and instructions relative to the pricing and sale of reports through the Office of Technical Services.

Positive Distribution

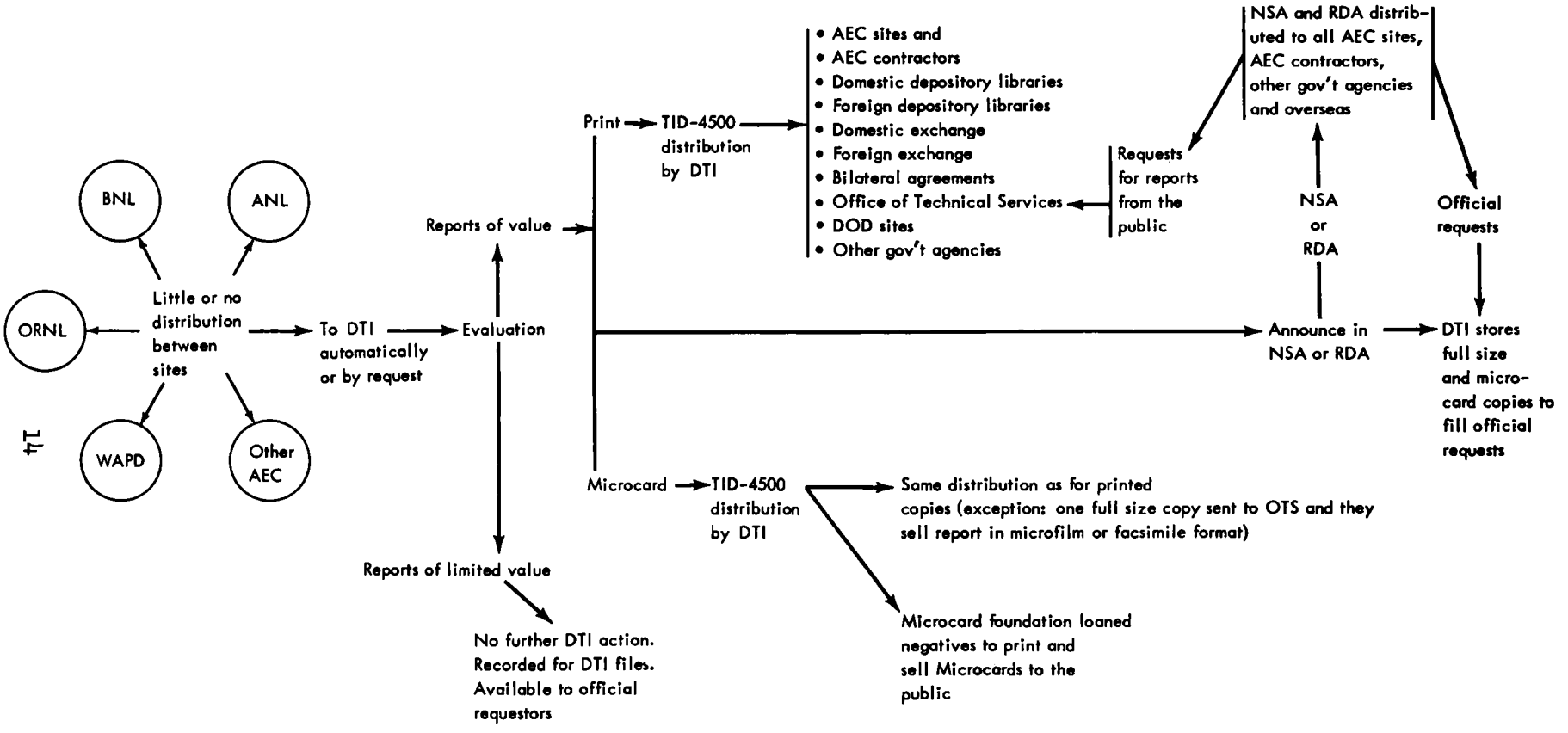
Due to the broad scope of the classified distribution categories, some installations may have a continuing requirement for only a part of the information contained in certain of these categories. In order to satisfy this requirement, the DTI Extension maintains "Positive Distribution" lists for each category, listing the installation and its information requirements. Installations may be included on these lists for either "automatic" or "request" positive distribution. On automatic positive, new reports received by DTI Extension are reviewed and the required distribution of the document is authorized and transmitted without waiting for a specific request. Some installations do not want to get reports automatically by standard distribution or by automatic positive but prefer to request them after learning of their existence in our weekly classified accession list or "Abstracts of Classified Reports". These installations have their need established for certain categories or portions of categories in advance and then request reports from us as the need arises.

I have briefly summarized a part of our dissemination program. Other parts of the program such as the civilian application program, dissemination of technical information to the general public, and the handling of requests for specific reports will be covered by other speakers later in the meeting.

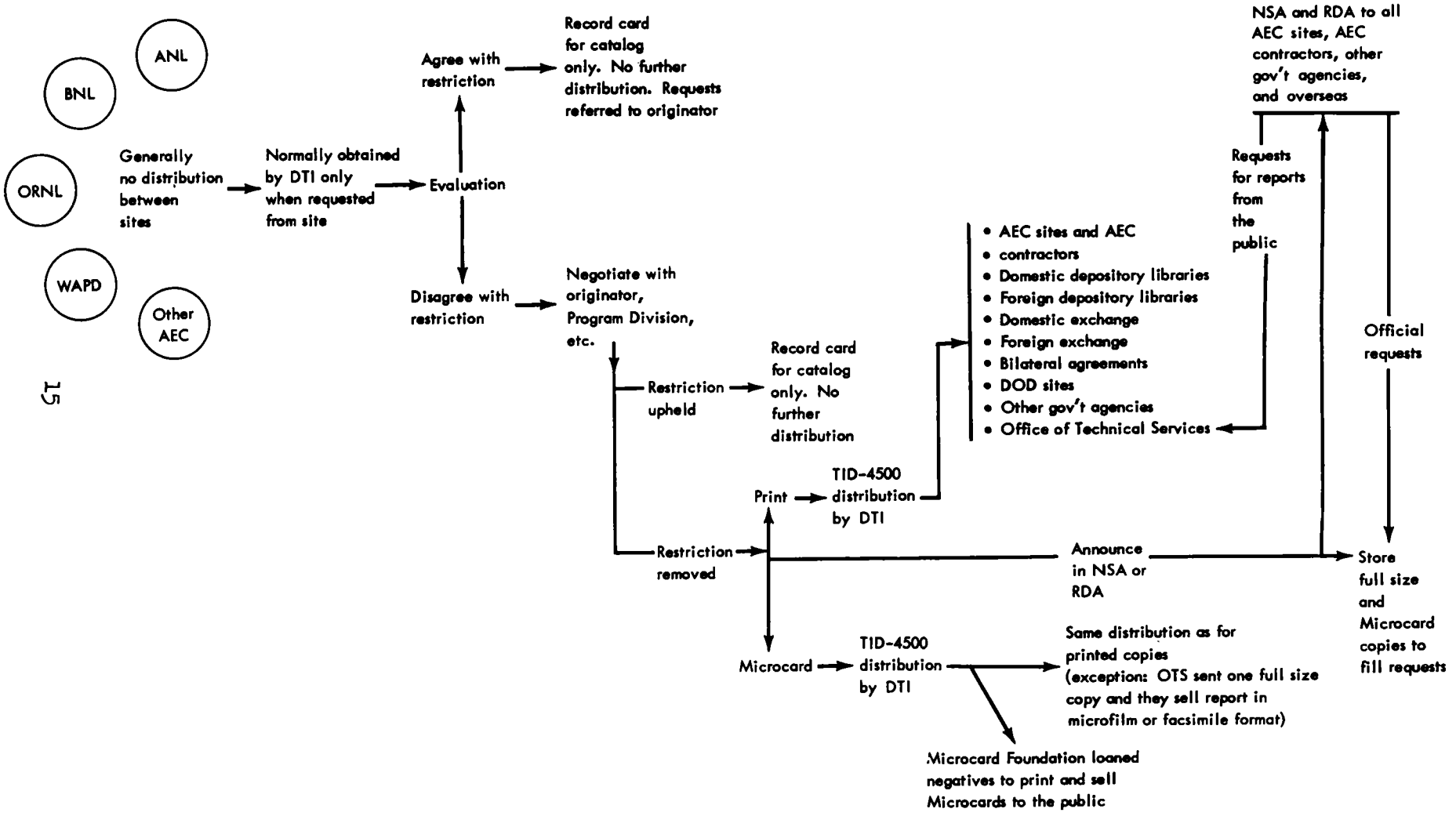
UNCLASSIFIED AEC REPORTS RECEIVING STANDARD DISTRIBUTION ACCORDING TO TID-4500



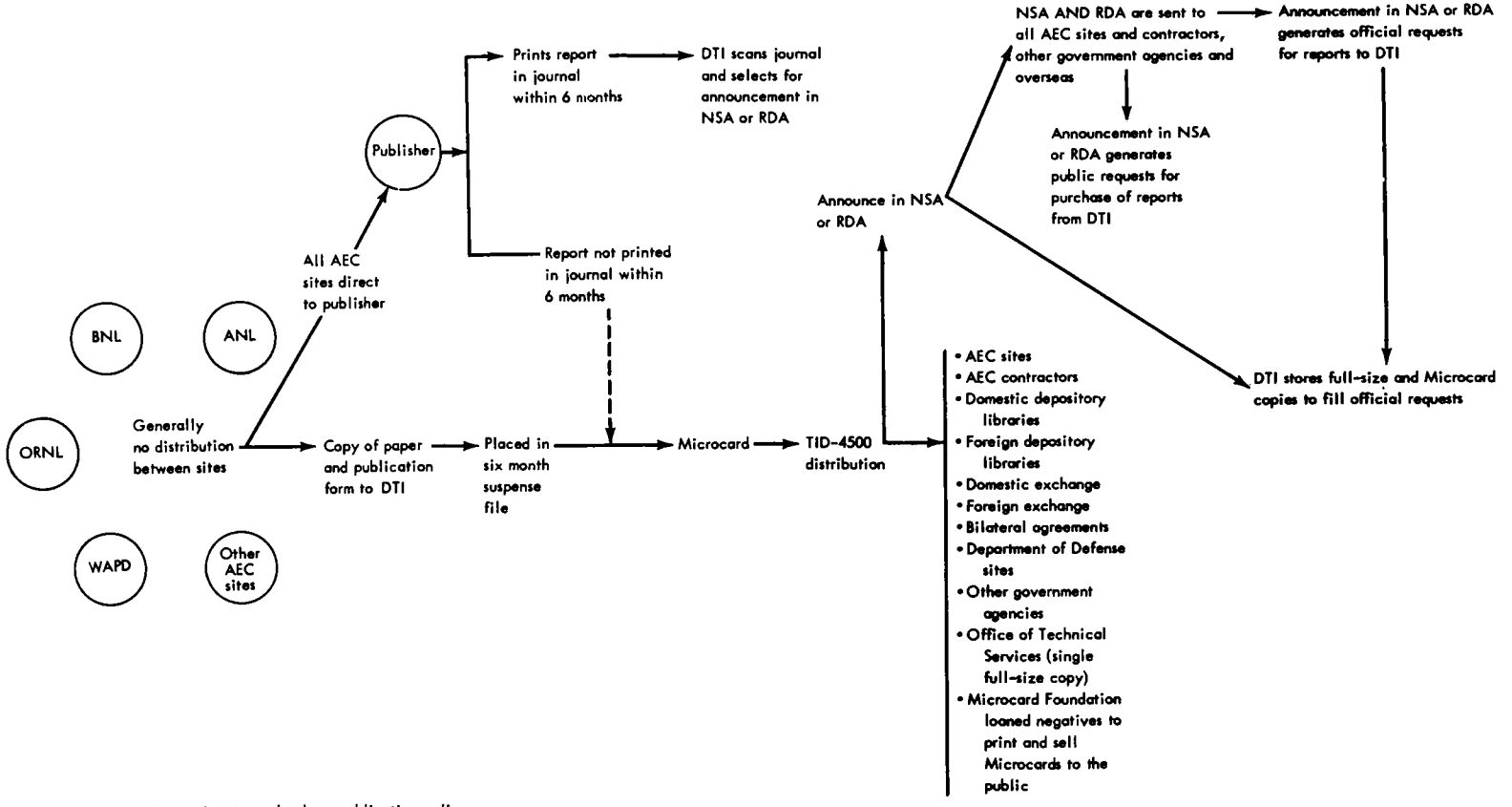
UNCLASSIFIED AEC REPORTS NOT RECEIVING STANDARD DISTRIBUTION (WITH NO ORIGINATOR RESTRICTIONS ON DISTRIBUTION)



UNCLASSIFIED AEC REPORTS NOT RECEIVING STANDARD DISTRIBUTION (WITH ORIGINATOR RESTRICTIONS ON DISTRIBUTION)

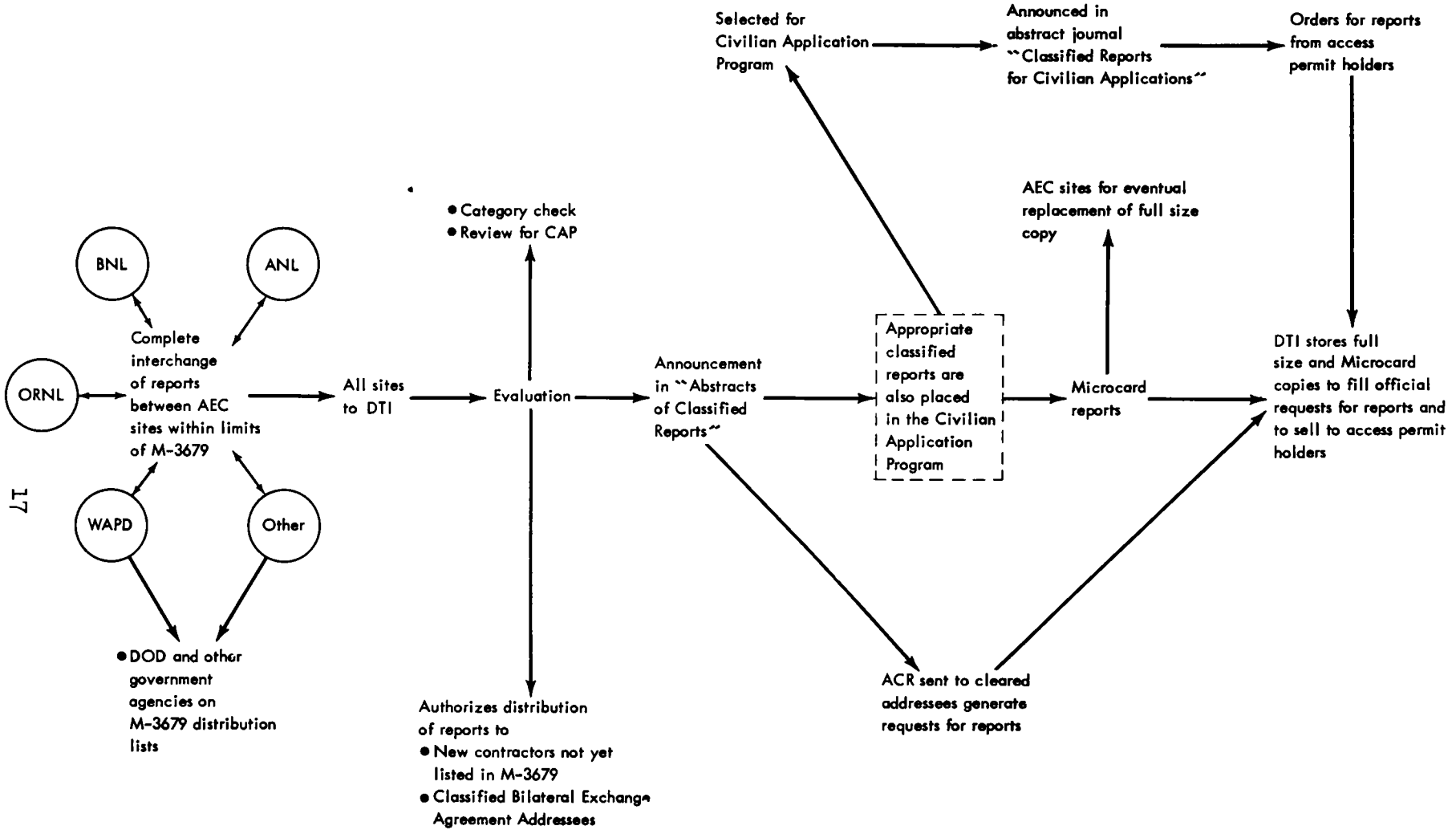


AEC DOCUMENTS INTENDED FOR PUBLICATION IN A JOURNAL WHOSE PUBLICATION POLICY PRECLUDES ADVANCE DISTRIBUTION WITHIN THE AEC, SINGLE COPY DISTRIBUTION TO OTS, AND TO DOMESTIC DEPOSITORY LIBRARIES*

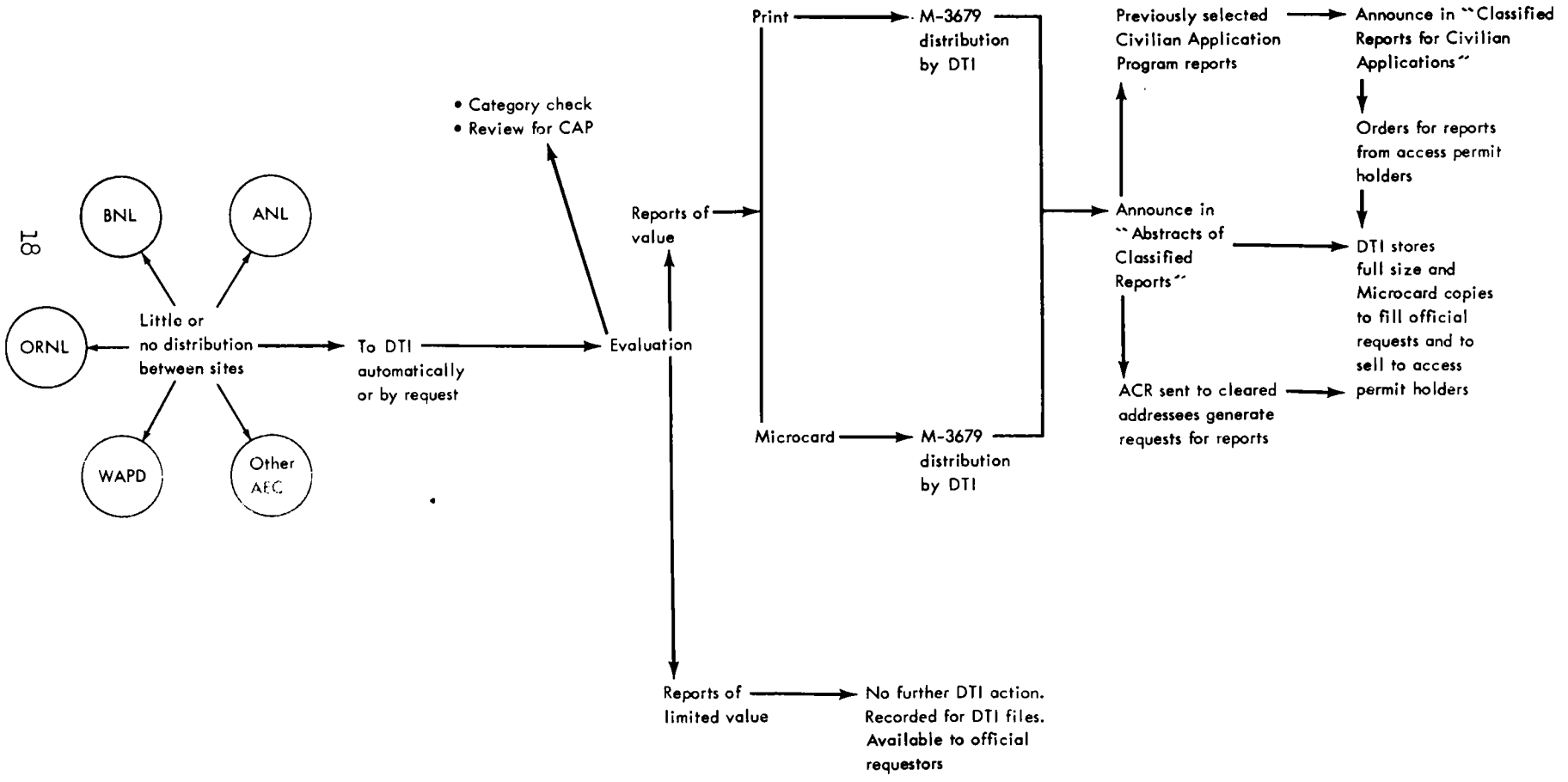


*Papers submitted to journals whose publication policy does not preclude advance distribution within the AEC, and single copy distribution to OTS and domestic depositories, are given such distribution by the site or by DTI.

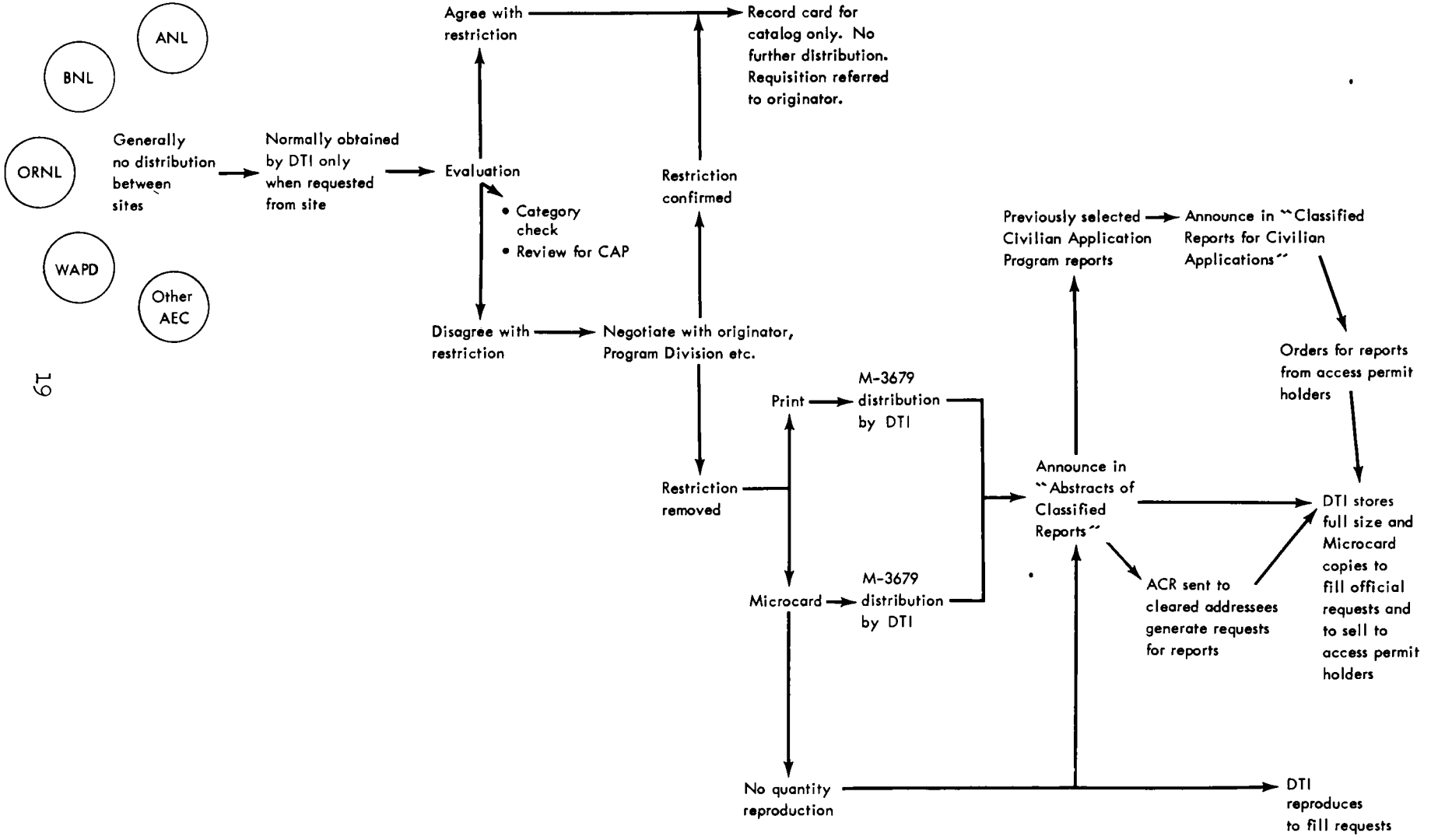
CLASSIFIED AEC REPORTS RECEIVING STANDARD DISTRIBUTION ACCORDING TO M-3679



CLASSIFIED AEC REPORTS NOT RECEIVING STANDARD DISTRIBUTION (WITH NO ORIGINATOR RESTRICTIONS ON DISTRIBUTION)



CLASSIFIED AEC REPORTS NOT RECEIVING STANDARD DISTRIBUTION (WITH ORIGINATOR RESTRICTIONS ON DISTRIBUTION)



Sample Pages

TID-4500
August 1962

UNITED STATES ATOMIC ENERGY COMMISSION

Standard DISTRIBUTION LISTS

for Unclassified Scientific and Technical Reports

Issued by

DIVISION OF TECHNICAL INFORMATION

ATOMIC ENERGY COMMISSION
Division of Technical Information
Washington 25, D. C.

PREFACE

Report TID-4500 was first issued on November 15, 1950. The function of these lists is to provide for the effective distribution of unclassified AEC research and development reports by providing lists of organizations permitted to receive such reports on an official basis. They further allow an organization, although eligible to receive all categories, to control their receipt of unclassified reports on a selective basis. Each succeeding edition adjusts the distribution lists according to current needs.

These lists contain two basic and related parts:

1. Category scope notes which enable proper categorization of reports to be made and
2. Approved distribution lists for each category.

POLICY

By authority of AEC Manual Chapter 3202, all unclassified formal research and development reports shall be distributed in the most appropriate category listed herein. It is desirable that informal research and development reports be distributed in the same way. Internal reports (as defined in 3202-043) normally will not receive distribution in accordance with the categories listed. If, however, a distribution is made of such a document outside the originating site (exclusive of the responsible operations office or cognizant Washington program division) the document can no longer be considered internal and should be issued as a research and development report by the originator (See 3202-062).

The following types of documents should NOT be distributed in accordance with the categories listed herein:

1. Program proposals which contain little or no research and development information.
2. Private communications and documents written primarily to convey administrative, personnel, financial, or other nontechnical information.

Questions on the meaning or interpretation of Chapter 3202 on AEC policy governing the distribution of unclassified reports or on the types of documents to be distributed in accordance with these lists should be directed to the Division of Technical Information, U. S. Atomic Energy Commission, Washington, D. C.

Requests for addition of official recipients to particular categories, or questions concerning the distribution of specific documents, should be directed to the Division of Technical Information Extension, Oak Ridge, Tennessee.

CATEGORIZATION OF REPORTS

Before issuance of a new report, the originating installation should determine the subject category into which the report falls.

Care should be exercised so that reports are distributed in the most appropriate category. General, miscellaneous, and progress reports which include information contained in more than one category should be distributed in category UC-2. Progress reports covering a single category contained in these lists should be issued under the applicable category. Provided the technical value to the AEC program is not destroyed, all reports should be prepared so that they may receive the broadest unclassified distribution.

USE OF PUBLICATION RELEASE FORM

When unclassified reports are initially distributed under these lists, or, when any other unclassified report is initially transmitted to the Division of Technical Information Extension, a Publication Release Form should be submitted. The Publication Release Form, Form AEC-426, is illustrated on pages 3 and 4.

USE OF "OFFICIAL USE ONLY" MARKING

The administrative marking "Official Use Only" may only be used as authorized by AEC Manual Chapter 2104. Trade secrets of a private contractor, proposed policy statements of the AEC, medical histories of personnel, pending patent applications, and other administrative information of a privileged nature may be appropriately marked "Official Use Only." Reports bearing the marking "Official Use Only" will be distributed in accordance with the most appropriate category contained in M-3679, "Standard Distribution Lists for Classified Scientific and Technical Reports," and are not available to the Civilian Application Program.

DISTRIBUTION OF REPORTS

When reports are issued and distributed according to these lists by the originating organization, copies are automatically provided to the official recipients listed under the appropriate category as well as to the Office of Technical Services, Department of Commerce, Washington, for sale to the general public. A sufficient number of copies are forwarded to the Division of Technical Information Extension for further distribution to domestic and foreign depository libraries, (a current list of both domestic and foreign depositories is contained in each semi-monthly issue of *Nuclear Science Abstracts)* to foreign governments with which the AEC has agreements for technical co-operation and to other organizations with which information exchange agreements exist. A sufficient number of copies are maintained by DTI Extension as stock to fill requests from official sources.

ANNOUNCEMENT IN *NUCLEAR SCIENCE ABSTRACTS*

Reports distributed by these lists are evaluated for abstracting and indexing in *Nuclear Science Abstracts* and *Research and Development Abstracts of the USAEC.*

REQUESTS FOR REPORTS

Requests may be submitted to the Division of Technical Information Extension (using standard Form OR-540) for copies of any documents issued under these distribution lists.

Form AEC-426(11-61)
AEC Manual Chapter 3202, Appendix 064a

UNITED STATES ATOMIC ENERGY COMMISSION
PUBLICATION RELEASE FORM

Document Number

INSTRUCTIONS: This form should accompany each UNCLASSIFIED document the first time it is submitted to the USAEC Division of Technical Information Extension, Post Office Box 62, Oak Ridge, Tennessee.

Document Title _____ Date of Document _____

Author(s) _____ Contract No. _____

I. ☐ Research and Development Report Enclosed is a TID-4500 Standard Distribution Report as defined in AEC Manual Chapter 3202. No Journal Publication or Oral Presentation is Intended. (Use Section II or III below if Journal Publication is Intended or Section IV if Oral Presentation is Intended.)

1. ☐ Complete TID-4500 distribution has been made, including copies to the Office of Technical Services, Department of Commerce (OTS sale price is $_____). The number of copies specified in TID-4500 have been forwarded to the Division of Technical Information Extension for stock and for further distribution to domestic and foreign depository libraries, foreign exchange organizations, etc., and for announcement in Nuclear Science Abstracts.
2. ☐ Document has been printed but complete TID-4500 distribution has not been made. Copies are being furnished for the Division of Technical Information Extension to:
   a. ☐ Make complete TID-4500 distribution including copies to OTS (sale price is $_____) and to depository libraries, etc.
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(Over)

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_____ _____
Name, Location, Sponsor of Meeting Date

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AEC Manual Chapter 3202 requires that informal reports generally be given TID-4500 distribution, and that technical information contained in internal reports also appear in a distributable document which receives appropriate distribution.

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When reports of any page content are considered by the originating site to be of exceptional public interest, the site is encouraged to request that the Division of Technical Information negotiate a lower OTS sale price than given in the following schedule, and an increase in the number of copies normally prcvided OTS.

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SUBJECT CATEGORY TABLE OF CONTENTS

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Reports in this category include information on:

1. The progress of laboratory-wide or program-wide activities whose subject matter is not limited to a single subject category as defined in these lists.
2. Other reports which include information contained in more than one other category listed herein or which contain information not defined in another category listed herein.

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Deletions from the 17th Edition

1		Glasstone, Samuel
1		Goodyear Aircraft, Akron (BUWEPS)
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1		U. S. Geological Survey, Naval Gun Factory

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Gentlemen:

As required by the AEC Manual Chapter 2109-16 the following certification by, or in the name of, _____,
one of the Department of Defense or National Aeronautics and Space Administration officials listed in AEC Manual Appendix 2318-03 is as follows:

a. _____
_____
is an ☐ office or ☐ contractor of the ☐ Air Force, ☐ Army, ☐ Navy, ☐ NASA, or ☐ other Department of Defense or NASA agency performing under contract _____
at the following security address:

b. The M-3679 category(ies) of reports required for the installation or office in a. above are:

☐ C-1 Abstracts of Classified Reports
☐ C-24 Isotope Separation-Gas Centrifuge Method
☐ C-44a Nuclear Technology – Materials
☐ C-44b Nuclear Technology – Chemistry and Chemical Engineering
☐ C-44c Nuclear Technology – Reactor Engineering and Technology
☐ C-52 Technology – Gaseous Diffusion Process
☐ C-57 Technology – Tritium Production
☐ C-65 Plutonium Production
☐ C-73 Nuclear Weapons and Effects
☐ C-82 Reactors – Special Features of Naval Reactors
☐ C-83 Reactors – Critical Features of Military Power Reactors
☐ C-90 Nuclear Reactors for Ram-Jet Propulsion
☐ C-91 Nuclear Reactors for Rocket Propulsion
☐ C-92a Systems for Nuclear Auxiliary Power (SNAP)-Isotopic SNAP Program
☐ C-92b Systems for Nuclear Auxiliary Power (SNAP)-Reactor SNAP Program

☐ C-93a Advanced Concepts for Future Application-Reactor Experiments
☐ C-93b Advanced Concepts for Future Application-Conversion Devices

c. The installation or office in a. above is responsible for, or performing work on, the following:

_____
_____
_____

d. Security clearance for ☐ (person named) _____ _____ and/or ☐ (titled position) _____ _____ is _____ and any incumbent to titled position will have appropriate AEC or military clearance ☐. (Named individual or position listed must be that appearing in attention line of address in a. above.)

e. The installation and person appearing in a. and d. above is authorized access to and has need-to-know for restricted data and/or other defense information in performance of official duties cited in c. above.

f. Permitting access to the data in b. above to the office or installation and the person named in a. above or incumbent to titled position detailed in a. and d. above will not endanger the common defense and security.

The previous cleared address, if any, used by the AEC for this installation was:

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_____
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Signed:

_____
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(DOD or NASA official listed in AEC Appendix 2318-03)

Special authorization is required for categories C-24, C-52, C-57, C-65, C-82, C-83, C-90, C-91, C-92a, C-92b, C-93a, and C-93b and detailed justification of these is attached herewith.

In addition to the above, NASA requests shall include a certification that the matter to which access is desired relates to aeronautical and space activities, unless access is being requested on the basis of AEC Clearances.

*2109-16 Transmission of Classified Research and Development Reports to the Department of Defense, Its Contractors, and Members of the Armed Forces.

161 Requirement for Certification.

a. Employees of Department of Defense or Its Contractors or Members of the Armed Forces. Research and Development Reports containing Restricted Data may be furnished to an employee of an agency of the Department of Defense, or its contractors or to any member of the Armed Forces only upon the basis of a certification in writing by, or in the name of, one of the Department of Defense officials listed in AEC Manual Appendix 2318-03. This certification shall be forwarded to the Technical Information Service, Headquarters, or the Technical Information Service Extension, Oak Ridge, and shall include the following information:

1. name of the person(s), title of his position, organizational unit and service (or if a contractor, his relationship to the Department of Defense), and address;
2. statement of reports or category(ies) of reports which certifying official requests to be transmitted;
3. brief statement of scope of work for which reports are requested (this information will expedite transmission of reports required by addressee(s));
4. military clearance status (Top Secret, Secret or Confidential) or AEC clearance of addressee(s);
5. certification that the person(s) needs and is authorized access to the report(s) in the performance of official duties; and
6. statement of determination that permitting the person(s) access to the Restricted Data requested will not endanger the common defense and security.

b. Titled Positions in the Department of Defense or Armed Forces. Research and Development Reports containing Restricted Data also may be transmitted to a titled position (in an agency of the Department of Defense or in the Armed Forces) which is properly certified in writing by or in the name of one of the Department of Defense officials listed in Appendix 2318-03.[1] This certification shall include the following:

[1] Transmission to employees of contractors of the Department of Defense may be made only to named individuals.

1. title of position, organizational unit and service, and address;
2. statement of report(s) or category(ies) of reports which certifying official requests to be transmitted;
3. brief statement of scope of work for which reports are requested;
4. certification that any incumbent of the titled position will have an appropriate military clearance or AEC clearance;
5. certification that any incumbent of the titled position will need and will be authorized access to the document(s) in the performance of official duties; and
6. statement of determination that permitting any incumbent of the position certified access to the Restricted Data requested will not endanger the common defense and security.

The certification received may be valid for a period not to exceed one year (if category of reports is involved).

162 Approval of Certification for Reports Requested From AEC or Its Contractors. Upon receipt of a certification, signed by, or in the name of, one of the designated officials, the Technical Information Service is authorized to approve the transmission of Research and Development Reports containing Restricted Data in the possession of Atomic Energy Commission or its contractors.

*2109-17 Transmission of Classified Research and Development Reports to National Aeronautics and Space Administration. Procedures in Section 2109-16 above apply to the transmission of such reports to officers, employees or members of the advisory committees of the NASA and officers and employees of its contractors or subcontractors. Certifications shall be signed by, or for, one of the NASA officials listed in AEC Manual Appendix 2318-03A.

Transmissions shall be limited to reports relating to aeronautical and space activities, except where the intended recipient has AEC security clearance.

It will be noted that on the basis of certification, reports containing Restricted Data may be transmitted to officers, employees, or members of the advisory committees of the NASA either by name or title of position. In the case of NASA contractors or subcontractors, documents shall be transmitted to named individuals only.

In transmissions to the NASA, references to military clearance in Section 2109-16 shall be interpreted to mean NASA security clearance.*

EVALUATION OF UNCLASSIFIED PUBLICATIONS

Mary H. Newman

Division of Technical Information Extension
U. S. Atomic Energy Commission

It is my pleasure to speak to you today on the subject of evaluation of unclassified publications. We could readily devote several days to this area alone. It should be mentioned at the onset that John Norris, Bob Kelly, and all the evaluators will be available to you for the duration of the meeting to discuss in depth any phase of evaluation that is of interest to you. In the 15 minutes allowed for this area on this program I would try to establish an awareness of the guidelines and techniques that we use.

A brief review of our origin and products may be of interest and value in the understanding of the techniques which have evolved in the processing of information.

Our predecessor, the Manhattan Engineering Project, recognized the necessity for using and exploiting all scientific and technical information needed by and generated within its programs. The majority of the information being generated and distributed at that time was classified and highly compartmented. The distribution of classified information was accomplished in the office of General Leslie Groves. The need for the rapid announcement of unclassified information within the project was accomplished by two Official Use Only publications, "Atomic Energy in Foreign Countries", and "Documents Declassified".

Following the war effort a mass review of classified literature was initiated to ease the strict compartmentation and to encourage the release of declassified information to the scientific community. One of the major contributions of this first review was the National Nuclear Energy Series volumes. Twenty-three hard-back unclassified volumes

summarizing major efforts were released. As of this date, nineteen more volumes have been declassified and the majority of these have been reprinted as paperbacks. The enormous quantity of material which still remained, often in informal report form, did not lend itself readily to announcement by existing abstracting services. Therefore, in July 1947, the USAEC introduced the journal "Abstracts of Declassified Reports" and this in turn was succeeded by "Nuclear Science Abstracts" in July 1948.

Our initial effort was concentrated on public announcement of declassified AEC research and development reports. As various classified areas were moved to an unclassified basis, we began to receive and process unclassified AEC reports. As a further service, it was necessary that we increase our coverage of nuclear science materials on a world wide basis and are continuing to do so at this time.

The contributors to our program have been identified in Mr. Kelly's paper. Our contributor's products include formal and informal research reports, monographs, theses, conference proceedings, books, patents, preprints, reprints, bibliographies, engineering materials, educational materials, and approximately 550 domestic and foreign journals which are received for scanning on a regular basis. About 2000 unclassified reports are selected for processing and an equal number of open literature items are announced in our unclassified journals each month.

All materials received are first subjected to an evaluation. This is a review to determine the pertinence of the material to Commission interests and programs, and to determine the processing steps necessary to assure expeditious announcement and distribution. We are kept abreast of Commission interests by direct communication with the AEC Washington program divisions, receipt of Contract Division contract lists and contracts, cooperation with contractor administrators at the Operations Office level, visits of personnel to and from AEC installations, and by meetings with the AEC Technical Information Panel. But even at best, evaluation is a complex decision making function.

The Commission's primary medium for the announcement of unclassified publications is Nuclear Science Abstracts(NSA). The evaluator's guide for the selection of material for this publication is TID-4552, "Subject Scope and Literature Coverage of Nuclear Science Abstracts". The guide is divided into two parts. Part I A. identifies subject

fields of interest, each followed by a notation on depth of interest in a particular subject. Part I B. identifies the extent of interest in the elements. Part II describes the types of literature covered. The appendixes define the NSA categories and include a list of periodicals scanned. (Please refer to the NSA Five-Year Cumulative Index for Vols. 11-15 (1957-61) for a more up-to-date listing of journals scanned).

TID-4552 is fairly broad in its definitions to provide for flexibility of selection dependent on current Commission interests. For example, direct energy conversion devices are a relatively new interest and we scan and report in this area extensively. The Commission's Plowshare Program covering the peaceful uses of nuclear explosions opened areas of interest which were not considered seriously several years ago. Due to reasonably sufficient uranium ore resources, our interest and coverage of materials on the geology, mineralogy, and exploration of deposits has lessened considerably. When isotopes were first produced by the national laboratories in sufficient quantity to make tracer studies a reality, we announced all tracer studies in NSA. As the availability of isotopes for tracer studies grew and the literature became monumental in size, we diverted comprehensive announcement of tracer application studies to special bibliographies. However, new tracer techniques, industrial applications, methods of isotope preparation and separation continue to be of primary interest and these are announced in NSA. Our emphasis in chemistry is primarily on radiation chemistry and radiochemistry or on the elements of prime interest, e.g., uranium, thorium, lithium; in mathematics, we concentrate on methods applicable to the solution of problems in nuclear science; in biology we emphasize primarily studies on radiation effects on living tissues, radiation sickness, fallout, and ecology studies and toxicology studies on elements of interest; our coverage of metals, ceramics, and refractories is limited primarily to those established or potentially useful for nuclear applications; our emphasis in physics is extensive and we cover astrophysics, nuclear physics, plasma physics, studies on elementary particles and radiation, theoretical physics, particle accelerators, etc.--also, our emphasis is on nuclear rather than atomic or molecular physics; all aspects of radioactive waste disposal and processing are of primary interest; reactor technology is, of course, covered extensively.

It should be emphasized that all unclassified and all declassified AEC reports received are reviewed for inclusion

in NSA. The Publication Release Form (see attachment), completed by the originator, is used as a guide for the processing of an AEC report. Form OTI-315, included in our master copy record, reflects the originator's intent and the evaluator's decision on the processing of each report. Full-scale printing is normally indicated for comprehensive topical, final and progress reports, AEC conference proceedings, and AEC sponsored books, monographs, and translations. Handbooks and analytical manuals of major interest are printed. Special publications such as the Technical Progress Reviews are also released in full-size copy form. Informal and interim reports are usually released in Microcard form. Heavy work loads in our printing plant are sometimes the determining factor.

Your attention is invited to the marking "Record Card" on the OTI-315 form. This marking if checked by the evaluator means that the report will not be announced in NSA. Record Card is indicated for informal AEC reports, when the originator requests that we not effect public release or when the evaluator believes that the data are too fragmentary or preliminary to warrant public announcement. Record Card is also indicated when journal publication is intended and the originator requests that the report not be released pending journal publication. If journal publication is not effected within 6 months, the report is re-evaluated for release as a preprint.

Non-AEC supported reports which bear no restrictive markings are abstracted in NSA. Source of availability is indicated if it can be determined from the document or information accompanying its transmittal. All non-AEC reports with restrictions on public release are announced in Abstracts of Classified Reports.

AEC-supported reports, translations, patents, and journal articles which are outside the subject scope of NSA are announced in Research and Development Abstracts. This would include AEC supported studies in basic biology, tracer applications, reports on materials of fringe interest, legal and administrative aspects of nuclear energy programs, basic chemistry, etc. All reports announced in this publication are also publicly available.

Weekly accession lists, both classified and unclassified, are issued by our organization. Distribution is limited to AEC sites and contractors due to restricted handling of some of the reports included in the listings. A limited number are excluded, e.g., administrative reports, highly informal notes which the originator requests that we not announce, draft copies of formal reports which will

be issued as formal reports pending corrections, or old informal reports which the originator states are obsolete but copies are being transmitted to fill a request. Occasionally, for security reasons, reports of a very sensitive nature which contain information related to weapons or production are omitted from the classified accession list.

In summary, then, the evaluation function in DTIE serves as a review and acquisition station to assure the effective release and announcement of AEC research and development information primarily for official use and subsequent public availability. In addition, our effort is directed toward the announcement of the world literature in the field of nuclear science through NSA and RDA.

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Form AEC-426(11-61)
AEC Manual Chapter 3202, Appendix 064a

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INSTRUCTIONS: This form should accompany each UNCLASSIFIED document the first time it is submitted to the USAEC Division of Technical Information Extension, Post Office Box 62, Oak Ridge, Tennessee.

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Author(s) Philip G. Burke and Cecil Tate Contract No. W-7405-eng-48

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USAEC Division of Technical Information Extension, Oak Ridge, Tennessee

Facsimile of key word sheet completed by evaluator for use in preparing weekly accessions list. The short title is for use in the personal author and corporate author index in NSA.

EVALUATION OF CLASSIFIED REPORTS

Lee M. Thompson

Division of Technical Information Extension
U. S. Atomic Energy Commission

INTRODUCTION

Those of you who have been following the Commission's information program for several years have seen the volume of classified information gradually shrink. In 1954, for example, classified reports made up about 40 to 45 per cent of our total report receipts. Today, the percentage is probably in the neighborhood of 15. You, of course, realize that the various programs of the Commission differ in degree of sensitivity. The gaseous diffusion process, production facilities at Hanford and Savannah River, and Naval reactor technology, for examples, have been through the years and remain to this day, very sensitive with distribution very limited. You are also aware that classification is quite flexible and what is sensitive today may not be sensitive tomorrow, and vice versa. The demise of the Aircraft Nuclear Propulsion Program last year serves to illustrate this--a highly classified program changed to a virtually unclassified one overnight--only the highly developed technology, such as that of certain materials, remaining classified.

In evaluating classified material, we are only incidentally concerned with security classification itself. If we feel a report is not classified properly, we refer it to the Division of Classification, Oak Ridge Extension, for review. Our primary concern is with compartmentation--or to use our more familiar term--categorization. We will have more to say about categories later, but now let's examine the evaluation process.

EVALUATION PROCESS

Our specific goal is to evaluate each classified report so as to give it the widest possible announcement consistent

with national security. Our first step, either assigning or confirming a category, ties in very closely with the "Standard Distribution Lists for Classified Scientific and Technical Reports", M-3679, which Mr. Kelly mentioned a few minutes ago. The distribution lists call for AEC contractors to provide 15 to 40 copies to DTIE, depending of course, on the category. So really, with a formal R&D report in hand, our first problem is to decide whether or not we agree with the category already assigned. In practically all cases we do--only rarely do we have to negotiate with the issuing site or cognizant AEC Operations Office--and these few cases are usually resolved without much difficulty. I might add that the informal reports--those we get in limited quantity (usually 1 to 3 copies)--do not have previously assigned categories. We are usually able to assign a category for such, though, using program identification (by issuing site) and security classification as guides.

But, let's hold category assignment for the time being, and proceed to the second step. Next, we must decide how broadly we can announce a particular report. We have three choices, namely: (1) Abstract or Title List Only in Abstracts of Classified Reports (ACR); (2) Announce both in ACR and List of Reports for Civilian Applications (LRCA); or (3) Title List and announce only to our AEC offices and contractors by means of our weekly accession list. We process, on the average, about 400 classified or limited distribution reports per month. Some of the reports we receive from the Department of Defense and some of the foreign countries (especially Canada and the United Kingdom), although unclassified, have distribution restrictions because of commercial or patent interests, are proprietary, etc. We announce them in ACR, and in the cases of Canadian and United Kingdom reports, also make them available to industry through the Civilian Applications Program (CAP). Of the 400 per month, approximately 185 go into ACR with 40 of the 185 to the CAP; 160 are Record Carded or Indexed for DTI use only; and the remaining 55 are either rejected and destroyed or sent to some AEC site which might be interested.

A third function at the time of evaluation is to effect the "positive" distribution which Mr. Kelly commented on earlier. This involves providing copies of the report, or in some cases, portions of the report to AEC, Department of Defense, or NASA offices and contractors, as authorized by the contracting offices and Washington program divisions.

Another function, more or less an incidental one, is indicating Microcard distribution and print orders. Although

category assignment largely dictates this, the evaluator must, in many cases, decide whether or not to print the report or Microcard only.

EXAMINATION OF CLASSIFIED CATEGORIES

Briefly now, I would like to take a little closer look at our classified categories with you--you may follow on sheet I-A-3 that has been passed out. A quick perusal of these categories, first of all, will tell you of the Commission's classified programs and interests. I have rearranged these categories slightly from the way they appear in M-3679 and grouped in three groups, the first one including C-1, Abstracts of Classified Reports (ACR), which I mentioned earlier.

I have purposely pulled ACR out to itself since it is our monthly abstract journal and is, in fact, made up of the reports which we put in the other 17 categories. Incidentally, our 18 categories in use today contrast rather sharply with the 38 used a couple of years ago. This came about largely from a condensation of many of our less sensitive categories into the C-44 Nuclear Technology categories, which comprise most of our first group. The majority of reports now going into these C-44 categories are classified Confidential, are not very sensitive, and usually are made available to industry through the Civilian Applications Program. Access to these categories, as well as C-73, "Nuclear Weapons and Effects", is approved by DTIE as noted below. In case you are wondering about the C-73 category, most of the reports discuss only physical or biological effects of the weapons, and nothing sensitive about the weapons themselves. This is taken care of in Weapon Data reports, which, as you will note, are not a part of our standard distribution system--I only mention them here to help make the distinction.

Our next grouping, access to each category controlled by the Production Division, AEC Headquarters, are namely, Isotope Separation-Gas Centrifuge method, Gaseous Diffusion Process, Tritium Production, and Plutonium Production. As I indicated earlier, the technologies concerned with these programs are extremely sensitive and distribution of reports in these categories is very limited. I might say here in passing, partly to emphasize a point in our compartmentation scheme, that our contractors whose work relates to these categories are sometimes in a real quandary. They develop a piece of equipment or a process which at a glance would be

destined for one of the not-so-sensitive C-44 "Nuclear Technology" categories. But they have to be very careful in making this decision that they do not unwittingly reveal sensitive production information in one of these four categories. The same can be said of the people whose work relates to the last grouping.

Now, let us hurriedly survey this last grouping, programs of which are under cognizance of the Division of Reactor Development, AEC Headquarters. The C-82 category, "Special Features of Naval Reactors" as mentioned earlier, is still considered quite sensitive with distribution quite limited. However, the Naval Reactor Group has an active program whereby the developed technology, separated from military significance, is either released to industry through the CAP or is released as unclassified without limitation. The C-83 category, "Critical Features of Military Power Reactor", is concerned with actual or planned reactor systems which render possible a unique military operational capability. Although C-83 has never been released to the Civilian Applications Program, we have a brand new category, C-94 "Military Compact Reactor (MCR)", which will make available Restricted Data on the MCR to the CAP. The other six categories, the Nineties, are for reports concerned with the activities in reactors for rocket or ramjet propulsion, SNAP systems (either reactor or isotopic) and advanced concepts, either reactor experiments or conversion devices. These six categories are all releasable to the Civilian Applications Program, provided the reports contain only Restricted Data--no Defense Information.

CIVILIAN APPLICATIONS PROGRAM

Let me briefly comment on the Civilian Applications Program (CAP) which I have mentioned several times. At the time of a major classification review effort in 1955-56, the Commission instituted the CAP program to make available to industry certain areas of technology developed during the Manhattan Project and following years, which was not at that time declassifiable. Reports released to the CAP, of course, could not reveal production, weapons, or other very sensitive information, e.g., Naval or Aircraft reactor. The CAP program has remained with us since its inception, and at the present time, there are about 560 licensees eligible to receive various categories of classified information. As stated earlier, we announce about 40 reports per month to industry through this medium, including the British and Canadian "Official Use Only" and unclassified "Not for Publication" reports.

SUMMARY

To summarize briefly, our evaluation of classified material consists of (1) assignment or verification of subject category, (2) indicating how broadly the report may be announced--e.g., (a) ACR only, (b) ACR and to the CAP, or (c) accession list to AEC family only, and (3) positive distribution to eligibles who have not already received the report.

M-3679(26th Ed.)

CLASSIFIED CATEGORIES

A.	C-1	Abstracts of Classified Reports (ACR)
	C-44a	Nuclear Technology--Materials
	C-44b	Nuclear Technology--Chemistry and Chemical Engineering
	C-44c	Nuclear Technology--Reactor Engineering and Technology
	C-73	Nuclear Weapons and Effects
B.	C-24	Isotope Separation--Gas Centrifuge Method
	C-52	Technology--Gaseous Diffusion Process
	C-57	Technology--Tritium Production
	C-65	Plutonium Production
C.	C-82	Reactors--Special Features of Naval Reactors
	C-83	Reactors--Critical Features of Military Power Reactors
	C-90	Nuclear Reactors for Ramjet Propulsion
	C-91	Nuclear Reactors for Rocket Propulsion
	C-92a	Systems for Nuclear Auxiliary Power--Isotopic SNAP Program
	C-92b	Systems for Nuclear Auxiliary Power--Reactor SNAP Program
	C-93a	Advanced Concepts for Future Application--Reactor Experiments
	C-93b	Advanced Concepts for Future Application--Conversion Devices
	C-94	Military Compact Reactor (MCR)

A. Not usually very sensitive. Access authorized by DTIE. C-44a, -b, and -c, releasable to CAP.

B. Very sensitive. Access authorized only by Division of Production, AEC Headquarters. C-24 and C-65 releasable to CAP, but distribution very limited.

C. Fairly sensitive. Access authorized only by Division of Reactor Development, AEC Headquarters. All categories releasable to CAP except C-82 and C-83.

DISCUSSION: SESSION I-A

ACQUISITION, SELECTION, AND DISSEMINATION IN DTI

John W. Norris, Discussion Leader

BARBARA M. PROBERT: Is there any reason why the next issue of M-3679 cannot provide space to make notes on revision material?

JOHN W. NORRIS: Consideration is being given to revising M-3679 every two months to keep it more current. Other means of revision are being studied.

UNIDENTIFIED: Will the changes for M-3679 also be made for TID-4500?

J. W. NORRIS: Changes to TID-4500 are not required as frequently as for M-3679.

CHARLES K. BAUER: Can we refer requests for "NP" documents to DTIE?

ROBERT C. KELLY: This question will be covered by Margaret Pflueger.

UNIDENTIFIED: With regard to changes in TID-4500, will there be fewer this time than last year?

R. C. KELLY: There will probably be fewer than in the past. Many agencies have been added in the past year. A new revision of TID-4500 is now in press.

UNIDENTIFIED: In a library with a limited amount of space available, what are we expected to do with the weekly accession lists sent us?

J. W. NORRIS: These lists are distributed for announcement purposes only. They are not intended for retention.

C. K. BAUER: Do non-AEC contractors get these weekly accession lists?

J. W. NORRIS: No.

ALLEEN THOMPSON: Are NNES volumes available in paper-bound copies?

J. W. NORRIS: Some of the unclassified volumes are available in the TID-5200 series. Other volumes, however, are still classified. Walter Kee of AEC Headquarters Library says he has a complete list of these. Some are available in microcopy form from Microcard Editions, Inc. Others are still available in printed form.

WALTER A. KEE: A complete listing of these is included in the publication, Technical Books and Monograms.

UNIDENTIFIED: Does DTIE plan to revise the publication release form?

J. W. NORRIS: Not decided at present.

ROSE KRAFT: Why cannot the RDA material be included in NSA? Why not have one publication to include all materials now included in two?

J. W. NORRIS: For a long time these materials were not announced at all by AEC. RDA is the medium adopted for its announcement, and it is also a tool being exploited for experimentation in machine techniques.

B. M. PROBERT: Do we need to request C-93 and C-94 material?

J. W. NORRIS: You must send in requests for C-93. If you have been on C-83 distribution, you probably can get C-94.

UNIDENTIFIED: Could you explain the miscellaneous category?

J. W. NORRIS: For years, when the document was not categorizable - did not fit the established categories, it was put in C-75, a catch-all category. C-75 material is not distributed routinely. Copies are retained in DTIE in case there is a request for it. They are provided on a need-to-know basis.

CROWELL O. DEAN: My question concerns the restricted or sensitive information. Could DTIE provide an equivalence table for conversion between U. S. and foreign classification markings?

J. W. NORRIS: There is a variance in meaning between U. S. and foreign markings, e.g., the meaning of British OUO markings. We will consider preparing such a table.

B. AVAILABILITY OF THE LITERATURE

AVAILABILITY OF RESEARCH AND DEVELOPMENT REPORTS

Margaret L. Pflueger

Division of Technical Information Extension
U. S. Atomic Energy Commission

The title of our short talk that appears in the program is somewhat misleading. I am, however, at a loss to give our presentation a more accurate title. Some possible titles are: "What's Available and What's not Available from DTI Extension;" "How to Obtain Reports from DTI Extension in Ten Easy Lessons;" or "Do-it-Yourself Technical Information." We don't need to tell you that you can get research and development reports from DTI Extension. Most of you here receive large quantities of research and development reports from us, and you know that you can come to us for many of those you need and don't have. The automatic receipt of reports, both AEC and non-AEC, through standard distribution and depository distribution, has been covered earlier.

We want to give you some pointers that, if followed, should result in your getting what you need in the least amount of time. In essence, what we will try to do is to point out ways for you to help us help you. Our remarks and advise are based on the estimated 400,000 requests that have been handled in the Information Section since Willie Clark and I have been working together in the Section.

I will first speak briefly and in general terms about what you as contractors or depository librarians can expect from us, and will then point out how Nuclear Science Abstracts can guide you in acquiring needed items that you find in it. Miss Clark will discuss matters which you should consider when you make requests to us.

I should, however, like to digress a moment. First, much of what we will say will be elementary and obvious to many of you. Please, in

the words of Alden Greene, bear with us. We feel some of this merits repeating for the sake of those whose experience with the report literature is not so extensive as that of others. Second, we do not want you to construe anything that we say as discouragement to your coming to us for help when you need it. We ask only that you use reasonable judgment in determining that we are the most appropriate source for the item you need.

The Division of Technical Information's main stock in trade is the research and development report. We probably have more than a million of them in this building. We've never stopped to count. For this discussion we will group them into the three following classes (1) AEC-sponsored reports, (2) reports of other U. S. Government agencies, and (3) reports originating outside the United States. These large general classes could be broken down into several sub-classes that are treated with many variations. For example, we have British military reports obtained through ASTIA. These are not subject to the same handling procedures as are British reports written under the United Kingdom Atomic Energy Authority. However, for the purpose of this talk we will consider only the large classes, and will bear in mind that there are exceptions to the general principles that I will discuss. I might also add parenthetically that when I speak of research and development reports, I will be including translations issued by the same organizations that issue reports.

The availability of these three large classes of reports to you contractor and depository librarians is shown in general terms in the chart entitled, "Types of Materials Supplied by DTI Extension to Requesters." However, as I indicated earlier, the words "supplied" or "referred," are an over-simplification. We will look at these three main classes and discuss each in a little more detail.

I. AEC Sponsored Reports. AEC reports are our primary concern. Obviously, they serve their purpose only when they reach the person who needs them in his work. Much effort is spent in getting the reports where they will be available to the man who needs them in advance of his need. This is accomplished through standard distribution and depository distribution. Why then, should it be necessary for contractors and depositories to have to request thousands of AEC reports from DTI Extension each year?

   1. Format. You may have the report on Microcards and find that they will not serve your purpose. Perhaps there are charts, tables, or graphs that you need in eye-legible form. We will provide at least a single eye-legible copy upon request under these circumstances. We are at present looking into the feasibility of providing film negatives to those organizations that want to be able to make their own reproductions. You will likely

be hearing more of this matter. However, for the present, you may come to us for eye-legible copy.

2. AEC reports not given standard distribution. Many AEC reports come to people's attention even though the reports have not been widely distributed, in some cases not even written. They are cited in foot-notes and reference lists; they are learned about through word-of-mouth; they are passed from scientist to scientist without going through established distribution channels. We receive many requests for such reports and in all cases we try to satisfy the requester. If DTI Extension does not have the report, as is often the case, we try to obtain it from the originator to see whether it is appropriate to make it available. Many times the requester receives instead of the report an explanation of its non-availability, (a) it is obsolete; a later report contains better information, (b) a formal report on the subject will be distributed shortly, (c) the information has been published in a particular journal article. When DTI Extension relays replies of this kind, we consider the matter closed, since we feel that the originator is in the best position to know the situation.

   There are, in addition, a certain number of requests received for reports DTI Extension has but cannot or should not supply for a variety of reasons. Some requests of this kind are:

   1. The requester is asking for a classified report and he can receive only unclassified material.

   2. The requester is entitled to classified reports in certain categories; the requested item is outside the authorized categories.

   3. The requester is asking for an out-of-date, out-of-stock manual or handbook. It would be possible but not economically sound to reproduce a copy when the same information is available in later sources.

   To sum up, AEC research and development reports are available to you from us, with the truly minor exceptions I've noted.

II. Reports of Other U. S. Government Agencies. Since, as I have said, I intended to discuss what you as depository and contractor librarians can expect from DTI Extension, I will in this section have to speak to you as separate groups. The reason is that we can and do make reports of other government agencies available to AEC contractors but, unfortunately, we cannot give them to depository libraries. I will first speak briefly about our supplying of these reports to the contractors.

Those of you who are at all familiar with Nuclear Science Abstracts know of the many non-AEC reports that fall within the subject scope of that journal. By far the greatest number of these reports are sponsored by the Department of Defense. These reports are Microcarded and supplied to contractors on standard distribution. We will also supply eye-legible copy upon request. If you require other reports that have not been announced in NSA and do not have other sources for them, we will obtain them for you. (In connection with other sources, Miss Clark will speak about direct access to ASTIA services.)

The Department of Defense does not have standard distribution as we know it in the AEC. It is however, frequently possible to be added to the mailing list to receive reports issued under specific contracts, and DTI Extension is glad to arrange that service for AEC contractors who require the reports.

In saying that we do obtain and provide non-AEC reports for you, I should include the warning that we do try to use judgment in this matter, as in the filling of all requests. Thus, we do not feel that we should prepare a facsimile copy of a report when you can obtain a printed copy at the Office of Technical Services. Similarily, we do not feel justified in absorbing the administrative expense to obtain a free copy of a National Bureau of Standards Handbook and send it on to you when you can buy one by sending in 50 cents worth of GPO coupons to the Superintendent of Documents. We feel our efforts should be devoted to obtaining for you that which you cannot so easily obtain for yourselves.

I wish we could tell you who are with depository libraries that we could give you the same service with domestic non-AEC reports. We have been told many times of difficulties you have had in obtaining some of these reports. There is reason to believe that the present situation regarding Department of Defense and National Aeronautics and Space Administration reports is much better than it has been in the past. I believe Dr. Gray will cover this more completely in his talk later in this session.

III. Reports of Non-U. S. Atomic Energy Establishments. Through exchanges and other arrangements and agreements DTI receives reports from most of the laboratories and research establishments throughout the world where nuclear investigations are undertaken. The AEC feels that we have the same obligation to make these reports available in the United States as we have with our own AEC reports. They are given standard distribution and depository distribution often in Microcard form, and eye-legible copy is available on request. We will also try to obtain reports that are requested if we do not already have them. We do not, however, send them outside the United States,

since we feel it is not appropriate to give to an organization in one country the reports issued in another country.

I have spoken so far of research and development reports and translations and DTI's obligations and limitations in making them available. Not all publications you receive from us can be accurately called research and development reports. There are guides, bibliographical tools, bibliographies, cover-to-cover translations of journals, occasionaly a case-bound book. Most of these non-report publications are either prepared by or sponsored by an AEC office, and you can usually tell from the nature of the publication why you have received it from us.

We have found, however, over the years, that we must reply to many hundreds of requests that are misdirected to us. We are asked for books, journals, patents, trade literature, and commercially published proceedings. Every request must receive a reply of some kind, and these misdirected requests force us to expend time and energy that could more profitably be spent in filling requests that are appropriately directed to us. There are a number of factors that lead people to mistakenly direct certain requests to us.

1. Historical reasons. Some contractor personnel remember the early days of the Atomic Energy Commission, when DTI (under whatever name it had in those days) was the only source for any publication that contained words like "nuclear," "atomic," "half-life," etc. They still feel they can and should come to us for all their information needs.

2. Inadequate understanding of NSA. We receive many requests from people who appear to believe that if a publication is abstracted and indexed in Nuclear Science Abstracts, we can supply it. I will enlarge on this later.

3. Last resort. Many of our requesters make an honest effort to identify and locate publications before coming to us. If they are unsuccessful in their attempts, they will ask us in the hope that we can either supply the publication or tell them where to get it. We are flattered by such requests and are pleased to help if we possibly can.

I'd like to return to reason No. 2, and inadequate understanding of Nuclear Science Abstracts. What I will say here is obvious in the extreme to some of you. To others it may be new and helpful, I hope. If you are trying to locate an item found in Nuclear Science Abstracts, and the abstract does not have a report number preceding the title, you are in all probability looking for something that we have considered "published literature," that is, a journal article, book, meeting paper, or thesis. The item should be obtained through what we are accustomed to call "regular library sources," that is, through purchase from book dealers, on interlibrary loan, or from the publishers. It is not possible in the scope of

this paper to give you instructions for obtaining all types of published literature included in Nuclear Science Abstracts. Miss Marion Garber will speak later during this meeting of the services the Library of the Oak Ridge Institute of Nuclear Studies offers in the way of interlibrary loan. In this connection I do feel it worth an admonitory word to point out that an organization should not rely on an outside library for all its published literature needs. ORINS Library is extremely generous in their service, but they should not be called on to lend bound volumes of Physical Review to a contractor in New York City, because an AEC report was published in an issue earlier than the contractor's subscription.

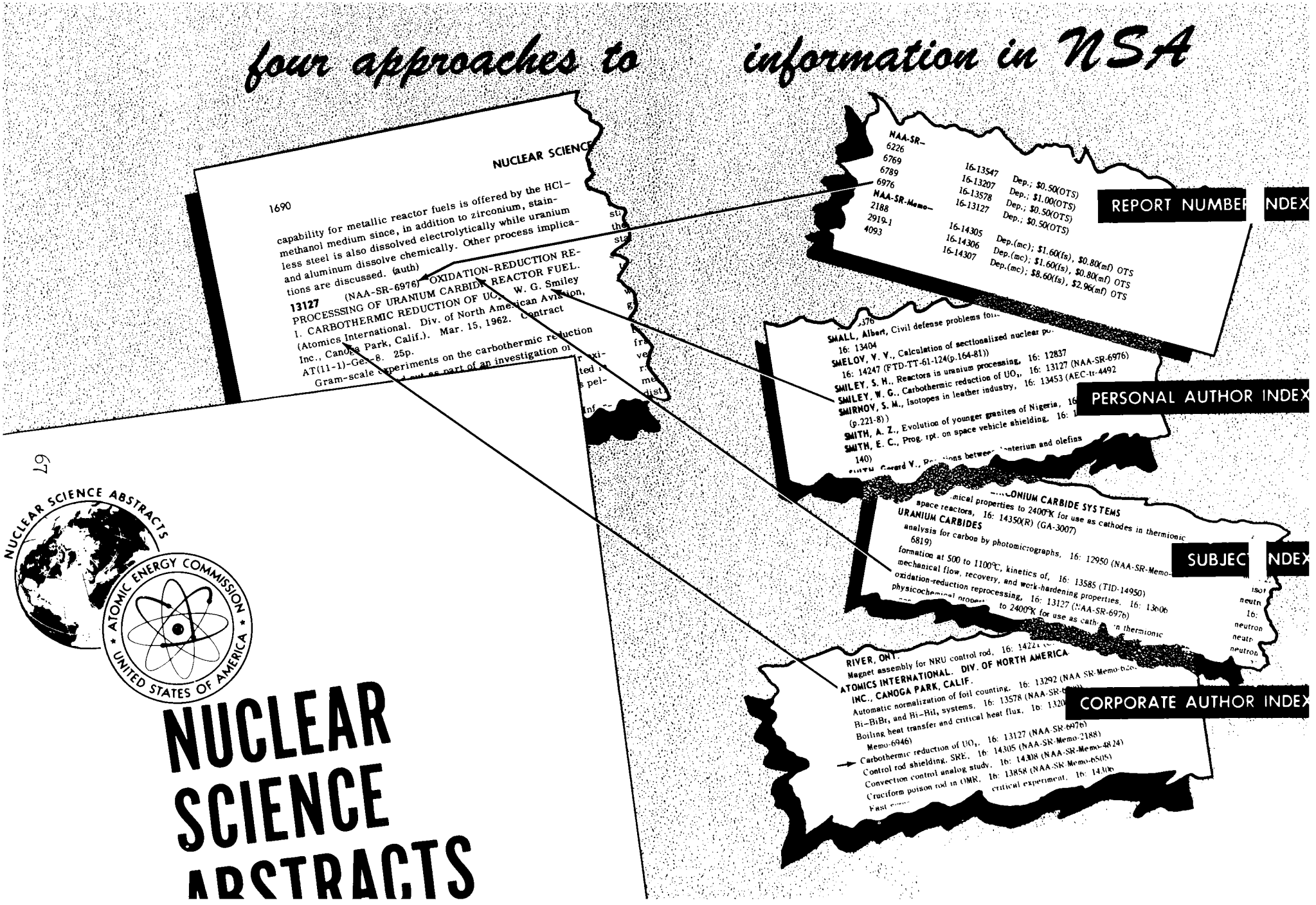
If the item you are looking for does have a report number preceding the title, you should then look at the information on this report in the report number index. You may find that it has been published in a journal, that it is superseded, that it is part of a book already in your library. If you are in a depository library or in a military library, you should look at the series indication to see whether the report is AEC- or DOD-sponsored. In other words, there is usually in Nuclear Science Abstracts the information needed to direct you to the best source. If you have difficulty interpreting this information, please let us know. We realize that we need to develop better guides and tools to help you in your work, and we plan to continue to improve existing guides and to prepare new ones. However, we also frequently feel, as we look at the requests we receive, that our requesters have not used the information they already have. There is a wealth of information in the introductory matter in Nuclear Science Abstracts. It would be interesting to know how many of you have read it. Or to know how many of you are thoroughly familiar with the following guides:

TID-485 Technical Information Services of the United States Atomic Energy Commission (Prepared primarily for official users of DTI's services.)

TID-4550 What's Available in the Atomic Energy Literature (Intended primarily for the general public.)

TID-4565 Guide to AEC Reports for the Depository Libraries

In summary, there do exist means by which you can improve the service you give your own clientele, through a knowledge of the best and quickest ways to obtain the scientific publications they need. Please keep in mind, however, that the DTI does stand ready to help you. We welcome the opportunity to give the service that it is our mission to give and to further the atomic energy program through the best and most efficient dissemination of the literature of nuclear science.


four approaches to information in NSA
NUCLEAR SCIENCE
1690
capability for metallic reactor fuels is offered by the HCl–methanol medium since, in addition to zirconium, stainless steel is also dissolved electrolytically while uranium and aluminum dissolve chemically. Other process implications are discussed. (auth)
13127 (NAA-SR-6976) OXIDATION-REDUCTION REPROCESSSING OF URANIUM CARBIDE REACTOR FUEL. I. CARBOTHERMIC REDUCTION OF UO2. W. G. Smiley (Atomics International. Div. of North American Aviation, Inc., Canoga Park, Calif.). Mar. 15, 1962. Contract AT(11-1)-Gen-8. 25p.
Gram-scale experiments on the carbothermic reduction
NAA-SR–
6226
6769
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6976
NAA-SR-Memo–
2188
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4093
16-13547 Dep.; $0.50(OTS)
16-13207 Dep.; $1.00(OTS)
16-13578 Dep.; $0.50(OTS)
16-13127 Dep.; $0.50(OTS)
16-14305 Dep.(mc); $1.60(fs), $0.80(mf) OTS
16-14306 Dep.(mc); $1.60(fs), $0.80(mf) OTS
16-14307 Dep.(mc); $8.60(fs), $2.96(mf) OTS
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Convection control analog study, 16: 14308 (NAA-SR-Memo-6505)
Cruciform poison rod in OMR, 16: 13858 (NAA-SR-Memo-
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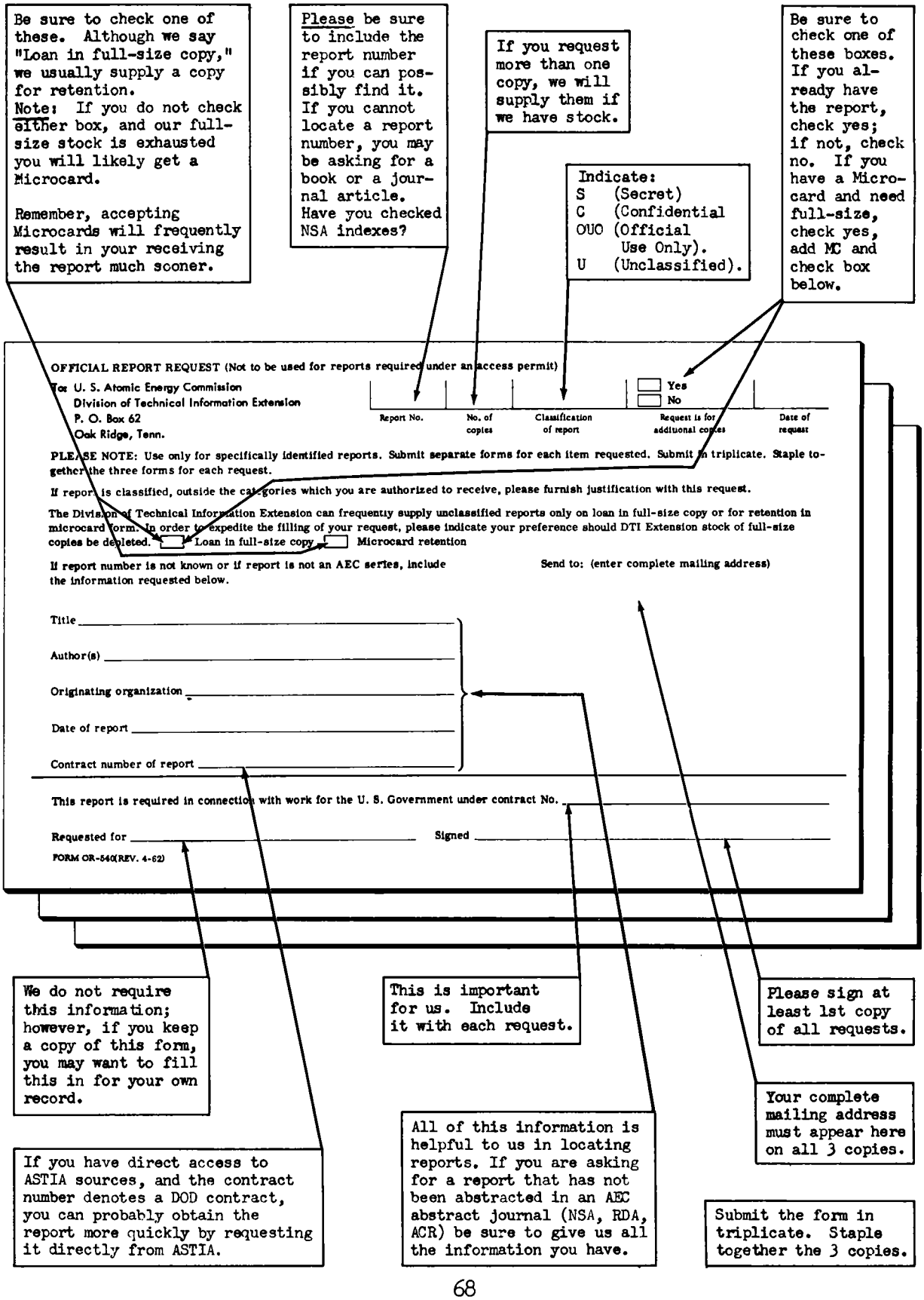
CORPORATE AUTHOR INDEX
NUCLEAR SCIENCE ABSTRACTS
ATOMIC ENERGY COMMISSION
UNITED STATES OF AMERICA
NUCLEAR SCIENCE ABSTRACTS


Be sure to check one of these. Although we say "Loan in full-size copy," we usually supply a copy for retention.
Note: If you do not check either box, and our full-size stock is exhausted you will likely get a Microcard.
Remember, accepting Microcards will frequently result in your receiving the report much sooner.
Please be sure to include the report number if you can possibly find it. If you cannot locate a report number, you may be asking for a book or a journal article. Have you checked NSA indexes?
If you request more than one copy, we will supply them if we have stock.
Indicate:
S (Secret)
C (Confidential
OUO (Official Use Only).
U (Unclassified).
Be sure to check one of these boxes. If you already have the report, check yes; if not, check no. If you have a Microcard and need full-size, check yes, add MC and check box below.
OFFICIAL REPORT REQUEST (Not to be used for reports required under an access permit)
For U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tenn.
Report No.
No. of copies
Classification of report
Request is for additional copies
Yes
No
Date of request
PLEASE NOTE: Use only for specifically identified reports. Submit separate forms for each item requested. Submit in triplicate. Staple together the three forms for each request.
If report is classified, outside the categories which you are authorized to receive, please furnish justification with this request.
The Division of Technical Information Extension can frequently supply unclassified reports only on loan in full-size copy or for retention in microcard form. In order to expedite the filling of your request, please indicate your preference should DTI Extension stock of full-size copies be depleted. Loan in full-size copy Microcard retention
If report number is not known or if report is not an AEC series, include the information requested below.
Send to: (enter complete mailing address)
Title
Author(s)
Originating organization
Date of report
Contract number of report
This report is required in connection with work for the U. S. Government under contract No.
Requested for
Signed
FORM OR-540(REV. 4-62)
We do not require this information; however, if you keep a copy of this form, you may want to fill this in for your own record.
This is important for us. Include it with each request.
Please sign at least 1st copy of all requests.
Your complete mailing address must appear here on all 3 copies.
If you have direct access to ASTIA sources, and the contract number denotes a DOD contract, you can probably obtain the report more quickly by requesting it directly from ASTIA.
All of this information is helpful to us in locating reports. If you are asking for a report that has not been abstracted in an AEC abstract journal (NSA, RDA, ACR) be sure to give us all the information you have.
Submit the form in triplicate. Staple together the 3 copies.

Types of Materials Supplied by DTI Extension to Requesters

Type of material	AEC offices and contractors	Other U. S. government agencies and contractors	Non–U. S. official agencies (AERE, AECL, embassies, etc.)	Depositories in the United States	Depositories outside the United States	Industrial firms	Staff members at colleges and universities	Individuals (students, teachers, et al.)	College, school, and public libraries
Technical Reports									
AEC	Supplied	Supplied	Supplied	Supplied	Supplied	Referred to sales agency or depository library	Supplied to library; requester informed	Referred to sales agency or depository library	Supplied
Other U. S. government agency (DOD, NBS, etc.)	Supplied	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency
Non–U. S. atomic energy (AERE, CERN, etc.)	Supplied	Supplied	Referred to originator or sales agency	Supplied	Referred to originator or sales agency	Referred to originator or sales agency	Supplied to library; requester informed	Referred to originator or sales agency	Supplied
Translations									
AEC	Supplied	Supplied	Supplied	Supplied	Supplied	Referred to sales agency or depository library	Supplied to library; requester informed	Referred to sales agency or depository library	Supplied
Other U. S. government agency	Supplied	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency
Non–U. S. agency	Supplied	Supplied	Referred to originator or sales agency	Supplied	Referred to originator or sales agency	Referred to originator or sales agency	Supplied to library; requester informed	Referred to originator or sales agency	Supplied
Commercial	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency	Referred to originator or sales agency
Educational Materials (Brochures and reference lists; general and technical information for students, teachers, and laymen)	Supplied in bulk quantities to operations offices	Supplied on exchange basis	Supplied in single copies	Supplied in single-copy collections	Supplied in single-copy collections	Supplied in single copies pertinent to the request	Supplied in single-copy collections	Supplied in single copies pertinent to the request	Supplied in single-copy collections
Engineering Materials With the exceptions noted here, all requesters are expected to purchase engineering materials from the AEC's sales agency.		Supplied on exchange basis	Supplied on exchange basis	Supplied on a loan basis	Supplied on a loan basis				

I-B-1b

REQUESTING OF PUBLICATIONS FROM DTI EXTENSION

Willie E. Clark

Division of Technical Information Extension
U. S. Atomic Energy Commission

Margaret has mentioned some of the matters that should be considered when you need to obtain research and development publications for your scientists. I am going to discuss the actual requesting of publications from the DTI Extension and, I hope, provide some help that will make your job and ours easier.

For your guidance we have prepared a checklist of questions that you should ask yourself before sending in a request to us. I am going to try to give you reasons for these questions.

Before I go into these questions though, I want to mention the group of "problem" requests that we have reproduced and that you have in front of you. Some of these are "horrible examples"; others are designed to show you legitimate requests and queries that we handle during the course of our daily work. We hope the number of "horrible examples" will appreciably decrease after this meeting. As we said earlier, however, we want you to continue to come to us with your problems.

The first question on our checklist may seem obvious. However, our official request form has always contained a statement such as "Copy has been furnished previously on the date indicated. Are additional copies needed?" In other words, people do not always realize they have the report they're asking for. The question is not intended to discourage you from coming to us for additional copies if you need them. We're glad to furnish them if we have stock. The answer I just gave is used only when we're out of stock of the report you want. In this connection, if

the copy you do have is a facsimile reproduction rather than an original printed copy, the likelihood of our having stock is very small. You can probably obtain needed additional copies of such reports more quickly by reproducing them from the copy you have.

Question 2. Have I checked NSA indexes? Although Margaret touched on this point, we think it bears repeating. If the item selected does not carry a report number, it has been considered as being in the open literature, and it should be obtained through the same methods used to obtain journals, reprints, or other library materials. The DTI Extension does not distribute journal articles, patents, or commercially available proceedings of symposia and meetings. Much time and effort on our part and yours can be saved if you first determine whether or not the item being requested is a report rather than a book or journal article.

Question 3. Is the report I'm requesting one which DTI can't furnish? Another way to phrase this question would be "Does the DTI Extension furnish me the type of reports I'm asking for?" You have heard earlier of types of reports we cannot supply to certain types of requesters. If this is not clear to any of you, let us know and we will try to give you better guide lines.

Question 4. Is the report I'm requesting one I can get from ASTIA? In 1958, our first group of AEC contractors was granted direct access to ASTIA's services. Since 1958, others have been added and today 37 AEC contractors have direct access to ASTIA's service. The primary purpose of arranging for direct access to ASTIA's services was to expedite the filling of requests from AEC contractors for DOD sponsored reports. We believe that this service has proven to be very beneficial to the contractors. However, many requests are received at DTIE for DOD sponsored reports without any indication that the requester has first tried to obtain the report from ASTIA. We know from our own experiences that many DOD sponsored reports cannot be obtained from ASTIA for various reasons, but we believe, unless the notation in TAB indicates that it is unavailable or it is outside your FOIR, that you should first try to obtain a DOD report from ASTIA. If you cannot obtain the report from ASTIA, it should then be requested from the DTI Extension. You can help us expedite the obtaining of the report by furnishing complete bibliographic information and the specific reason why it could not be obtained from ASTIA.

Question 5. If you are tempted to submit requests on a letter, please don't. Regardless of how it is requested, in a list, in a letter, or on a request form, each publication requested must be handled as a separate item. If there is more than one item on a piece of paper, and we can supply one and cannot supply the others, we are in trouble. Please use the forms OR-540 and OTI-114, and provide all the essential information. While we occasionally enjoy the detective work necessary to figure out where to send a report when the requester has omitted his return

address, it does cut down on production. You have received sheets that show the important items of information we need on a request form. Please study the appropriate sheet carefully. If you are not directly concerned with requesting reports from us, please give it to the person in your organization who does have that responsibility.

Question 6. The importance of this question cannot be emphasized too strongly. Among the examples of requests that we reproduced for you is one that gives only a title. We can say categorically that whenever you send us a request that cites only a title, you have not given us enough information. DTI's records of its publications are maintained by report number, personal author, corporate author, and subject. We do not have a title index to our hundreds of thousands of reports. If you ask us for something by title alone, you are asking us to recover this title from our memories, identify it by report number, and either supply it or tell you where to get it. (Occasionally we can identify a title through the subject indexes, but this is very time consuming). The number of such title requests that we do fill is surprisingly large; however, we must often return the request to you for more information. The most helpful information that you can often give is a notation as to where the title was found. We have, unfortunately, not provided a space for this information on either of our request forms; future revisions of the forms will provide for this. Please give it to us anyway. Always give us as complete a bibliographic citation as you possibly can, author, title, dates, originator, contract number, unless you are requesting by a report number found in one of our abstract journals.

We hope you will not feel that we have put too great a burden of responsibility on you, our requester, in this matter. We feel sure you will find that we'll all gain by your careful attention to the details that I've discussed.

CHECKLIST FOR REQUESTING REPORTS FROM DTIE

1. Do I have the report already?

   a. If yes, have I indicated that I am asking for an additional copy?

   b. If I have a Microcard and am asking for eye legible copy, have I indicated that fact?

   c. If no, am I sure I don't have it?

   d. Is it perhaps filed under a secondary number?

   e. Has it just been received on standard distribution and is in the unopened mail?

2. Have I checked NSA indexes? (These may give me a clue as to why I don't have the publication I'm asking for.)

   a. Is the publication a book or a journal article rather than a report?

3. Is the report I'm requesting one which DTI can't furnish? (An Air Force report requested by a Navy contractor; a French report requested by a depository in another country.)

4. Is the report I'm requesting one I can get from ASTIA? (This question is pertinent only for those contractors who have direct access to ASTIA services.) If I have been unable to obtain from ASTIA, am I furnishing the DTIE all the needed information to obtain elsewhere?

5. Am I submitting my request on the appropriate request form or am I submitting my requests on a list or in a letter? (Requests submitted to DTIE on lists or in letters require considerable more time to handle than those submitted on the request forms, OR-540 for official requesters, OTI-114 for depository libraries.)

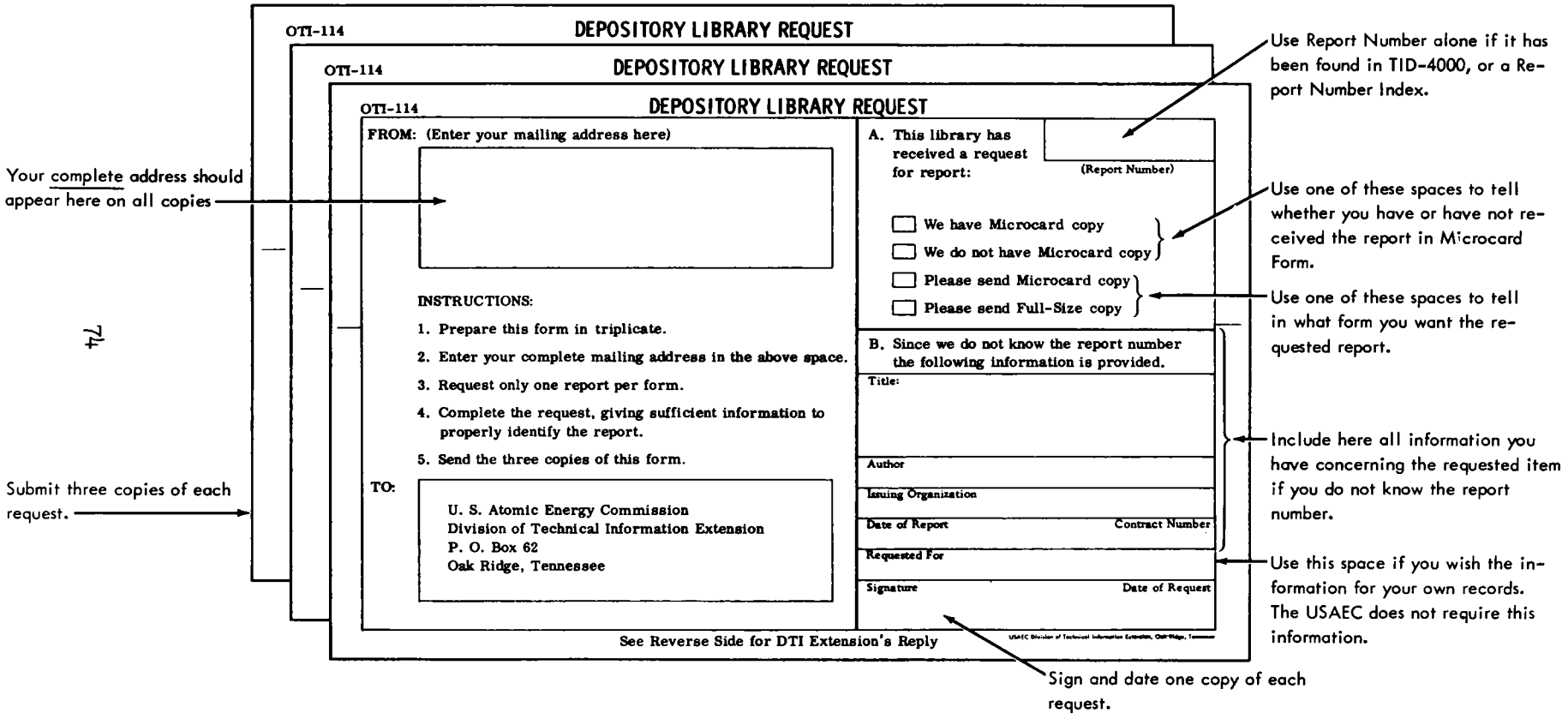
6. Have I included all the information necessary to permit DTI to identify the publication I'm asking for? (If I've listed only a title, it isn't enough! If the requested item was identified in an AEC abstract journal, the report number alone is sufficient.)

   a. Have I included the following:

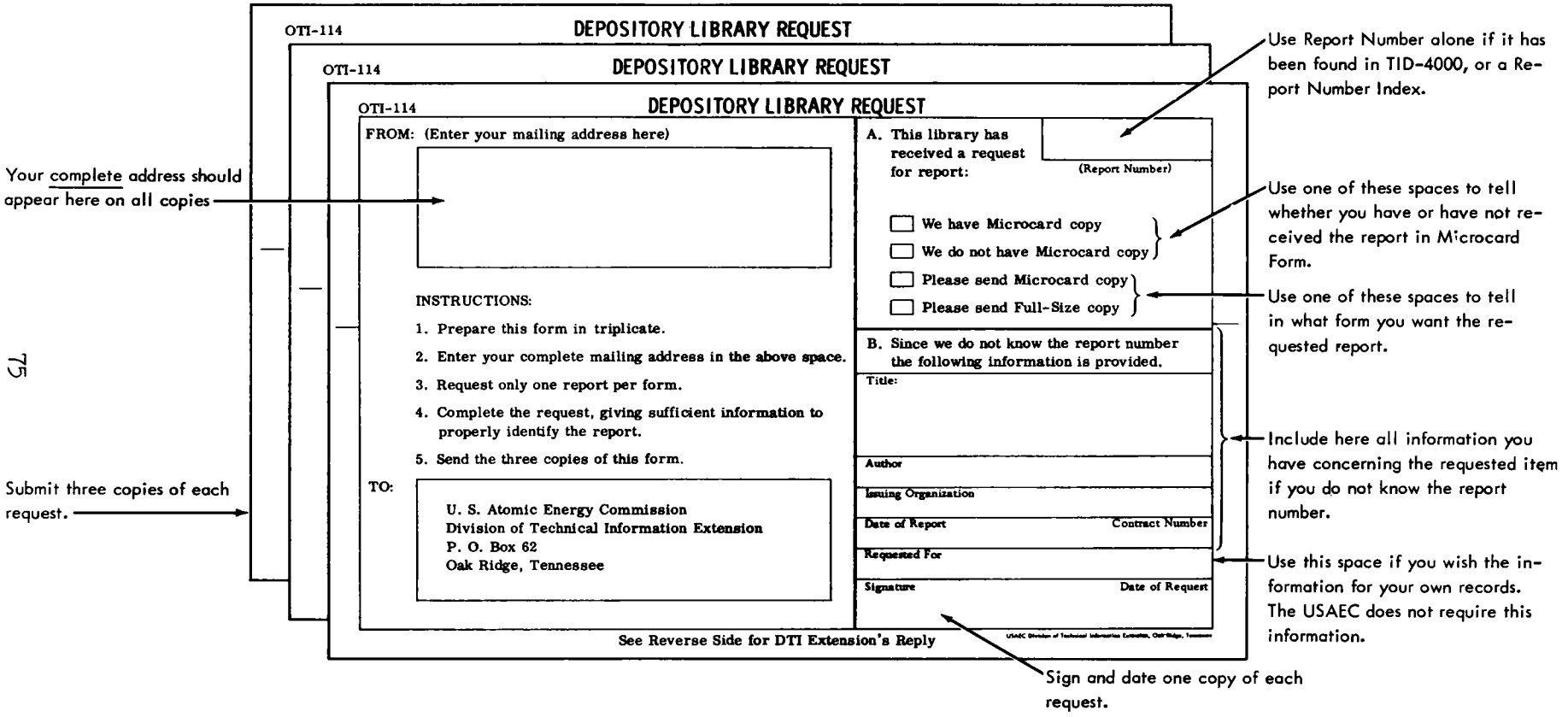
      (1) Author(s)
      (2) Title
      (3) Date
      (4) Issuing organization
      (5) Contract number

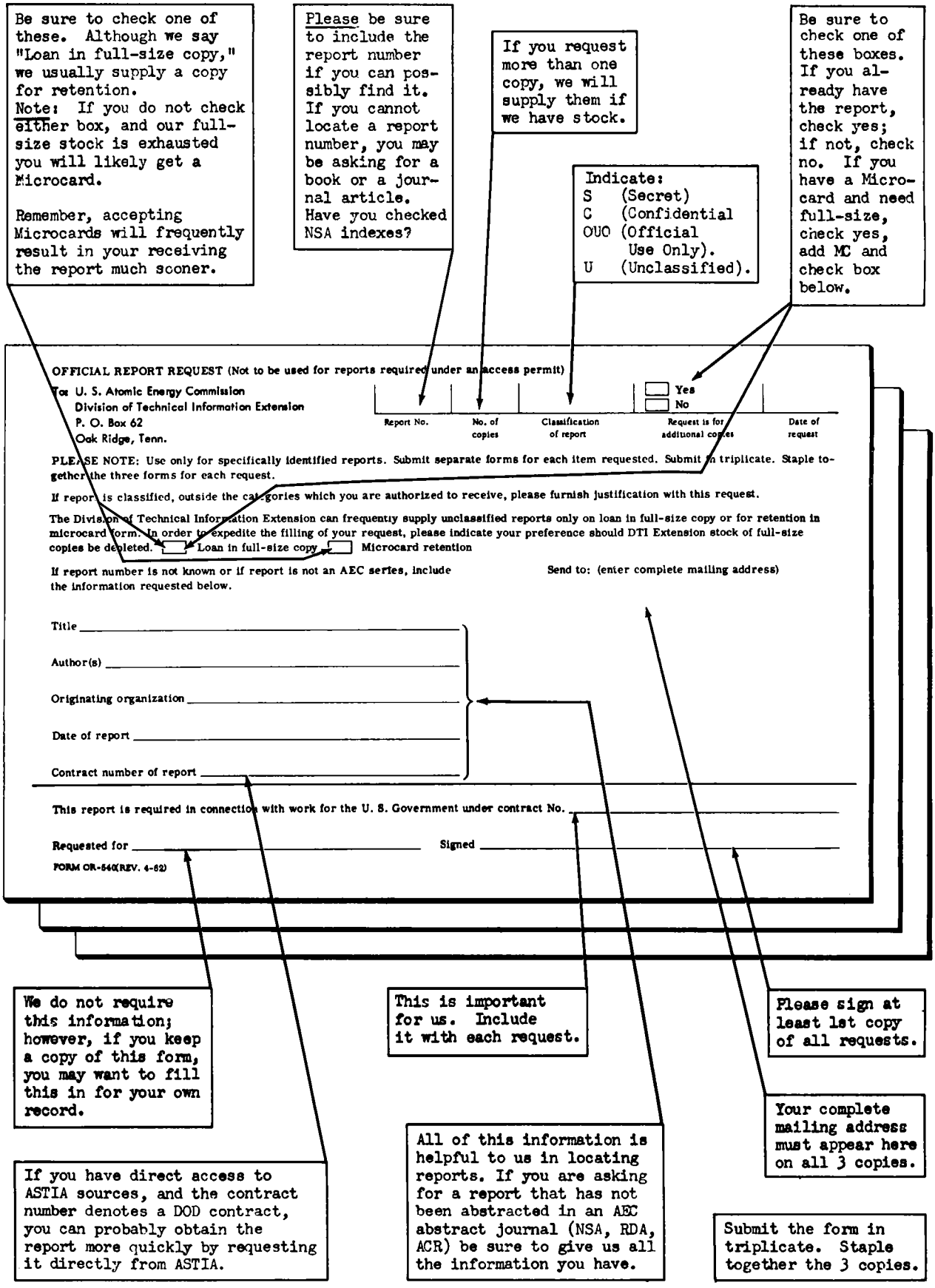
   b. If I have an incomplete reference, have I included a statement as to where the publication was cited or the reference found?

INSTRUCTIONS FOR THE USE OF FORM OTI-114



INSTRUCTIONS FOR THE USE OF FORM OTI-114




Be sure to check one of these. Although we say "Loan in full-size copy," we usually supply a copy for retention.
Note: If you do not check either box, and our full-size stock is exhausted you will likely get a Microcard.
Remember, accepting Microcards will frequently result in your receiving the report much sooner.
Please be sure to include the report number if you can possibly find it. If you cannot locate a report number, you may be asking for a book or a journal article. Have you checked NSA indexes?
If you request more than one copy, we will supply them if we have stock.
Indicate:
S (Secret)
C (Confidential
OUO (Official Use Only).
U (Unclassified).
Be sure to check one of these boxes. If you already have the report, check yes; if not, check no. If you have a Microcard and need full-size, check yes, add MC and check box below.
OFFICIAL REPORT REQUEST (Not to be used for reports required under an access permit)
To: U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tenn.
Report No.
No. of copies
Classification of report
Yes
No
Request is for additional copies
Date of request
PLEASE NOTE: Use only for specifically identified reports. Submit separate forms for each item requested. Submit in triplicate. Staple together the three forms for each request.
If report is classified, outside the categories which you are authorized to receive, please furnish justification with this request.
The Division of Technical Information Extension can frequently supply unclassified reports only on loan in full-size copy or for retention in microcard form. In order to expedite the filling of your request, please indicate your preference should DTI Extension stock of full-size copies be depleted. Loan in full-size copy Microcard retention
If report number is not known or if report is not an AEC series, include the information requested below.
Send to: (enter complete mailing address)
Title
Author(s)
Originating organization
Date of report
Contract number of report
This report is required in connection with work for the U. S. Government under contract No.
Requested for
Signed
FORM OR-540(REV. 4-62)
We do not require this information; however, if you keep a copy of this form, you may want to fill this in for your own record.
This is important for us. Include it with each request.
Please sign at least 1st copy of all requests.
Your complete mailing address must appear here on all 3 copies.
If you have direct access to ASTIA sources, and the contract number denotes a DOD contract, you can probably obtain the report more quickly by requesting it directly from ASTIA.
All of this information is helpful to us in locating reports. If you are asking for a report that has not been abstracted in an AEC abstract journal (NSA, RDA, ACR) be sure to give us all the information you have.
Submit the form in triplicate. Staple together the 3 copies.

TYPICAL "PROBLEM" REQUESTS RECEIVED BY DTI EXTENSION

A Selection of Actual Requests Received with an Account of the Action by DTI Extension

United States Atomic Energy Commission
Division of Technical Information
Washington 25, D. C.

Gentlemen:

Please send us one photocopy of AEC report 16:9974. We feel that it would be of great help to us to have a copy of this report available.

ACTION BY DTI EXTENSION

DTI Extension assumed that the requester wanted Abstract 9974 of NSA, Vol. 16. The abstract was checked. This abstract is of a paper from Progress in Nuclear Energy, Series IX, 2. Progress in Nuclear Energy is commercially available from Pergamon Press and not distributed by DTIE. Requester was told to obtain through regular library sources.

U. S. Atomic Energy Commission
Division of Technical Information Extension
P.O. Box 62
Oak Ridge, Tennessee

Gentlemen:

Is it permissible to make copies (e.g. Xerox reproduction) of unclassified AEC reports which are out of print and borrowed from AEC depository libraries? I refer in particular to ORNL No. 1742 (1955) which I would like to copy for use on an AEC sponsored project at the University of Maine

Thank you.

ACTION BY DTI EXTENSION

The requester was informed that Atomic Energy Commission reports which have been deposited in the depository libraries are in the public domain. It is permissable to reproduce any of these reports . However, both AEC and non-AEC sponsored reports will be supplied to you for use on an AEC sponsored project by the DTI Extension on request.

OFFICIAL REPORT REQUEST (Not to be used for reports required under an access permit)

To: U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tenn.

Report No.	No. of copies	Classification of report	Request is for additional copies	Date of request
NSA-16-3149	1	U	☐ Yes ☒ No	7/18/62

PLEASE NOTE: Use only for specifically identified reports. Submit separate forms for each item requested. Submit in triplicate. Staple together the three forms for each request.

If report is classified, outside the categories which you are authorized to receive, please furnish justification with this request.

The Division of Technical Information Extension can frequently supply unclassified reports only on loan in full-size copy or for retention in microcard form. In order to expedite the filling of your request, please indicate your preference should DTI Extension stock of full-size copies be depleted. ☒ Loan in full-size copy ☐ Microcard retention

If report number is not known or if report is not an AEC series, include the information requested below.

Send to: (enter complete mailing address)

Title _____

Author(s) _____

Originating organization _____

Date of report _____

Contract number of report _____

This report is required in connection with work for the U. S. Government under contract No. AT(11-1) 578

Requested for _____ Signed _____

FORM OR-540(REV. 4-62)

ACTION BY DTI EXTENSION

Abstract 3149 is a paper contained in the "Proceedings of the Ninth Conference on Hot Laboratories and Equipment". Abstract 16:3107 gives the availability of these proceedings as $10.00 (ASN) Requester was told to obtain commercially.

OFFICIAL REPORT REQUEST (Not to be used for reports required under an access permit)

To: U. S. Atomic Energy Commission
Technical Information Service Extension
P. O. Box 62
Oak Ridge, Tenn.

Report No.	No. of copies	Classification of report	Request is for additional copies	Date of request
	1		☐ Yes ☒ No	8/15/62

AUG 17 1962

PLEASE NOTE: Use only for specifically identified reports. Submit separate forms for each item requested. Submit in triplicate. Staple together the three forms for each request.

If report is classified, outside the categories which you are authorized to receive, please furnish justification with this request.

The Technical Information Service Extension can frequently supply unclassified reports only on loan in full-size copy or for retention in microcard form. In order to expedite the filling of your request, please indicate your preference should TISE's stock of full-size copies be depleted. ☐ Loan in full-size copy ☐ Microcard retention

If report number is not known or if report is not an AEC series, include the information requested below.

Send to: (enter complete mailing address)

Title Nuclear bomb effects computer

Author(s) _____

Originating organization _____

Date of report _____

Contract number of report _____

This report is required in connection with work for the U. S. Government under contract No. _____

Requested for _____ Signed _____

FORM OR-540(REV. 12-56)

ACTION BY DTI EXTENSION

This computer is an attachment to the book "The Effects of Nuclear Weapons". It is being sold separately by the Superintendent of Documents for $1.00. Requester was referred to GPO.

OFFICIAL REPORT REQUEST (Not to be used for reports required under an access permit)

To: U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tenn.

Report No.	No. of copies	Classification of report	Request is for additional copies	Date of request
	1	Unclass	☐ Yes ☒ No	8/18/62

JUL 23 1962

PLEASE NOTE: Use only for specifically identified reports. Submit separate forms for each item requested. Submit in triplicate. Staple together the three forms for each request.

If report is classified, outside the categories which you are authorized to receive, please furnish justification with this request.

The Division of Technical Information Extension can frequently supply unclassified reports only on loan in full-size copy or for retention in microcard form. In order to expedite the filling of your request, please indicate your preference should DTI Extension stock of full-size copies be depleted. ☒ Loan in full-size copy ☐ Microcard retention

If report number is not known or if report is not an AEC series, include the information requested below.

Send to: (enter complete mailing address)

Title Constitution of Ti Alloy Systems

Author(s) _____

Originating organization _____

Date of report _____

Contract number of report _____

This report is required in connection with work for the U. S. Government under contract No. _____

Requested for _____ Signed _____

FORM OR-540(REV. 4-62)

ACTION BY DTI EXTENSION

Request was returned to requester asking for bibliographic information.

OFFICIAL REPORT REQUEST

(Not to be used for reports required under an access permit)

To: U. S. Atomic Energy Commission
Office of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee

REPORT NUMBER	NO. OF COPIES	CLASSIFICATION OF REPORT	REQUEST IS FOR ADDITIONAL COPIES	DATE OF REQUEST
AD-24278	1		☐ YES ☒ NO	8/17/62

AUG 27 1962

PLEASE NOTE: Use only for specifically identified reports. Submit separate forms for each item requested. Submit in triplicate.

If report is classified, outside the categories which you are authorized to receive, please furnish justification with this request.

Per ASTIA This is an AEC report AD # cancelled

The Office of Technical Information Extension can frequently supply unclassified reports only on loan if full-size copy or for retention in microcard form. In order to expedite the filling of your request, please indicate your preference should OTI Extension's stock of full-size copies be depleted. ☐ Loan in full-size copy ☐ Microcard retention

If report number is not known or if report is not an AEC series, include the information requested below.

Send to: (enter complete mailing address)

TITLE

AUTHOR(S)

ORIGINATING ORGANIZATION

DATE OF REPORT | CONTRACT NUMBER OF REPORT

Signed: _____

By. _____

This report is required in connection with work for the U. S. Government under Contract No. W7405 e 26

REQUESTED FOR

SIGNED

AUG 27 1962

UCN-650B
(3 4-61)

ACTION BY DTI EXTENSION

The DTI Extension does not maintain a cross reference file from the AD number to the original number. Requester was told to request by the AEC report number if he did not already have copies of the report.

PLEASE OBTAIN FOR US: NOT AVAILABLE FROM ASTIA.

USAEC
Technical Information Service Extension
P.O. Box 62
Oak Ridge, Tennessee

AD 271,002	one	
Report No.	Number of Copies	Transmitted

It is requested that the report indicated above be forwarded to this office.

Are these additional copies? Yes____ No XX

Classification Unclass
(Please fill in whenever classification is known)

If report number is not known or if report is not an AEC series include the information requested below.

Title Unijunction devices made from rare earth semiconductors (Descriptors: (Borides) CPR -3

Requesting Installation

Author(s) Nathan Sclar

Issuing installation Nuclear Corp. of America, Denville, N.J.

Date of report July-Sept. 61

Contract number of report DA 36-039-sc-87392, Proj. 3A 99021-001.

Requested for

Date of request 5-3-62

Signed

ACTION ON REPORT REQUESTED IS INDICATED ON REVERSE SIDE

USE ONLY FOR SPECIFICALLY IDENTIFIED REPORTS. SUBMIT SEPARATE FORMS FOR EACH ITEM REQUESTED. SUBMIT IN TRIPLICATE.

REPORT REQU

FORM 598 1500 1-60

ACTION BY DTI EXTENSION

The Technical Abstract Bulletin was checked to determine why the report was not available from ASTIA. Notation in TAB said "For reference only at ASTIA, this report can not be satisfactorily reproduced; ASTIA does not furnish copies." The report was requested from the originating organization.

OFFICIAL REPORT REQUEST (Not to be used for reports required under an access permit)

To: U. S. Atomic Energy Commission
Office of Technical Information Extension
P. O. Box 62
Oak Ridge, Tenn.

Report No.	No. of copies	Classification of report	Request is for additional copies	Date of request
	1	Uncl.	☐ Yes ☒ No	7-17-

JUL 23 1962

PLEASE NOTE: Use only for specifically identified reports. Submit separate forms for each item requested. Submit in triplicate. Staple together the three forms for each request.

If report is classified, outside the categories which you are authorized to receive, please furnish justification with this request.

The Office of Technical Information Extension can frequently supply unclassified reports only on loan in full-size copy or for retention in microcard form. In order to expedite the filling of your request, please indicate your preference should OTI Extension stock of full-size copies be depleted. ☐ Loan in full-size copy ☐ Microcard retention

If report number is not known or if report is not an AEC series, include the information requested below.

Send to: (enter complete mailing address)

Title Technical Publications Announcements with Indexes. Vol. 2 No. 3 N62-10502 thru N62-10917

Author(s) _____

Originating organization _____

Date of report _____

Contract number of report _____

This report is required in connection with work for the U. S. Government under contract No. _____

Requested for _____ Signed _____

FORM OR-540(REV. 7-60)

ACTION BY DTI EXTENSION

DTI Extension assumed that the publications requested were issued by the National Aeronautics and Space Administration. Copies were requested from NASA.

OTI-114

DEPOSITORY LIBRARY REQUEST

FROM: (Enter your mailing address here)

INSTRUCTIONS:

1. Prepare this form in triplicate.
2. Enter your complete mailing address in the above space.
3. Request only one report per form.
4. Complete the request, giving sufficient information to properly identify the report.
5. Send the three copies of this form.

TO:

U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee

A. This library has received a request for report: ORNL (Report Number)

- ☐ We have Microcard copy
- ☐ We do not have Microcard copy
- ☐ Please send Microcard copy
- ☒ Please send Full-Size copy

B. Since we do not know the report number the following information is provided.

Title: Semiannual Progress Report Jan. - July 1961

Author

Issuing Organization

Date of Report | Contract Number

Requested For

Signature | Date of Request

See Reverse Side for DTI Extension's Reply

USAEC Division of Technical Information Extension, Oak Ridge, Tennessee

ACTION BY DTI EXTENSION

As the ORNL issues more than one semiannual report, the request was returned to the requester asking for more information.

TRANSLATIONS

Frances E. Stratton

Division of Technical Information Extension
U. S. Atomic Energy Commission

The necessity for an awareness of scientific and technical advances reported in foreign languages has been recognized since the beginning of the atomic energy program. In the earliest days of the Manhattan District it was necessary to prepare translations of basic information already available in languages other than English. You will remember that some of the earliest research on atomic energy was done in Italy, Denmark, and Germany.

More recently, with atomic energy programs firmly established in many nations, the need for translations has increased proportionately. The AEC has given increased attention and effort to make this body of information available in translated form. This effort consists of the sponsorship of the translation of books and journals, participation in the PL-480 Program, cooperation with other government agencies, and some foreign agencies to achieve the widest possible use of translated material.

The AEC participates in the PL-480 Program administered by the National Science Foundation. Under this program scientific translations are prepared in certain foreign countries with the use of funds accruing to the United States from the sale of surplus agricultural products. This program is in effect in Israel, Poland, and Yugoslavia. The AEC has chosen to use its allotment of pages for the cover-to-cover translation of journals. Among those translated or being translated are:

Zhurnal Neorganicheskoi Khimii, vols. 1, 2, 3(1957-1958)
Uspekhi Fizicheskikh Nauk, vols. 61, 62, 63, 64, 65(1957-1958)
Nukleonika, 1957-1961 and current issues

Radiokhimiya, vols. 2 and 3(1960-1961)
Roczniki Chemii, 1959-1960
Bulletin of the Institute of Nuclear Sciences, Boris Kidrich, 1959-61 and current issues.

The AEC will not sponsor translation of the current volume of Radiokhimiya. A commercial translator has elected to do this beginning with volume 4, and this office will not compete. The AEC is translating the journal Radiobiologiya. Translations of this journal will be printed and issued in the translation series. Arrangements have been made with the International Atomic Energy Agency, Vienna, to receive advance copies of papers to be presented at IAEA sponsored conferences. DTI Extension will automatically translate the Russian papers presented.

The translation program of the AEC includes the work of the AEC contractors as well as the work of the Division of Technical Information. Most contractors have assumed the responsibility of procuring the translation of journal articles and those requested for a particular need in a particular situation. The DTI program is concerned with the translation of books, large monographs, meeting papers, and the cover-to-cover translation of journals. The brochure, "Selected Technical Translations Sponsored by the USAEC," lists some of the major works sponsored by this office. This title is on your check list if you wish copies sent to you.

Translations prepared under AEC contract are handled much the same as Research and Development reports prepared under contract. They should be sent routinely to DTI Extension for standard processing in the same manner as are reports; for evaluation, announcement in the abstract journals, and further dissemination.

Another activity of this program is the prompt announcement of translations and their availability. This is done through the issuance of the U.S. AEC Translation List and TID-4025, Translation Title List and Cross Reference Guide. The Translation List is an informal publication issued approximately twice monthly. The original purpose of the List was to notify contractors of translations in process within the official family in order to avoid costly duplication of effort. It has been expanded to include not only the translations being prepared by AEC contractors and by some foreign government agencies, but also to include titles and availability of completed translations received by this office. Part I of the List includes titles of items in process. These are reported to us on standard Form OTI-36. Part II of the List includes titles of completed translations scheduled for announcement in NSA or RDA. Part III is reserved for listing translations that are out of scope for the abstract journals, those cancelled, added availability, errata, etc.

Copies of all translations listed in Part II and the completed ones in Part III are held in the master file. Official distribution is made on all AEC sponsored translations. Some translations from non-AEC sources are reproduced and given official distribution including depository libraries. All others should be requested from the originating agency, OTS, or JCL.

TID-4025(1st Rev.) is an indexed title list arranged by report number of the translation holdings in the DTI Extension master file as of June 30, 1960. Supplements to this publication will list subsequent acquisitions. The supplements will be issued with cumulative author and original source indexes.

This office also provides a duplication check service. Contractors preparing translations are urged to use this service by asking us to determine whether a publication has been translated. DTI Extension will check the master file in Washington and give a prompt reply. Such requests may be made on the official request form or by teletype.

It is assumed that the requester has made a search for the usual reference tools before asking DTI Extension to make a duplication check; including the OTS Technical Translations and its predecessor, the SLA Translations Monthly; Transatom Bulletin; Consolidated Translation Survey; Nuclear Science Abstracts; TID-4025(1st Rev.); and the U. S. AEC Translation List. Nuclear Science Abstracts and the Translation Lists prior to June 30, 1960, need not be checked for AEC holdings. TID-4025(1st Rev.) lists all holdings as of that date.

If you need help in obtaining a translation that is not available through the regular sources, that is, the Office of Technical Services, the SLA Translation Center, or a commercial translator, please come to us. We will do our best to get it for you. Keep in mind the extreme importance of an accurate bibliographic citation. Such accuracy is necessary not only in trying to locate a translation, but also in identifying the source for any translation you issue. Please use standard bibliographic form and give all the information.

The translation program of the Atomic Energy Commission is a truly cooperative program. With the continued help of the AEC contractors and of other agencies, we hope to continue to give service in the area of translations consistent with that in the area of research and development reports.

TRANSLATIONS IN PROCESS

This information will be included in Translation Lists prepared by the USAEC Division of Technical Information.

Titles and Authors (in the language of the translation)	Citation: Original Title, Journal Reference*, Originating Agency, Publisher, etc.	Translation Number (if any)	Scheduled Completion Date

*Please include volume number, issue number, inclusive pages, and year in the journal reference.

Return to: U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee

Attn: Cataloging Branch

Additional copies of this form may be ordered from DTI Extension.

Date _____ Signature _____ Organization _____

Form OTI -62)

UNITED STATES ATOMIC ENERGY COMMISSION
Division of Technical Information Extension
P. O. Box 62, Oak Ridge, Tennessee

U. S. AEC TRANSLATION LIST NO. 73

September 10, 1962

The following translations have been reported as being in process or completed. The entries are listed in the form in which they were received. Future lists will be issued periodically as information is supplied to the Division of Technical Information Extension.*

PART I. TRANSLATIONS IN PROCESS

PLEASE NOTE: A 'translation in process' is not completed, and therefore, is not yet available. Requests for translations in this Part should be made only after they have been announced in Part II, Translations Completed, in NUCLEAR SCIENCE ABSTRACTS, or in RESEARCH AND DEVELOPMENT ABSTRACTS.

73-1 Akhachinskii, V. V., Kopytin, L. M.
HEATS OF FORMATION OF INTERMETALLIC COMPOUNDS OF Pu WITH Al AND Fe, U WITH Fe (Teploty Obrazovaniya Intermetallicheskikh Soedinenii Plutoniya s Aluminem i Zhelezom i Urana s Zhelezom) ermodynamics of Nuclear Materials, Symposium, Vienna .1-5, 1962. SM-26/59. 13 pages. (Division of Tech formation Extension).

73-2 Andreeva, O. I ostikova, G. I.
STUDY OF CAR. -ISOTOPE EXCHANGE REACTIONS BETWEEN POTASSIUM CYANIDE AND SOME CARBONATES, AND THEIR USE FOR OBTAINING C^{14}-LABELLED POTASSIUM CYANIDE (Izuchenie Reaktsii Izotopnogo Obmena Ugleroda Mezhdutsinanistym Kaliem i Karbonatami i Primenenie ikh Dlya Polucheniya Tsianistogo Kaliya, Mechannogo Izotopom C^{14}). Radioisotopes in the Physical Sciences and Industry, Conference Proceedings, Copenhagen, September 6-17, 1962, Vol. 3: 111-22(1962). 12p. (Division of Technical Information Extension).

*Organizations may request from the DTI Extension, Oak Ridge, Tennessee, copies of Form OTI-36, 'Translations in Process', for contributing items to these lists.

73-75 Zhukov, G. R., Zabiyakin, G. I., et al
MULTI-MEASURING TAPE-RECORDING SYSTEMS WITH STATISTICAL EQUALIZING (mnogomernye Sistemy Registratsii na Magnitnom Lente s Razravnivaniem Statistiki). Nuclear Electronics, Proceedings of the Conference on Nuclear Electronics, Belgrade, May 15-20, 1961, Vol. II: 61-71(1962). STI/PUB/42. 11p. (Division of Technical Information Extension.

73-76 Ziebland, H.
A NEW EXAMINATION OF THE THERMAL CONDUCTIVITY OF HEAVY WATER. Allgemeine Warmetechnik 9: No. 2, 37-39(1959). (Atomic Energy of Canada, Ltd., Chalk River).

PART II: TRANSLATIONS COMPLETED

Translations listed in this Part will be abstracted and indexed in NUCLEAR SCIENCE ABSTRACTS or RESEARCH AND DEVELOPMENT ABSTRACTS, as noted. Translations into languages other than English are noted.

A. AEC Translations.

Translations prepared by organizations under contract to the U. S. Atomic Energy Commission are reproduced for official AEC distribution, including depository libraries in the United States and other countries. They are available as noted, from (1) the Office of Technical Services (OTS) in printed form, or (2) the John Crerar Library (JCL) and the Library of Congress (LC) in facsimile (fs) or microfilm (mf) form.

73-77 AEC-tr-4576
RADIOCHEMISTRY. Translation of Radiokhimiya, 2: 1-264(1960). 287p. (PST-Cat.-565-566). NSA. Dep.; $2.75(OTS).

73-78 AEC-tr-4577
RADIOCHEMISTRY. Translation of Radiokhimiya, 2: 265-507(1960). 257p. (PST-Cat.-567-568). NSA. Dep.; $2.75(OTS).

73-79 AEC-tr-5168
THE MICROSCOPIC DIFFUSION OF NEUTRONS BY AN APPROXIMATE METHOD. J. Yvon. Translated by Eugene Gruber, Jr. (Westinghouse Electric Corp. Bettis Atomic Power Lab., Pittsburgh) from J. Nuclear Energy, 4: 305-18(1957). NSA. Dep.(mc); $1.60(fs), $0.80(mf), JCL.

73-130 UCRL-Trans-843
INVESTIGATION OF THE CHARACTERISTICS OF THE BEAM OF PROTONS ACCELERATED IN THE 10 Bev SYNCHROPHASOTRON. A. B. Kuznetsov and K. P. Myznikov (Joint Inst. for Nuclear Research, Dubna, U.S.S.R., Lab. of High Energy). Translated by D. A. Nimidoff (Univ. of California Lawrence Radiation Lab., Berkeley) from report JINR-P-787. 1961. 18p. NSA. Dep.(mc); $1.60(fs), $0.80(mf), JCL or OTS.

73-131 UCRL-Trans-847(L)
ON THE DEPENDENCE OF THE IONIZATION PROBABILITY OF $H_2 \rightarrow H + H^+ + e$ + KINETIC ENERGY, ON THE ORIENTATION OF THE MOLECULE TOWARD THE COLLIDING ELECTRON. Nobuji Sasaki and Tsuneyo Nakao. Translated by F. S. Baker (Univ. of California Lawrence Radiation Lab., Berkeley) from Proc. Imp. Acad. (Tokyo), 11: 138-40(1935). 4p. NSA. Dep.(mc); $1.10(fs), $0.80(mf), JCL.

B. Non-AEC Translations.

Translations prepared by organizations not under contract to the U. S. AEC are reproduced for official AEC distribution. Additional availability is given, when known, at the end of the citation. Abbreviations used are JCL (John Crerar Library); OTS (Office of Technical Services); LC (Library of Congress); Dep. (U. S. depository libraries in full-scale form); Dep.(mc) (U. S. depository libraries in Microcard form). All others should be requested from the issuing agency.

73-132 AERE-Trans-894
RADIATION-INDUCED OXIDATION OF HYDROCARBONS. S. Ciborowski. Translated by W. Bourke (United Kingdom Atomic Energy Authority. Research Group. Atomic Energy Research Establishment, Harwell, Berks, England) from Wiadomosci Chem., 15: 225-46(1961). 20p. NSA. Dep.

73-133 AERE-Trans-895
FUNDAMENTALS AND POSSIBILITIES OF FILM DOSIMETRY. K. Becker. Translated by J. B. Sykes (United Kingdom Atomic Energy Authority. Research Group. Atomic Energy Research Establishment, Harwell, Berks, England) from Atompraxis, 4: 168-75 (1958). 21p. NSA. Dep.

73-134 AERE-Trans-896
ASYMPTOTIC EXPANSION OF THE WAVE FUNCTION OF CHARGED PARTICLES. R. Peterkops. Translated by J. Caldwell (United Kingdom Atomic Energy Research Establishment, Harwell, Berks, England) from Latvijas PSR Zinatnu Akad. Vestis, No. 9, 79-84(1960). 10p. NSA. Dep.

73-135 AWRE/Trans/35
INDUCTANCE OF SECTIONAL PAPER CAPACITORS. G. S. Kuchinskii and K. M. Irkaeva. Translated by F. E. Wallwork (U.K.A.E.A., Weapons Group. Atomic Energy Research Establishment, Aldermaston, Berks, Eng.) from Vestnik Electroprom., 32: No. 11, 38-41(1961). 18p. NSA. Dep.(mc); $1.60(fs), $0.80(mf), JCL.

73-136 CEA-tr-X-436
DOSAGE DU CHROME DANS LES ACIERS INOXYDABLES PAR LA METHODE D'ANALYSE PAR FLUORESCENCE AUX RAYONS X. (Determination of Chromium in Inoxidizable Steels by X-Ray Fluorescence Analysis). K. Momogi. Translated into French from Kogyo Kagaku Zasshi, 64: 98-109(1961). 34p. NSA. Dep.(mc); $3.60(fs), $1.22(mf), JCL.

73-137 CEA-tr-X-438
SEPARATION ET DOSAGE DU L'URANIUM(VI) EN PRESENCE D'URANIUM(IV) ET D'AUTRES CATIONS. (Separation and Determination of Uranium(VI) in Presence of Uranium(IV) and Other Cations). Jorge Alberto Blay (Argentina. Comision Nacional de Energia Atomica, Buenos Aires). Translated into French from Report No. 48. 1960. 28p. NSA. Dep. (mc); $2.60(fs), $1.04(mf), JCL.

73-138 CEA-tr-X-444
DE LA PREPARATION DU CUIVRE-64, DU NICKEL-65 ET DU MANAGNESE-56 A HAUTE ACTIVITE SPECIFIQUE. (On the Preparation of Copper-64, Nickel-65, and Manganese-56 of High Specific Activities). Hiroshi Ebihara and Kenji Yoshihara. Translated into French from Bunseki Kagaku, 9: 815-21(1960). 21p. NSA. Dep.(mc); $2.60(fs), $0.83(mf), JCL.

AUTHOR INDEX

EDUCATIONAL MATERIALS PROGRAM

Richard E. C. Duthie

Division of Technical Information Extension
U. S. Atomic Energy Commission

OBJECTIVE

The purpose of the Educational Materials Program is to supply, upon request, technical information concerning atomic energy to students, teachers, and others.

HISTORY

Inquiries always have been received by the Atomic Energy Commission for information on atomic energy. Originally most letters requesting general information were answered by the Division of Public Information. More recently, as the volume of requests increased many-fold and the nature of the questions asked became more technical, the major responsibility for answering these inquiries was transferred to the Division of Technical Information. Starting in January 1961 the work involved in answering requests, acquisitioning educational type literature, and reprinting in quantity various brochures was transferred to DTI Extension, Oak Ridge. In setting up the program, the first thing accomplished was a review and an evaluation of all literature (40 titles) that was currently in use. A committee of six professional people reviewed the literature and approximately one-half were retained as being appropriate for continued use. The Educational Materials Section, Reference Branch, DTI Extension, devised new procedures, developed form replies, and acquisitioned from AEC contractors, government agencies and commercial firms, new brochures and other type literature.

In 1960 letters received from students and teachers averaged 960 per month; in 1961 the influx rose to 1760 per month; and in the 8 months of 1962 letters have been received at the rate of approximately 2100 per month. See charts in the Appendix.

CURRENT PROGRAM

The basic practice that is adhered to in processing requests in DTI Extension is:

1. Each request is promptly answered.

2. One or more brochures containing information on the subject requested is supplied.

3. Reference lists to additional literature that is available are also supplied.

4. Requesters of the senior high school and college levels are informed of the location of the AEC depository libraries and are given a copy of TID-4550.

5. Student requesters are urged to make use of their local libraries (school, public, and technical).

ACQUISITIONS

In January 1961 there was available to answer requests literature on 20 titles covering approximately 12 phases of atomic energy. At the close of 1961 the quantity of literature available had increased thru acquisitioning and printing at DTIE to a total of 130 titles on 20 subject categories. Currently we have approximately 200 titles on 21 subjects related to atomic energy. This collection includes brochures, booklets, reprints of technical articles, photographs, charts, and press releases.

When a new brochure is reviewed and evaluated for possible inclusion in this collection, it is necessary that a minimum of 500 to 1500 copies of that title be available depending on the subject. Most of the items of literature distributed were prepared under AEC sponsorship. However, commercial firms have supplied DTI Extension with many thousands of copies of excellent brochures. Some of these firms are: General Electric Company, Science Service, Consolidated Edison, Westinghouse Corporation, New York Life Insurance Company, Esso Research and Engineering, General Dynamics, Abbott Laboratories, and Revelle, Inc. To date these firms have supplied 182,000 copies to the AEC without charge.

LITERATURE AVAILABLE

Brochures

The collection of information stocked in quantity in DTI Extension for this program has been arranged into the following subject categories:

AEC Organizations, Functions, and Facilities
Atomic Energy and the Life and Physical Sciences
Atomic Energy Projects and Experiments

Basic Atomic Energy Facts
Career Guidance
Catalogs, Libraries and Literature
Education and Training
Fall-Out
Fusion Power
International Aspects
Nuclear Propulsion
Plowshare Projects
Radiation Uses, Hazards, and Safety
Radioactive Waste Disposal and Reprocessing of Fuel Elements
Radioisotopes
Reactors: Power
Reactors: Research, Training, Test and Experimental Research
Research
Teaching Atomic Energy
Uranium and Thorium Prospecting, Mining and Production
Weapons Development and Testing

In order to supply more literature to certain classes of requesters, kits of brochures are prepared. The contents of these kits are arranged by educational and teaching levels and include from 10 to 30 items of literature. The kits currently in use are:

Elementary Students
Junior and Senior High School Students
High School Science Students
Science Projects
Elementary Teachers
Education Majors
Junior High School Teachers
High School Science Teachers
Career Guidance Counselors
Radiation Effects

These kits have been enthusiastically received by students, teachers, and career guidance counselors for use in classroom teaching, education meetings of teachers and for use in local school libraries.

Reference Lists

During the past year it was found that many requests were being received for information which was not covered adequately in the brochures, booklets, etc. At first, these requests were answered by performing individual literature searches or, supplying reprints of journal articles. Separate letters were prepared to each requester. As many more requests were received for information on the same and other topics, it was impossible to supply reprints to all or perform separate searches. Therefore, lists were compiled containing reading

references to technical papers, with the majority of the references being to books and articles in semi-technical journals. The journals cited are those that are generally available in school libraries as well as public libraries. In addition to the references listed a one to two page resume of the topic is included. Currently reading lists in this format have been prepared on approximately 130 topics concerned with atomic energy. From 500 to 2000 copies each of these reading lists are printed and stocked in DTIE and are supplied to requesters along with brochures. Some of the topics covered by the reference lists are as follows:

Atomic, Cobalt and Hydrogen Bombs
Atoms, Molecules, and Chemical Change
Ion Propulsion
Positrons
Radiation Effects on Bones
Radiation Effects on Mice
Radiosterilization of Foods
Rockets, Missiles and Space
Solar Energy
Transuranium Elements
Women in Science

OTHER ACTIVITIES

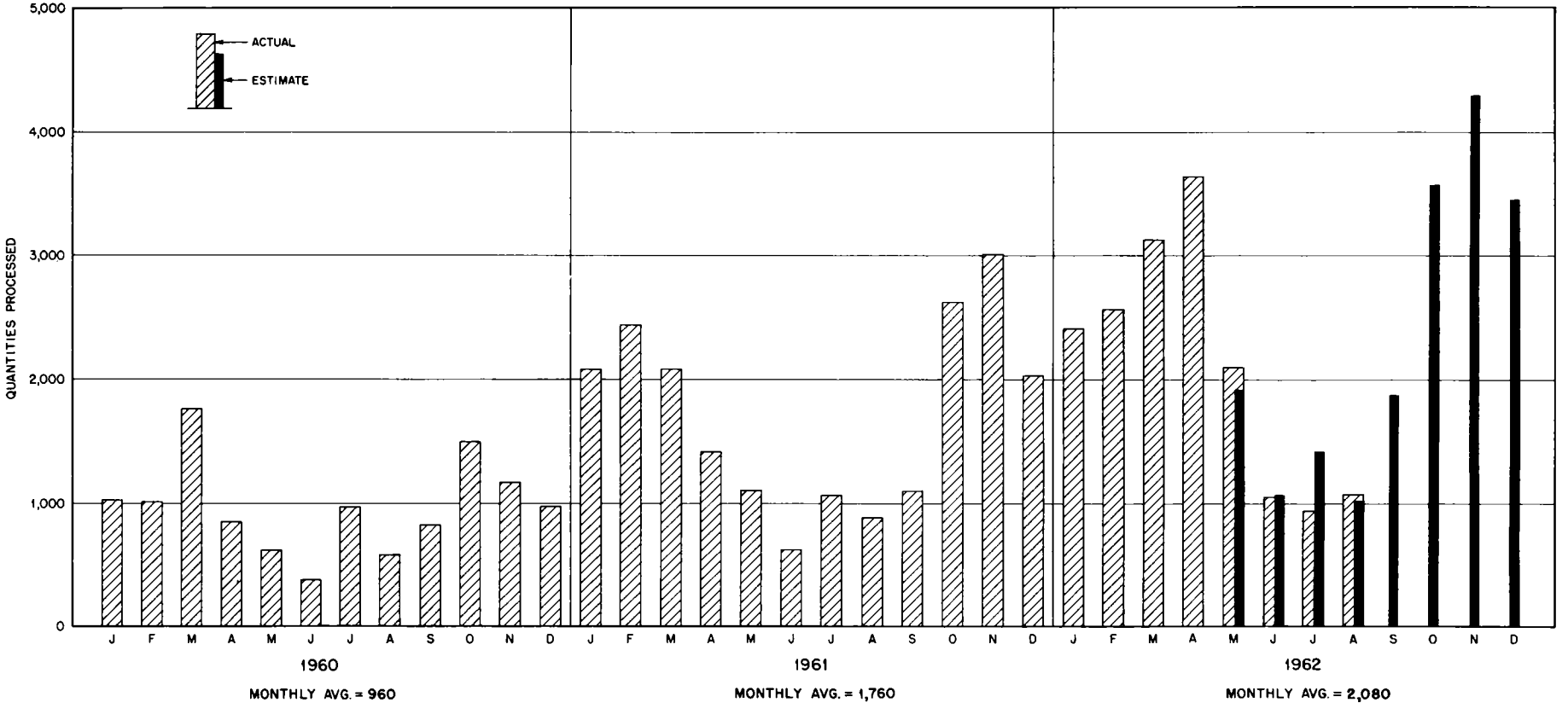
Because of their advantageous position, special consideration is given to requests from guidance counselors, teachers and educators. These requesters are sent a sizable collection of literature. Also, AEC educational materials are being made available at meetings of educators, students and teachers. Examples of such meetings during the past year are National Youth Conference at Chicago; Boy Scout Regional Meeting at Cincinnati; State of Iowa Teacher's Meeting at Cedar Rapids. The reactions of these people to the DTI collection were extremely favorable.

Responses received from students have indicated that most libraries in towns and small communities do not have literature on atomic energy such as the brochures currently being used and, therefore, are not available to the students. This condition exists because most brochures stocked by DTI Extension are prepared by the firms on very specific topics of current interest and to be used as giveaways. Therefore, they are not available for sale nor even widely publicized. For these reasons it is considered important to continue supplying AEC's unique brochures and also to direct the student to make use of tools and literature in their local library to obtain additional information from the more traditional literature (books, papers, etc.).

AVAILABILITY

Librarians may obtain a reference collection of these materials by contacting the Educational Materials Section, Reference Branch, DTI Extension, P. O. Box 62, Oak Ridge, Tennessee. Also, the letters these libraries receive from students requesting copies for their own use, may be sent to DTI Extension. We will supply single copies.

EDUCATIONAL MATERIALS PROGRAM



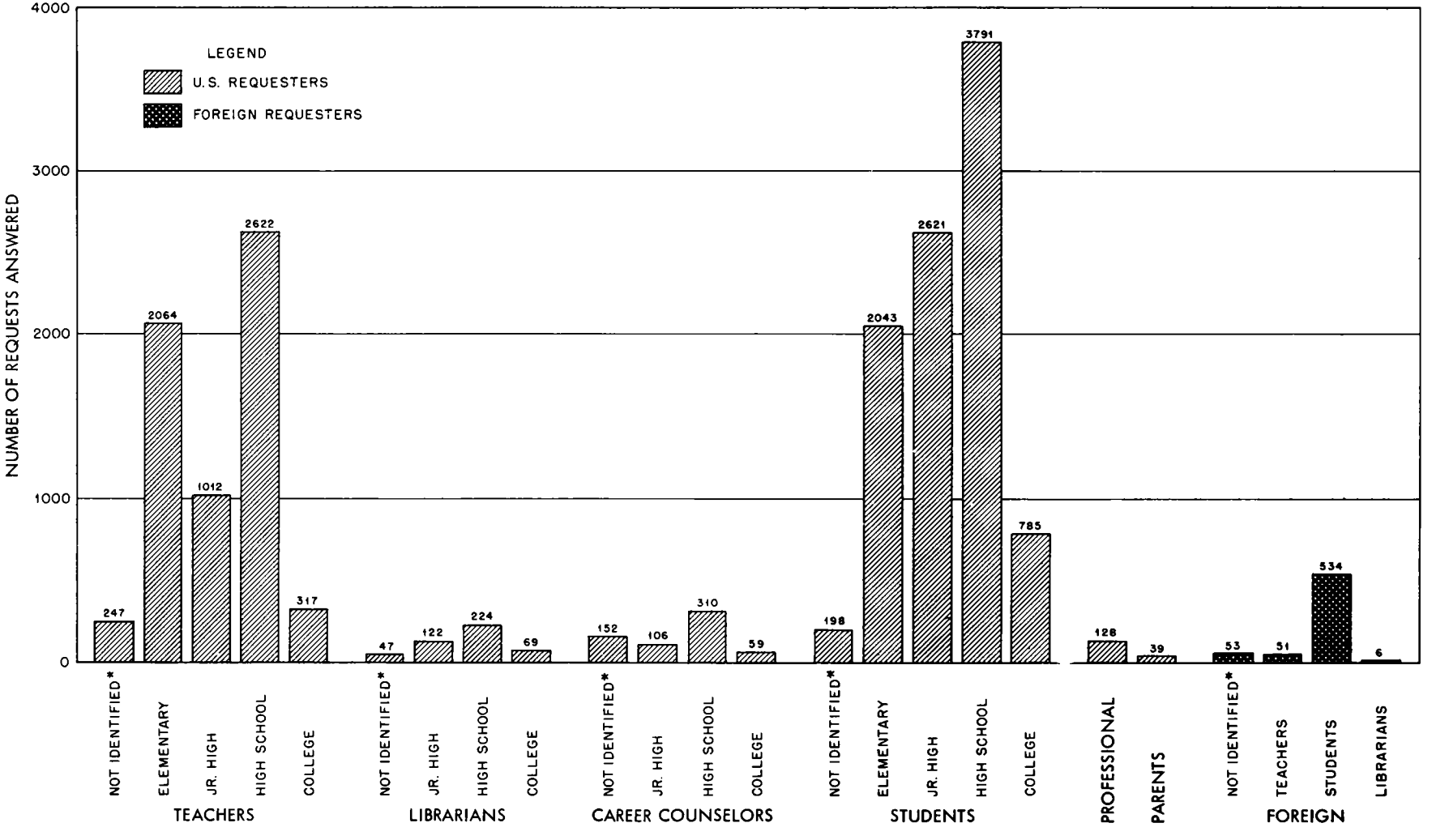
REQUESTS
RECEIVED AND PROCESSED UNDER THE
EDUCATIONAL ASSISTANCE ACTIVITY AT DTI EXTENSION

1960 -- 1962

EDUCATIONAL MATERIALS EVALUATION CHART

January 1962—August 1962

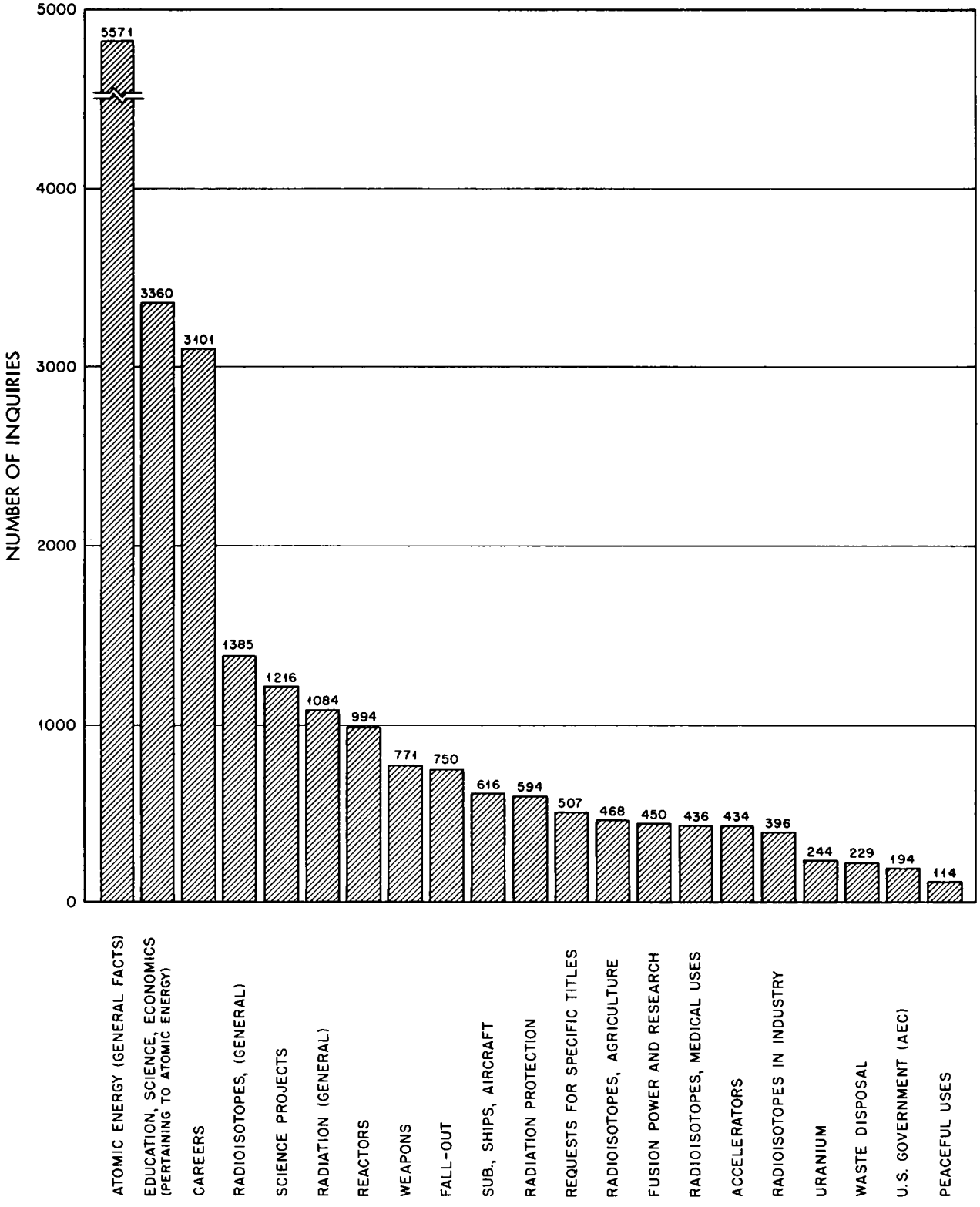
Total—17,600



*SPECIFIC EDUCATIONAL LEVEL NOT AVAILABLE

EDUCATIONAL MATERIALS PROGRAM

January 1962—August 1962



CATEGORIES OF INFORMATION REQUESTED

(By Students, Teachers, and Librarians)

ENGINEERING MATERIALS PROGRAM

Richard E. C. Duthie

Division of Technical Information Extension
U. S. Atomic Energy Commission

OBJECTIVE

The purpose of the AEC's Engineering Materials Program is to make available AEC engineering materials (drawings, specifications, photographs, and bills of materials) for use in the development of nuclear energy for peaceful uses.

HISTORY

The first activities in the program started in 1956 when engineering materials were supplied on an individual request basis. Later these materials were obtained in comprehensive groups or sets and announced in TID-4100, Engineering Materials List. Copies of engineering materials were sold in 1957 to the public and supplied without charge to official requesters and contractors from DTI Extension. Because of the growth in demand for these materials, the reproduction of copies and their sale was transferred to an AEC contractor. DTI continued to acquisition and announce sets of new materials in TID-4100. The AEC contractor also reproduced on 105 mm film all engineering materials that were announced. Twenty collections of film (25,000 negatives each) were made for use in industrial libraries and centers throughout the United States and in foreign depositories. In 1960 microfilming was terminated.

CURRENT PROGRAM

Requests for both classified and unclassified engineering drawings are processed in this program. Classified drawings are obtained on an individual request basis and not announced.

CATALOGING AND ANNOUNCEMENT

The Engineering Materials List, TID-4100, is a looseleaf catalog of all unclassified AEC engineering materials made available to the public by DTI. The individual drawings and specifications are grouped

by complete devices or by functions, and indexes are provided. Approximately 950 CAPE packages or sets have been announced. The first 700 packages are listed by a title; an abstract describing the equipment and the uses made of it; corporate author; and listing of each drawing or specification by drawing number and title. Later the current format was adopted which eliminates the listing of each drawing by title and number. Also the subject, corporate author and cumulative indexes have been eliminated.

ACQUISITIONS

DTI acquisitions comprehensive sets of new materials upon receiving requests for any portion of them. In addition, AEC contractors have been asked to submit materials (in which interest has been shown by visitors or by requests from engineers) to DTI Extension on a routine basis. Currently, approximately 3,000 new drawings were announced in 1962. This makes a total of approximately 36,000 items of engineering materials that have been made available to industry and the public.

As R & D reports (which list or refer to drawings) are received for printing and distribution by DTIE, the drawings and specifications are acquisitioned. A statement is inserted into the report indicating the CAPE No. and the availability of the materials.

REQUESTS

As indicated in the charts in the Appendix, letters requesting multiple engineering drawings that were received by DTI Extension have been increasing over 1961 which then averaged 25 per month. Currently in 1962, the average per month is 60 letters which involve requests for a total of approximately 29,400 items of engineering materials for the year. Most of these requests are identified and referred to Cooper-Trent to supply. If the materials requested have not been announced in TID-4100 and made available for sale at the AEC reproduction contractor, Cooper-Trent, then the drawings are acquisitioned, organized into a CAPE package and announced in TID-4100. Cooper-Trent sold 36,600 full-sized blueline prints of AEC drawings during the first 9 months in 1962. The complete name and address of Cooper-Trent and instructions on ordering prints are outlined on the forward of each Supplement issued to TID-4100.

LOAN PROGRAM

Most requesters obtain prints from Cooper-Trent. However, DTI Extension has a loan service by which depository libraries can receive 105 mm negatives of any CAPE package for a period of 30 to 60 days. The requester can view these filmed drawings in the library, select the materials needed, and order full size prints from the contractor. This service is available for approximately 750 CAPE packages that have been filmed. For the CAPE packages announced since 1961, librarians should contact DTI Extension for individual arrangements.

FILM COLLECTIONS IN LIBRARIES

For the three years prior to 1961, AEC engineering materials were produced in microcopy. Collections of these films were deposited in certain cities of the U. S. to make them readily available for reference use. The use that was made of these collections, which were in the form of 105 mm diazo films, did not justify continuation of this service. However, collections (approximately 25,000 individual items organized into 750 CAPE-numbered sets) have been retained at their request by the following organizations:

Stanford Research Institute, Menlo Park, California
Argonne National Laboratory, Argonne, Illinois
Linda Hall Library, Kansas City, Missouri

During the year, letters were sent by the DIA to a selected group of organizations abroad to offer sets of diazo collections to them. The following organizations requested that collections be deposited in their libraries:

British Museum, London
European Nuclear Energy Agency, Paris
Atomic Energy of Canada, Toronto
National Diet Library, Tokyo
Euratom, Ispra, Italy

ASSISTANCE FROM LIBRARIANS

DTI Extension serves as a reference center for all information about AEC-developed engineering materials. In order to expedite service given to requesters, certain information is required by DTI Extension in order to locate and obtain new engineering materials not yet included in TID-4100. Librarians can give assistance in this regard by:

a. Submitting requests to the attention of Engineering Materials Section, DTI Extension, P. O. Box 62, Oak Ridge, Tennessee. If ORO-540 is used and the CAPE number is not known, then it should be marked clearly that it is an item of engineering materials that is wanted.

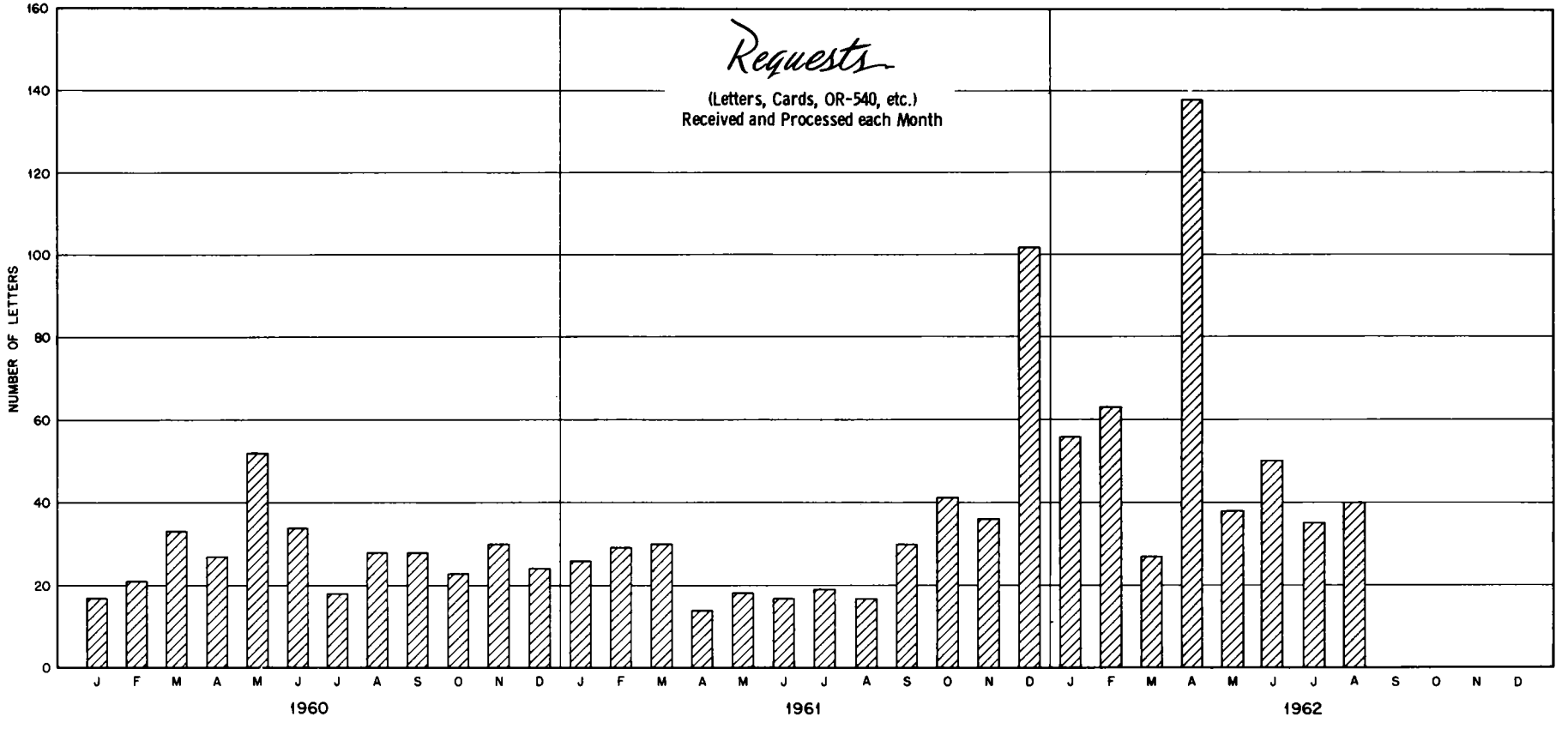
b. Obtaining all possible descriptive information from the person making the request. Information needed by DTI Extension is the CAPE number (if known); title and number of the drawing or specification; the site or AEC contractor who originated the drawing; and the instrument, reactor facility, etc., in which the device was used.

c. If the requester does not know all of these facts, then a descriptive paragraph should be sent to DTI Extension explaining where the requester saw the instrument or device, who his contacts were, etc. (e.g., assembly drawing for neutron chopper; equipment observed at ANL in April 1962; talked with an engineer, Mr. J. J. Woods).

COPIES OF ENGINEERING MATERIALS

Prints of all engineering materials in TID-4100 may be bought from Cooper-Trent Blueprint and Microfilm Corporation, 2701 Wilson Boulevard, Arlington 1, Virginia. Cost to the public is 17 cents/sq. ft. If depository library receives a request (and this applies to a foreign library mostly) from an official agency of a foreign government (AECL, Euratom, AEC of any country), the request should be forwarded to DTI Extension for handling. AEC supplies prints of drawings on an exchange basis with certain foreign countries.

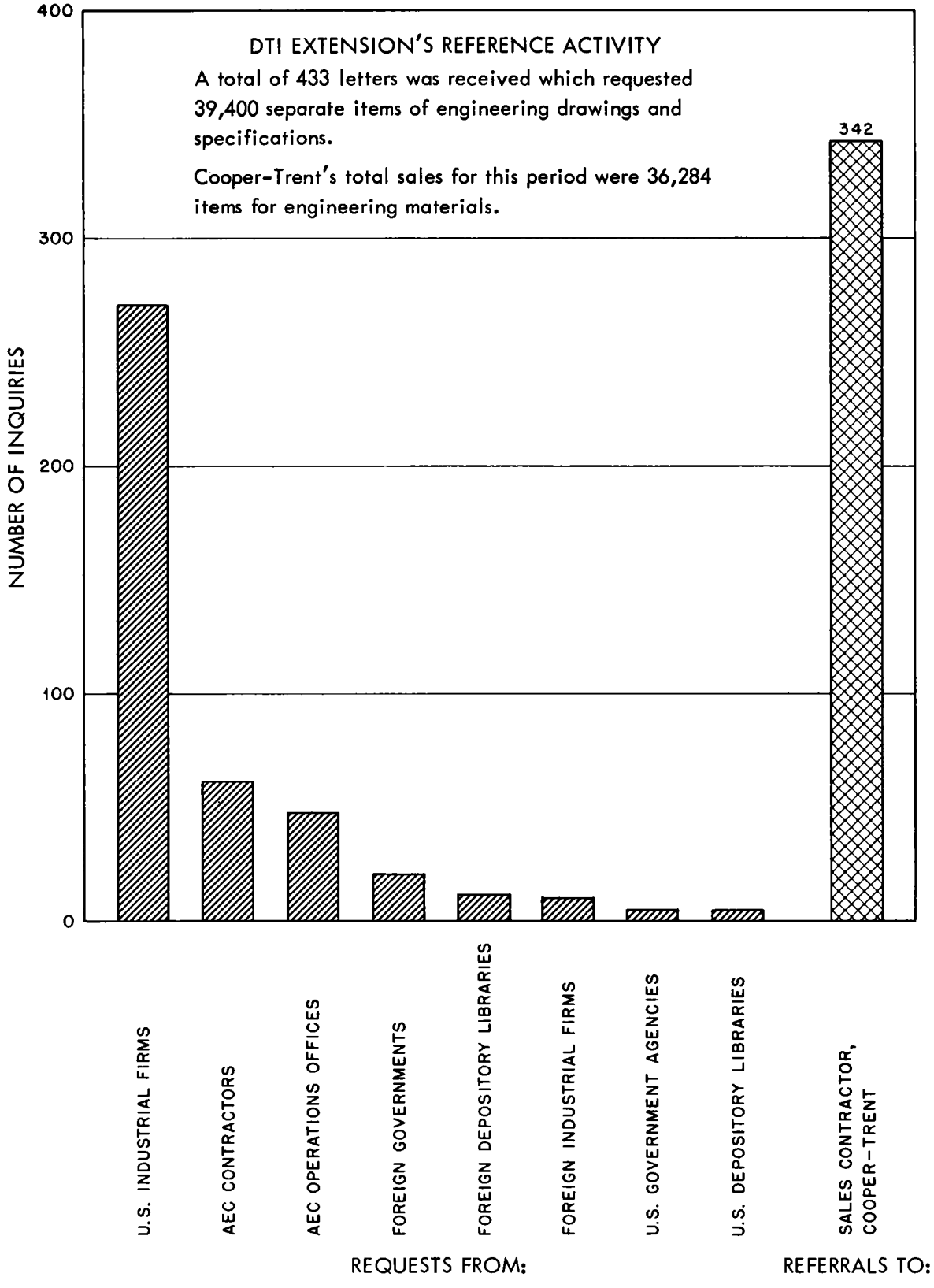
ENGINEERING MATERIALS PROGRAM



Note: These are requests on which written action (supplying the material or referral) was necessary.
Does not include telephone requests in which requesters were referred to the sales contractor.

ENGINEERING MATERIALS PROGRAM

January 1962—August 1962



AVAILABILITY OF LEGISLATIVE MATERIALS

Walter A. Kee
Division of Technical Information
U. S. Atomic Energy Commission

Legislation, whether federal, state or foreign is promulgated for the same general purpose: to establish rules and regulations governing the operations of government agencies, private organizations and the public within the appropriate geographical area. This legislation may appear in many formats such as proposed legislation, hearings, reports, documents, committee prints, bills, laws and public laws and is one of the more difficult types of publications to acquire. It usually is given a short print run, goes out of print quickly and has myriad of sources of availability. While legislation is of great interest for its legislative and legal content alone, it also contains a considerable amount of scientific, technical and management data. These comments also apply, of course, to legislation dealing specifically with the field of atomic energy. Therefore, any library having a clientele with an interest in this field should have a collection of relevant legislation if it wishes to have a comprehensive collection in the field of nuclear science and technology.

Federal Legislation

The U. S. Government legislation related to atomic energy, along with other legislation, is announced in the "Monthly Catalog of U. S. Government Publications".[1] However, as you know; some legislation is available from the Superintendent of Documents, some from the Office of Technical Services, some from the various Congressional committees, such as the Joint Committee on Atomic Energy (JCAE), some from the House and Senate document rooms while some are practically unavailable. As a result, the acquisitions procedures of libraries are quite complicated

and time consuming. This situation as it relates to atomic energy legislation was discussed by the JCAE and DTI and arrangements made to have all of the JCAE sponsored legislation distributed to the U. S. and foreign depositories of the AEC. However, not all legislation dealing with atomic energy comes from this source; it still will be necessary to scan the Monthly Catalog to identify pertinent legislation issued from other Congressional sources.

Some of the federal legislation is deposited in those libraries, having GPO depositories, which choose to receive legislation. However, as you have noted from looking at the Monthly Catalog; a substantial amount of legislation is not made available through this depository system. Usually, however, the libraries which request legislation are law libraries; and they carry on extensive acquisition programs to obtain extensive collections of legislation. Therefore, such law libraries may be a good source for obtaining legislation on interlibrary loan.

Recently, some secondary sources for federal legislation have become available. Readex Microprint Corporation is making federal legislation (including the Federal Register and the Congressional Record) available on Readex Microprint.[2] University Microfilms[3] also is making legislation, including the Congressional Record, available on 100 foot reels of microfilm. Unfortunately in both instances, the actual legislation does not become available in microcopy until well after its issuance date. Therefore, these services are adequate for historical uses but not for current awareness.

Especially important bibliographic publications for legislation are the legislative histories. The AEC has issued "Legislative Histories of the Atomic Energy Act of 1954"[4] which is available from the Government Printing Office. Legislative histories covering amendatory actions to the 1954 Act, as well as other legislation, are obtainable on Microcards from Matthew Bender and Company.[5] Two special publications which serve as a type of legislative history of the atomic energy program in the U. S. are published annually by the Joint Committee on Atomic Energy.[15] These Committee Prints contain the texts of the Atomic Energy Act of 1946, with amendments and the Atomic Energy Act of 1954, with amendments, legislative histories for these acts, appropriations legislation, associated legislation, membership of the JCAE and the Commissioners since 1946, organizations and functions of JCAE and a list of the publications of the JCAE since 1945. A copy of each of these Committee Prints will be distributed to the foreign and domestic depositories when they are published each year. Since these publications are Committee Prints they are not sold by the Superintendent of Documents but may be available from the

JCAE.

In accordance with its responsibility for licensing and regulating the peaceful developments of atomic energy, the AEC issues "Rules and Regulations"[6], a loose-leaf publication available from GPO. This service contains the regulations with annotations covering the amendments to the regulations, applicable miscellaneous notices, a chronology of regulations and an index.

Additionally, these rules and regulations are published in the daily issues of the "Federal Register"[7] and codified later in Title 10 of the "Code of Federal Regulations".[8] The miscellaneous notices, however, are published only in the daily issues of the "Federal Register".

State Legislation

Legislation of the 50 states in the U. S. is even more difficult to obtain than the federal legislation. Yet with the AEC involved in a program of transferring certain regulatory functions to the individual states, each of you may need certain of this legislation as it relates to the state in which your organization is located. One source of legislation issued by your state, may be the state library which usually serves as a depository for such materials. A commercial service, which provides digests of all state legislation, is issued by the Commerce Clearing House.[9] While this service does not provide the complete text of legislation, it does serve as a means of keeping aware of such material and of determining the basic content of this legislation. It is possible to order the service covering the legislation of your state only. The Headquarters Library currently receives this service covering all 50 states.

The Monthly Checklist of State Publications[10] published by the Library of Congress does announce some state legislation although it contains only that material which is received by L.C. Similarly to the federal legislature, the state legislation often has a variety of sources and is printed in short runs. In fact some states prepare only a few typewritten copies. As a result not all of this material is made available to the Library of Congress.

Foreign Legislation

Foreign legislation is the most difficult material of all (1) to find out that it has been published and (2) to obtain copies once you have discovered it exists.

Announcement is made in variety of types of publications or, perhaps, not at all. Yet with the AEC bi-lateral agreement and assistance programs, proposed visits of the NS Savannah, etc. it is necessary for AEC to keep aware of such legislation. The Headquarters Library acquires a substantial amount of such legislation through exchange agreements with foreign atomic energy commissions and foreign libraries and through positive acquisition.

Some of you may need individual pieces of such foreign legislation on occasion. If possible, the Headquarters Library will loan you a copy from our collection or attempt to borrow it for you.

Bibliographic Control

Catalog cards are published for the legislation received by the Library of Congress which makes it possible to establish bibliographic control over the legislation in your own collection. However, no classification scheme has been established by L.C. for legislation, although they have been working on such a scheme for a number of years. It will be necessary for you to make some decision concerning how you will handle the legislation in your collection. Some special libraries treat the legislative items as though they were books and place them under the appropriate subjects in their classification scheme while others have devised various shelf numbering systems. A simple system is to file the material by the number of the Congress and then by an accessions number arrangement (For example: legislation issued during the eighty-fourth session of Congress would be numbered 84-1, 84-2, 84-3, etc.). The catalog cards, then, can be arranged to provide the author, subject and document number entries to the collection.

Commercial Services

A number of commercial publications are available which provide an excellent means of keeping abreast of new legislative developments.

The "Atomic Energy Law Reports"[11] published by Commerce Clearing House include federal and state statutes and regulations (with reprints of official acts and regulations), decisions, executive orders, patent awards, licenses, contracts, international agreements, and "AEC Manual" chapters. This publication is arranged by subject and contains an excellent index and finding list.

Another useful publication is the "Atomic Energy Clearing House",[12] a weekly report covering federal legislative, regulatory, legal and technical information. Of particular interest is the fact that this publication

contains considerable analysis of and verbatim quotes from reports, speeches, legislation, AEC regulations and other pertinent sources. This weekly service contains a table of contents but no index.

A more complete description of some of the publications mentioned in this paper, as well as other publications, is contained in an article entitled "Blueprint for Atomic Energy Literature: Legislative and Legal" which was published in the "Law Library Journal".[13] Details on establishing, organizing and maintaining a legislative and legal collection can be obtained from the volumes published in the American Association of Law Librarians "Publication Series".[14]

I hope this brief description of the acquisition and bibliographic control of legislation will be helpful.

COORDINATION AMONG GOVERNMENT AGENCIES *

Dwight E. Gray
Office of Science Information Service
National Science Foundation

I presume that the National Science Foundation's Office of Science Information Service was asked to discuss this topic with you because of the directive the Foundation has to "take leadership for the accomplishment of effective coordination of the various scientific information activities within the Federal Government." Therefore, before considering some examples of such coordination, I should like to touch briefly on two other points - the basic framework within which we believe coordination must be accomplished if it is to be effective, and the Foundation's approach to the discharge of the responsibility just stated.

The Government is the nation's principal sponsor of scientific research and development (R&D) and, as such, is both a major producer and a large-scale user of scientific information. Every Federal agency that conducts or supports R&D, therefore, has some kind of formal or informal scientific information program, the principal purpose of which is to meet the technical information needs of that agency. Regarding the availability

* Based largely upon internal OSIS memoranda prepared by Charles M. Stearns, OSIS Program Director for Research Data and Information Services

of these information services beyond their parent agencies, the programs fall into three categories: (1) Those permitted to serve, at the most, a limited, sharply defined group of other users - e.g. ASTIA; (2) a number that are allowed, but not required, to provide service beyond their own agencies; and (3) some that have been directed to make the information they handle widely available - e.g. AEC and NASA. Any program for coordinating the many Federal scientific information activities must take account of this complex situation and, to be really effective on a long-term basis, must try to combine maximum benefit to the total R&D effort with minimum jeopardy to each individual program's primary responsibility to serve its own agency. This means, we believe, that effective coordination can only be achieved through the cooperative efforts of all the agencies involved.

Consequently, the Foundation sees its proper role in the development of such coordination to include principally alerting agencies to existing and potential problems caused by lack of coordination, studying trends in the various programs and recommending coordinated planning of future projects, calling together representatives of the various agencies to discuss specific coordination problems and plan cooperative solutions, riding herd on such plans to insure that they are implemented, supporting studies and experiments to provide data essential to intelligent coordination planning, and in general working with all of the agencies that have technical information programs for the cooperative development of effective coordinated actions.

I shall limit my discussion of specific examples of Federal coordination in the scientific information field to five particular areas that either involve directly, or are closely related to, the topic of this particular conference session - the availability of the technical literature. It should be emphasized that the first big hurdle in the accomplishment of coordination under the conditions I have described is acceptance of the idea by all concerned that such a move is desirable. Unless there is such agreement, effective coordination is likely never to get off the ground. Therefore, credit for whatever has been acheived in the areas I shall mention belongs largely to the operating agencies that have agreed upon the desirability of coordination and have taken steps to implement this decision. Because these five programs seem, to me at least, to comprise a logical, interrelated sequence, I shall list them first and then discuss each one briefly. They may be said, with perhaps some slight over-simplification, to be directed respectively toward making it easier for an individual or an organization

1. To obtain information on Federally supported R&D in progress - that is, on who is now doing what, where, under Government sponsorship
2. To learn reasonably promptly what technical reports are being issued on this R&D
3. To search the present and past report literature for information on any given subject

4. To obtain access to copies of desired reports
5. To learn where authoritative answers to scientific and technical inquiries can be obtained.

Information on Current Federally Supported Research

The Science Information Exchange (SIE) has been established to fill this need; it represents an expansion of the former Bio-Sciences Information Exchange which has functioned under the Smithsonian Institution for a number of years. SIE's mission is to obtain, control bibliographically, and make available on a subject basis, information on current Federally supported R&D in the life and physical sciences. Admittedly, the start has been slow with some of the problems of implementation and operation still to be worked out. However, the need for a coordinated center of this kind has been generally recognized and the agencies involved are cooperating wholeheartedly. It is hoped later to expand the Exchange's coverage both into the social sciences and into privately sponsored R&D.

Prompt Announcement of Technical Reports

This function, of course, already is performed by the various report-originating and report-controlling agencies for the organizations for which their missions give them specific responsibility. The big first step toward coordination occurred with the acceptance of the idea that there also should be a single center for announcing all agencies' reports for the benefit of individuals and organizations not covered by these parent-child programs.

The Office of Technical Services (OTS) long has functioned in a limited way as such a center, announcing technical reports from various Federal agencies through its abstracting journal U. S. GOVERNMENT RESEARCH REPORT (USGRR). With acceptance and implementation of the idea that this service should be comprehensive, the number of reports announced and annotated by USGRR increased greatly. Cooperation among the several agencies has been excellent. This fact combined with an aggressive acquisition program by OTS has resulted in major expansion in USGRR's coverage of technical reports from many agencies. In particular, for unrestricted AEC reports, NASA reports, and Department of Defense reports held by ASTIA, listings in USGRR are substantially complete. The permuted-title KEYWORDS INDEX recently initiated by OTS provides a rapid report announcement medium with certain subject search features. This publication is very new and ways of improving it are being studied; suggestions will be welcomed.

Involved in the problem of prompt announcement is, of course, the question of how many technical reports should be introduced into the nation's report literature system. Certainly not every piece of laboratory paper on which someone has recorded technical data should be widely distributed and put under bibliographic control by OTS; nor should every two or three such pieces of paper that happen to have been stapled together; and so forth. The dividing line between internal memoranda or notes that should not be widely distributed and documents of sufficient technical stature to warrant formal handling is difficult to define, and the ground rules employed by different agencies and laboratories vary widely. Therefore, I tend to be extremely skeptical of figures that are cited as to how many reports

a national system ought to cover - at least unless the figures allow for a plus-or-minus error of 50% or so. However, the problem is important and the major agencies that conduct or support R&D are giving serious thought to insuring that significant research findings are adequately disseminated.

Subject Search of the Report Literature

Again, of course, the major report issuing and controlling agencies provide indexes to their own documents. It is not clear as yet just how much of a hindrance to literature search results from variations in the several agencies' separate indexing schemes. One Foundation-sponsored study of compatibility of two particular systems suggests that this problem may not be as serious as many of us had feared. Indications are that the basic keys to improvement lie along lines of (a) developing compatible indexing schemes that permit each agency to use the abstracting-indexing results of other systems and (b) creating some kind of unified central index to the report literature that will permit the nonspecialist to avoid multiple searches. A major coordinating step to date in this area has been the cooperative indexing agreement between ASTIA and OTS which has both facilitated subject search of the Department of Defense report literature and eliminated some unnecessary duplication of effort. Hopefully, NSF in cooperation with the recently established Committee of Scientific Information of the Federal Council on Science and Technology can further resolve this problem.

Access to Copies of Reports

All reports of any given agency now are readily available to the technical staff of that agency and its contractors. Since all reports announced and abstracted in USGRR always have been generally available for purchase, the sizable expansion of OTS' report coverage automatically has increased greatly the total number of reports to which the general scientific and technical community has reasonably ready access.

Here, as in some of the other areas mentioned, the crucial first step toward coordination was general recognition of the desirability of regional depositories of OTS-announced technical reports from all Federal agencies that support R&D. This agreement has recently been implemented by the addition of 11 new report depositories to the one at the Library of Congress that has functioned for some time. These 12 depositories receive copies of all reports in the OTS system, together with associated announcement and other bibliographic material. It should be noted that these centers do not replace existing individual agency depositories, even though a number of them are in the same locations.

The Foundation, and the other agencies participating in this program, recognize that there are problems of format of material, provision of services, and implementation in general that still have to be solved before the over-all system will function smoothly. Here again we seek suggestions and advice - particularly from those in this audience who are directly associated with these OTS report depositories.

Another aspect of the effective provision of access to copies of technical reports concerns initial distribution. Report-issuing agencies employ widely different patterns of initial dissemination; some follow well standardized systems while others proceed quite haphazardly on the basis of a few individuals' opinions on who might be interested in each report. One fairly detailed, NSF-supported study of initial report distribution practices in the Federal Government has been completed and the results made available to the various agencies for their comment, consideration, and use as they see fit. Also OTS will feed information back to the report-issuing organizations on requests for their documents; this procedure should provide information useful for keeping initial distribution lists current and adequately comprehensive. This is another area in which the cooperative efforts of NSF and the new Federal Council committee referred to above can be extremely helpful.

Answers to Technical Queries

A desirable supplement to the services and programs already mentioned is availability of a single source to which any individual or organization can turn for guidance on where answers can best be obtained to specific scientific and technical questions - that is, a source of information on technical information. A National Referral Center now being established in the Library of Congress will be such a source. It will not provide

scientific data; it will advise a questioner where to go for data in a scientific field or on a technical subject of interest to him. The staff of this Center is now being assembled and the necessary machinery and techniques developed for its operation. The announcement that it is open for business should be forthcoming within a relatively short time.

These, then are five areas related to the availability of Federal technical literature in which we believe significant progress in coordination is being made. The Foundation and other agencies also are working together to coordinate Federal information programs in a number of other areas, including research and development in machine translation and the mechanization of the storage and retrieval of information.

The English statesman Lord Lansdowne once said, referring to his colleague Lord Macaulay, "I wish I could be as sure of anything as Tom Macaulay is of everything." In the technical information field, as I'm sure in all fields, one runs into a fair number of "Tom Macaulays." We in the Foundation's Office of Science Information Service are far from being in this category. There are many things we are not sure of and concerning which we are looking for answers. We do feel fairly certain, however, about a couple of points: First, that really effective coordination of Federal information activities will be achieved only through the cooperative efforts of the various agencies involved, and second, that our proper role in this effort is vigorously and aggressively to assist in this cooperation in the various ways I mentioned earlier.

DISCUSSION: SESSION I-B

AVAILABILITY OF THE LITERATURE

Paul E. Postell, Discussion Leader

HOWARD W. DILLON: If a report is requested by our library for some outside person, can the report be given to the requester for his retention, or should it be retained in the library?

MARGARET L. PFLUEGER: They usually are intended for the library, but can be placed on "indefinite loan" to an individual. Additional copies can also be supplied to the depositories.

C. K. BAUER: I want to commend Margaret Pflueger and Willie Clark for the work they are doing in handling requests. Also, I would like to say that it is worthwhile to read the introductions in publications routinely. For example, the change of even a sentence in the introduction to NSA indexes may be important. This involves a lot of extra reading since we get them so often. I would recommend that such changes be flagged in some way in future issues.

HELEN CHICK: With regard to record-carded reports, are we to go to ASTIA for AD's?

WILLIE E. CLARK: If it is not AEC-sponsored go to ASTIA; if AEC, request from DTIE.

MARION L. CHASE: How can depository libraries be certain that they are getting everything supplied to depositories? Some AEC reports have not been received by us.

M. L. PFLUEGER: Some materials are announced but are illegible for Microcards; this is one reason. Also, there are some delays in distribution, and reports arrive late. Unless you have a request for it, don't worry.

ELSIE P. FISHBEIN: One problem that we have is that our researchers sometimes find a reference to a classified report in an unclassified document.

M. L. PFLUEGER: Write a letter to DTIE to find out if the report has been declassified.

ROSE KRAFT: Would you please consider providing snap-out carbons when the form 540's are revised? Also, why is the information regarding reports not always correct - e.g., the classification.

WILLIAM M. VADEN: The problem with respect to the reports has been recognized, and is being remedied.

UNIDENTIFIED: Will DTIE accept rough translations?

M. L. PFLUEGER: Yes.

LESTER A. ROUDEBUSH: Are engineering drawings, specifications and supporting documents available in both forms, i.e., full-size blueline copies and 105mm microfilm?

RICHARD E. C. DUTHIE: Yes, with this qualification. Packages of AEC engineering materials are available in 105mm microfilm from CAPE-1 through CAPE-852 with a few exceptions. All packages of materials from CAPE-1 through CAPE-950, which have been announced to date, are available in full-size blueline print copy. If a CAPE package was microfilmed, it included both engineering drawings and supporting documents.

H. CHICK: May we refer requests for educational material to DTIE?

R.E.C. DUTHIE: Yes, we will also supply you with materials for the library.

CHRIS G. STEVENSON: We want to publicize this service in our local high school, I am sure that you would thus be covered with requests. Do you encourage this?

PAUL E. POSTELL: You may publicize in high schools, just as we have done to a small extent in Oak Ridge. We do not encourage but rather discourage multiple requests from the same classroom and school. We have a proposed plan for offering the educational materials to depository libraries, including the special lists of references. We certainly want to encourage AEC contractors and libraries to help in supplying information to students. We send material to libraries so all students can have access to it.

R.E.C. DUTHIE: We do not supply multiple copies to individual requesters. We would rather send materials to the school library, and let the students go there for it.

C. K. BAUER: Do you issue a listing of the legislative materials?

WALTER A. KEE: We did publish Doorway to Legal News, but this was discontinued. We are presently considering the possibility of issuing a publication on a commercial basis.

UNIDENTIFIED: What is the name of the center to be set up at the Library of Congress?

DWIGHT E. GRAY: The National Referral Center.

C. G. STEVENSON: How does National Science Foundation decide what projects to underwrite?

D. E. GRAY: We try to form a unified national system. The National Science Foundation has passed the point of being able to support all programs. We now receive more support requests than we have money for. We have reviewers who are authorities in the particular fields. We support proposals that will improve the National Science Foundation's aims.

HOWARD DILLON: What about the twelve regional centers? (1) When can we get help, (2) what kind of help can we get, and (3) where do we write?

D. E. GRAY: For the next couple of months, write where you have been writing, Even ultimately, you may write where you prefer. Regional centers are extensions of OTS in Washington, and if you prefer to continue writing Washington, you may.

P. E. POSTELL: Two regional center representatives are present, and you may speak with them if you wish.

EDWARD J. BRUNENKANT: DTI will continue to provide its services to the regional center depositories.

C. TOUR OF DTI EXTENSION FACILITIES

Tour Coordinator Alden G. Greene, DTIE

The following photographs represent only some of the work done at the DTI Extension. Other operations conducted in rather normal office areas, e.g., editing, abstracting and indexing, processing requests, and compilation of literature searches, are not included.

Fig. 1—Composing of reproducible copy. Racks hold demountable type bars carrying 180 Greek letters and mathematical characters for use in setting equations. Proofreading and correction rooms at left.

Fig. 2—Sequential card cameras photograph text typed on cards. Indexes for Nuclear Science Abstracts are run at 230 lines per minute, on paper for editing, and on film in a single roll negative. The film is stripped into a two-column page negative on vacuum-equipped light tables (right). Developing room at rear.

Fig. 3—Offset printing is done on eight-page press (left), two four-page presses (right), and a number of smaller presses.

Fig. 4—Distribution of printed reports is accomplished in this area.

Fig. 5—Microcards are arranged in distribution bins prior to mailing.

Fig. 6—Descriptive cataloging of reports and published literature for the abstract journals.

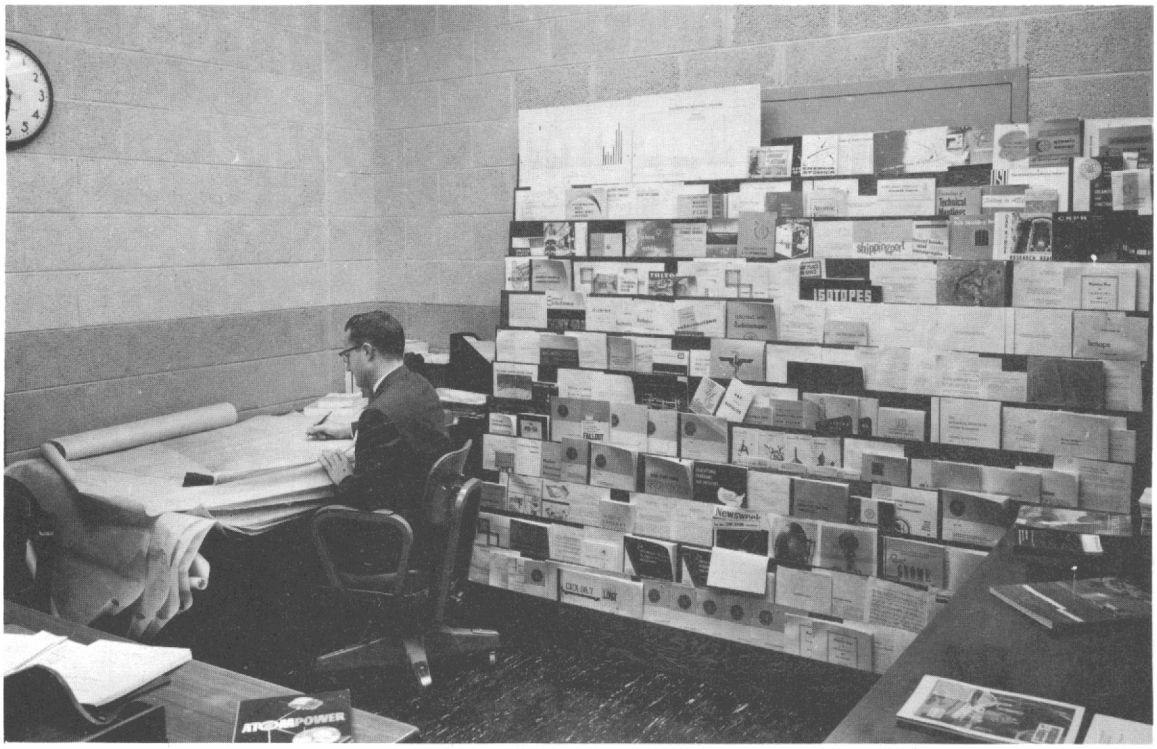


Fig. 7—Engineering drawings are organized into sets, and cataloged for announcement in the Engineering Materials List. Educational materials on many subjects and at different grade levels are available to students and teachers.

Fig. 8—A card catalog provides access to the 240,000 reports in the master collection.

SESSION II

A. MANAGEMENT OF THE LITERATURE

ORGANIZING AND USING THE UNCLASSIFIED REPORT COLLECTION AT BROOKHAVEN NATIONAL LABORATORY RESEARCH LIBRARY

Marjorie Comstock
Brookhaven National Laboratory

Today the report literature plays an important part as an essential part of the scientific library resources. The effective use made of this material depends upon its organization and accessibility in the library.

At Brookhaven, we have evolved a system that works for us. It may be similar to your own system or perhaps have a feature that is unique. The reports which we receive either on initial distribution, due to an exchange agreement or in response to a direct request, are arranged in two separate files. Those which have a distinctive number assigned by the issuing agency which clearly separates them from other reports are filed in an alphabetical - numerical file. This file contains mostly AEC and some foreign reports. The second file, is called the "Institution File", and contains various reports issued without any distinguishing numbered series. This includes progress reports and technical reports from a variety of organizations. These reports are filed alphabetically by the name of the institution and then by the technical report number, if there is one, or by date or author. Under the name of the institution we sometimes sub-divide the file according to departments or laboratory.

The advantages of this arrangement of the two files are the same. All reports from a specific organization are together. For example, a library user who has very vague information on a report can browse through the most recent Ames reports or look through the last few progress reports of the M. I. T. Research Laboratory of Electronics

without going to a file to look up a number or to Nuclear Science Abstracts. Also a cross reference file of various report numbers is cut to the minimum. These advantages may seem small, but in practical application has saved both the user and the library staff considerable time.

The disadvantage to this arrangement as contrasted with the straight accession number system is in the problem of filing. It is necessary to leave sufficient space for the growth of established series and the insertion of new series. It is often difficult to estimate this due to the present rate at which new numbered series are appearing and the tremendous bulk of many of the reports. This disadvantage may become acute in the near future. Particularly when conserva-files are used. With these files it is almost impossible to insert an empty unit of files without moving all of them. However, we have solved this problem to some extent with our weeding program.

The processing of the reports is quite elementary, but seems to be satisfactory. We maintain a numerical card file, a limited personal author file, and have kept our subject file which covers the report literature up to March 1959. When a report is received which is to be filed in the alphabetical - numerical file, we search the numerical card file for a printed number card which we receive from AEC. If there is no printed card, a temporary number card is typed. The number of copies is indicated on the card and it is filed. This card is later replaced with the printed card when it is received. At the time the number card is typed, a card is also typed for the Weekly Selected Reading List. After the list is prepared, this card is filed in the author file which we have maintained on a limited basis since 1959, the cut-off date for the receipt of multiple copies of printed cards from the AEC. This author file is limited, as it is currently restricted to reports that appear in the Weekly Selected Reading List. Excluded are declassified reports, reports prior to a fixed date and those received on Microcard only. The institution reports receive similar treatment, a reading list card is prepared and a card is prepared for the separate file maintained by corporate author for this particular group of reports. In addition to these cards, we also keep an open entry series card for progress reports from the various national laboratories. In place of a subject catalog we rely on Nuclear Science Abstracts, NASA Technical Publications Announcements and the ASTIA Technical Abstract Bulletin.

When the printed cards are received, they are filed by number and cross reference number cards required are made. Notations are also made

on cards which describe reports in the Institution File, periodicals and books.

We receive many Microcard copies of reports. When these are received, they are dated and property stamped, arranged in alphabetical - numerical order and filed behind the number card. The front of the card is stamped to indicate that we have a Microcard copy.

In order to publicize the receipt of reports, current printed reports are listed in our Weekly Selected Reading List under the pertinent subject. When the reading list is issued, these reports are put on display for one week. After this time, they may be borrowed. We permit all copies of reports to circulate, including Microcard copies.

As I mentioned at the beginning of this paper, we have a weeding program which has alleviated to some extent the space problem. Our weeding is based almost entirely on the appearance of reports in the published literature. We check the annual report index of Nuclear Science Abstracts for all reports which have been published in books or journals available in the library. This information is transferred to the number card and our supply of reports reduced to one printed copy plus the Microcard copy. The practice of keeping a printed copy may be revised when we put the Microcard printer into operation.

In conclusion, it should be recognized that every effort should be made to call attention to the value of the report collection in the most expedient and effective manner possible. Although we are well aware of the disadvantages of our present system, on the whole it successfully brings the reports and the library user together.

II-A-2

REVIEW AND EVALUATION OF INCOMING REPORTS FOR INTEGRATION WITH THE BOOKS AND JOURNALS COLLECTION; AND SOME INITIAL REPORT CHECK-IN, CATALOGING, AND PROCESSING PRACTICES AT LRL, BERKELEY

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Lawrence Radiation Laboratory
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ABSTRACT

Some approaches and techniques in managing nuclear science literature at the Lawrence Radiation Laboratory, Berkeley, are described. Supporting practices in the initial cataloging and processing of technical reports received are also described.

* * * *

As the quantity of nuclear science literature generated increases sharply from year to year, the effective and efficient management of it by librarians and other technical information personnel becomes more and more important. We all are thankful to receive report literature because we know how helpful it is to the scientists, engineers, etc. who are participating in the generation, exchange and use of information on the many aspects of nuclear science and its related subjects. This information is of vital interest to the welfare of our country and all its people. The awareness of the benefits of this flood of literature, however, does not overshadow the realization that the proper and judicious handling of it is a huge job involving many problems, complexities, questions, and challenging difficulties. These remarks are addressed to some of these matters.

It was suggested that we base our remarks on the current situation as seen from, at, and by the Library Branch of the University of California Lawrence Radiation Laboratory at Berkeley. We shall confine ourselves to the two areas of consideration indicated in the title of this talk. Our set-up at Berkeley which is quite independent of the LRL, Livermore counterpart, has several noteworthy features which merit prefatory mention. We have had thus far separate groups operating the report (or document) library and the adjoining book and journal library. These two groups are soon to be merged. The Document Section personnel are presently located in two buildings about a block apart. We expect very soon to have all of the main library and document operating personnel located in the same area in one building. Another important factor is that at Berkeley our classified collection is only one-tenth or less of the unclassified report collection. Geographically, we are within a few blocks of the AEC depository collection maintained by the University of California at Berkeley.

The AEC-designed standard distribution system results in most of our incoming technical information except books and subscription journals being received in our Technical Information Division office in our Lab Building 30. Almost all of the Library and Document Section facilities and personnel are located in Building 50, a block down the hill. Because of the imminent changes mentioned above, our present practices of initial receipt, review, and processing may soon be changed somewhat.

I. THE REVIEW AND EVALUATION OF INCOMING LITERATURE

We shall discuss first the review and evaluation of incoming literature other than commerical books and journals, with respect to placement and treatment of these items (integration with a conventional library collection). This will be a mixture of what we do now and what we intend to be doing shortly and will, of necessity, be selective.

Sources

The literature received comes from many places but a significant part of it comes from AEC DTIE, Oak Ridge and AEC DTI, Washington. Other sources are ASTIA, NASA, and hundreds of originating agencies and authors. PB reports from the Office of Technical Services (OTS) are purchased by the book library. Sometimes literature comes to us second-hand from the scientists of our Laboratory.

Considerations

Since some technical reports are available from several sources, we find it helpful to note from which office each copy has come.

In most libraries, some of the literature received is not particularly useful to the organization served and certain of the worthwhile items received could be placed with equal logic in the report library or the book library, e.g. many items available from the Government Printing Office (GPO), proceedings of conferences and symposia, larger translations, and certain periodicals such as Naval Research Reviews, Nuclear Safety, ONR-L European Scientific Notes, and Euratom-U.S. Joint Research and Development Program Quarterly Digest. At LRL(B)(to distinguish our Berkeley facility from the one at Livermore) decisions on such questions are usually based on customary criteria such as (1)where would the readers expect the file to be kept, (2)where are the readers located, (3)where would the item be more efficiently cataloged, indexed and maintained at low costs and with adequate bibliographic control (4)where would it be more available to the readers (our document library is presently a restricted area), and (5)what will the circulation requirements be? Although incoming literature is opened and sorted by clerical help, new titles and questions are referred to professional librarians one block away for review and decision. In our new layout, the openers, sorters, and librarians will all be within a few feet of each other. This will be true for books and journals as well as for report literature and we think will be a big improvement over our present situation.

Another important factor in initial review and evaluation is the report number status of the document in hand. Those that have bona fide

report numbers are usually directed to the document library; the others are individually reviewed for destination consignment and assignment of control number or entry. Those of the latter sort that are assigned to the document library at LRL(B) are controlled by an accession number in what we call our Miscellaneous Series, e.g., MISC-1962-27 (the 27th no-report-number title processed in 1962).

Two additional local factors

Certain items received could be treated as pamphlets, notably certain promotional brochures and less important ephemera. We do not have this option at LRL(B) at present because no such collection is maintained. Items suitable for pamphlet treatment, if worthy of library retention, we process either as books, periodicals, or documents.

Another factor bearing on this issue is the ordering office. Our ordering is in two places--the book library orders its material (purchase requisitions) and the document library requests documents (form letters, pre-printed forms, and in a few cases, original correspondence). The result is that possession is nine points of the law and sometimes consignment of the item obtained is determined on the basis of which office ordered it, when it should be determined by more important considerations.

Preprints and Reprints

These usually come from the personal authors or their institutions. They are mentioned here for three reasons: (1) their importance because of interrelationship of technical reports and articles published in journals, and (2) listing of journal articles in Nuclear Science Abstracts (NSA), and (3) certain reprints are distributed under report numbers. AT LRL(B), the document library catalogs and processes most of the pre-prints received under "MISC" control numbers. These are reviewed six months later to see which have been published and can be withdrawn from the collection.

Reprints received are reviewed to see which ones are from journals not locally available. The ones that are from locally available journals are placed in the giveaway box in the book library. The others (not many) are cataloged and processed by the document library under the report number if there is one, otherwise under "MISC" control numbers. Information cards are made for reprints bearing report numbers.

Incidentally, many preprints and many technical reports later become journal articles (with some changes) and in these cases cataloging follow-up is in order, and opportunities are afforded to withdraw such reports from the collection.

NASA and ASTIA reports

Since LRL(B), and most sites we believe, are interested in many subjects besides nuclear science per se, we order and receive many reports both from NASA and ASTIA. Some of these are indexed in Nuclear Science Abstracts and we sometimes have to deal with the problem of multiple report numbers. For instance, an Air Force contractor report might eventually bear the following four report numbers: contractor,

sponsoring agency, AD, and PB. Such cases require three report number cross references. AEC assigns an NP (Non-Project) number to non-Project reports received without bona fide report numbers. These sometimes bear a report series number but without a prefix of letters. Many of them are also indexed by ASTIA, NASA, and OTS and are assigned AD and PB numbers. The integration required in these cases is with respect to availability and cataloging of such reports.

Conference Proceedings and Symposia

These are very common in book libraries and when they are published with report numbers, the questions of placement and treatment arise. There are two alternatives: (1) place all copies in either the book library or the document library, or (2) place copies in both collections. In either event, card catalog holding information notes are in order--in both card catalogs if there are separate catalogs for the two collections. Since meetings, conferences, and symposia are so important to scientists and engineers, and since there is so much irregularity and inconsistency in publishing the proceedings of these conclaves (especially the continuing ones) we at IRL(B) maintain a special index of such meetings, by name, showing report numbers and book library call numbers of papers and proceedings of which we have knowledge. Papers presented at these meetings are similar in character to the preprint, technical report, reprint relationship discussed above.

Translations

This is a fast-growing specialty with many ramifications. Journals are translated from cover to cover, some translation journals present translations of selected articles, books and proceedings are translated and thousands of individual articles, papers, and reports are being translated by a multitude of agencies every year. And the translating is being done from and into many languages and by agencies all over the world. Sometimes a Russian article is translated into French in France and then translated again from French into English by Americans. The placement of translations in the report collection or in the book collection is subject to the same criteria mentioned above. Again, those translations which are of book library character, even if with paper covers, ought to be consigned to the book library, the assignment of report numbers requiring card catalog informtion notes notwithstanding.

Foreign Language Material

We receive many documents in foreign languages, some from DTIE. Languages commonly represented are German, French, Italian, Danish, Swedish, Dutch Russian, Polish, and Japanese. This material is in various formats: books, government documents, periodicals, technical reports, preprints, and reprints. In some cases there is an English translation of the title and abstract. If not, one of our librarians must do some translating of titles, etc. to judge the worth of each item to our Laboratory. Translating the titles and corporate authors is necessary for the descriptive cataloging of the material retained. The disposition of the unrequired foreign language items is another problem; if they are government documents, we forward them to the Documents Dept. of the

adjoining University of California Library (an AEC depository). In general, we are currently receiving much more foreign language material than our readers call for.

Theses in Microfilm Form

Many interesting theses are abstracted in Nuclear Science Abstracts and when we are asked to acquire copies, we usually receive them in microfilm format. Hard copies are placed in the book collection; microfilm copies of the same theses are placed in our document collection. This points out that it is not unusual for the uncommon format items to be consigned to the document collection. This has come about quite naturally and is probably the situation at many sites.

Free Serials and Periodicals

One of the many nice services AEC provides the sites, is the forwarding of certain periodicals and serials free of charge. Examples are Public Health Reports and Radiological Health Data and the annual reports of certain foreign institutions. Many of these are availabe for sale from GPO and other sources. Most of these receipts are consigned to the book library which appreciates receiving them but we are not sure enough of this service to cancel previous subscription arrangements. Nor can we figure about when any given issue will arrive.

Patents

When a patent is required, the book library relays the request to the Laboratory Patent Office which obtains a copy through AEC. The order record is the only one maintained by the Library; it is filed by author (inventor) and shows the name of the reader for whom the copy was obtained. The patent is stamped and forwarded to the reader without cataloging.

Abstract Journals and Translations Lists

These are of interest to both of our libraries. Sets of Nuclear Science Abstracts are filed in both libraries. Other leading abstract journals are ASTIA's Technical Abstract Bulletin, NASA's Technical Publications Announcements with Indexes, and OTS's US Government Research Reports. The first two of these are filed in the document library, the last title is filed in the book library. Lists of translations relate closely to both journals and reports. At LRL(B) most of these are filed in the book library.

Congressional Documents

Those pertaining to atomic energy are sent to us by DTI, Washington. They are consigned to the book library and most of them are immediately sent to storage. We hope to be giving these documents adequate cataloging soon.

National Nuclear Energy Series

This series is a beautiful example of the need for integrated approach

and action by book libraries and document libraries. We do not have time to discuss it today.

Reports on Open Shelves in Library Reading Room

We plan to have some of our unclassified reports on open shelves in the book library reading room in our new set-up. This too brings the integration need into the spotlight. Which reports shall we place there (besides our UCRL series) and why and in what order shall we shelve them? What would you recommend?

II. SOME LRL(B) INITIAL DOCUMENT PROCESSING PRACTICES

The second part of this talk deals with some LRL(B) initial document processing practices related to the review and evaluation discussed above. And because time is limited, we shall be very selective and brief.

Our document library receives regularly DTIE Oak Ridge Accession (catalog) Cards (three copies each). In many cases these are received later than the technical reports they describe, so we prepare our own temporary descriptive (with holdings) shelf-list cards as necessary when the reports are received. An interesting use we make of the DTIE catalog cards is our interim or "lag" file arranged by corporate author and sub-arranged by title. These are interfiled with carbon copies of the descriptive catalog cards we make for current report receipts. With these two kinds of cards, we have a very helpful record of reports recently received by DTIE and LRL(B). This file answers many questions for us about recently published reports and often reveals cataloging discrepancies. The other main function it serves, is its use in our semi-annual review of items held which have been abstracted and indexed by NSA. This shows us which reports and preprints have appeared in journals, etc.

NSA Coverage

Our cataloging and indexing is affected by the coverage of Nuclear Science Abstracts. Material abstracted and indexed promptly by NSA need not ordinarily be fully cataloged at the sites. This is our philosophy at LRL(B). Our full cataloging of reports is usually reserved for the material not adequately and promptly abstracted and indexed in commonly available abstract and index reference tools. Similarly, we are alerted when we receive "PBL", "RC", and "IO" coded accession cards from DTIE that such items may require full cataloging by us at the outset if local requirements warrant same.

NSA Distribution at Berkeley

Because NSA coverage is so extensive and it is available so promptly, LRL(B) is pleased with the present service extended by DTIE whereby we receive and distribute to the 155 of our readers who have requested it, individual copies of each issue of NSA. This gets useful information delivered to the consumer and stimulates use of the information resources at our Laboratory. A similar program has been started for the new Research and Development Abstracts (RDA) series. These supplement as announcement media our own semi-monthly "Unclassified Reports Title List" computer-pre-

pared in cooperation with our Livermore facility. This bulletin has a keyword-in-context index which is cumulated semi-annually. It is a categorized list and is given widest possible local distribution. Another consideration in cataloging reports received at Berkeley, is the provision of descriptive copy and category designation for these reports to the LRL Livermore office which prepares our joint "Unclassified Reports Title List". This accession bulletin is made with the help of an IBM 1401 computer.

UCRL and Other LRL Reports

As one might suppose, special consideration is given to the reports of our own Laboratory. Our document library is the principal storage facility for UCRL reports and maintains key production and distribution records for them. The Document Section has recently prepared KWIC (keyword-in-context) indexed lists of UCRL, Berkeley reports issued in 1960 and 1961. Files of reference copies of the internal and LRL Livermore reports are also maintained. One of the auxiliary services of our document library is the storage and distribution of brochures and pamphlets on various aspects of the programs and operations of our Laboratory (LRL Publications).

Translation Entries

One practice of ours we have found to be good is the preparation of added entry cards for translations for filing in our author file by personal author and by journal.

Berkeley- Livermore Catalog Card Coordination

One should understand that our Livermore facility is larger than LRL(B), and is 35 miles away from us, and has a parallel Technical Information Division which includes counterparts of our book library and report library. Furthermore, there are some descriptive cataloging policy and rule differences between Berkeley and Livermore. Berkeley has found it advantageous to receive copies of Livermore catalog cards for items received by Livermore which may not be held by Berkeley. Filing these cards in our shelf list requires some additional cross references but provides Berkeley a measure of union list benefit and additional bibliographic information.

Microcards

We would be remiss if we had nothing to say about our microcard collection which is involved in almost all of the matters discussed above. This collection is maintained by our document library. There are two comments we would like to make about our microcards. First, we are very conscious of using them as replacements for older, little-used reports. Secondly, they are almost unanimously disliked by our readers. This is partly because the few microcard viewing machines we have are not geographically close enough to many of our readers who are located in many buildings on a site covering about one square mile. Until this dislike is reduced, we won't be "selling" many of the newer reports we hold in microcard format only. Nor will we be able to

discard without some uneasiness full-size copies of older reports we have also in microcard format.

Library of Congress Catalog Cards

Occasionally a technical report is received and cataloged by the Library of Congress. When this happens to items of interest to our book library (often noticed from review of LC catalog card proof slips) cooperative and coordinated ordering, cataloging, and circulation action by our book library and our document library is required. In some cases, both libraries have copies of the same item under different control numbers. This we hope to minimize in the future.

Some Examples of Special Cases

As a final note it might be helpful to cite some of the titles and sorts of information which call for integration and coordination in various ways at different sites. Those that come quickly to mind include: Nuclear Data Sheets, Tube Handbooks (various), Power Information Center Project Briefs, Effects of Nuclear Weapons, Charts of Nuclides, etc., and Special and Supplementary issues of journals, e.g., Table of Isotopes, Rev. of Mod. Phys., 1958.

These remarks have been more food for thought than a particular thesis. We hope they will help define some aspects of the interrelated services and resources employed in the management of the literature of nuclear science.

II-A-3

PROPOSALS FOR IMPROVING ACCESS TO THE TECHNICAL REPORT LITERATURE

J. C. Wyllie

University of Virginia Library
Charlottesville, Va.

Dr. Dwight Gray of the National Science Foundation commented yesterday on the peculiar advantage the last speakers on a panel enjoy. In the end, the clock confines us to relevance, so I have abandoned my prepared but somewhat lengthy statement with good grace to make only three points:

These concern size, compatibility, and obsolescence.

To deal with the matter of size first: Mr. Alden Greene of the AEC yesterday, in one of the most ably conducted tours I have ever been on, devoted a good deal of his very considerable talents to impressing my group with the size of the operational output of the Atomic Energy Commission. The technical reports for the new depository at Boulder, Colorado, for example, weigh four tons. It takes a third of the entire postal budget to mail out the AEC's annual output. And so on.

On reflection, however, I remind myself that this very week my own library is hauling a collection of books from the Eastern Shore of Virginia that weighs considerably more than four tons, and that we have recently moved more than four tons of Chinese books from Hong Kong.

On questionnaires asking about foreign-language collections, I check our Turkish holdings as being NIL, and yet the books in Turkish in my library occupy somewhat more than double the cubic footage of the AEC depository documents.

The University of Virginia Library is not accounted one of the largest even in the South, yet we are approaching the million and a half volume mark, and the now hundred thousand technical reports (in which the annual take this past year was about 1/5th from the AEC) is so insignificant a part as not even to be counted in this total.

We are speaking here, then, in molecular terms when we speak of the volume of the AEC output. The very impressive thing about the AEC operation is that so much skill and treasure has been devoted to so narrow a corner of the world's literature.

This is an important aspect of my second point. There are now five million cards in the University of Virginia's dictionary catalog for somewhat over a million books, but the report literature is almost unrepresented in these cards, for the reason that the report indexers have constructed a system incompatible with the LC entries.

It is argued that this was necessary, and my only answer to this in my effort to be brief is that of the things that are necessary, only some are also possible. I belabor this subject no further because I am happy to see that the gifted Mr. William Hammond (for whom I think all of us will have an abiding admiration for his contribution to ASTIA) is speaking to us this afternoon on this subject of compatibility, and my hope is that he may address himself to the major problem of the LC entries as well as the relatively minor one of the compatibility of the AEC, ASTIA, and NASA descriptors.

And then my final point: obsolescence, a matter of much concern in the natural sciences because of the depth of the indexing. With regard to bulk, I hope I have made myself clear that if I have any complaint about the number of technical reports, it is only that we don't get enough of them. I have no present need or any ultimate desire to reduce their number or bulk. I would, however, like for the literature searches to have some built-in guards against obsolescence.

I can conclude this summary most briefly by reading my specific recommendations from the final paragraph of my prepared statement. The recommendations are these:

(a) That the AEC adopt the internationally-accepted form of no-conflict author entry and collaborate with the research libraries on a mutually usable system of subject headings and secondary entries.

(b) That they inaugurate a system of compatible precataloging, with LC card numbers on the verso of title pages. This would cost say $7,500 a year.

(c) That they ask some such group as the Association of Research Libraries to appoint an Advisory Committee to consult with DTI on just such problems as are dealt with in this symposium.

(d) That they establish a grant-making section of DTI which (perhaps with the collaboration of an ARL Advisory Group) would initiate and screen applications for matching grants in support of literature-searches. Say $75,000 a year for two exploratory years until the scope could be assessed.

(e) That they encourage and finance the publication of scientific subject bibliographies on all aspects of the structure of matter, but only for such bibliographies as have built-in protections against obsolescence. Since this concept (in a generation that usually aims at indiscriminate and unachievable comprehensiveness)

may not be clear, an example is offered: Acdeptable for aid under this plan would be a bibliography on methods of crystal growth, which gives brief abstracts of substantially all articles and reports of the immediately preceding 5-year period, but includes only such older studies as have been cited within this 5-year period. An appropriation of $50,000 (or even half that for the first year) might be enough to explore the extent to which partial subsidization through University presses would almost independently support this operation once the pump is adequately primed.

DOCUMENT MANAGEMENT AT DTI EXTENSION

Thomas W. Laughlin

Division of Technical Information Extension
U. S. Atomic Energy Commission

Our document management requirements and techniques are probably unique to our operation. With this in mind, I will briefly discuss certain of the activities that I hope will be of interest to you.

As might be expected, our document management functions are primarily concerned with receiving, stockpiling, control and distribution of technical reports in accordance with established distribution patterns or in response to requests for specific materials. To give you an idea of the volume of reports we are concerned with, I would like to quote a few figures:

1. Our master copy collection which contains one copy of each title on hand consists of approximately 250,000 titles.

2. Our stocks of extra copies of the 250,000 titles are in excess of 1,000,000 copies. Additionally, we have several hundred thousand copies of pamphlets and brochures that are used for answering requests from students and teachers in an Educational Materials Program.

3. Our receipts from, and deliveries to, the local post office average approximately 8,000 lbs. of report materials per day. There are many times throughout the year that we dispatch as many as 10 tons of materials to the post office in a single day. Also, there are many bulk shipments which we receive and dispatch by motor freight. As many as 250,000 copies of a single item have been included in some of these shipments.

Just as indexing is required as a control and retrieval means for information within a report, we must establish appropriate records for control and retrieval of the reports themselves. There are, I am sure, more sophisticated and/or elaborate record keeping systems in use for the management of collections of reports and publications; however, the one in use by DTIE was designed to collect all pertinent data relative to a report immediately after the decision is made to retain a copy. To this data announcement and availability information is added as it is developed in our processing cycle. This information and data is captured on IBM punched cards. With a small installation of standard IBM equipment we are able to mechanically produce at regular intervals the necessary operating tools in the several document management functions.

The data that is collected in the cards can also be mechanically processed, on demand, to produce a variety of reports, statistics and background information for special projects.

One regularly produced print out of information contained in the punched cards is commonly referred to as our Availability List. This listing is updated on a weekly basis and is used daily in processing requests for reports. A specimen copy of the print out was included in the materials handed out this morning. A line entry on the availability list may begin with only a report number, classification, and perhaps a distribution category. As additional information is developed, it is combined with existing information and appears on the next print out. A completed line entry will show all pertinent information such as drawer number where extra copies are filed, abstract number, price if on sale at OTS, and journal citation if it has appeared in the open literature. Any request which you submit to this office will be screened against this list, drawer number will be added to the request, if copies are available, and the request referred to our Distribution Section for dispatching the report. Requests for reports which do not appear on the Availability List, or which do not have drawer numbers or other availability information, are somewhat more complicated to process and therefore more time is required to process these.

At the risk of repeating something that may have been covered in another session, I wish to emphasize the importance of using the Official Report Request Form or the Depository Library Request Form as the case may be, when requesting reports. Since we process approximately 7000 requests for reports per month (last month there were 10,000 requests), our system for screening requests and pulling copies from the files is designed on the individual report basis rather than on a complete order basis. All requests for a given day are first arranged in alpha numeric order for checking against the Availability List. Those that are immediately available are then rearranged in drawer number order for pulling from the files and dispatching. A letter containing a request for several reports cannot be handled in this manner and normally will be delayed, unless there is an indication of urgency, until all requests submitted on the standard forms have been processed.

Since the majority of you represent organizations that receive reports from us on regular distributions, an explanation of our distribution practices may be of interest. Normally, the research and development reports are distributed by TID-4500 distribution categories through the use of a bin system. We have a bin for each installation on standard distribution, labeled on one side with each category and under the category an indication of the number of copies for that particular installation. The bins are emptied from the reverse side. On this side of each bin is a supply of preaddressed mailing labels which are used for mailing the materials emptied from the bins. The bins and our shipping containers were designed to compliment each other and to conform to postal weight limitations throughout the world. In other words, a bin of reports will empty into a standard shipping container which will not exceed the weight limitations in any country to which we ship. This is a very economical distribution system; however, there are certain disadvantages. The main disadvantage is probably the fact that an installation will receive all reports issued in a given category in the same quantities. There can be no variations in the quantities nor any selectivity of reports by installation or report number series. We do have several publications which are handled independently of the bin system and for which special mailing lists are maintained. An example is the distribution list for Nuclear Science Abstracts. The distribution lists for NSA and certain other selected publications are maintained on punched cards and can be changed to fit the requirements of our customers rather easily.

I believe you may be interested in our master copy filing and charge out system. As I mentioned earlier, we have in the neighborhood of 250,000 report titles in our collection. Currently, these are filed in individual transfiles stacked 5 high--comparable to a 5 drawer filing cabinet. We are, however, in the process of converting from this method of filing to the divider type shelving for our active files. Although there are certain disadvantages to this method of filing, we believe the savings in costs of the open shelf files far outweigh the disadvantages. The main reasons for converting to open shelf files are:

1. The initial cost is less. Cost per filing inch in open shelves is approximately ½ the cost of transfiles.

2. Shelf files use less space. We have planned for a gain of 78% in filing space in the available floor area.

3. Filing operations should be faster. We hope that removing and replacing folders will be approximately 25% faster using open shelf equipment.

Now a brief explanation of our charge out or, as more commonly referred to--locator control system. We must be able to locate new reports that are in the processing cycle for abstracting, reproduction,

distribution, etc., as well as any that have been removed from the files for reference uses. There are normally 4000 masters on our charge out list each day. The location of each master is shown on a daily listing. This listing is produced through the use of IBM cards in each folder which have been prepunched with the identifying report number and were prepared soon after a decision to retain the report was made. You have a sample copy identified as Locator Control List. When a master copy is removed from files or moves from one processing station to another, one of the IBM cards is removed from the folder, a station number, date and time of movement is indicated on the card. At a designated time, all cards are collected and mechanically processed to produce a listing in alpha numeric order of all reports not in the files.

The next function I would like to briefly explain is what we normally refer to as a Change Notice function. Perhaps most of you are familiar with our External Change Notice. Page 3 of your packet material is a sample of this form. Also included in the packet as Page 4 is a companion Form identified as DTI Extension Internal Change Notice. All discrepancies or changes, including classification changes, affecting reports which we have processed, are referred to a central point to decide if corrective action is necessary and if so to issue instructions for making the changes. The Internal Change Notice Form is a medium for communicating these instructions to the appropriate DTI components. The External Change Notice Form is normally used for notifying recipients of reports of those changes considered significant enough to warrant action on all copies.

Finally, I should like to state that our record keeping and processing techniques are geared to a report number as the primary means of identification. As such it is necessary that some control be exercised over the use of report numbers. AEC contractors are required to obtain report number code approvals from us; however, we do not have any control over the report numbers appearing on Non-AEC reports. Therefore, we either accept them, or if there are reasons why they cannot be used, we assign an NP number to the report.

Similarily, all unnumbered reports received by the DTI Extension are assigned report numbers, normally in the TID or NP series dependent on whether it is AEC or Non-AEC sponsored.

AVAILABILITY LIST

Report Number	Classification	Distribution Category	Extra Copy Location (Drawer Number)	Abstract Journal Announcement: Volume	Abstract Journal Announcement: Abstract Number	Availability 1/
WAPD-TM						
294	U	34	2765			
315	U			16	20934	$0.50 DEP
327	U	32	2867			
336	U	80	2916			
WCAP						
1874	U	37				
1929	U	37				
4121	U			16	21825	$1.60FS $0.80MF DEP MC
4124	U			16	20003	$1.60FS $0.80MF DEP MC
4126	U	80	17			
WIS-OOR						
31	U			16	19481	
WRU						
106	U					ARCHIVES OF PATH 71 494-501
201	U					J CHEM PHSY 36 2991-4 62
WT						
921	U		855			
1018	U		855			
1225	U					HEALTH PHYS 8 NO 3 245-60
1339	U		4892			
1407	U		4927			
1451	U			16	18720	$2.00 DEP
1454	U		4892			
1455	U			16	18721	$2.75 DEP
1485	U			16	20647	$0.50 DEP
1701	U			16	19189	$2.00 DEP
XDC-59						
5 78	U		3217	16	19883	$6.60FS $2.03MF DEP MC
6 220	U			16	19920	$8.60FS $2.96MF DEP MC

1/ OTS availability shown by indication of a price. Price alone indicates printed copy availability. FS or MF following the price indicates availability as facsimile or Microfilm copy only.
Depository library availability shown by indication DEP when available as printed copy or DEP MC when available as Microcard copy.
A journal citation indicates publication in the open literature. Any previous availability indication is normally dropped when a journal citation appears.

LOCATOR CONTROL LIST

Report Number	Station Number	Station Identification	Date Charged To Station
AECTR 5263	22	DESCRIPT CA	8 29 62
AECTR 5264	22	DESCRIPT CA	8 29 62
AECTR 5265	22	DESCRIPT CA	8 29 62
AECTR 5266	22	DESCRIPT CA	8 29 62
AECTR 5267	23	ABSTRACT INDEX	8 30 62
AECTR 5268	23	ABSTRACT INDEX	8 30 62
AECTR 5269	23	ABSTRACT INDEX	8 30 62
AECTR 5270	23	ABSTRACT INDEX	8 30 62
AECTR 5271	23	ABSTRACT INDEX	8 30 62
AECTR 5272	22	DESCRIPT CA	8 29 62
AECTR 5273	22	DESCRIPT CA	8 29 62
AECTR 5274	22	DESCRIPT CA	8 29 62
AECTR 5275	22	DESCRIPT CA	8 29 62
AECTR 5276	22	DESCRIPT CA	8 29 62
AECTR 5277	22	DESCRIPT CA	8 29 62
AECTR 5278	22	DESCRIPT CA	8 29 62
AECTR 5279	22	DESCRIPT CA	8 29 62
AECTR 5280	22	DESCRIPT CA	8 29 62
AECTR 5281	22	DESCRIPT CA	8 29 62
AECTR 5282	22	DESCRIPT CA	8 29 62
AECTR 5283	22	DESCRIPT CA	8 29 62
AECTR 5284	22	DESCRIPT CA	8 29 62
AECTR 5285	22	DESCRIPT CA	8 29 62
AECTR 5286	22	DESCRIPT CA	8 29 62
AECTR 5287	22	DESCRIPT CA	8 29 62
AECTR 5288	22	DESCRIPT CA	8 29 62
AECTR 5290	22	DESCRIPT CA	8 29 62
AECTR 5291	22	DESCRIPT CA	8 29 62
AECTR 5292	22	DESCRIPT CA	8 29 62
AECTR 5293	22	DESCRIPT CA	8 29 62
AECTR 5294	22	DESCRIPT CA	8 29 62
AECTR 5295	22	DESCRIPT CA	8 29 62
AECTR 5296	22	DESCRIPT CA	8 29 62
AECTR 5297	22	DESCRIPT CA	8 29 62
AECTR 5298	22	DESCRIPT CA	8 29 62
AECTR 5299	22	DESCRIPT CA	8 29 62
AECTR 5300	22	DESCRIPT CA	8 29 62
AECTR 5301	22	DESCRIPT CA	8 30 62
AECTR 5302	22	DESCRIPT CA	8 30 62
AECU 242	64	RECORD SEC	2 26 62
AECU 663	50	PRINTING BR	8 29 62
AECU 2246	41	MICROCARD CORP	5 23 62
AECU 2967	41	MICROCARD CORP	5 23 62
AE.U 3599	49	ENGR MATERIALS	4 26 62
AECU 4140SUPPL2	41	MICROCARD CORP	4 20 62
AECU 4707	64	RECORD SEC	5 9 60
AEDCTDR62 145	41	MICROCARD CORP	8 30 62
AEDCTDR62 19	44	PHOTOSTAT	8 30 62

UNITED STATES
ATOMIC ENERGY COMMISSION
DIVISION OF TECHNICAL INFORMATION

Post Office Box 62,
Oak Ridge, Tennessee

In Reply Refer To:

NOTICE OF CHANGE NUMBER _____ DATE _____

ITEM IDENTIFICATION:

Report No.	Date of Report	Classification

Author(s)

Originating Agency

Title

INSTRUCTIONS:

This is authority to make changes in documentary holdings as described above, and in records pertinent thereto. Changes in classification, security markings, etc., should be made in accordance with AEC Manual Chapter 2105, Control Of Classified Documents and Chapter 3401, Classification.

Thomas W. Laughlin, Chief
Document Management Branch
Division of Technical Information Extension

Form OTI-FL-14(9-60)

USAEC Division of Technical Information Extension, Oak Ridge, Tennessee

DTI–EXTENSION INTERNAL CHANGE NOTICE

FROM: Records Section (TDR)
Document Management Branch
DTI Extension

NUMBER: _____
DATE: _____

Item Numbers Indicate Specific Actions:

TO: Control Section
Catalog Operation Section
Catalog Maintenance Group
Microcard Corporation

Distribution Section

NATURE OF CHANGE:

☐ Declassified Without deletions
☐ Downgrade to: _____
☐ Change Report No. from _____ to _____
☐ Upgrade to: _____
☐ Recalled By: _____
☐ Other: _____

ITEM(S) AFFECTED BY CHANGE:

AUTHORITY FOR CHANGE:

INSTRUCTIONS: Items for Specific Actions are checked if applicable. Units responsible for making changes should date and initial when action is completed and Return This Notice within Five Working Days to The Document Management Branch, Attn: Records Section.

1. ☐ Change Report Numbers on all Extra Copies of Reports and Microcards from: _____ To _____
2. ☐ Make Physical Changes in Extra Copies of Report and Microcards
3. ☐ Attach Copies of Errata to Extra Copies of Report
4. ☐ Distribute Form OTI-FL-14 to Prior Recipients of Reports and Microcards
5. ☐ Correct IBM Accountability and/or Availability Records
6. ☐ Pick Up Accountability for all copies in DTI Extension. Master Copy is:
7. ☐ Destroy Microcard Neg.
8. ☐ Destroy_____ Microcards
9. ☐ Correct–Downgrade–Upgrade–Destroy–Catalog Cards in DTI Extension CARD Catalog.
10. ☐ Remark Catalog Cards In Series File of Weapon Data Catalog
11. ☐ File Series Card Showing _____ as Primary No., Use_____ as Secondary No.
12. ☐ Remove from Report No. Index-Author-Corporate Author-Subject Indexes in NSA–ACR.
13. ☐ Reflect Change In Status of Weapon Data Report
14. ☐

THIS SPACE RESERVED FOR ADDITIONAL ITEMS AS REQUIRED:

MASTER TRANSMITTED TO:

FORM: OTI-83(11-61)

USAEC Division of Technical Information Extension, Oak Ridge, Tennessee

DISCUSSION: SESSION II-A

MANAGEMENT OF THE LITERATURE

Walter A. Kee, Discussion Leader

CHRIS G. STEVENSON: I think Mr. Wyllie has raised some very basic questions that would be well for us to consider. I think that the report literature is a very highly specialized literature. It has, because of its nature, certain characteristics that often present certain problems. One of the problems Mr. Wyllie mentioned is the high degree or high rate of obsolescence, and certainly this is something we need to contend with all the time. Another one of the problems is--and I do not agree--it could be adequately cataloged by LC techniques. I think this is completely misstating the case. This class of literature just isn't amenable to this kind of approach. This is the reason AEC and other agencies have developed indexes and other types of approach in cataloging this literature.

I would like to address a question to Mr. Nielsen. It seems to me in the problem of integrating the report literature with the book material, do you have as one of your criteria, whether or not this material can be adequately located by the LC technique?

ROY J. M. NIELSEN: Yes, we do. I included that in the statement of work that is best and most efficiently maintained. Regard for the method of indexing is a definite factor.

C. G. STEVENSON: It seems that basically we have to make this a decisive factor. Is it amenable to this approach? If it can't be adequately handled under the LC system, there is no other recourse but to resort to the indexing techniques we use. Some installations, I believe Los Alamos is one, have reversed the situation, and they handle a great deal of their book material under the same indexing system as they use for the reports.

R.J.M. NEILSEN: I can see that, and agree whole-heartedly. It is a basic tool for the use of indexing books and reports.

WALTER A. KEE: Mr. Wyllie requested a minute to have a rebuttal.

JOHN C. WYLLIE: By no means is this a rebuttal. It is a basic fallacy in the supposition that the LC system is something fixed and unchangeable. I believe I will agree that because of the nature of the scientific literature today, it is impossible to insert it into the LC system. This doesn't mean don't insert it. It may mean changing the LC system. But the important thing to me is to get all of these under one kind of control. I am perfectly willing to change my five million

cards into the tens to hundreds of those that are necessary here, if this can be shown to be the proper method of approach. The thing that is essential to me is to get a single system of control. Perhaps we are all going to have to convert to the Atomic Energy Commission's system of non-author entry. But to do that, we are going to have to persuade a lot of people to abandon some enormous investments. I have experienced recently in inter-library loan requests, some astonishing things. We have loaned to neighboring depository institutions AEC reports which they have. This may sound a little silly, but then, I find also we, ourselves, have borrowed AEC reports from another depository, even though we had them, simply because we didn't know it.

ROBERT GREENE: I would like to ask Mr. Nielsen how he treats material integrated physically? What do you do in the matter of labeling or binding?

R.J.M. NIELSEN: This would be for the regular report processing?

R. GREENE: The reports integrated with book collections.

R.J.M. NIELSEN: Oh, I see, most of which are paper covered, for instance. If there are reports, say substantial DOD or ASTIA reports that the library feels are of book stature and should be in the book collection, sometimes we have treated them as reports, and also turned over copies to the book library for ordinary book treatment. Then it must be decided whether to reinforce the covers, have bound, order LC catalog cards, etc. I must admit however, that we have done things inconsistently at times. This we hope to straighten out.

R. GREENE: Do you ever just put the report on the shelf, integrate it and just label it?

R.J.M. NIELSEN: When integrated into the book library the report would be assigned an LC number, and handled as an ordinary commercial book.

W. A. KEE: We have been pulling out the proceedings and complete book translations, giving them complete cataloging treatment, and incorporating them within the book collection, even though we retain second copies with the reports. Frequently this brings it to the attention of the people more effectively--a double, or dual approach.

To make it brief, we have worked out a conglomeration, I guess, of the LC scheme which I'd like to describe, i.e., a modification of LC classification system. We picked and chose from LC headings, combined and recombined, and came up with what we call our UCD schedule. Basically, it brings together the scientific and technical material in a little different arrangement than appears in the LC classification schedules. It brings together subjects (material in these subject categories), that might be separated in LC—it brings them together at

one place on the shelves. We have found this modified LC system very helpful. A number of the foreign depositories are using our scheme, and I understand some of our contractors are also using it. We have prepared a publication which describes our system and I have a few here if you want copies. There are copies coming from Washington. The first shipment was lost in the mail somewhere along the way, and a second shipment was sent. I hope it will be here today, or certainly tomorrow. I would be happy to give copies to anyone that would like to see it.

HELEN G. KURTZ: Mr. Laughlin, if you are going to arrange your documents on an open shelf the way we have done, it would be a great help to us if the report numbers would be put in the left hand corner of the documents. We have a fellow, eighty nine years of age, that does this changing of the report numbers from the right to left, but most people aren't this fortunate, and it does take a lot of time.

THOMAS W. LAUGHLIN: We are giving some consideration to changing the position of report number on documents. Again, many of the reports are not printed here, and we receive them with the report numbers in various places.

H. G. KURTZ: Oh, sure, but couldn't you get the boys together and say, "Look, it is going to be up here now." The AEC provides the money and should be able to decide this.

T. W. LAUGHLIN: I am not so sure of that, but some attempt might be made to do it. I think perhaps some reports which are printed at DTIE could include the report number on the spine rather than on the front.

H. G. KURTZ: We wouldn't even ask that much. Just so when we pull it out, the number is in the upper left hand corner.

W. A. KEE: I believe a request was made of the contractors to do this. Bill Vaden has a better feel for this.

WILLIAM M. VADEN: We found many people wanted report numbers on the right. There must be a sort of a compromise on this question.

H. G. KURTZ: I can see that it would be all right until you use the open file system. Then it means that the position of the numbers must be changed.

The other thing I would like to ask has to do with a system involving the keeping of more adequate records. It takes two full time employees now in the document section under our present simplified system. We couldn't possibly do all the fancy things you do here. So, ours has to be a much more simplified system. If we go into recording each document that we receive on a card and file this card alphanumerically, could the AEC be induced to put out a single 3" x 5" card

with a hole in the bottom, with the number in the left hand corner? Then we could let this take the place of our check-in card.

W. A. KEE: Could I say something about the accession lists and cards that DTIE puts out. So far, the cards have been distributed only to the AEC contractors and the regional depositories.

H. G. KURTZ: Our system started out long before we were a depository. We had quite a bulk of AEC stuff, and we started with a regular periodical check-in system. We devised a card with a thousand check places on each phase, so that we could handle the check-in operation with a minimum of time. Of course, now we are in the middle of that.

To our chagrin, we hear about the possible distribution of cards for each document with a number on them. To change over to that system at this time would require some careful consideration. Our system has worked fairly well. We can tell in a minute from the face of a card if the report has been received. We use red checks on the check-in card for Microcards and black checks for full-size reports. This system worked beautifully until KTL and WOAC began to do what they did, then we got lost.

I think it is a very quick checking system. We devote only a few hours a week to carry out the operation. Except for the two big categories, it works pretty well.

W. A. KEE: The Nuclear Science Abstracts cumulative report indexes are used by some libraries as a shelf list. It is perhaps simpler than preparing cards, for a lot of people. The point I am making is that it would perhaps take less time to do this than to make cards.

H. G. KURTZ: Of course, once the cards are made, it is just a matter of filing.

W. A. KEE: Like a serials checking.

EVELYN B. HENRY: I would like to address my question to Mr. Laughlin. You touched briefly on NP reports. I have found difficulty in requesting NP documents to know whether or not you people will be able to supply them. Sometimes we get them, sometimes we get an answer back: "Have no record of this document." Is there a clear-cut method? This is in regard to classified documents announced in Abstracts of Classified Reports. Is there something I am overlooking? Something that would have to go directly to the originator. In some cases the originating agency is not listed.

T. W. LAUGHLIN: Are you speaking of those that bear an NP number, or non-AEC reports under other numbers?

E. B. HENRY: Yes, NP numbers.

T. W. LAUGHLIN: And they have appeared in ACR?

E. B. HENRY: Sometimes they can be obtained from DTIE. Sometimes they are not available from you.

T. W. LAUGHLIN: I don't understand that. We should have all reports that are in ACR and identified with NP numbers.

E. B. HENRY: I have received answers back: "No record of this." There must have been a record somewhere if it is in ACR.

T. W. LAUGHLIN: I don't quite understand that. We should have a record, if those reports have appeared in Abstracts of Classified Reports. Being classified reports, there may be reasons why they could not be transmitted to certain installations, but that shouldn't result in the answer that we have no record of the report. If you have any specific examples, we would like to check those out for you.

E. B. HENRY: Unfortunately, I didn't bring the list of them with me.

T. W. LAUGHLIN: Send the requests back to us, and we will attempt to straighten out the situation.

MARGARET W. MARTIN: While we are speaking about these AEC numbers, I wonder if there isn't some way of making these numbers less complicated. We are having a horrible time checking them in. The bulk of our checking records are getting tremendous numbers, they are so long. Can't they be kept a little simpler?

T. W. LAUGHLIN: We have tried to keep them simple. There are many different types of numbers that have been in the past accepted, because--well, a good example is some of the "crash review programs" involving classified reports and their review for possible declassification. We had to process several thousands of these in a very short time, and due to the work involved in changing and notifying people that already had copies under one number, we accepted into the uncalssified area these various codes that were originally intended to be only internal code numbers. The reports were not intended originally for external distribution. Under normal circumstances they would have been renumbered; however, time did not permit this. As a result, many of these now have complicated codes used for external distribution of the reports.

W. A. KEE: May we go back to a number of contractors on this point? Some of the contractors, unfortunately, try to make a report number be more than it really is. Instead of giving it a number, they try to tack on a number of slashes, etc., to indicate the department, the project, the guy who worked on the thing, and eighteen thousand other things, and have them all go into the report number. We are trying to go back and tell them it is ridiculous.

PAUL E. POSTELL: Plus the fact there are so many reports we have no control over, e.g., non-AEC reports, foreign reports, etc.

MARY EILLEEN ROBERTS: You mentioned DTIE cards for reports received. Are they available?

W. A. KEE: As I mentioned, we have been making distribution only to contractors, and we have been requested to make distribution to the OTS Regional Report Centers. Beyond that, we haven't made a distribution. I would hate to get into the middle by telling DTIE what to do. I will refer the question to them. I think we would be willing to talk it over and find out who might be interested.

M. E. ROBERTS: I wondered whether they are available by purchase.

W. A. KEE: No, as I see it, these cards are a by-product of the DTIE accession lists, some copies are reprinted on card stock from the original mats, and cut up in three by five card size.

BARBARA M. PROBERT: On classified distribution, Mr. Laughlin, we have quite a problem in receiving a group of classified documents on which it is not designated which contract the material is received. Of course, there is no problem when the category information is on special distribution documents, or those received on positive distribution. Sometimes there is a choice of perhaps four contracts as result of which we receive reports. And since we are using one classified address, there is no means for us to identify the proper contract for this material. Can there be some means of showing under which contract the material is made available, in your sending this material to us?

T. W. LAUGHLIN: With our distribution setup, there would not be any way to do this.

B. M. PROBERT: How can we be assured of the proper material for the proper contract?

T. W. LAUGHLIN: That is a problem that perhaps Bob Kelly of our organization could better answer for you than I could. But there is only one way that I know that we could separate the material for you, and that would be using separate mailing addresses for each contract.

JOHN W. NORRIS: Our card and distribution information is tied to our processing the DTI journal and they come from the first copy of our work sheets prepared for each report. We would like for you to add as Question No. 10 on the sheet given to you at the beginning of this session: "Would you be interested in receiving one card for each report." And answer "Yes" or "No." This will give us some indication what the problem would be for us if we could do this. At the present time, the cards are not sorted, and go only to contractors that get the material. I would like an expression of whether we would even consider

going into this additional sorting and distribution operation on the cards. We have tried to eliminate this, as it is a very expensive and time consuming. We, therefore, steer away from it unless there is a requirement for it.

B. M. PROBERT: If they are sent automatically to the contractors, we don't get them.

J. W. NORRIS: They are sent automatically if the AEC contractor requested them.

DONALD LUCK: Is there a possibility in this distribution of cards to contractors, to separate the classified reports from the cards for the unclassified reports?

J. W. NORRIS: We will take this under consideration. This has not been presented as a problem before.

NADINE GEORGE: As one of the regional depositories, can you give me any idea of the beginning date for these cards? I assume they are going to be current. Can you tell me approximately when you began to send these to the regional depositories?

J. W. NORRIS: We haven't sent them to depositories yet. We are considering this if the demand warrants it.

N. GEORGE: Well, it was my understanding you were going to start that.

W. A. KEE: We have been requested by OTS to do so.

P. E. POSTELL: How many of you file your reports on open shelves versus filing cabinets? That may have a bearing on this numbering business on the left side. How many file on open shelves? (A high percentage indicated they file on open shelves.)

I have another question. Is there any feeling among this group about the NSA corporate author indexes? Sometimes we get various suggestions from people at various times as to the validity of the value of continuing the NSA corporate author indexes as a finding mechanism.

VIRGINIA D. ROSE: I am not clear as to the proposal. I think it relates to eliminating corporates and relying on personals, because of the headaches and expense of trying to keep track of all the corporates.

J. C. WYLLIE: The corporates should be there.

P. E. POSTELL: It is quite a chore, and we are not proposing to eliminate it. We are just trying to get the feel for the corporate author indexes. Note: There was strong expression for retaining the NSA corporate author indexes.

C. G. STEVENSON: I don't know but that this Microcard could be greatly improved

B. MECHANIZATION OF LIBRARY OPERATIONS

INTRODUCTORY REMARKS

Chris G. Stevenson
General Electric Company
Richland, Washington

I would like to make a number of points before the members of the panel present their papers:

(1) We are going to concern ourselves primarily with the mechanization of library clerical routines. We are not going to discuss mechanized information storage and retrieval.

(2) We are not claiming to be experts in library mechanization. In fact, from my conversations with others at the meeting, I think there are many good programs that we all need to know more about. We are going to talk about those which we know best as a point of departure for further discussion. For this reason, I have asked the members of the panel to make their presentations very brief.

(3) The aim of the program is to give all of us a chance to learn in a general way who is doing what in the field of library mechanization. Those who are interested in a particular program should go directly to the site for details.

INTEGRATING A LIBRARY MACHINE SYSTEM

By Crowell Dean

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ABSTRACT

A study is being made by the Sandia Corporation Library on the feasibility of an integrated machine system for performing various library tasks, some of which are now performed by different machine methods.

* * * *

The Sandia Corporation Technical Library recently began a study on the feasibility of integrating all possible functions into a single machine system. It is hoped that the study will lead to an acceptable proposal. The reason for and the nature of the study can perhaps be made clear by first considering three unintegrated machine systems now in use at the library: circulation, journal routing, and accession announcements.

Circulation records have for the past four years been kept by electronic accounting machine methods. The records consist of punch cards for each transaction, the punch card being made from a numbered transaction card filled out by the borrower and completed by a library clerk. The borrower fills out the card to show call number of the book, its author and title, and his name and employee number; the clerk adds a code number for type of loan. After preparation of the punch card from the transaction card, the latter is kept as a master at the circulation desk. Discharging the loan follows the reverse procedure.

The punch-card file in this two-file system provides automatic print-out and mailing of overdue notices, immediate print-out of charges for terminating employees, and ready compilation of circulation statistics. The file also provides statistics to help decide the need for branch libraries and to determine library usage by subject classification or by laboratory organization. The system, however, has a number of disadvantages that follow from the fact that it is only a partial system. The cards must be edited before key punching to ensure legibility.

Since the punch-card operator is in another organization on the opposite side of the laboratory, no record of transactions is available after either charging or discharging until the master card is returned. In addition, repetitive operations are required during the cycle of transactions.

A more flexible and therefore more satisfactory machine method is used in the automatic distribution of technical journals to personnel who have requested them. Journal routing is a major clerical problem, less because of the numbers (7000 copies of 1500 titles go to 1300 recipients) than because organizational addresses of many recipients change often. The machine method used for journal routing is coordinated with machine-kept personnel records, which are, of course, kept current. Electronic data processing machines update and print routing slips, provide the purchasing department with 90-day notices of expiring subscriptions, detect errors in the records of the ordering group and the publisher, tabulate routing and cost statistics, and make a monthly master list of all journals. From this system, a list of the journals directed to any organization can be quickly prepared on request. Without machine assistance, journal routing would have had to be abandoned by the Sandia Library as it has by many libraries.

Announcement of Sandia Corporation reports is an important library task, especially since these reports must be controlled closely. Thus announcements of reports must not be sent to persons or organizations not able to obtain them because of their security classification, administrative privacy, etc.

The announcement bulletin (Sandia Title List) was developed from the Bell Telephone Laboratories BE-PIP program by the addition of a capability for discrimination according to security classification. This list has been formed around permuted title indexes, and author and organization indexes; it also contains a merge capability for cumulations.

The information going into the announcement bulletin originates in cataloging. Because the task of preparing the Sandia Title List was a large one, it appeared that with only a small amount of additional work, all information generated in the library could be gathered by a single effort. This consideration led to a proposal to study the feasibility of integrating all electronic data processing systems used by the library into a single system. This proposal has been accepted and the feasibility study is going forward.

First, the feasibility study group analyzed basic library operations in order to determine the inputs to an integrated data processing system. This analysis was performed by preparing a posting form that synthesizes purchase, bibliographic, analytic, and circulation procedures.

In the system proposed on the basis of the analysis, the following clerical activities will be performed by machine:

a. Cycling of documents for destruction or reclassification,

b. collecting and collating for microfilming and updating locations,

c. printing catalog cards,

d. furnishing printer's copy for announcement and accession lists,

e. printing current routing slips for journals,

f. listing periodical holdings,

g. making annotated lists of unindexed periodicals,

h. making special catalogs for branch libraries, and

i. printing of permuted indexes to selected categories of materials.

The field-of-interest register will be periodically up-dated from information already present in various sections of the system -- ordering, circulation, journal routing, reference, etc. The system will provide subject reference lists, generate special aids to analysis and revision of cataloging tools, and print chronologically ordered lists within subject fields for bringing a collection up to date. Clerical time may be saved in card production and in updating of special catalogs and files, in preparation and publication of special lists, in bulletin preparation, and in circulation editing.

In summary, each of the applications of electronic data processing has provided an insight into clerical problems in the library. It now appears possible to set up a single machine system to relieve the library of routine clerical tasks, to eliminate duplication of effort, and to provide tools that will increase the value of the library to its users.

MECHANIZATION IN ORNL LIBRARY OPERATIONS

R. R. Dickison

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Oak Ridge, Tennessee

ABSTRACT

Three relatively simple and economical techniques resulting in some improvement in standard ORNL library functions are described. Certain cataloging, circulation, and reference functions have been semi-automated by the introduction of machines into these operations.

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Within the last two or three years but principally in 1962, the ORNL library has introduced a certain amount of mechanization into its various operations. This mechanization has affected all the standard library operations; ordering, cataloging, circulation and reference, as well as some of the special library operations such as announcement services and literature searching. Considering the relatively large size of the ORNL library as a special library and the conservative approach we have to mechanized information retrieval, this is a surprising degree of mechanization. Considering the success of the mechanization so far attempted, it can be predicted that further mechanization will be approached less conservatively. In fact, we are currently considering ordering our first IBM equipment solely for library use, an IBM 870 document writing system.

A long standing problem of how to copy quickly, cheaply, simply, and cleanly a 3 x 5" book charge card was solved recently when 3M made an improvement in their Thermofax Secretary Copying machine. A change in the switching arrangement made it possible to copy material as small in size as a postage stamp without the use of a screen carrier. While there has not been a significant reduction in either the cost or the time involved in maintaining our circulation files by this method, there has been a significant reduction in the drudgery involved by eliminating manual posting of circulation information.

With a convenient means of copying 3 x 5" material, it appeared that we were half way down the road to solving another long standing bottleneck in the reference section. In making manual literature searches, the slowest part of the process and the source of a good many errors is the copying by hand of pertinent references onto 3 x 5" slips. Using 3M's dual spectrum paper, it appeared that a reference from an abstracting journal could be copied quickly, cheaply and cleanly, and without error. To do this, all that is required is to build a suitable 3 x 5" accessory unit which will make the exposure. The exposed slip

can then be printed on the Secretary machine. Our Graphic Arts department designed a 3 x 5" accessory unit and our Instruments Division is building a working model. Even if we were so fortunate as to design a satisfactory machine retrieval system, we still believe it would have to be supplemented by manual searches and improvement in manual searching techniques appears possible.

The expanding field of documentation has provided us with a solution to still another long standing problem, that of a subject approach to the laboratory's internal preliminary information. People at the laboratory write many memos containing preliminary information which are intended only for laboratory use. For years we had no subject approach at all to these memos, since we were unwilling to develop a conventional card catalog for this material for many of the same reasons that lead the AEC in 1959 to abandon altogether card catalogs for reports. The development of the permuted title index and its acceptance by Chemical Abstracts Service and Biological Abstracts led to our adoption of this technique for a subject approach to our internal reports. The index is prepared monthly on an IBM 7090 computer, using a program written by Bell Laboratories. The first semi-annual cumulation of our keyword index was recently issued. The next applications of the technique will probably be first an experiment at indexing in depth an annual progress report, with an attempt to standardize the terminology used to prevent scattering. Secondly, we will probably utilize the technique not only on our own reports, but on all reports received by the laboratory.

As I indicated, further mechanization in our library will probably come somewhat more rapidly in the future. Once we have gained some experience with our basic document writing system, we are extremely interested in seeing what can be done with our serials recording and our book cataloging. In both of these areas there appear to be possible improvements to be made by utilizing machine operations.

Sample pages from: Oak Ridge National Laboratory
Libraries - Technical Information Division

KEY WORD INDEX - LABORATORY REPORTS RECEIVED
JULY 1962

INTRODUCTION

This Key Word Index provides acess to reports issued by the Laboratory in a form easy to use, readily available, and well supplied with descriptive key words. As the majority of such reports are not indexed by NUCLEAR SCIENCE ABSTRACTS or other indexing services this experimental program, using the IBM-7090, plans to fill this void.

Every issue will contain three parts. The first consists of an index in which key words from each title have been arranged alphabetically down the center of a column. Each line is identified by a report number. The second part is a bibliographical listing, by number, of laboratory reports received during a month. The third part is an index of all authors of reports mentioned in an issue with a reference to the report number.

When the length of a title is such that it cannot be given on one line, a slash (/) indicates the title break. If necessary to find the complete title the list by number will carry the full bibliographical entry.

Numerical entries contained in the title appear after the alphabetical sequence. This part of the permuted title provides convenient search for equipment and experiment run numbers and other numerical data.

An asterisk (*) after the report number indicates the report is classified.

All meetings, symposia, minutes, and conferences are grouped under the word conference. All literature searches or surveys are grouped under the word bibliography.

The computer has no lower case type; therefore, to avoid confusion Greek letters, chemical symbols, formulas, names of elements and compounds will be written out.

One effective way of using the index is to scan vertically the alphabetical keyword list pausing at words of interest to examine the horizontal context. Where interest is thereby confirmed the number on the right of the entry will serve as identification.

A mechanized title word index should be regarded as a prompt announcement device readily available for desk use rather than a retrospective search instrument. Each issue will cover the reports issued by the Laboratory and received in the Document Collection Section of the Central Research Library for a one month period. The Index will be issued monthly with a semi-annual and an annual cumulative index. With the issuance of the cumulative indexes all previous issues may be discarded.

Your comments and suggestions on the use of this system to provide easy access and current awareness to Laboratory reports will be welcomed.

PERMUTED TITLE INDEX

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57-2-1-R1 SYMBOLS FOR INSTRUMENT FLOWSHEETS AND DRAWINGS, A RECOMMENDED SYSTEM FOR APPLICATION TO ORNL INSTRUMENT WORK-REV.-1
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62-3-92 HOT CELL OPERATIONS QUARTERLY REPORT JANUARY TO MARCH,1962
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MECHANIZATION OF HANFORD'S TECHNICAL INFORMATION OPERATION

Chris G. Stevenson
General Electric Company
Richland, Washington

I would like to begin by pointing out that the mechanization of Hanford's Technical Information Operation resulted from careful and detailed procedural analysis. For a number of years we had a full time procedures specialist on our staff. The plant also has a Business System group and we have used, and continue to use, their services extensively. Sensible application of machines must be preceded by careful systems studies, so that the result is an integrated system for the organization, scheduling, and flow of work. Only in an integrated system can machines play their proper role.

An essential part of our mechanization program at Hanford is our machine room. This is a sound-proofed, air conditioned room immediately adjacent to our mail Files work area. It contains an IBM Key Punch, a sorter, a collator, and our IBM 858 Card-a-type complex. All our document activity is processed through this room. Hanford also has extensive computer capability -- 7090, 1401, etc. -- in another Department. We use these facilities as required. Our annual charges from the computer group are about $10,000.00.

Our document issuance, routing, and mailing is handled on the IBM 858 Card-a-type. This is a flexible machine, programmed by means of a plugboard. In-put is from punched cards, a typewriter, and a keyboard into which certain repetitive information can be keyed. Out-put is both typed material and punched tape. Our complex has one in-put typewriter, three out-put typewriters, and a punched tape unit.

Documents for incorporation into our collection come to the machine room accompanied by a packet of IBM cards. These cards include the classification of the document, corporate author, and the individuals or organizations, both onsite and offsite, who are the intended recipients of the report. Using the IBM cards as in-put, keying in certain information on the keyboard, and typing in the bibliographic information about the document, the Card-a-type operator simultaneously prepares a basic accountability card, the receipts for the documents, the mailing labels, and a registered delivery form which is used internally for getting classified documents to the mail room. She also creates an 8-channel tape which is later used on a Flexowriter to prepare our catalog cards, and to prepare our weekly announcement bulletin.

The disposition of the three-part route form is as follows: One IBM card and the flimsy are attached to the document and carried to the recipient by a Files messenger. The recipient signs the IBM card and retains the flimsy for his records. The other IBM card goes to the keypunch operator. She keypunches into it certain basic information, and makes a duplicate. The duplicate is pended and the source card is immediately filed by document number. When the signature card is returned and matched, the duplicate is filed by document holder and the signature card sent to storage.

Note that all the IBM cards used in the routing form are pre-numbered and pre-punched when ordered. This transaction number is used when (1) clearing pending receipts when the signed copy is returned, and (2) clearing documents returned to Files when the number cards and document holder cards are pulled and matched. This match is done on the collator using this transaction number.

The Card-a-type prepares three copies of the basic accountability record. One of these goes to our permanent file, one to the key-punch operator (if the document is classified and must be taken into our accountability program) and the third copy, with the tape, accompanies the document to the abstractors where the document is abstracted and indexed prior to the preparation of catalog cards.

We have also programmed the Card-a-type to (1) prepare lists of labels for large mailings of unclassified materials, and (2) prepare document revision forms in quantity, together with the necessary labels.

For a number of years we have also had our classified document control mechanized. We maintain on magnetic tape on the IBM 7090 a

record of all classified documents for which the site is accountable. This is possible because at Hanford we have centralized receiving, issuance, and control of classified documents. Periodically the 7090 prints a list of classified documents and this list is used to make our Files inventory. The document is either in its proper place in the vault, or charged to someone on the Plant. In the latter case it is counted as present, because our Files inventory is supplemented by regular inventories of individual document holders.

Our individual document inventories are a direct by-product of our routing procedure. Periodically, a portion of the document holder file is pulled and a print-out made. This inventory list goes to the customer for authentication. This is now done at six-month intervals.

One of the by-products of our document control system is machine preparation of certificates of destruction. Cover sheets for classified documents destined for destruction go to the key punch operator who punches an IBM card which will delete this item from the master accountability tape. As the item is removed from the tape, the computer automatically prints the certificates of destruction.

A third area in which we have found the computer most useful is in handling our large number (2800) of periodical subscriptions. All of our subscriptions are on magnetic tape including the name of the journal, the subscription period, the current order number, the individual to whom the periodical is to be sent, the distribution that is made of it in Technical Information, i. e., reference or circulating copy, price of the periodical, cost code of the Department for which it was ordered, and vendor's name and address.

From this tape record a number of print-outs are routinely made. These include:

1. Periodicals coming up for renewal.

   The renewal forms are printed monthly by the machine, two months before the expiration date of the subscription. It is printed in three copies -- one for Department approval of the re-order; one for the Purchasing group for re-ordering the subscription; and one which is sent to the customer some time later to affirm that he is, in fact, receiving the journal.

2. A complete listing of subscriptions arranged by title and sub-arranged by individual subscription.

3. A complete listing of subscriptions arranged by individual subscription and sub-arranged by periodical title.

4. A simple title listing with no subscription data.

5. A vendor name and address listing.

6. A listing of all subscriptions paid for by Departments, and by Sub-units in the Departments. This includes the title of the subscription, its cost, and who in the Department receives it.

It is difficult to see how we could handle this many subscriptions without the aid of the machines. Actually, one clerk orders and receives all these periodicals!

We have numerous other less important mechanical devices which we have found useful. Our catalog cards in the library are prepared on a Flexowriter; we use a goodly number of electrically operated rotary files; we have a mechanical collator; and a mechanical dispenser of gummed tape which is most useful in our packaging activities. These mechanical devices streamline our work, improve production, and relieve our clerks of a great deal of repetitive manual work.

MECHANIZATION OF LIBRARY OPERATIONS IN THE NRTS TECHNICAL LIBRARY*

II-B-4

By G. B. Stultz

Phillips Petroleum Company
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ABSTRACT

The use of machines and punched cards in reducing the amount of time and effort expended in performing many routine library functions is discussed. Machine applications described include the preparation of lists of journal holdings, accession lists of reports, books and journals, and bindery lists as well as a system for ordering books and renewing journal subscriptions, printing a book catalog, and circulation control of all types of library materials.

* * * *

The ever increasing publication rate of scientific and technical literature and the remoteness of our location in regard to other sources of information led the staff of the National Reactor Testing Station Technical Library several years ago to begin considering means of coping with these two problems. The value of machines in reducing or eliminating repetitive, time-consuming operations in the business world led us to believe that perhaps they could assist us in overcoming our problems. As a consequence, we gathered information on machine applications and then embarked on a program of experimentation. Since then we have made numerous punched card applications to routine clerical tasks in our library and have been very pleased with the amount of time and effort saved.

Our first application of the use of machines in our library operation was in the preparation of a list of our periodical holdings. As our journal collection grew prolifically, as they seem to in all libraries, it seemed imperative that we initiate some type of consolidated list of our serial holdings. This would then enable us to determine quickly and easily the extent of our holdings. In this manner we could promptly ascertain the volume and year of the first volume of

* Much of the information presented in this paper appeared in the article: Griffin, H. L., The National Reactor Testing Station Technical Library, Pacific Northwest Library Association Quarterly 26, 199 (1962) July.

Work performed under the auspices of the U. S. Atomic Energy Commission.

any title in our collection, where our gaps lay, and where each title was located, i.e., in the main library or a subsidiary collection.

After reviewing various means of producing such a list, and keeping it current, we decided to produce the list through the use of punched IBM cards. This method offered several advantages, not the least of which was the speed and ease with which the file could be updated and a revised listing printed.

We had frequently noticed the essentially one-way nature of our inter-library loan activity. We were often requesting the loan of badly needed articles from neighboring university and public libraries, but we never received a request from them. Perhaps, we thought, it could be made more reciprocal if other libraries realized just what was in our library, and especially in our journal collection. When the first list of our periodical holdings was published, we sent copies to the libraries which had been cooperating with us in inter-library loan activities, and let them know of our willingness to reciprocate in the loan of our materials. Since then we have received several requests for journals on inter-library loan.

The journal list served as our introduction to the punched card. When we saw what it had done for us in this project, we began to wonder what it might contribute to other procedures involved in the operation of our library. It appeared to us that many routine clerical tasks might be accomplished through the application of punched cards, thereby releasing the time of our library staff for the more interesting and less repetitious work of the library.

A program of serious experimentation with punched card applications was shortly under way. One of the first library procedures to be accomplished in this manner was the production of the monthly accession list, which is circulated to researchers throughout the project. We found that the use of punched cards instead of a typewriter in the production of this list produced a distinctive publication which could easily be arranged into subject categories. In addition it could be printed rapidly -- 150 lines per minute. Included for each entry are author, title, date of publication, call number, and the location of the book (whether in the main library or a branch). Since the punched cards lend themselves easily to machine sorting and file maintenance, we found that semi-annual and annual cumulations of the books so listed might be accomplished quickly and easily, as an added service to the library staff and to library users as well. For the many of our borrowers who find it difficult to visit the library because their work locations are so remote from ours, this list serves as a quick catalog of the titles added to our collections during the period of the cumulation.

Automatic telephone-answering equipment is used to provide round-the-clock service for loan requests, especially in conjunction with the monthly acquisition lists. Coded marginal numbers are included on the list for easy use in requesting materials on this equipment. In this way library users may request materials at any time, regardless of

whether the library staff is on duty. The service is popular and is heavily used. The automatic answering equipment also serves to release the circulation assistant from the handling of many routine calls, and makes this time available to her for handling a growing volume of non-routine telephone requests and for over-the-desk assistance. Calls are taken from the equipment several times each day at her convenience, and items are promptly dispatched or recalled. The only difficulty which we have encountered with the system is the requester who forgets to give his name with his request. Applied imagination has resulted in satisfactory completion of many of these anonymous requests, however.

The monthly acquisitions bulletin just mentioned has served as the pilot project for a printed catalog which will be printed from -- of course -- punched cards. The catalog will be issued in three volumes (authors, titles, and subjects) and the maintenance and printing of the catalogs is to be done entirely by machine. Copies of these volumes will be made available, as were the periodical listings, to the various offices and laboratories about the site and at the head-quarters building in Idaho Falls.

Cards for the titles listed in the monthly lists merge directly by machine into master files from which the printed catalog is prepared. The only manual work necessary is the key punching of cards for the author entry. From this point all operations are handled quickly by machine.

Many other applications of punched cards are in operation in the library. Books are ordered from our two major dealers by using punched cards to print a fifteen-part book-purchase form. This form, basically 3" x 5" in size, contains slips for all library files and internal company requirements. The slips which the dealer receives include his purchase order to the publisher for books not in stock, a report form to the library, and the dealer file copy and invoices, which are priced and returned with the book. Part of this system enables us to print a list of all orders outstanding at any time for use in expediting activities. The file of orders outstanding is purged automatically, by machine, of titles which are received. A monthly financial summary and distribution is also prepared automatically from these cards.

The bindery list also is prepared from punched cards, as is the annual series of purchase orders for renewal of periodical subscriptions. The list for various shipments at the bindery at any time may be merged by machine to give a master list of volumes at the bindery, for use in checking journals not on the shelves, or in circulation, in response to borrower requests for them. The cards used for journal purchasing will eventually form the basis for a periodical check-in system, and work is presently under way on the development of an automatic computer-based system for claiming journals not received.

Circulation control for both library materials and technical reports is handled with IBM equipment. An extended loan period for books requires frequent lists of the materials which are charged to individual borrowers. Such listings are prepared automatically from punched cards at the rate

of 150 titles per minute. The system is designed for complete machine maintenance. New circulation is merged into the file, and cards for returns are pulled automatically.

A nominal one-week loan period for journals necessitates more careful attention to the circulation cards for journals, which are interspersed in the main file with cards for books and other materials. At weekly intervals a computer scans the entire circulation file, arranged in borrower order, at the rate of 700 cards per minute, and prints a list for each borrower of only the journals which are charged out to him. The computer program is so designed that any card which is not in proper borrower sequence is rejected for later refiling without being printed. Journals which are more than one month overdue cause a special card to be punched which will call the situation to the attention of the circulation assistant, who can then follow up by telephone to secure the return of the journal.

Systems are presently in development for the production of a Keyword-in-Context indexing program. Future plans for the use of machines in the library include information retrieval programs, as well as continuing applications to various conventional library procedures.

Our experience with punched cards and electronic data processing equipment in our library operation has been most satisfactory. We have realized a considerable saving in time in repetitive operations, and have found that many projects which were not reasonably within our capabilities are now possible because of our machines. We realize a saving in time, as the drudgery of many routine clerical tasks is relegated to the machines. This gives our staff more time to devote to the more important jobs which, in any library, are constantly demanding attention.

We have found that, in this way, a smaller but capable and efficient library staff, assisted by modern electronic data processing methods, has enabled us to cope with the large volume of scientific information which we must process and make readily available to our research staff. The fast pace of present-day research demands of us the ability to handle this information promptly and economically, while maintaining some control over its whereabouts. We must also be able to make this material quickly available and bring it to the attention of those who may have a present or future need for it. These factors influence the service which we offer our users, and the direction which we have taken in our program of library service.

TECHNICAL JOURNALS

at the

NATIONAL REACTOR TESTING STATION

Holdings at the

NRTS TECHNICAL LIBRARY

and the

Aircraft Nuclear Propulsion F eneral Electric Company)
Naval Reactor Facility (ouse Electric Corporation)
Argonne Natior atory (Idaho Facilities)

January 1961

Listing Compiled by the Staff of the
NRTS TECHNICAL LIBRARY

Operated by
PHILLIPS PETROLEUM COMPANY
ATOMIC ENERGY DIVISION

Under Contract to
IDAHO OPERATIONS OFFICE
U. S. ATOMIC ENERGY COMMISSION

FOREWORD

New discoveries at the National Reactor Testing Station, as elsewhere, are based on world knowledge, which is stored in a vast accumulation of books, reports, and journals.

Workers at the NRTS have access to over 500 technical and scientific journals important in the field of nuclear energy. Of this number, about 150 are published outside the USA and 21 are USSR journals translated into English.

This listing indicates both current and back issues available at NRTS sites. Those at the NRTS Technical Library may be requested by telephone (extension 4312), or through the appropriate library office in your organization.

Allan C. Johnson
Manager, Idaho Operations Office
Atomic Energy Commission

Technical Journals at the National Reactor Testing Station represents the holdings in the various libraries as of approximately December 31, 1960. The form of entry followed is that used by the Union List of Serials, i.e., bulletins, journals, proceedings, transactions, etc., of associations and societies are listed under the name of the issuing body (e.g., Journal of the American Chemical Society is listed as American Chemical Society. Journal.) All other journals are listed directly by title. In the case of foreign journals which are received in English translation, reference is made from the title of the foreign journal to the title under which the translated contents are published, as well as the volume numbering of the original publication when the volume numbering of the translated edition is not similar.

Holdings are shown as completely as possible, with the date of the first issue or volume held. In a few cases no holdings are shown for a journal title. In such cases the periodical was on order at the time this listing was printed. It may be assumed that the library is currently receiving the publication, and that holdings will appear in the supplement to this listing when it is issued.

Symbols used and their meanings are:

+	Set complete from volume or date listed, and currently received.
.	Set complete as listed, and not currently received.
*	Volume or volumes incomplete.
R	Reference use only. Does not circulate. (Shown after date)

ANL	Library at Idaho Facilities, EBR-I.
ANP	Library at the Aircraft Nuclear Propulsion Facility.
CPP	Branch of the NRTS Technical Library at the Chemical Processing Plant.
MTR	NRTS Technical Library, located at the MTR, Bldg. 625.
NRF	Library at the Naval Reactor Facility.

A.I.CH.E. JOURNAL.
V.1+ 1955 CPP

A I M E TRANSACTIONS. (AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS)
SEE--AMERICAN INSTITUTE OF MINING, METALLURGICAL AND PETROLEUM ENGINEERS. METALLURGICAL SOCIETY. TRANSACTIONS.

A P C A ABSTRACTS. (AIR POLLUTION CONTROL ASSOCIATION)
V.4*, V.5+ 1958 MTR

ABSTRACTS JOURNAL OF METALLURGY.
TRANSLATION OF SELECTED ABSTRACTS FROM REFERATIVNYI ZHURNAL. METALLURGIIA. (PUBLISHED IN 2 SECTIONS BEGINNING 1958 - PT. A - SCIENCE OF METALS, PT. B - TECHNOLOGY OF METALS.
1957+ 1957 MTR

ABSTRACTS OF DECLASSIFIED DOCUMENTS
V.1,2. 1947R MTR
V.1,2. 1947 CPP

ACADEMIE DES SCIENCES, PARIS. COMPTES-RENDUS HEBDOMADAIRES DE SEANCES.
V.240+ 1955 MTR

ACOUSTICAL SOCIETY OF AMERICA. JOURNAL.
V.1+ 1929 MTR

ACTA CHEMICA SCANDINAVICA
V.1-3, V.4*, V.5+ 1947 CPP

ACTA CRYSTALLOGRAPHICA
V.1+ 1948 MTR

ACTA METALLURGICA
V.1+ 1953 MTR

ACTA PATHOLOGICA ET MICROBIOLOGICA SCANDINAVICA.
V.33. 1953 MTR

ADVANCES IN APPLIED MECHANICS.
V.5+ 1958 MTR

ADVANCES IN BIOLOGICAL AND MEDICAL PHYSICS.
V.1-4. 1948 MTR

ADVANCES IN CATALYSIS AND RELATED SUBJECTS.
V.1+ 1948 CPP

DISCUSSION: SESSION II-B

MECHANIZATION OF LIBRARY OPERATIONS

Chris G. Stevenson, Discussion Leader

C. G. STEVENSON: Thank you, Mr. Stultz. I think one of the points very evident in Mr. Stultz's paper is that if we can get our material converted into a machinable unit--IBM punch card, a Flexowriter, or any other kind of punch tape--we have something with which we can do a tremendous number of different things. We can prepare our weekly accession list from the tape. In addition to these cards we have the tape, and we can retain these until the end of the week, sort them by subject, the typist can type the subject in when it comes to this, and the tape is used to knock out the pages of the weekly accession list. Similarly, of course, the tape can be used ultimately to be fed into computers and used for retrieval since it contains subject headings. Once you get it into machine usable language or form, there are many, many kinds of flexible kinds of things to do with it. Now for some questions, or some brief statements by others in the same business that have something to contribute.

JOHN P. BINNINGTON: I have three questions. Can I ask all three standing up without taking turns? Mr. Stultz, on the automatic telephone, which is very interesting to me, you say that it takes the routine questions. Who decides which are routine and non-routine on the use of the telephone?

GEORGE B. STULTZ: Well, it is true, if we get requests that are not routine but considered routine, we have to call the individual, if he gives his telephone number. It works out quite well on the printed accession list. We use it mainly for that purpose.

J. P. BINNINGTON: The telephone takes all the calls you get, and then you decide later?

G. B. STULTZ: No, we make a statement on our accession list to the effect that this number is not listed in the directory or otherwise. So, most of our calls come in as a result of this accession list. The later calls we get for this material come in in the ordinary way.

J. P. BINNINGTON: Chris, when you changed to the mechanization of your serial records--serial publications, what did you do with the

records you used before? In other words, are you still keeping those records you were using before? You had a card for every journal title with the information on it and posting this information by hand as to the cost of the material, vendor, etc. Do you still keep those cards and use them?

C. G. STEVENSON: No, we do not. All we have now is a card which is printed by the machines, and which is used as the clerks simply check in the items. But we don't keep any other information on the punch cards. We have fairly complete lists which the clerks, by the way, find very, very useful. They wouldn't go back to the individual records for anything. They are just very handy. Each girl has a series of three or four different kinds of listings used in the course of the records. We get these out about twice a year.

J. P. BINNINGTON: Mrs. Dean, in your circulation records, do you have any way of determining reserves or keeping reserves in your system?

CROWELL O. DEAN: Yes, we do. I think I indicated that the circulation system that we have illustrates the inadequacies of partial mechanization. We keep those by hand in the file which is the circulation file. In other words, every library, I suppose, that has a record at the circulation desk has a reserve card flag right on the charge out. Our circulation system gives us a lot of data that we need, but we still have too much handling in it. And we see no way to get away from keeping a reserve card on the one at the desk. We also have this telephone business that he speaks about here.

CHARLES K. BAUER: You mentioned about the Flexowriter 257. We are using IBM cards--punched IBM cards, and put them on three by five cards out of the IBM cards. These IBM cards get our printed material out. Why do you use then the Flexowriter since you also use the punched system?

C. G. STEVENSON: Our document issuance preparation is done on 858. It gives us our basic records, routing forms, mailing labels, registered delivery forms. But it also gives us a tape, and this tape can be fed to a Flexowriter. It is easier to do it this way. You don't have punch cards containing the bibliographic information you need. Some sites do prepare catalog cards on 1401. It is getting to be quite a popular machine for cataloging cards. The same kind of key punch cards you are talking about.

ROBERT GREENE: I would like to ask Mr. Dickison, assuming access to equipment, about what would be the cost of producing something like this?

RAY R. DICKISON: I believe our costs for the first half year were in the neighborhood of $1150 for the data processing charge. That included the key punching and the machine time on the 7090. I guess about $2200 a year.

CARL J. WENSRICH: Could I get a show of hands on the number of people who have telephone answering service? Two. We are thinking of installing this system ourselves, and I wanted to hear all the bad things about it first.

C. O. DEAN: I can tell you some. We have it in our branch libraries, because the branch librarians are often not at the desk, but we only leave a message asking them to call back when the librarian will be there. We do not take questions on the telephone. We found it entirely unsatisfactory--or the men did. The people who were calling in found it unsatisfactory to answer. Now I can see the reason, the good reason that he uses it on the accession lists. But we accumulate our requests for material in the accession list by tearing out sheets that they send in, which are processed all in a bundle.

C. J. WENSRICH: Mr. Stultz, what I was curious about--what was the purpose of installing this system? Was it something that was a necessity, or was it just for the accession lists, or actually for what purpose?

G. B. STULTZ: For the accession list. It cut down on the time of the clerical personnel answering the telephone.

C. J. WENSRICH: If you have these tear out lists by mailing requests, would you abandon this answering service if you had another system for handling this?

G. B. STULTZ: For reports? We do have a listing of reports they can order in this manner. But we do not have for our book accession list, and it has proven to be very useful in this respect. It is also used a good deal by those ordering reports as well.

C. J. WENSRICH: Are you for this now?

G. B. STULTZ: Yes, we are going to keep them. We have two such telephone answering systems. One in the reports section and

one in books and journals section. We are split up physically.

CORUM SCOTT: I have a question concerning document accountability, Chris. Could you tell us approximately your volume, the number of messengers you use to run these things over the plant, and approximately your cost in handling this function.

C. G. STEVENSON: That is a rather difficult question. Mrs. Puckett is here, one of our document librarians. I may have to ask her to verify our numbers. We have--is it three or four messengers? Three full time messengers. And what would be their monthly delivery and pick up total? About 15,000 deliveries and pick ups a month. The deliveries are made on regular schedule. The pick up man has to call for the classified documents. To return classified documents, the men call and tell us they want to return them and the messengers include these on their rounds. The messengers are paid around $80 to $85 a week.

C. SCOTT: Do you have a number on your total accountability costs?

C. G. STEVENSON: I don't have. We have around four to five hundred thousand documents at Hanford--individual copies not titles--and by the way, the machines, of course, give us totals every month. We have about 195,000 classified documents on the tape. What our total accountability costs are, I couldn't say. It would take a real cost analysis to determine. It would be a real job to separate it out.

LESTER A. ROUDEBUSH: This is not a question. It could be considered a commercial all about our 7090. We have been doing retrieval on it for better than a year, and we would like to extend an invitation to any of the people that come to Indianapolis, to see this run, or on request, we will send you a description of the system. We do it by key words.

C. G. STEVENSON: Is it serial search or coordinate type?

L. A. ROUDENBUSH: Coordinated in keys of twenty thousand technical reports in the reservoir. It is growing at the rate of about eight thousand a year or better. All in the gas turbine engine, space and nuclear fields.

C. G. STEVENSON: Did you develop your own thesaurus in connection with it?

L. A. ROUDEBUSH: Yes, the thesaurus of our vocabulary now speaks about eight thousand words, I guess.

C. G. STEVENSON: Coordinate descriptors come up with what you want?

L. A. ROUDEBUSH: Correct.

C. G. STEVENSON: You have the ability to talk about A + B, A + B - C + D?

L. A. ROUDEBUSH: Yes, certain logic is built into it that can be defined and will describe to what extent you can get an either/or situation, as far as combinations are concerned.

C. G. STEVENSON: I think many of us find it interesting.

L. A. ROUDEBUSH: I will be happy to send descriptions. I flew down here and couldn't bring any. At your request I would be happy to send you copies, or if you are in Indianapolis stop in and we will put on a demonstration.

L. W. WALKER: Can you give us your address?

L. A. ROUDEBUSH: My name is L. A. Roudebush, Allison Division - General Motors Corporation, Engineering Research Laboratory, Indianapolis, Indiana.

C. G. STEVENSON: I presume you have full bibliographic information--a record, a unit record on the tape?

L. A. ROUDEBUSH: Yes, we do have.

C. G. STEVENSON: You could have a printed catalog by corporate author.

L. A. ROUDEBUSH: Including abstracts. We can search as high as ten different ways on system.

C. G. STEVENSON: I think a person that begins that way at the beginning has a tremendous advantage. If you have one hundred thousand reports on your hands to try to start to do that is a tremendous undertaking.

L. A. ROUDEBUSH: There are fringe benefits that go into this program. One of the general inventory controls used to require three weeks time to do, and now it is done in forty minutes. Accountability records can be established this way, it remembers what levels receive this information, and other nice features. We enjoy it.

C. G. STEVENSON: Once you get the unit record on there, you can manipulate it to get many, many benefits.

L. A. ROUDEBUSH: Correct.

C. K. BAUER: We have seen the GE system, and the last inspection we had was on the IBM-704. I am not real certain what machine is carrying it now. We are doing ours on the 7090. They are using the 7090 up to the point of economical extent. They don't use it as the print out. The 1401 is used as the printing record.

C. J. WENSRICH: I have a question on this 2800 subscriptions for journals. I'm wondering about bringing anniversary dates or renewal dates into line?

C. G. STEVENSON: That is a good question. I can tell of the experience had by a very young and earnest librarian working for me. She spent a great deal of time and money doing this. In my opinion it was a total bust. The problem you have is, if you have these anniversary dates worked out to the point they are all expiring at the end of the year, all of your work load is at the end of the year, and the rest of the time you have nothing to do. If the random requests come in, and they are handled as they come in as random distribution subscriptions; they are expiring all through the year, and the work load is pretty even, and those of you that have had any experience with subscriptions know that to get an address changed or an expiration date changed requires lots of correspondence and a great deal of clerical work. The total effort is simply not worth doing. It is better organization and you certainly have better distribution of the work load to have the subscriptions expire randomly.

EVELYN B. HENRY: I want to ask Mrs. Dean if in the accountability for reports you ask for a due date, if you have felt this was possible or feasible? In our operation we can't operate with a due date for documents.

C. O. DEAN: We have several leeways in this. Unless someone else requests them--I am talking about unclassified, and classified, too. We never ask anyone to send them in. We don't want them in the library. We only send them a listing from the machine occasionally of what they have, telling them they are accountable for these documents, and hope to goodness they keep them until we or someone else wants them.

E. B. HENRY: I am glad to hear you say that. I gathered from your talk you did have a due date and you followed through with this.

C. O. DEAN: It is merely a notification to the person. They forget what they have, or lend it to someone else, and it tends to get lost, unless they know occasionally. They hand it to the secretary to find them, you know, but they do find them.

C. G. STEVENSON: I am in agreement with Mrs. Dean. In addition to the classified, we get out once a year a complete listing of what a man has, classified and unclassified. If we don't do this, when the time comes to terminate, he can't find the document and it is one we need. He can't have the argument that we never reminded him, that he had it four or five years ago, charged it out and nobody told him about it. You remind them annually what each has charged and what each is responsible for. And I think it is very necessary to do this, both in the library and the documents.

E. B. HENRY: I misunderstood. I thought you had a due date like the public libraries, at the end of two weeks, notify them.

C. O. DEAN: I know. Chris cut me down. I skipped quite a bit of detail. We have, of course, three or four circulation systems, and the ones for the books we do have a due date, but it is merely a notification date. All he does is scribble on there if he wants to renew it.

C. MECHANIZATION IN DTI EXTENSION

MECHANIZATION IN DIVISION OF TECHNICAL INFORMATION EXTENSION

William M. Vaden

Division of Technical Information Extension
U. S. Atomic Energy Commission

My assignment today is to report on certain activities in the various Branches of DTI Extension wherein mechanization in some form or another helps us in getting the job done quicker or better or shows promise of getting the job done quicker or better.

Let me say at the outset that we do not have as yet a computer here for information retrieval. It is not that we are anti-computer, but rather it is the fact that problems in documentation have not yet manifested themselves to us to the extent that other agencies may have experienced them, and we are therefore still relying on other forms of mechanization.

For example, we do not as yet have a problem in accomplishing the number of literature searches requested of us each year--which seems to be a major selling point for a computer system of information retrieval. One reason for this is that we provide, on a world-wide basis, printed indexes which permits searching by individuals. Thus far we can prepare our indexes faster and cheaper using our mechanized camera and punched cards than if we were to use a computer to do the same job. We also have a better index from the standpoint of typography and compactness.

We are nevertheless watching with great interest what other agencies are doing in the area of information retrieval, but because this is such a stormy area, what with conflicts in defining just what is information retrieval, how the information should be indexed, whose system is best, what equipment is obsolete or obsolescent, hopes and failures, and contrapuntal arguments, we have tended to become a little bit conservative. At least until the storm clouds subside, we prefer to provide a service which is apparently meeting a need. At least we have received too few complaints to justify a radical departure just yet from what we are now doing.

MECHANIZATION OF ABSTRACT JOURNALS

With that introduction, I shall begin with mechanization in the Cataloging Branch. I shall say very little about the indexing pattern for Nuclear Science Abstracts. You are familiar enough with this index to know that indexes for NSA, as well as for Abstracts of Classified Reports, and Research and Development Abstracts are mechanized. Very briefly the procedure is as follows: The indexer indicates on a prescribed form the main-heading entry or entries for a particular document along with the necessary modifiers. The main headings have assigned numerical codes which are key punched into the IMB card on which headings have been composed. The modifier card to a main heading has the same numerical code punched into it plus a sufficient number of characters to alphabetize the entry under the main heading. The IBM equipment arranges these cards in numerical and alphabetical order, thus preparing them for photography. They are then photographed at a rate of 230 cards per minute in columnar arrangement for making up into pages. Upon completion of an index, the cards are set aside for the cumulative indexes, and then are merged by IBM equipment for the next run.

This is an oversimplification of the process, of course, but it is essentially what is required for the production of all indexes with the exception that personal author and report number indexes do not have assigned numerical codes. For those interested in a more detailed description of this procedure, I have provided reprints of an article by Day and Lebow from Review of Documentation.

EXPERIMENT WITH RDA

Research and Development Abstracts has thus far been indexed according to the NSA system. It has been decided, however, to make this publication, because of its infrequent appearance and small size, a guinea pig for experimentation. Our first experiment, which is Issue No. 3 not yet printed, might be described more of a mechanical trick than an intellectually planned experiment, but it may nevertheless be of interest to you.

Primarily, it was conceived with the following ideas in mind:

(1) To acquaint our personnel with computer operations, computer limitations, and computer capabilities.

(2) To plan a simple experiment involving the maximum number of DTIE personnel for the sake of obtaining experience.

(3) To determine the feasibility of a computer to index such compilations as bibliographies from single-step composition using suitable codings for the various indexes.

(4) Because we are renting programming and computer time from the Carbide Central Data Processing Center, we wished to reduce costs by preparing the computer input tapes ourselves.

At the first meeting of our committee on indexing, the following assumption was made: A KWIC index could possibly provide 50 per cent or less subject retrieval from the key words listed in the title. Could it be assumed that the title along with the abstract would provide enough indexing terms to increase this to perhaps 60 per cent or even greater? The majority present believed this might be possible. The current procedure for the preparation of RDA is to compose the abstracts on IBM typewriters. The abstracts are mounted as finished composed copy into page format, arranged by categories. Index entries are jotted down in specified areas on the indexer's form for later composition into single cards for index preparation exactly as NSA has been described. Abstract preparation and index composition are entirely separate operations and are prepared on different kinds of equipment.

This procedure has been altered for the first experiment as follows: Abstracts have been composed on Justowriters to provide tape input into a computer. Copy for printing is therefore generated exactly as had been done by IBM typewriters. For the subject index, the abstracter underlined words in the title or abstract which sufficiently described the document. If there were not enough terms, he added what he considered were the requisite number. No thesauri or standard subject headings were considered for this experiment. In addition an author, a report number, journal, and corporate author indexes were specified.

At the second meeting, the computer programmers at Carbide were called in and the purpose of the experiment was explained. They agreed it could be done and set to work with the Chief of our Composition Section to devise a system of codes which would identify all of the terms for the various indexes. It is, of course, understood that the abstract is written in a definite style which requires that the abstract number appear first, followed by the report number, the title, authors, source, date, contract number, and finally the abstract. As these various entities were being composed on the Justowriter, a nonprint code was incorporated in the tape to identify for the computer those items to be selected out for the various indexes. Initially, for the subject indexes this was an "up-down" code; i.e., the shift key on the machine to select a capital letter was struck and then released. Each time this occurred, a code appeared in the tape but it was not printed. Because of the likelihood of accidents, however, this plan was discarded in favor of a stop code. For the remaining items, a "no more" code was created by the use of a 2-unit space bar being struck followed by a 1-unit back space. This code was necessary in order to select out in their sequence the report number, title, author, etc. All underlined items in the title or abstract were coded accordingly. Twenty or so abstracts were prepared in this form and sent to Central Data Processing; upon learning that the tapes were readable in the computer and the codes were correctly interpreted, the 250 or so abstracts comprising Issue No. 3 were composed.

In the middle of the experiment, it was noted that short titles had been prepared by the evaluators, so as an afterthought, it was decided to permit the short titles to be arranged as modifiers after the main headings.

We have seen rough print-outs, and the indexes seem to be satisfactory; the remaining problem was formatting (i.e., indentions of subentries, length of line, etc.). That now having been settled, we are awaiting the final results.

It is felt that a very rough subject index will result. It probably will approximate an unedited book-type index. It will not have the "see" and "see also" references, but subject-heading terms will appear only once, and the abstract numbers will be cross referenced to the heading as many times as the heading was composed. To that extent, the index may be somewhat better than a KWIC, but less satisfactory than an edited book-type index. Along with its competence as a subject retrieval mechanism, its worth will have to be judged in terms of its expediency and economy. It quite probably would be useful only for such applications as indexing bibliographies or similar publications that do not require updating.

IBM OPERATIONS

I should clarify a point here by saying that, although responsibility for NSA, ACR, and RDA rests with the Cataloging Branch, the actual mechanization is carried on in the Publishing and Document Management Branches.

Having mentioned the Document Management Branch, it is appropriate to tell you of some of the other tasks accomplished here. The Control Section, in addition to the task of sorting, merging, and arranging IBM cards for the indexes, has the following important duties:

(1) The number of classified reports received, on hand, and distributed, plus the preparation of classified receipts are IBM controlled, and this accountability information is constantly updated.

(2) Sales records are kept and financial reports to the Finance Division are prepared on unclassified reports sold to OTS and on classified reports sold to the Civilian Application Program.

(3) Certain indexes are prepared by IBM for special bibliographies and special publications. Material is key punched and arranged and prepared by IBM in a format suitable for offset reproduction.

(4) Addresses are maintained by IBM, and labels are produced for large shipments of such publications as NSA and Technical Progress Reviews.

(5) Locator control records are kept by this group. A daily record of the location of all reports mastered and circulating in the building is prepared for location purposes.

(6) Data are collected on a myriad of subjects for producing administrative reports and statistics.

KWIC INDEXING EXPERIMENT

In the Reference Branch, we have two projects going on that may be of interest to some of you. We recently completed one part of a two-part bibliography of radiobiology. The literature covered in these two bibliographies ranges from the year 1895 to 1960, and each part will contain approximately 12,000 abstracts apiece. To subject index such a monumental work by conventional means was too vast an undertaking for us even to consider, and yet an index of some type or another was a necessity. We therefore decided on the Key Work in Context, or KWIC indexes, for these bibliographies.

We started with a series of small tests with the cooperation of the Carbide Central Data Processing Center. One of the aims was to test the effectiveness of the KWIC index. To do this we selected three short bibliographies which had already been indexed by conventional means, and the plan was to run these titles through a KWIC program and compare the results. Carbide, in the meanwhile, had obtained a KWIC program from the Bell Laboratories suitable for their IBM 7090 computer. Our indexing committee began to do its homework on such terms as "non-essential word list", "wrap-around titles," etc., and to look carefully at some of the currently successful KWIC indexes such as Chemical Titles and Biological Abstracts.

It became very quickly apparent that many titles for report literature are grossly inadequate for the selection of key words. Many reports, as you are aware, are identified merely as progress reports for the year such and such. Others may be identified as one in a series of reports on a common research task, and the title appears in a conglomerate mess in the descriptive cataloging, e.g., main title followed by authors followed by subtitle. At this point we had a session on title editing and attempted to formulate some ground rules. In addition to the preparation of meaningful titles containing suitable key words, we had one very important additional aim: We wanted to group terms insofar as possible, inasmuch as "see" and "see also" references could not be obtained. For example, all of the isotopes were edited for grouping in one form. Carbon-14 was always key punched as C-14.

FUTURE PLANS FOR MECHANIZATION

Richard M. Berg

Deputy Director, Division of Technical Information
U. S. Atomic Energy Commission

I am glad to have the opportunity to meet with what is, to my knowledge, the largest group of atomic energy-oriented information people ever assembled. Collectively, you form the final link in the AEC's technical information network. You are the retailers who serve the ultimate consumers -- scientists, engineers, management people, students, and the general public. We here in the AEC's Division of Technical Information serve primarily as wholesalers. Our job is to provide you the wherewithal to serve your customers. I would like to emphasize this wholesaler-retailer relationship because it has an important bearing on mechanization; for that matter, almost everything we do. Before changing a product or procedure we here in DTI must take into account the impact on the operations of our customers. This is not to say that everything we do makes our customers happy. On occasion we have made them unhappy and undoubtedly will do so in the future. But we would rather make them unhappy through premeditation rather than through ignorance.

Microcards provide a case in point. We decided a number of years ago to distribute the bulk of AEC technical reports in Microcard form. Now nobody is deliriously happy about Microcards. They do meet two requirements: however, they provide unitized production, storage and retrieval, and they are cheap to produce and distribute. But what about eye-legible hard copy from them? A year or so ago, the Microcard Corporation brought out a printer but it is not a wholly satisfactory solution to the problem. Meanwhile you - our clients - created a substantial workload for us by requesting hard copy. Until a few months ago we filled these requests with Xerox reproductions. We are now providing eye-legible copy from the original Microcard negatives using the step and repeat enlarger Bill Vaden described earlier. Where do we go from here?

We would like to shift a substantial part of the hard copy reproduction to you. Accordingly, we sent your organizations a

questionnaire requesting views about Microcards and alternatives -- roll microfilm and microfiche. Only a third of the responses are in but it is not too early to draw some conclusions:

1. Most organizations prefer to stick with Microcards in spite of their drawbacks. (I suspect that they are not eager to do reproduction work now done gratis by DTIE.)

2. About one out of five organizations want microfiche so that they can reproduce eye-legible copy locally.

3. There is no enthusiasm for roll microfilm.

So much for microforms and eye-legible copy. What about the burning issue today -- application of Electronic Data Processing to Information Storage and Retrieval.

Bill Vaden has described some of the experimental work we now have under way. He has also told you DTI does not own a computer. Some day we shall undoubtedly acquire one but as of now we feel that our needs can be better met by using computer facilities of the AEC contractor family.

For the foreseeable future I see five areas where we will be active in EDP work.

1. Index manipulation (KWIC indexes for bibliographies, etc.)

2. R & D Project information processing.

3. Research and Development abstracts preparation.

4. Selective Dissemination of Information experimentation.

5. Numerical data storage and retrieval.

I shall not dwell on KWIC indexes and things of this sort since I assume that all of you are just as or more familiar with them than I am. You may be less well acquainted with some of the other areas I mentioned.

CURRENT RESEARCH

Research and development results are under reasonably good control. I believe, at least, this is the case with respect to AEC-sponsored R & D. But what about information on a project before results are reported? A project may be under way for one or more years before the first results are published. Almost every agency, including the AEC has made some effort to publish current research project summaries. And, of course, there is the Science Information Exchange operated by the Smithsonian for a number of sponsoring agencies. By and large, however, no systematic attack has been made on the problem. Pressures from the Congress, ever fearful of duplication of research

effort, and the Executive Office of the President are forcing the issue. Dwight Gray has pointed out that a central clearing house for R & D project information is given. But each R & D agency has to get its house in order, i.e., collect and organize and index a huge amount of project information. This job, at least in part, appears suitable for computer processing. In the case of the AEC this will involve a running inventory of at least 5,000 projects.

RDA

You are familiar with our new abstract journal RDA. It serves two purposes: First it serves as an announcement medium for AEC reports outside the scope of NSA. Second it serves as a vehicle for experimentation. And the latter without constant tampering with NSA. Besides experimenting with indexing, we might try feeding the complete cataloging information and abstracts into the computer and turning out literature searches and bibliographies.

SDI

Selective Dissemination of Information -- SDI -- is a new term that is cropping up in the lore. Certainly the idea of sending a consumer just the information he needs is not a new one. This is just what librarians try to do. What is new is a machine system approach. IBM has done some pioneering work and is now trying to market the product. In crude terms, here is how it works. An interest profile is built up for each participating person. The profiles are processed and stored for computer retrieval. Incoming information -- reports, journal articles, etc. -- are abstracted and indexed and put in computer processing form. The computer compares the incoming information against the user profile. The results go to the user in the form of an IBM card containing title information, abstract, and response blocks. If the user is interested, he orders the item. His response (positive or negative) can be fed back to the system to alter his profile.

Our interest in SDI is more on behalf of our retailers than of ourselves. We believe the system is far better suited to a retail situation than ours. Accordingly, we are considering a cooperative project with one of the AEC's major research contractors to try out and evaluate the system.

From their appearance on the scene, computers have invited comparison with the human mind. I have no intention of falling in this pit. Rather, I would like to state a conclusion. Except for mathematicians (and their near kin) men are poor at arithmetic and wonderful with words -- many of them; computers, on the other hand, are great at arithmetic but something less than proficient with words. I feel that at least some of our effort should be directed to getting computers to do jobs they are best equipped to do. Numerical information has high fact density per unit of input - words have low fact density per unit of input. Data now buried in reports come to mind as possible candidates.

One final note. We in DTI believe that far too little research is being done on scientific communication. As a result information people have been subjected to a deluge of panaceas. In no area has this been more true than machine storage and retrieval. We believe that intensive study by people with no axes to grind will pay a good dividend. We have therefore proposed to establish jointly with NSF a Center for Scientific Communication Research. We propose that the Center be located at one of the AEC's university-operated research establishments. Advantages would be:

1. an academic atmosphere
2. a diversity of talent in many disciplines
3. interplay with a going technical information activity
4. access to computer and equipment development facilities

The Center will concern itself not only with EDP but also with user behavior, documentation techniques, and specialized equipment development.

Hopefully, the Center would give us some answers and some usable tools. You are all familiar with the old bromide:

"Don't send a boy to do a man's job."

There is another which deals with the reverse situation:

"He who uses a butcher knife to peel a pear has only himself to blame."

DISCUSSION: SESSION II-C

MECHANIZATION IN DTI EXTENSION

Paul E. Postell, Discussion Leader

CHRIS G. STEVENSON: One of the criticisms leveled at the standard distribution lists, is that many sites get a lot of material they don't need if they are on the distribution list for certain categories. It might be desirable to have a site profile in which case you could categorize the reports and run them against the profiles and come up with distribution list that might be considerably more economical and meet the necessities of a site much more than the standard distribution list is currently doing.

RICHARD M. BERG: There is merit in what you say. Namely, each site would build up its own profile composed of individual profiles and these in turn, fed to us, giving us a gross profile for the site. If a site would like to do this job and tell us, I think we would find a way to cut them off the list of materials they have no need for.

CROWELL O. DEAN: I think that you will find that in your KWIC indexing and the KWIC indexing done by the sites, that many of us are doing it now. You are going to find a higher retrieval tool in the titles. I mean it is going to be a self-improving system, that these people like to talk about.

PAUL E. POSTELL: Are you saying that as more people get into the KWIC indexing business, the titles will improve?

C. O. DEAN: This is an obvious thing - a feeder to your system and our requirements, too.

Progress reports present problems in title preparation at least some indicative information should be included in the titles. We are finding title improvements at Sandia.

P. E. POSTELL: Somebody posed a question to me outside. He was interested in knowing something about the adequacy of short titles used in NSA indexes. Do they serve the purpose required by you? Do you like the short titles we use for the corporate author indexes and personal author indexes? The person that asked me this question and told me to bring it up, has the job of composing titles, and he is interested in knowing the reaction.

MARTHA ANDERSON: We find the short title entries for the corporate and personal author indexes very useful. They are certainly much more helpful than the former method of having a number

reference only.

ADELA EMANUELE: Any reason why you do not put the date of the progress report listed under the corporate author index entry?

P. E. POSTELL: Primarily to save space.

JOHN W. NORRIS: It was done mainly to save space. We even resort to abbreviating the words "progress report".

SESSION III

DINNER SPEECH

SUBJECT ANALYSIS AND INFORMATION RETRIEVAL

SUBJECT INDEXING FOR NUCLEAR SCIENCE ABSTRACTS

Donald D. Davis

Division of Technical Information Extension
U. S. Atomic Energy Commission

There are a number of basic principles underlying the subject indexing practices and policies of Nuclear Science Abstracts. These principles, for practical reasons, do not always govern, but they do influence the end product - the printed indexes. Some of these principles are obvious and are only stated to make the list more nearly complete. Others are not only not obvious to all but are contrary to the beliefs of some. Some of these principles are unique to a continuing and cumulating index such as for NSA but others are applicable as well to a "closed" index such as for a book.

Subject indexing should identify and call attention to all of the information and ideas in a document which are emphasized or reported as new by the author. That is, the indexing should reflect what it is that has been achieved by the research reported, (even negative results) and how it was achieved (if the technique or materials are new). Martha Thorne Wheeler[1] in the New York State Library Bulletin "Indexing; Principles, Rules and Examples" speaking of the indexing of books says, "... books frequently contain illustrative or explanatory matter or digressions of various kinds which, though useful in their connection, a reader would not expect to find analyzed in the index; hence their inclusion under distinct headings is a waste of space." The situation is not the same in a continually growing index, such as for NSA. It cannot be reliably predicted that a given subject will continue to be of only incidental interest. We, therefore, feel that if the article is on nuclear science all of the information it contains should be indexed, even though some of the information is apparently of only incidental interest. Fortunately scientific papers are less likely than books to contain such incidental information.

Indexing should not call attention to routine applications of standard procedures, and it should not reflect the why of the work unless the why is a subject of the report. Let me illustrate: Research on the fabrication of cadmium should not be indexed to Reactor Control Rods,

even though that is the ultimate goal of the study, unless there is information that relates the fabricating problems to the ultimate use as a control rod. In other words - cadmium itself is not a control rod and there should be no entry for control rods unless the document includes information on that subject.

There are those who disagree, they think that information should be indexed to its potential application. It might be very nice, from a user's point of view, to be able to go to the heading Reactor Control Rods and find indexed there every paper on every material ever found to have a high neutron-absorption cross section; whether the paper dealt with the nuclear properties, the chemical properties, or the physical properties of the material, or with the use of the material as a control rod. Our strongest argument against this (but not the only one) is that no indexer is smart enough. We have a hard enough time finding indexers without requiring omniscience. Once a material has been identified as potentially suitable for use in a control rod, an indexer just might remember to index all future papers on the material to Reactor Control Rods, but the searcher could never be sure, and in any case would have to go to the material heading in order to find all information indexed before it was recognized as being suitable for control rods.

Index headings should be as specific as the information to be indexed. David Judson Haykin[2] in his book "Subject Headings - a Practical Guide" explained this point very nicely. If you haven't read it you should, but his argument boils down to something like this: If you want to index to a heading that is more general than the topic to be indexed what heading do you use? There is almost always a choice of several equally logical ones, so see references for the indexer and the user have to be set up from the specific heading that might have been used to the general heading that was used. In addition, the user who only wants information on a specific subject must search for it in a collection which includes information on the general subject as well as on all other specific subjects included under the same general heading, and the user who wants only information on the class must search among all of the items on the subclasses.

Although several headings may be used to indicate the several aspects of the topic being indexed, general headings which include any of the specific headings should not be used as additional entries for the same topic. If the paper is about rats it should be indexed to Rats, but not to Rodents. If it is indexed to Rodents it would be just as logical for it to be indexed to Mammals, and Animals. Where do you stop?

Cross references, instead of multiple indexing, should always be used in a cumulating index to show any of the various kinds of relationships among subjects (relationships such as between general and specific subjects and between two or more specific subjects that belong to the same general class). The index doesn't grow as fast, the user needn't search through both general and specific information unless he wants both, and the indexer

needn't have to remember to always add all of the inclusive general headings for every specific. Another argument in favor of cross references is that the relationship between subjects cannot always be known at the time of the indexing, and in a cumulating index such as NSA's or in a card catalog a cross reference is "retroactive". It is not necessary to go back and reindex whenever new relationships are discovered.

Perhaps the most important principle, and the most difficult to apply, is that an index and the indexing should be reliable. It should be accurate, and it should be consistent. I am reminded of the psychologist who, when advising parents on how to get along with their teenagers, said, "It's all right to be wrong, just don't be confused. The teenager must know what to expect." I hope our indexes are seldom wrong, and I know that index users are seldom teenagers, but the user must know what to expect. An index founded on poor principles consistently followed can be a more useful tool than one founded on the best principles inconsistently applied.

As you can well imagine our philosophy on subject indexing has grown and evolved over the years, and our practice has not always lived up to our principles. On two occasions very drastic changes were made in our indexing patterns.

Originally, there were two, completely independent, cataloging operations -- the preparation of catalog cards, and the preparation of indexes for Nuclear Science Abstracts. At that time there was no authority for the subject headings used in NSA except previously printed indexes. Headings such as Ammonia -- Spectra and Spectra -- Ammonia and Crystal structure -- ice and Ice -- crystal structure were used but the references were seldom the same under both of a pair of entries.

In 1951 (Volume 5 of NSA) the two cataloging operations were combined. The same people indexed both catalog cards and NSA. During that one year the indexing for both was identical. The requirements of the card catalog were more strict than those of the NSA indexes, therefore, the pattern of indexing was that required for the cards. The practice in the Project's catalogs was to have guide cards for every main heading - subheading combination. Since we wanted to avoid having just one card filed behind each guide it was convenient to have a list of authorized subheadings as well as authorized main headings and to keep the subheadings from being too specific. Since each catalog card had printed on it a complete abstract the lack of specificity in the subheading was not important. However, the "nonspecific" subheadings were inadequate in the NSA indexes, so with Volume 6, (1952) we started using the type modifiers we now use. The main headings continued to be the same for catalog cards and NSA. Volume 5 was eventually reindexed so that it could be cumulated with volumes 6 through 10.

The needs of the card catalogs did not, however, limit the specificity of main headings. In fact, the limitations on the subheadings induced us to make the main headings more specific than we might otherwise have.

The need to index for catalog cards no longer controls the NSA heading patterns, (except from habit), and over the past several years some changes have been made. More will no doubt be made in the future. However, the changes in the future are not likely to be as drastic as those made at the end of Volumes 4 and 5. I will mention some of the changes which have been made. At one time we had headings of the type, Copper-Gold Intermetallic Compounds. They were abandoned in favor of Copper-Gold Alloys. I have been assured that there is a very real difference between alloys and intermetallic compounds, but metallurgists don't always agree on this, and the indexers found that they could not reliably make the distinction. Headings of the type Iron (Liquid) were found to be impracticable. Should a study of the density of iron over the range 1000-2000°C (it melts at 1535) be indexed to Iron Iron (Liquid), or to both? Should a study of the corrosive effects of sodium, with no temperature given, be indexed to Sodium or to Sodium (Liquid)? Some entries that should have been going under the (Liquid) form of the heading weren't, and others that should not have, were. We are now in the process of eliminating all of the (Liquid) headings. The principle behind the elimination of these two types of headings is that whenever neither one of a pair of headings can be usefully searched without the other, then the two headings should be combined.

We used to have headings for labeled compounds, in the form Name of compound (Labeled). Experience showed that almost the only legitimate use for such headings was to index an item on the preparation of the labeled compound, so these headings were discontinued. The aspect of labeling is now carried in the modifier. Headings of the type, Copper Single Crystals have been abandoned in favor of headings such as Copper Crystals, and the aspect of single crystals is carried in the modifier.

Not all of the changes which we might make concern specificity. One of the problems of preparing a cumulating index is that a decision of some sort must be made about subject headings when the first paper in a new field is indexed. After a number of papers have been indexed it can be seen that the field has grown in an unanticipated manner and headings need to be changed.

Some arbitrary decisions had to be made long ago that still control our indexing patterns. For example:

When we were faced with heading patterns represented by Ammonia vs Spectra and Crystal Structure vs Ice which I mentioned earlier, we decided that we couldn't afford both patterns, and we weren't sure we

wanted both if we could afford them. We decided that more searchers would be interested in all of the information about a specific material than in all information about a specific property of all materials. We now index to materials, such as ammonia, as main headings and specify the property, such as spectra, in the modifier. Therefore, our main headings are usually materials or devices, (concretes). (In view of Mrs. Atherton's comments we will have to study this again.)

Some relatively few main headings are processes or properties. These are reserved for general papers that study the process, or property, itself without regard to the materials to which it is applied and for survey or review type papers that cover the application of the process to, or the property of, many specific materials. A few main headings which have proved to be useful search points are not subjects at all. These headings are of the type: Bibliographies and Conferences. It is intended that they be used for every item for which they are appropriate, but because they are descriptive of the document and are not subjects the indexers sometimes have trouble remembering to use them.

The modifiers in NSA are phrases which usually say something about the main heading. They describe the property of the main heading or a process applied to the main heading. Occasionally the modifiers also include a subdivision of the main heading. For example: Breeder Reactor -- design of pellet-bed. "Pellet-bed" is part of the identification of the reactor, and might just as well have gone in the main heading.

The nature of our modifiers is such that it has not been practical to have an authority listing of approved modifiers. The purpose of the modifiers is to provide enough information for the searcher to distinguish the article or articles in which he is interested from all others, therefore, theoretically, no two modifiers should ever be identical. However, instead of an authority list of approved modifiers we have issued rules to control modifier style and as much as possible to keep modifiers on related aspects of a subject together. These rules are in TID-4576, (Guide to Abstracting and Indexing for Nuclear Science Abstracts). A number of these rules are arbitrary and serve only to bring related material together and any one of several possible forms would have been equally acceptable. We use such file words as whole-body instead of total-body, monitoring instead of radiological monitoring, and separation instead of recovery. We use analysis and determination as file words and include the method of analysis or determination, such as spectrographic, at the end of the modifier on the assumption that it is more important to keep all analyses and all determinations together than to keep all spectrographic methods together.

A feature of our indexes which is almost as important as the main headings and subheadings is the cross references. There are several types of references used in our subject indexes and an understanding of them will make NSA easier to use and make searches more effective.

First, there are see references from headings not used as index points to synonyms which are used. Then there are see also references from class headings to the specific members of the class. These references are frequently in several steps. For example: Under the broad class heading Reactors there are see also references to headings which are more specific, but still class headings, such as Power Reactors but not to specific power reactors. The see also references to the specific power reactors are under the heading Power Reactors. See also references are also entered to lead from one heading to other headings where related information may be found but which are not obviously subdivisions of the same over-all class as the first heading. These are usually cross referred in both directions.

Example: Radioisotopes, see also Fission Products and
Fission Products see also Radioisotopes

See also references are usually not entered from headings for specific subclasses to the more general class heading unless the relationship is not obvious. No reference is made from Power Reactor to Reactors.

Cross references are not printed in the individual issues because of the time required to insert them. However, they are printed in the cumulated indexes and these can be used as guides to the individual issues.

I hope that I have given you a better understanding of the subject indexes of NSA and that as a result the indexes will be more useful to you.

References.

1. Wheeler, Martha Thorne, Indexing; Principles, Rules and Examples, p. 11, Bulletin Number 1445. University of the State of New York Fifth Ed. 1957

2. Haykin, David Judson, Subject Headings; A Practical Guide, p. 9-10, The Library of Congress (1951).

INDEXING REQUIREMENTS OF PHYSICISTS

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ABSTRACT

Some of the basic characteristics of an efficient reference retrieval system for physics literature have been determined from a study of the requirements physicists would impose upon such a system.

INTRODUCTION

It is not often that I have the opportunity to get up before a group of one hundred of my colleagues and confess that I am not to be held personally responsible for what I am about to say about the indexing requirements of physicists. 1000 research physicists are to be held responsible. Although I am not personally responsible for this report, I believe that what I am going to say comes closer to being the truth than what I or you could determine on our own. The indexing requirements of physicists which I will relate to you are based on the findings of a research project conceived of by an AEC nuclear physicist who designed the project in such a way that the cooperation of the entire physics community could be solicited. I think you will agree that this gives more weight to my remarks than they would have if they were based on the opinion of one librarian or one physicist.

My work over the past year has been to direct the behind-the-scenes efforts of the project. To my knowledge fewer than twenty physicists know that a librarian was associated with this project. This has been an absolutely essential element in this project, for among other things, we have been trying to gather data to test two common assumptions about the information problem: one, that assumption held by librarians and information specialists -- namely, the scientist, the user of information -- doesn't really know what he wants; and two, the assumption held by the scientists -- namely, that the librarian does not understand what the scientist's information requirements are and wouldn't be able to do much about them if he could understand them. The objective of this project is to help break down the barrier between these two groups and provide data for the librarians and designers of information services (such as the DTI group here) who are trying to improve existing systems. Before I report our findings, I would like to describe why and how we did what we did.

In a paper delivered before the Division of Chemical Literature, at the ACS National meeting in Chicago last September, Mr. Albert Rubinstein said: "In order to design an optimal or even a good information service, one must have some idea of what constitutes optimality or goodness. In other words, measurement of value of an information service must rest on what it is supposed to and actually does accomplish for the users."

To find out what a "reference retrieval system" for physicists is SUPPOSED TO accomplish, we, first of all, did NOT use a typical use study which can only relate how good/or bad things are.....not how good they could or should be. Nor did we make estimates from an extrapolation of the historical demands of existing services -- in fact, we took pains to remove the physicists from their present environment but still maintain an air of realism about their requests and requirements.

In order to indicate the limitations of our work, let me define a term we used to describe the project: the reference retrieval system for research physicists. We consider reference retrieval to be the first part of three parts of the information problem. The other parts, document retrieval and "information" or data retrieval were not part of our study. We did not try to survey the entire scientific community or even the entire physics community. We concentrated our efforts on the requirements of research physicists -- a fairly well defined section of the physics community. We are hopeful that a system which can meet their requirements will also be able to meet the requirements of other sections of the physics community.

DESCRIPTION OF STUDY

The research phase of the project, begun in the fall of 1961, included the development of a technique to determine the requirements physicists would impose upon an efficient reference retrieval system.[1,2] The technique used was a questionnaire which invited the physicist to:

(1) "describe your own work in physics, assuming for the purposes here that you are describing your specific field to another physicist."

(2) "make requests for lists of references to physics research in journal an report literature according to certain 'rules of the game.'" (The physicist was told to "assume that there exists an ideal system (human or mechanical) that you could trust to provide you with a list of references." The characteristics of this ideal system were described in general terms.

(3) The physicist was instructed to make precise requests for either current or past literature. He was also given an example of one physicist's completion of the form. Guidance in phrasing the search requests was limited to the following instructions:

"You may phrase your request(s) in whatever form you wish, but assume that the system would need a precise request.

"There are certain common concepts which are included in all research papers. For example, the research was either experimental, theoretical, or both. Furthermore, each paper will refer to some property (or properties) of some object(s) determined by some method(s). The individual papers will emphasize one or more of these concepts over the others. It is obvious that the permutations of these concepts

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[1] A Project for the Development of a Reference Retrieval System for Physicists (April, 1962)

[2] A Preliminary Report on Phase I of the Reference Retrieval System Development Project (April, 1962)

will each indicate a different emphasis and interest. A precise request for a literature search will include each of these concepts (1. experimental, theoretical or both; 2. property; 3. object; 4. method) and the particular emphasis of interest."

The questionnaire was first distributed to two test groups in the fall of 1961: 101 contributors to the latest edition of the AIP Handbook of Physics and 114 research nuclear physicists. Data from 106 physicists were analyzed. In February, 1962, the same questionnaire was sent to approximately 15% of all the research physicists listed in the 1960 National Physics Register.

The executed questionnaires, received from approximately 1000 physicists, are being analyzed in order to determine:

(1) The number and frequency of search requests for current and past literature.

(2) the type of research work requested (experimental, theoretical, or both).

(3) the aspects of research requested and the emphasis of the search request.

SUMMARY OF FINDINGS*

From the data collected, and analyzed, the following performance characteristics of a reference retrieval system have been identified as necessary to meet the requirements of research physicists:

(1) A reference retrieval system (e.g., table of contents, index, bibliography, etc.) that specified type of research reported, (experimental, theoretical, or both) would be a most useful system for physicists.

(2) A reference retrieval system that provided access points for all three aspects of research: "property", "object (or system)" and "method" reported in the research literature would be much more useful than a system which only provided access points for one of these aspects of research.

(3) A reference retrieval system that identified in the "reference" all aspects of research reported and the emphasis of the research would be most useful.

(4) A reference retrieval system that could retrieve references to the current literature of physics at 3-4 month intervals would satisfy approximately 75% of the requests made by the physicists in the study. (Time lag between publication of original report and the output from the reference retrieval system was not included in this time interval.)

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* See also the attached tabulation of results.

(5) A reference retrieval system that could retrieve references to the past literature of physics as far back as 1940 would satisfy approximately 60% of the requests made by the physicists in the study.

PRESENT AND FUTURE USE OF DATA

Written reports of our work done to date include representative descriptions of working fields of nuclear physicists; analyses of these descriptions, representative search requests of nuclear physicists and analyses of these search requests.** A tabulation of the quantitative data is available (number and frequency of requests, etc.) for all fields of physics. These reports and the data collected are available to anyone interested in reference retrieval systems evaluation and in the literature-search requests of physicists.

The Documentation Research Project staff, editors of the journals published by the American Institute of Physics, editors of Nuclear Science Abstracts and Physics Abstracts, are using the data collected in this study to improve existing reference retrieval systems. Some checking of existing reference retrieval tools against the indicated requirements has been done. Plans are underway to use the data collected for testing experimental reference retrieval systems.

** See Footnote 2.
See also "Excerpts from reports", distributed at Oak Ridge meeting.

AMERICAN INSTITUTE OF PHYSICS - DOCUMENTATION RESEARCH PROJECT

RESULTS OF STUDY OF THE LITERATURE SEARCH REQUESTS OF PHYSICISTS -- DATA AVAILABLE FOR DETERMINATION OF PERFORMANCE REQUIREMENTS OF REFERENCE RETRIEVAL SYSTEMS

1. From the analysis of more than 6000 search requests from 1000 research physicists working in all fields of physics, it was found that physicists specify TYPE OF RESEARCH as well as ASPECTS OF RESEARCH and EMPHASIS OF RESEARCH.

   Therefore, the most useful reference retrieval system (e.g., table of contents, index, bibliography, etc.) would be one that (a) specified type of research (is work reported experimental, theoretical, or both?) and (b) indicated the aspects and emphasis of the research (what property of what object was determined or calculated by what method?)

2. It was found that the frequency of current literature searches and number of standing requests for current literature searches fall within reasonable limits. Of the search requests (for current literature), approximately 35% would have a search made every 3-4 months; 32% - search made every 6 months; 25% - search made every 1-2 months (or time unspecified); 8% - search made every 12 months.

3. It was also found that the degree of retrospection for past literature searches and the number of requests for past literature searches fall within reasonable limits. Of the search requests studied, the following specified degree of retrospection was noted: 40% - search back to 1950 or more recent years; 20% - search back to 1940's; 40% - search back before 1940 (or time unspecified).

EXAMPLE OF METHOD OF ANALYSIS OF SEARCH REQUESTS AND REFERENCE RETRIEVAL SYSTEMS

FIVE SEARCH REQUESTS MADE BY NUCLEAR PHYSICISTS:

A. Level structure in O^{16} and F^{18} (Theoretical and Experimental) (3 months)
B. Nuclear energy levels of F^{19} and C^{13} (Experimental and Theoretical) (since 1945) -- "have made search but not sure I found all references."
C. Experimental and theoretical work relating to nuclear spectroscopy of low mass nuclei
D. Low energy neutron spectroscopy of fissile nuclides (since 1955)
E. Double focusing magnetic spectrometers (since 1950 - have made search).

ANALYSIS OF THREE SEARCH REQUESTS:

		Type of Research			Aspect of Research
A.	Current - every 3 mo. -	E/T	:	Property:	Parameters of level structure
				*Object :	O^{16}, F^{18}
				Method :	any
B.	Past - 1954 to date -	E/T	:	*Property:	nuclear energy levels
				*Object :	F^{19}, C^{13}
				Method :	any
E.	Past - 1950 to date -	E	:	Property:	Detection of existence after double magnetic focusing
				Object :	any charged particle beam
				*Method :	any development of apparatus

EXAMPLE OF ONE RESEARCH REPORT'S LISTING IN EXISTING REFERENCE RETRIEVAL SYSTEMS

1. Table of Contents (by title of paper) : Nuclear Energy Levels of N^{17}, O^{18}, and O^{20}

2. Index Entries in Journal Subject Index:
   a) Nuclear Reactions Induced by Deuterons and Tritons (article listed under first word of title)
   b) Nuclear Spectra (article listed under first word of title)

3. Index Entries in Physics Abstracts (PA) Subject Index:
   a) Nuclear reactions/tritons
      O^{18} (t, alpha) N^{17}, levels in N^{17} (plus abstract number)
      O^{16} (t,p) O^{18}, levels in O^{18} (plus abstract number)
      O^{18} (t,p) O^{20}, levels in O^{20} (plus abstract number)
   b) Alpha-ray spectra
      O^{18}(t, alpha) N^{17} (followed by abstract number)

c) Proton spectra

O^{16} (t, p) O^{18} (followed by abstract number)

O^{18} (t, p) O^{20} (followed by abstract number)

d) Atomic mass

N^{17} (followed by abstract number)

O^{20} (followed by abstract number)

e) Nucleus/energy levels

N^{17}, to 4.3 Mev (followed by abstract number)

O^{18}, to 5.2 Mev (followed by abstract number)

O^{20}, to 4.6 Mev (followed by abstract number)

4. Nuclear Science Abstracts (NSA) Subject Index:

a) Nitrogen Isotopes N^{17}
energy levels up to 4.3 Mev (followed by abstract number)

b) Oxygen Isotopes O^{18}
energy levels up to 5.2 Mev (followed by abstract number)
triton reactions (t,a) and (t,p), energy levels to 4.3 and 4.6 Mev for (followed by abstract number)

c) Oxygen Isotopes O^{16}
triton reactions (t,p), energy levels to 5.2 Mev for (followed by abstract number)

d) Oxygen Isotopes O^{20}
energy levels up to 4.6 Mev (followed by abstract number)

	INDICATION OF TYPE OF RESEARCH (E, T, or E/T)	ACCESS TO PAPER BY ASPECT TO RESEARCH PROPERTY	OBJECT	METHOD[c]	INDICATION OF ALL ASPECTS AND EMPHASIS
1. Table of Contents	NO	7[a]	7[a]	NO	7[a]
2. Journal Subject Index	NO	YES	NO	NO	NO
3. PA Subject Index	NO	YES	YES[b]	NO	NO
4. NSA Subject Index	NO	NO	YES	NO	NO

[a]The normal use of a table of contents is examination to eliminate non-pertinent papers. For this reason, since the words in the title do specify "property" and "objects" of research, and thereby emphasize these aspects, it was decided to credit the contents page with access points and indication of emphasis of the aspects of research in the paper.

[b]The generic term "nucleus" is considered an "object" access point to this paper.

[c]The author's abstract for this paper included this statement: "study with 180° double-focusing magnetic spectrometer.

CONVERTIBILITY OF INDEXING VOCABULARIES

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ABSTRACT

A study to determine the feasibility of vocabulary convertibility is discussed. It included the compilation of a unilateral Table of Indexing Equivalents showing, for each of ASTIA's 7,145 descriptors, the identical, synonymous, or usefully equivalent counterpart among the subject headings of the AEC. Statistics showing the amount and degree of convertibility are given. Two supporting Datatrol studies are also described: (1) convertibility of the most frequently used AEC subject headings, and (2) a comparative analysis of the AEC and ASTIA indexing of a common body of reports. Results indicate that patterns of conversion exist such that the ultimate goal of a Dictionary of Indexing Equivalents can be attained.

THE PROBLEM

A good deal of concern has been expressed, within the past year or so, about relationships between the large technical indexing vocabularies of Federal agencies such as ASTIA, the AEC, NASA and others -- whether they are, or should be, "compatible", "convertible", or in some way related. Much of this concern has stemmed from the potential inherent in modern computers and related equipment. My intention, here today, is to shed some light on these problems.

DATATROL CONVERTIBILITY STUDY FOR NSF

The Datatrol Corporation has recently completed a study for the National Science Foundation which was designed to generate the basic data required to evaluate the difficulties inherent in applying one technical indexing vocabulary to information previously cataloged in another. Specifically, we took the descriptor vocabulary used by ASTIA and attempted to find the closest possible useful equivalents in terms of AEC subject headings.

Results of this phase of the work have been published. Copies of the report (1) are available from NSF. The publication includes a Table of Indexing Equivalents, showing the AEC complement to every ASTIA term, as well as statistics showing the amount and degree of convertibility.

The Table was only developed unilaterally; that is, it shows only the AEC equivalent for the ASTIA term, but not vice-versa. It has been possible, however, from this data and other information subsequently made available, to be reasonably assured that patterns of conversion exist such that the ultimate goal of a Dictionary of Indexing Equivalents can be attained. Such a Dictionary would be a compilation which not only shows bilateral equivalency between the two vocabularies, but includes other vocabularies as well.

Before we proceed further, certain definitions might be in order. First of all, convertibility and compatibility must be distinguished. By convertibility we mean the ability to go from one indexing vocabulary to another, defining the path in such a way that any incompatibiiity is circumvented. For example, in that the ASTIA descriptors and AEC subject headings cannot be interfiled with a resulting one-to-one match, and in that a composite of the two vocabularies would be excessive for either agency, the two vocabularies could be called "incompatible". Since, however, equivalents -- that is terms that one or the other would use as substitutes for the other's -- can be determined, the vocabularies are "convertible". For example, AEC does not have the term "preservation" which ASTIA uses in the group "Food". We called the AEC term "food" equivalent to ASTIA's "preservation" (indicating, by the way, that this was a term of higher generic level). In AEC's five-year cumulative index to Nuclear Science Abstracts we were able to see that, in fact, AEC had placed documents on food preservation under the subject heading "food".

Incidentally, in compiling our Table, we worked within ASTIA's Field and Group Structure, which facilitated the task considerably. In several cases, AEC carried a subject heading identical to the ASTIA group heading, although it carried few if any of the terms in that group. For example, some 56 of 86 terms in ASTIA's group "Mathematics" were handled in this way. The ASTIA descriptors "algebraic topology", "arithmetic progressions", "binomials", etc., would be too specific under AEC's present concept -- such terms would be more likely to occur in the identifier sentences listed under the subject heading "mathematics". In addition to making generically related terms more obvious , errors, particularly in homographs, were less likely to occur, and "best" synonyms or equivalents were more easily discovered by examining the terms of both vocabularies in the ASTIA Group and Field environment.

Indexing equivalents were found in the AEC subject headings for all but 777 or 10.9% of the ASTIA descriptors. Ten percent might sound high, but when these 777 terms are examined, it is clear that AEC would probably never have any use for documents on most of these subjects -- and would, therefore, never be faced with the conversion problem. As a matter of fact, we also found that ASTIA tended to have little use for these terms, having used many of them only once. In fact, the 777 ASTIA descriptors accounted for only 6.1% of the total ASTIA assignment of descriptors over the past eight years.

We have said that the indexing equivalent is the term that AEC would probably use in indexing the material. This is really the key to the whole conversion problem. Also, by the way, this helps answer the question "Why conversion?"

Conversion by means of a Table or Dictionary, which we can envision as an automatic or computer operation, will serve as a means of eliminating duplication in cataloging and indexing effort. When ASTIA, for example, has expended all the intellectual effort required to place a document in its system, it is unfortunate that AEC -- or any other agency -- should have to duplicate that effort.

It is almost self-evident that , if two agencies have a mutual interest in a particular document, there will be allowance in their indexing vocabularies for the terms which describe it. However, simply using the index and catalog information of one agency and inserting these terms in the system is not usually adequate. Since a great deal of thought and care has gone into the delineation of indexes, it would be unfortunate to add new terms indiscriminately. (This argument might be open to question for strictly free indexing such as Uniterm indexing as originally defined.)

We should mention also that mutual interest does exist and that we are not trying to solve an imaginary problem. In the past five years AEC included about 3,000 ASTIA documents and NASA reports in its collection. With OTS, the interest even becomes an internal one. OTS announces all unclassified unlimited ASTIA documents, uses ASTIA's indexing, and even identifies them by AD rather than PB number. It announces enough AEC documents to identify these by AEC, rather than PB number, although it does some re-indexing of AEC reports. NASA reports are also re-indexed to a limited extent. By and large, however, OTS has to deal with ASTIA, AEC and NASA reports as sub-collections separate from reports received from other sources.

In the course of the NSF study, several interesting statistics emerged:

> 23.8% of the ASTIA vocabulary was identical to AEC's. Another 4.2% was, for all practical purposes, identical. This category included plurals such as "fish and fishes" and word inversion such as "liquid metals" and "metals (liquid)". A total, then of 28% of the ASTIA descriptors was directly convertible. An additional 2% of the descriptors were identical to the discarded AEC standardized sub-headings.
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> 38.1% of the ASTIA vocabulary was of a lower generic level than AEC's. Many chemicals are included in this category where the plural form is more generic than the singular. (We did not treat these plurals as identical, as we did "fish" and "fishes".) We created a special code for the case where one AEC term or another would be equivalent -- on a higher generic level -- to ASTIA's. For example, "exhaust gases" could be subsumed under "exhaust systems" or under "gases". Some human intervention might be called for here to make the decision, or the document can probably be indexed by both terms. We identified 8.2% of the ASTIA vocabulary as falling into this category. A total, then of 46.3% of the ASTIA terms were more specific than AEC's but were logically subsumed under some broader AEC term.
>
> Only 7.4% of the ASTIA vocabulary was of higher generic level than AEC's. This is a case where human intervention is required. If ASTIA has used the term "cells (biology)", and AEC only uses more specific terms like "animal cells" or "plant cells", then the document must be examined to determine the correct term.

These and other conversion statistics are summarized in Figure I. Figure II is a list of definitions of the equivalence categories and an explanation of the Table of Indexing Equivalents.

We have included, as Figure III, sample pages of the Table. As you can see, additional refinement will be required in some cases.

In analyzing the statistics, we found that frequency of use was highly significant. Figure I includes ASTIA's frequency of use. When the conversion statistics were weighted according to frequency of use, the profile changed considerably. This is illustrated in the pie charts in Figure IV. The upper figure shows the distribution of ASTIA descriptors among the categories, and the lower figure shows the weighted distribution.

CONVERTIBILITY OF MOST FREQUENTLY USED AEC TERMS

When the bulk of the work on the Table of Equivalents was carried out, usage data for AEC subject headings were not available in convenient form. Just before our report went to press, however, a tabulation of the AEC subject headings used in the last five years, arranged by usage frequency, was made available to us by AEC. A quick analysis of the most frequently used AEC subject headings -- those used on the average once a month or more during the past five years for indexing Nuclear Science Abstracts -- revealed the following:

Number of Headings Used	Headings	Usage	Pct of Total Usage
an average of once a day or more	24	42,809	16%
an average of once a week or more	215	132,643	49%
an average of once a month or more	905	215,705	80%
Total number used in 5 years	12,704	269,000	100%

The distribution of headings according to frequency of usage presents an interesting profile. At the low end of the range, 4,813 headings were used only once in five years. Headings used less than 10 times in five years totalled 9,546, or 75% of AEC's current vocabulary. The most frequently used heading was "uranium", used 4,857 times -- about four times a day.

The relationship to ASTIA descriptors of the 905 subject headings that were used at least once a day was as follows:

	Total No.	Percent
Identical terms	400	44
Synonymous terms	80	9

Of the remaining 425 headings in this frequency range, 83 were specific isotopes, which for ASTIA's purposes could readily be subsumed under the more generic ASTIA descriptor "isotopes"; and 33 were specific reactors, which could be subsumed under more general reactor types listed by ASTIA, such as "boiling water reactors". (Strangely enough, ASTIA does not use the generic term "reactors", although AEC does). The balance of the AEC headings was largely made up of chemical compounds and alloys, which could be readily converted by coordination of two or more ASTIA descriptors.

In summary, then, the 905 most frequently used AEC headings (once a month or more), while representing only 7 percent of the total AEC five-year vocabulary, accounted for some 80 percent of AEC term assignments. Over half of these headings were identical or directly convertible, and the others easily convertible to ASTIA descriptors. These figures clearly show that, to give a true picture, any measure of convertibility of terms must take into account their frequency of use, since each assignment represents an event having convertibility potential.

AEC AND ASTIA INDEXING OF 277 REPORTS COMPARED

In a small related study, which was also made subsequently to the publication of the report, Josephine Jaster of the Datatrol staff compared the AEC and ASTIA indexing of 277 reports cataloged by both agencies. The sample was selected from the AD reports listed in the Semiannual Report Number Index to NSA for the period January - June 1961. ASTIA furnished its catalog cards, and AEC furnished copies of the original worksheets. For ease of comparison, subject headings and descriptors were keypunched, sorted by AD number, and printed out.

ASTIA used a total of 2,571 descriptors, and AEC 840 subject headings to index the 277 reports. Of these, 392, or roughly half of the AEC terms, were either completely or, for all practical purposes, identical. This includes matches which would be achieved by coordination

of ASTIA terms. For example the coordination of the descriptors "rare earth" and "oxides" equals the AEC subject headings "rare earth oxides". In 59 of the documents, all AEC terms were matched by ASTIA terms. This represents 21% of the sample.

Time was not available to make a detailed study of equivalence for the remaining terms, but it was apparent that conversion of the ASTIA descriptors by means of the Table of Indexing Equivalents would, in fact, substantially have generated the terms AEC used. For example, these were the terms used for AD 125, 194:

ASTIA	AEC
spaceships	space vehicles
ion rockets	rockets
ion accelerators	
nuclear propulsion	
reactor feasibility studies	
design	

Our Table of Indexing Equivalents indicated that for ASTIA's "spaceships" AEC's "space vehicles" should be used and that for ASTIA's "ion rockets" AEC's "ions" and "rockets" should be used. Thus, both AEC terms would have been generated by the conversion. Of course, if all the ASTIA terms were converted, more AEC terms would have been derived: "propulsion", "reactors", "nuclear power", and the sub-headings "acceleration" and "design". It is interesting to note that AEC used these very terms in its modifiers to the subject headings for this document. The entries were as follows:

SPACE VEHICLES -- nuclear-powered ion-propulsion design
ROCKETS -- nuclear-powered ion-propulsion design

CONCLUSIONS AND RECOMMENDATIONS

Although the statistics and Table generated from the NSF study are to be considered experimental, it is believed that they will furnish stimulus and encouragement to those who seek to convert indexing vocabularies from one system to another.

There are several levels of convertibility. They fall generally in the categories of identity, synonymity, and generics. Difficulties in the two latter areas exist, but are not insurmountable. The assigning, for example, of a higher generic term as a useful equivalent tends to be subject to non-rigorous criteria. Knowledge of the system users' requirements, however, can provide fairly realistic solutions. Other criteria can be devised as well.

Several terms were found which seemed to have no useful equivalent. For the most part, these had very low frequency of use. This suggests that many ostensible problems of conversion are simply editing problems. (The preparation of a Table of Indexing Equivalents discloses other editing flaws such as inconsistency, etc.)

In addition to further study of the above, the following are potential areas of future work:

Field and Group Setting

Comparison of vocabularies was facilitated by using the ASTIA field-and-group subsumption scheme. Generically related terms became more ovbious; errors, particularly in homonym equivalence, were less likely to occur; and "best" synonyms were more easily discovered. However, if more than two vocabularies are to be compared, a composite or new scheme might be required.

Multi-directional Equivalence

The experimental Table prepared for the NSF study is undirectional. AEC equivalents for ASTIA terms are given, but not vice versa. Ideally, a Dictionary of Equivalents should lead from any one vocabulary to any or all the others. Doubtlessly, additional problems would be encountered in its preparation.

Mechanization

It is apparent, then that a medium-scale computer can easily handle conversion from several vocabularies to a given vocabulary for which a table of equivalents has been derived. More sophisticated machine techniques can be developed for multi-directional conversion.

Statistics

Greater use might be made of use statistics, both for analysis of convertibility and as conversion criteria.

There were times as we shuffled through some 19,999 punched cards, scanned indexes, searched dictionaries, called upon technical assistance for word definition, etc., when we wondered if conversion was truly practical. Now, however, when we see the Table of Indexing Equivalents -- unrefined as it is -- we feel encouraged that the effort expended is indeed equal to the time that would be consumed in re-indexing. Even allowing for up-dating the conversion tables we also feel that over a period of years, the time expended will be negligible in comparison to time saved.

REFERENCES

1. Hammond, William and Staffan Rosenborg, Experimental Study of Convertibility Between Large Technical Indexing Vocabularies -- With Table of Indexing Equivalents, Datatrol Corporation, Silver Spring, Md., Technical Report IR-1, August 1962, Contract NSF C-259.

Categories / Fields	1		2		3		4		5		6		7		8		Total	
	D	F	D	F	D	F	D	F	D	F	D	F	D	F	D	F	D	F
1	29	31914	7	4624	5	7028	16	5433	17	1991	234	48914	8	5814	37	6156	353	111874
2	20	5543	13	2484	7	11947	62	23078	24	1887	91	9692	23	4121	204	32215	444	90967
3	140	8450	9	252	1	89	4	284	9	198	173	3610	13	666	5	126	354	13675
4	455	71016	19	1936	18	10673	0	0	26	541	145	5908	185	11980	14	453	862	102507
5	6	448	6	430	5	1846	0	0	7	575	23	564	1	192	11	638	59	4693
6	70	29683	19	3428	2	2623	38	5276	92	10617	349	46802	28	17009	15	523	613	115961
7	173	26335	10	3069	0	0	1	3	14	1130	108	8224	26	6203	122	3842	454	48806
8	13	5380	3	1177	3	907	27	3282	8	1180	100	11563	2	697	12	467	168	24653
9	36	10486	3	310	7	13904	3	64	31	711	41	1762	7	692	45	1174	173	29103
10	143	39873	23	4690	6	8518	2	121	76	8722	129	7242	33	3880	28	2452	440	75498
11	34	9307	4	147	1	1413	32	3532	28	1383	149	6577	11	1748	28	1281	287	25388
12	179	20082	44	3525	8	3603	96	2117	78	1213	325	9130	62	2738	10	173	802	42581
13	18	13531	20	6420	24	113570	26	1606	23	2464	63	9165	21	11414	96	13811	291	171981
14	31	18124	5	1957	4	4013	17	1236	59	9386	282	47166	7	2692	36	2805	441	87379
15	282	99432	99	12579	49	32831	44	15282	39	3944	297	38533	64	16929	36	6058	910	225588
16	23	13888	6	1365	2	1499	3	168	23	3238	95	5632	8	637	24	1093	184	27520
17	38	7944	11	1287	1	393	10	1077	16	606	59	1716	26	6084	8	149	169	19256
18	4	1435	0	0	0	0	1	32	9	192	47	1323	3	711	43	1209	107	4902
19	5	1346	1	120	0	0	1	486	4	926	17	6287	3	525	3	193	34	9883
Total	1699	414217	302	49800	143	214857	383	63077	583	50904	2727	269810	531	94732	777	74818	7145	1232215
	23.8%	33.6%	4.2%	4.0%	2.0%	17.4%	5.4%	5.1%	8.2%	4.1%	38.1%	22.0%	7.4%	7.7%	10.9%	6.1%		

D = Number of Descriptors
F = Frequency of Assignment

Figure I Statistics of Convertibility of ASTIA Descriptors

CATEGORIES. The categories are defined as follows:

1 = Identical terminology in spelling and in context.

2 = Synonymous but not identical terminology.

3 = One of the AEC standardized Sub-headings is identical to or synonymous with the ASTIA Descriptor.

4 = An AEC Subject Heading combined with one of the available Sub-headings is synonymous with or generic to the ASTIA Descriptor. If the sub-headings are dropped, the relationship between the ASTIA Descriptors and the AEC Subject Heading remaining would be as indicated under Code 6 below.

5 = Two or more, usually two, AEC Subject Headings are required to provide equivalent indexing terminology. Insofar as usage data were available in the NSA Cumulative Index, the employment of the AEC terms in the manner indicated was verified.

6 = An AEC Subject Heading of a broader generic level subsumes the ASTIA Descriptor.

7 = The ASTIA Descriptor is of a broader generic level and subsumes the related AEC terminology.

8 = No equivalent AEC terminology could be identified at any useful generic level.

ABSENCE OF AEC TERM. If no AEC term is listed, the following is indicated:

Category 1 (blank) = AEC uses identical term
" 3 " = AEC uses identical term, but as sub-heading
" 7 " = Several AEC specific terms might be used.
" 8 " = AEC has no usefully equivalent term

ASTERISK(*). In general, an asterisk indicates that AEC has specified or indicated the relationship defined by the category.

An 8*, however, indicates that AEC has the same term, but that its definition is far removed from the ASTIA definition.

DASH(-). A dash preceding the term indicates that the term is an AEC sub-heading.

EXPLANATION OF TABLE OF INDEXING EQUIVALENTS

The Table of Indexing Equivalents resulting from this initial study presents data in a form which should help to illuminate the nature and scope of the convertibility potential in realistic terms. The Table should not be construed as a fully developed tool of convertibility. It is intended more as a working paper. For one thing, it is uni-directional in that it shows AEC equivalents for ASTIA's vocabulary, but not vice versa.

ARRANGEMENT. The Table is arranged by ASTIA Field and Groups. This order is shown in the table of contents, pages iii and iv.

FORMAT.

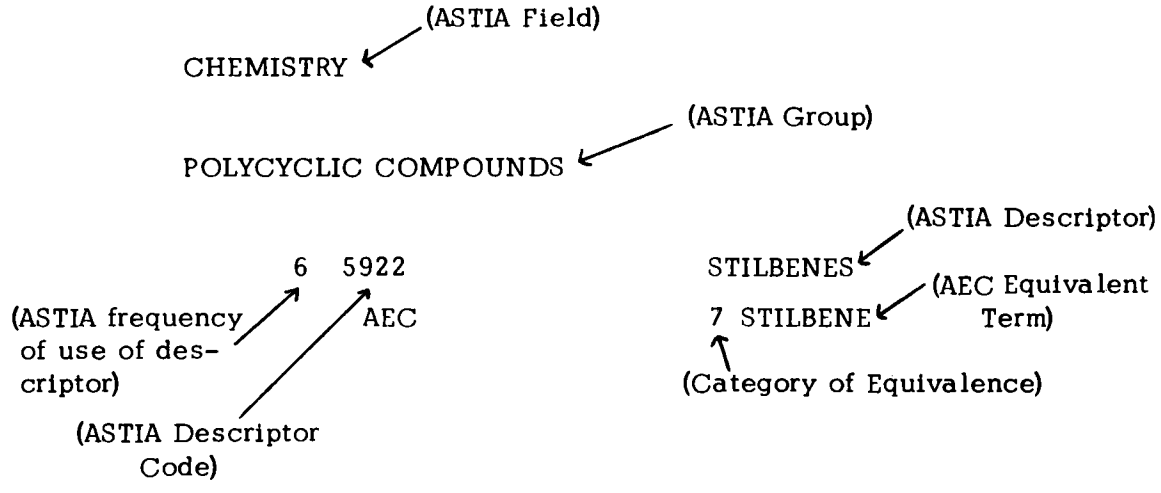


Figure IIb

MEDICINE

PHYSIOLOGY

123 0827 BODY WEIGHT
AEC 4 PHYSIOLOGY
-WEIGHING

25 0977 CALCIFICATION
AEC 1

4 1135 CERUMEN
AEC 6 WAXES

3 1175 CHILDBIRTH
AEC 5 PHYSIOLOGY
ANIMAL REPRODUCTION

98 1314 COLOR VISION
AEC 6 VISION

24 1391 CONSTRICTION
AEC 6 PHYSIOLOGY

6 1500 CROSS CIRCULATION
AEC 6 BLOOD CIRCULATION

145 1599 DARK ADAPTATION
AEC 4 VISION
-PHYSIOLOGY

17 1749 DILATION
AEC 6 PHYSIOLOGY

71 1957 ELECTROLYTES (PHYSIOLOGY)
AEC 5 ELECTROLYTES
PHYSIOLOGY

186 2117 EXCRETION
AEC 1

125 2118 EXERCISE
AEC 1

194 2175 FATIGUE (PHYSIOLOGY)
AEC 6 FATIGUE

30 2206 FERTILITY
AEC 5 PHYSIOLOGY
ANIMAL REPRODUCTION

34 2501 GALVANIC SKIN RESPONSE
AEC 5 SKIN
ELECTRIC POTENTIAL

1263 2691 GROWTH
AEC 1

52 2794 HEALING
AEC 6 PHYSIOLOGY

199 2796 HEARING
AEC 1

40 2807 HEAT PRODUCTION (BIOLOGY)
AEC 4 HEAT
-PHYSIOLOGICAL FACTORS

21 2848 HEMOPOIESIS
AEC 2 BLOOD FORMATION

10 2928 HUNGER
AEC 6 PHYSIOLOGY

1082 3167 INHIBITION
AEC 3*

852 3447 LIFE EXPECTANCY
AEC 2 LIFE SPANS

66 3454 LIGHT ADAPTATION
AEC 4 VISION
-PHYSIOLOGY

23 3545 LYMPH
AEC 1

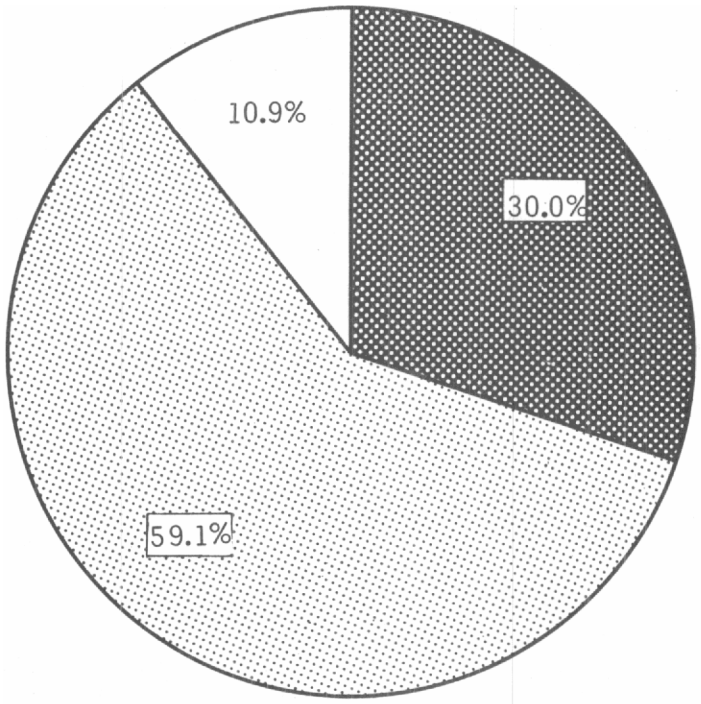
Figure IIIb

PHYSICS AND MATHEMATICS

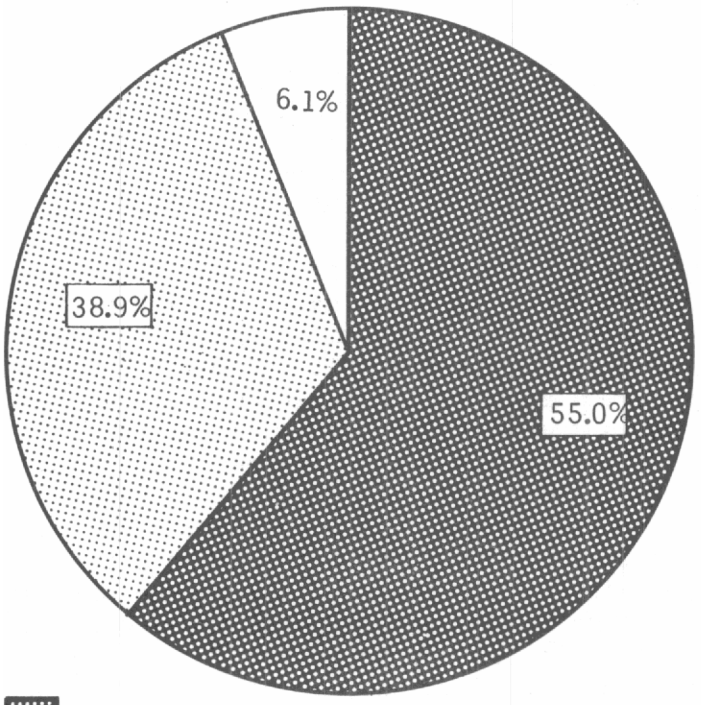
OPTICS AND SPECTROSCOPY

43	4301	OPTICAL SPECTROMETERS
	AEC	6 SPECTROMETERS
827	4305	OPTICS
	AEC	7
708	4332	OSCILLATION
	AEC	7
35	4550	PHOSPHORESCENCE
	AEC	1
7	4551	PHOSPHORESCENT DECAY
	AEC	4 PHOSPHORESCENCE -DISINTERGRATION
195	4554	PHOSPHORS
	AEC	1
54	4555	PHOTOELECTRIC EFFECT
	AEC	1
23	4573	PHOTOELECTRONS
	AEC	2 ELECTRONS -EMISSION
106	4574	PHOTOEMISSION
	AEC	6* PHOTOELECTRIC EFFECT
217	4597	PHOTOMETERS
	AEC	1
3	4602	PHOTOPOTENTIALS
	AEC	8
138	4604	PHOTOSENSITIVITY
	AEC	1
14	4729	POLARIZING FILTERS
	AEC	6 OPTICAL FILTERS
2528	4863	PROPAGATION
	AEC	8
357	5145	RADIOMETERS
	AEC	1
98	5151	RAMAN SPECTROSCOPY
	AEC	2 RAMAN EFFECT
1542	5237	REFLECTION
	AEC	1
37	5238	REFLECTOMETERS
	AEC	1
270	5239	REFLECTORS
	AEC	3*
253	5244	REFRACTION
	AEC	1
304	5245	REFRACTIVE INDEX
	AEC	6* REFRACTION
89	5246	REFRACTIVE PROPERTIES
	AEC	6 REFRACTION
77	5247	REFRACTOMETERS
	AEC	1
2	5695	SNELLS LAW
	AEC	8
1989	5802	SPECTROGRAPHIC ANALYSIS
	AEC	7

Figure IIIa



Percent of Total Number of ASTIA Descriptors



Percent of Total ASTIA Usage

Equivalence Categories 1, 2, 3 (direct equivalence)

" " 4, 5, 6, 7 (generic relationships)

" " 8 (no useful equivalence)

Figure IV

A PRAGMATIC APPROACH TO INFORMATION RETRIEVAL

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ABSTRACT

A brief review of the history of information retrieval at the Naval Ordnance Laboratory, White Oak, Maryland, is presented, with a few of the problems encountered and their solutions.

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The Naval Ordnance Laboratory, White Oak, Maryland, began subject-indexing its documents for the IBM Computer in December, 1959, and its Information Retrieval problems began. (Every new venture brings new problems or places the old ones in a different perspective.)

The very first problem, of course, was the system to be set up: would it be basically numerical or alphabetical? An alphabetic coding system was decided on immediately as the obvious type of coding designed for the coders and library users. Its mnemonic value comes first to mind if we are selecting a code for library catalogers to use. And for the library users, a four-letter code is far easier to translate to words than a numerical code, especially when these same users are totally accustomed to the abbreviations used - to a degree - throughout the Federal Government. So, the word TEMPERATURE becomes TEMP to the coder, OXYGEN becomes OXYG; and all English scientific terms become other four-letter combinations. And, unless some shading of meaning is used, these four-letter combinations are about 90% translatable by the Naval Ordnance Laboratory scientist. Those not immediately translatable become so with the use of our code dictionary and the help of the Reference Librarian (who is also a Cataloger). I shall illustrate only one of these shadings of meaning: the code MISL is translated MISSILE. This, of course, is obvious. But when we combine it with the code BALI, the information retrieved is on ballistic missiles, or ballistic-type missiles. If, on the other hand, we combine MISL with the code BALS, the information retrieved will be on

missile ballistics, or the ballistic characteristics of missiles. These shadings of code meanings are important to Naval Ordnance Laboratory scientists and engineers, and, therefore, to the Naval Ordnance Laboratory Library.

Our code book and coding system have grown according to the needs of our Laboratory. The Naval Ordnance Laboratory is primarily interested in underwater ordnance and its functions in its environment. We are interested in mines, depth charges and underwater missiles, in nuclear weapons, and explosion phenomena. We are interested in electronics and underwater sound. Our code dictionary reflects these interests and is heavily weighted accordingly. We index Atomic Energy Commission documents "in depth" if they have to do with explosion phenomena or nuclear weaponry. But only the most cursory indexing is done for those documents which deal with biological hazards of radiation - if, indeed, they are retained in the collection. Subjectwise the code dictionary is almost one-sided in its bias towards underwater ordnance and the sea around it.

I said earlier that about 90% of our code terms are easily translatable by the Library user. Our dictionary now contains about 14,000 entries, of which about 8,000 are legitimate code terms, and the remainder are used to identify numbers, projects, code names of equipment, and abbreviations. Not all codes can be made of the first four letters of the word. Ballistics, Ballistic-type, and Ball-shape must be somehow distinguished. So we use three different four-letter combinations for these terms. Such differentiation demands the use of a code dictionary by the information seeker, along with consultation with a reference librarian. Furthermore, we have a joker at the Naval Ordnance Laboratory who insists the code for Department of Agriculture should be FARM rather than DAGR. He has gotten away with the use of HOWE for State-of-the-Art, and FATY for Calorific. These rarities interrupt the alphabetic arrangement of the code book and drive library users to the point of profanity, but sometimes add just a bit of liveliness to the job of entering information on the IBM computer.

The code dictionary started as a simple unsophisticated list of ordnance terms with equivalent four-letter codes. It seemed a slow start, but to all of us who use it, it is quite apparent that it was the only way to start. Sophistication has been added gradually, and only after much discussion within the interested group - the Library Division Chief and the subject analysts. More codes were added as needed, and more types of codes were added. Alphabetic codes were supplemented by numerical and alpha-numeric codes as needed. A number is coded as a number, as long as it can be made to fit the program. Our limitation here is that we must use at least four digits or letters, but no more than six. So the number eleven becomes zero-zero-one-one, the initial zeroes filling the vacant spaces to bring our digits to the minimal four required by the program. A four- five- or six-digit number can be entered as is. Formulas for other letter and number designations (such

as missiles or aircraft) have been developed. So we code a B-51 aircraft as BØ51, and an A-2 Polaris as AØØ2. Designations containing multiple letters, however, are broken into letter codes and separated numeric codes.

Besides assigning subject headings to documents in the collection and giving the codes for each, another problem met and solved was the actual punching of IBM cards which place the subject headings on magnetic tape. At first, the Naval Ordnance Laboratory Library considered itself fortunate in having the Mathematics Department punch these cards. But the Mathematics Department was working, for practical purposes, with a foreign language - very much like those in the Orient who set type in English and have no notion of what they are producing on the printed page. Punching errors become, regrettably, more than a rarity. Miss Liberman, our Library Division Chief, brought this situation to the attention of the Naval Ordnance Laboratory Management, and proposed that we do our own punching of IBM cards. An Ø26 punching machine was supplied, and Library clerical personnel were trained in its use. These same people had been working with the compilation of the code book, and so were already slightly prepared to spot errors in codes assigned to descriptors. Errors were not eliminated in their entirety - we are still on earth - but a drastic reduction was effected by using library-oriented personnel to punch the IBM cards. I believe the people of the Mathematics Department were satisfied with this improvement, also.

With the passage of time, with more information stored on the tape (now more than 16,000 documents), and with rapidly increasing use of the retrieval feature, some perspective of the system as a whole began to emerge. One problem which began to come to the fore and to strike us hard was the problem of relationship between terms.

Our IBM program is apparently more sensual than intellectual, and even its senses seem limited to that of sight alone. When the computer is asked for information it delivers what it sees and makes no judgment whatever about relationship of terms. If we ask it what documents contain information on ships which track aircraft with radar, it will furnish whatever it sees on this subject, along with all information on aircraft which track ships by radar. This, of course, is far more than we wanted, so we had to dampen the machine's enthusiasm with the brake of human intelligence (still needed). We accomplished this by using a fifth letter added to the four-letter code as a "role indicator". This has solved our problem to a quite satisfactory degree. Now, if we want information on aircraft which track ships, we ask for Aircraft-as-Agent (coded AIRCA) and Ship-as-Object (SHIPO), and the machine gives us what we ask for with only a minimum of extraneous information or false drops.

It has been said that the cataloger in the library would make a superb reference librarian. Our Library Division Chief at the Naval Ordnance Laboratory, Miss Liberman, not only believes this, but puts it into effect with noticeable results. Our subject catalogers rotate

every two months to the Reference branch, where they have the chance to put their work through its paces and discover not only what they have done wrong, but more important, to discover what they have done right. Who should be better able to get information results from a computer than the one who has put the information there in the first place? The system has worked at the Naval Ordnance Laboratory.

Additional information may be found in the following publications:

1. NOLTR 62-51, Procedures for analyzing technical reports for machine retrieval, by Eva Liberman. May, 1961.

2. NOLTR 61-102, A plan to reduce costs of technical library operations in the Department of Defense, by E. H. Langenbeck. August, 1961.

3. NOLTR 62-50, Tables of four letter computer codes used in library retrieval program, by Eva Liberman and Hoyt L. Stevens. May, 1962.

SUBJECT ANALYSIS AND INFORMATION RETRIEVAL

Alden G. Greene, Discussion Leader

PAUL E. POSTELL: Walter Kee had an announcement to make about the AEC's efforts to establish a fellowship or scholarship program. I don't think it is ready to be announced in final form yet, but the AEC is working on a plan. Kee will give you more of the details. It is being worked on in the AEC Headquarters in Washington.

EVELYN B. HENRY: I would like to know how many use mechanization for accountability and retrieval of documents. We would like to go into mechanization to some extent. When I say "we", I mean the librarians at Aerojet. Just for my information, I would like to know how many other people--you could tell me by a show of hands--are mechanizing by use of IBM equipment for retrieval and accountability. Accountability first.

A. G. GREENE: Eight. Now for retrieval. I see five hands.

E. B. HENRY: Thank you very much. It is not quite the weapon I wanted.

A. G. GREENE: We have been asked to suggest that there are other companies who make appropriate equipment to these ends besides IBM. I mean, was the question truly limited to IBM? Would it make any difference if it was other equipment than IBM?

CROWELL O. DEAN: I didn't have my hand up before. I don't know why, I just sat here to see. On both counts.

A. G. GREENE: All right, one count more to each.

BERNARD M. FRY: I think in connection with this question, some of you might be interested to know of some plans afoot for a conference this next March on mechanization of library processing. Now, preparatory to this conference, some state of the art papers have been prepared on a national basis, which will endeavor to identify and describe as many places as possible that use mechanization for library processing all the way from the beginning; i.e., the acquisitioning through the cataloging. As a result of that conference, we also hope there will be some sort of a clearing house set up to exchange information among librarians who are interested in doing like things. Many of you this morning mentioned getting programs from the Bell Labs for your permuted title lists. There are also programs available at many --several universities. For example, the University of California has a program developed on serial records. The University of Illinois developed serial records and various other phases of library processing.

I think in the next year or so, there will be an opportunity to take advantage of program developments at some of these places and they will be made available throughout the country.

C. O. DEAN: Information retrieval and mechanization of libraries could become a kind of annual workshop. We have to have it somewhere, why not here?

A. G. GREENE: So glad you suggested an annual workshop in the matter pertaining to machines. In the development of this program, it and other matters were considered for inclusion in the agenda. By sheer strength of courage and frustration, we decided on this occasion to not include machines to the extent you might be thinking as well as a number of other things.

INFORMATION, SCIENCE, AND GOVERNMENT*

Alvin M. Weinberg

The ancient civilizations of the Indus Valley, in what is now West Pakistan, depended for their existence upon an elaborate network of irrigation canals. The water flow through these canals was regulated by the gatekeeper: he decided who was to receive water, who was not. As time went on, the gatekeepers of the irrigation system acquired more and more power; eventually, according to some historians, they became the rulers of the areas through which the water flowed.

This theory of the origin of the ancient kings of southern Asia has an analogy in our modern science and technology. The ideas and data that constitute science are embodied in its literature. Because science is unified, in the sense that what one scientist does affects and is dependent upon what other scientists do, the proper flow of the information contained in this literature is necessary for the existence of science--in much the same way that the proper flow of irrigation water was necessary for the existence of the ancient Indus Valley civilizations. I shall argue that just as the ancient gatekeepers became kings, so, as our science and technology grow and the flow of information becomes a crucially difficult problem, those who control information will acquire a more and more dominant position in the science of the future. All concerned with science and technology--the individual scientist and engineer, the technical society, the documentalist, and the Federal Government--must recognize this trend and must be prepared to devote to control of information a larger share than heretofore of their resources.

Even ignoring the secondary information crisis created by those who insist on writing and talking about the information crisis, there is a bona fide crisis

*After-dinner talk before meeting of AEC Contractor and Depository Librarians, September 12, 1962, C'est Bon, Knoxville.

in scientific information. The number of journals has quadrupled since 1900, and 100,000 government reports each year are superposed on the conventional literature. This growth is not slowing--on the contrary, more nations (notably China and India) are beginning to add to the world's scientific output, and the money being spent on science in the developed nations is increasing. If each scientist copes with his private scientific information crisis by narrowing the scope of what he keeps informed about, we shall end up by fragmenting science into a host of unrelated, repetitious and inefficient undertakings which may still give personal enjoyment to its practitioners, but which will hardly add to human knowledge at the maximum possible rate. This is the essence of the technical information crisis.

Science must undergo a social reorganization to enable it to remain unified even though it continues to grow bigger and bigger. The beginnings and the shape of such a social reorganization can be discerned in the emergence of a caste of scientists who are primarily handlers of information--who sift, retrieve, and analyze the information created by others, and who, in so doing, synthesize new information based on the individual findings of others. Our science is reorganizing itself into a pyramidal hierarchy in which those who unearth new facts are at one level and those who manipulate and interpret these facts are on another, higher level.

The manipulators and interpreters of information, being familiar with more data than is the practitioner, would be more likely to come up with broad new insights and syntheses than would the scientist at the working level. Just as the theoretical physicist has in the past used mathematics as a tool to derive new insights in physics, so one can expect the information-handling scientist of the future to use his larger resource of data to derive new generalizations for empirical science.

A most striking example of just such a synthesis is the formulation of the shell model of the nucleus by Mayer and Jensen. Probably the most important post-war discovery about nuclei was that neutrons and protons are arranged in shells, much like electrons in atoms. To deduce such a generalization required the most intimate familiarity with an enormous amount of nuclear data. This data has been accumulating, in isolated places, since the early beginnings of nuclear science. The systematic collection of the data, under the direction of K. Way at the Nuclear Data Center, helped very directly in establishing the regularities in nuclear structure that we now recognize as manifestations of the shell model. Here was a beautiful example of how scientists who manipulated the data were able, because they were close to the data, to invent the all-important new generalization. The handling of data in a meaningful and sophisticated manner in itself made possible new science.

The example of the Nuclear Data Center is by no means an isolated one. There are other cases where those who are primarily information-handlers create new science and technology. It is my belief that, as the information crisis deepens, such examples will become more and more common, and that the information-handlers will emerge as a dominant caste among scientists and technologists.

The information-handlers--those who sift the information rather than the documents that they handle--generally are members either of formal Specialized Information Centers or themselves constitute informal walking "specialized information centers". The Nuclear Data Center which I described earlier is an example of one such very successful center. At present in the United States there are more than 400 such centers, and their number is growing. Since they may well become a central feature of the hierarchal reorganization of science, it behooves us to try to understand what are the characteristics of a truly successful information center.

A central feature of an information center is that it identifies itself with the scientific community rather than with the documentation community. By this I mean that it must be operated by working and knowledgeable scientists who are recognized experts in the fields they cover, who extract information from the documents they manipulate, and who synthesize new information from what lies before them in random array. Primarily they handle information, not documents. They are particularly useful in helping cope with the crisis because it is they who compact meaningfully and reliably the horde of literature and bring it to a dimension and a form that can be assimilated by the human brain. The output of the Specialized Information Center is paper, to be sure; but the paper is a synthesis and analysis of the raw data that enter the system: critical reviews, new generalizations, compilations of data. The five Critical Technical Reviews issued by AEC specialized information centers have been extremely successful--in good part because they serve as a critical guide to the literature. In fact, publication of such review journals could well become a most important task of the specialized center.

Since the special information center is part of science, and must be manned by scientists, it ought to be located where science flourishes. I should therefore think that the large multi-purpose government laboratories, such as ORNL or NIH or NBS, ought to be ideal homes for clusters of information centers in fields related to the mission of the laboratory. At ORNL we already have some half-dozen information centers; it seems entirely reasonable to consider maintaining at an institution as large as ORNL, say, 20 or so specialized centers, and in fact to assign to such institutions the handling of information in the sense that I have described as a central mission.

The specialized centers cannot function without the strongest support from the technical library or central government depository. The raw material with

which the information center works must come from the document collection of the central depository. Hence if the specialized centers are to flourish, so must the depositories. But the distinction between the library and the center is fairly sharp: the library is concerned with the task of dissemination and retrieval of documents; the specialized information center, as I visualize it, will be concerned with dissemination of critically evaluated information. The specialized center must call on technical specialists: I suggest therefore that it is wrong to cluster such specialized centers around the depository. The centers are technical institutes, not technical libraries, and they should be clustered around a laboratory or university, not around a central depository.

According to this view of the future development of science, the role of automatic retrieval is secondary to the role of the information scientist. Automatic machine retrieval is improving, and it is obviously of great importance. But, at least as we now understand the possibilities, automatic machinery is fundamentally limited because it retrieves documents, not information. If science continues to grow at its present rate, retrieval of documents, as far as the individual scientist is concerned, will become less and less satisfactory. A study sponsored by Biological Abstracts suggests that biological scientists can peruse meaningfully no more than 5000 papers per year. Receiving a new pile of documents that remains undigested on one's desk every day is the frustrating experience of too many scientists who try earnestly to keep up. Insofar as improvement in mechanized retrieval will increase the size of the daily pile of unread reading matter, it worsens, rather than improves, the situation. Only by interposing in the information transfer chain a capable working scientist who critically culls and predigests the mass of documents presented by the machine can we hope to make real progress in handling the deepening crisis.

If science indeed undergoes the kind of social reorganization which I have described, with a new caste of high priests, ensconced in their temples called specialized information centers and ably supported by elaborate and efficient central depositories, the general attitude of science and those who support science toward the whole matter of information handling will have to change. Most important, science will have to allocate a much larger share of its resources to information than it has hitherto been willing to do. More money will be needed of course. Improving the central depositories and buying better retrieval devices is expensive. But money is not enough; men will also be needed. Science will have to deliver many of its gifted disciples to information just as, in the past, she has delivered many of her most gifted ones to teaching. Every really successful specialized information center has behind it one or more dedicated, competent scientists; as the number of centers grows, the number of gifted people who devote themselves to this activity will also have to grow.

To attract really competent people to these tasks, they will have to be paid well, of course--but they will also have to see in such careers real intellectual rewards. Such rewards I believe are likely to come in two directions: first, the scientist close to the data has a great advantage, that will increase as the information crisis deepens, that is denied those farther removed from the data; being close to the data, he is more likely to come up with the important new generalization. Second, being close to information equips one for the job of technical leadership. As one tries to make sense of the data at hand, discrepancies and suggestions for new meaningful experiments become apparent. I should think that in the science of the future research directors will often be chosen from among those who have been in the habit of dealing with information in a sophisticated and meaningful way. A prime job of the

research director is to keep informed--of what is going on in his own shop, and in related shops; he must be accustomed to critically analyzing and interpreting large amounts of information. He uses this information as a guide for his own decision making; he also conveys his information to his colleagues. In general, as one goes higher on the research administration ladder, the fraction of time spent in assimilating and acquiring information increases; the fraction spent in discovering new information decreases. The research director and his staff become more and more a sort of information center.

But it will be not only the individual scientists who must dedicate themselves more seriously to information. The universities, the technical societies, and above all the Federal Government will have to take information more seriously.

The universities can help in two ways: first, by teaching people how to communicate better, and second, by teaching scientists how to deal with the literature. Of the two I suppose I consider the former the more important. The new languages of science and technology--scientificese and engineerese--are turgid, heavy and unclear. A recent study by Pfafflin and others has indicated how very small is the information content of so many papers that are ostensibly filled with straight facts and cold dope. I would urge the technical schools to insist on more practice in exposition as part of the regular technical curriculum. I would urge also that faculties at universities acquire a more sympathetic attitude generally toward the efforts of the documentalist so that their students acquire some of the same attitude.

As for the technical societies, I believe they must be more aggressive in experimenting with new modalities of communication. I have already spoken of the specialized information center as a major key to the resolution of our difficulties; but it is not the whole story. There are many other new techniques

that have been invented which deserve brave experiment. For example, the central depository ought to be given a try by some courageous technical society. The prejudice and prestige that attach to the hard-copy journal is dissolving with the advent of the Xerox copying machine. Moreover, some technical societies, notably the American Physical Society, have already gone half-way toward the central depository scheme. Abstracts of papers to appear in The Physical Review now are broadcast several months before the paper actually appears in Physical Review. The Physical Review has become a sort of central depository, as it has grown thicker. Few people now read The Physical Review--it is too thick for that (although it is excellent for shielding book-lined fall-out shelters); people read only selected articles in Physical Review and the journal itself is going to the central, not the individual, libraries. From this arrangement to the full-fledged depository is a small step--one which the success of the central government depositories ought to make acceptable even to tradition-bound physicists. Another scheme which I recommend strongly to the technical societies is the citation index--a list of articles that cites a given article, and thus allow one to trace connections forward in time instead of merely backward in time, as is the case with reference lists. Citation indexes in genetics are being sponsored by the NSF; I would expect them to become better known and better supported in the years ahead.

The Federal Government must react very positively to the information explosion, partly because each agency doing research and development operates an internal information system, partly because, as the supporter of three-fourths of all research and development in the U. S., the government must be sensitive to the health of the information system that is so necessary for successful research and development. Rather than speak broadly to the question of the Federal Government's role in information (which has been discussed at very

great length by the Humphrey Subcommittee on Government Reorganization) I shall describe some of the things agencies can do to help evolve the information system of the future that I have described above--a network of specialized centers fed by efficient depositories and technical libraries. Clearly the government must keep its depositories efficient--that is, it must keep its internal system in good working order. But it must also accept more responsibility, generally, for support of information activities outside government in fields that are germane to its mission. In particular, I think the various government agencies should do for scientific communication in fields relevant to their mission (and in which they already support non-government research) what NSF does, through its OSIS, for science in general. They should, in these fields, encourage specialized centers; they must recognize that operation of a specialized center is a most worthwhile part of the job of some of its contractor scientists. I repeat also the suggestion I made earlier that Federal agencies ought to assign to their large laboratories the specific mission of being homes for specialized centers, in much the same way AEC has assigned responsibility for a reactor physics center to Argonne, a nuclear safety center to ORNL, and a nuclear materials center to Battelle.

Greater involvement with information will require that the agencies assign to the technical information function a definite high-level position within the agency. I believe that the technical information function, being primarily part of research and development, must be made part of the research arm of the Federal agencies, not part of the administrative arm. I cannot stress too strongly how important this is: information that is part of administration inevitably loses user-sensitivity, perhaps the most precious attribute of the good information system.

Whether or not the information-handling scientists will become, as did the gate-keepers in the Indus Valley, a dominant priesthood of science, time alone will tell. But, if the specialized information centers do not prove the key to the resolution of the growing information crisis, surely other inventions will be tried, and some will eventually work. The essential point is that coping with information has become a major problem in research and development, and the agencies, the technical community, the individual scientist, each must allocate more of his resources to the problem. Should we do less our science will fragment and crumble. I am confident that all those who have hitherto been unaware of this problem will awaken, before it is too late--that they will come to the assistance of the professional documentalists and librarians who have devotedly, and single-handedly, exerted themselves so bravely to maintain science as a unified and viable entity.

SESSION IV

*Not presented orally.

A. LOCATION OF INFORMATION

SPECIALIZED REFERENCE TOOLS

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Several weeks ago Mr. Postell distributed to those individuals scheduled to speak at this meeting a list of topics of interest to participants. These topics were suggested in reply to an inquiry sent out to various organizations. I was somewhat dismayed at how far removed these interests appeared to be from the topic Mrs. Morris and I were asked to discuss today. But my enthusiasm for reference service as the culmination of library efforts has not been dampened. Rather than believe that everyone here is so completely well versed in approaches to reference problems, I have rationalized the apparent absence of interest to a frequently occurring human failure -- that of ignoring the obvious. I'm also hopeful that there are present in sufficient number, representatives of smaller installations where the person on the job in the library has a real need for the material to be discussed in this brief session.

I cannot resist this opportunity (and I have warned Margaret Pflueger of my weakness) to say a few words about my basic philosophy of library service. This philosophy is centered around the word "service." Every library is or should be a service organization. Where retrieval of information is concerned, there is no limit to the scope of service. To accomplish this end it is necessary to call upon any and all available resources: books, journals, reports, newspapers, people, and above all the ingenuity and ability of prompt recall on the part of the individual of whom this service is demanded. There must be present an intellectual curiosity that prompts one to dig into one's past experience, on and off the job, to relate the present problem to problems or bits of information encountered in the past. In the Library of the Oak Ridge Institute of Nuclear Studies we have a question that is directed to us annually -- on what date will Easter fall in the following year? This information is needed for scheduling courses in our Special Training Division. Regularly, we answer this question by consulting the old faithful World Almanac. Early this year the question took a different slant -- on what date does the Greek Easter fall next year? This information was needed in scheduling participants from Greece. The information of course exists in a book somewhere -- but as far as we could determine it did not exist in our collection. The information in the World Almanac was confined to the Greek Church Calendar of the current year. Here is where we called upon our human resources. We knew that the friend of one of our colleagues was interested in things Grecian and had a group of Greek contacts in town. We directed our question to this person and in short order we had our answer. These are relatively simple questions but they have many complex parallels. They illustrate two points: The source of non technical infor-

mation must be available to a technical library and books in any given library are not the only source of answers for that library.

But let's talk about a very small segment of the books that are our mainstay in existing in this world that demands information of us. Before consulting the proper book on a specific problem we must know what tools are available to meet these needs. For many of us, years of acquaintance with a particular collection will automatically turn us toward the proper authority on the reference shelf. But for those of us who do not operate in a well established library or do not have the years of experience to call upon, there must be a starting place. This can be found in what we might call a "source book." One such is entitled How and Where to Look it Up. This book is not aimed at the librarian in particular, but rather at the person who is exposed to the reference shelf without formal library training. This librarian, however, has found it quite useful. For example: You are in a small library with biographical tools limited to Who's Who in America and a set of American Men of Science. You have been asked to collect some information on an educator who is coming to visit your organization. From How and Where to Look it Up you learn of the existence of the publication Who's Who in American Education. Even though you do not own this volume you know something quite specific that you can ask another library to check for you for your needed information.

There are such source tools available which concentrate on a particular field of interest. To name a few related to science: A Guide to the Literature of Chemistry; Physics Literature; Literature Sources in the Biological Sciences; A Guide to the Literature of Mathematics and Physics. A very useful publication for identifying scientific books in a particular field, both for building a basic collection and for meeting a particular problem, is Scientific, Medical, and Technical Books Published in the United States of America. Here are listed outstanding books in each of the fields covered, arranged by broad subject categories. Complete bibliographic information is given as well as the list price and a brief description of the contents. An author index and a detailed subject index are provided.

For the literature of business and finance we have Business Information, How to Find and Use It and Handbook of Commercial, Financial, and Information Services.

The grandaddy of all reference source books is Winchell's Guide to Reference Books. The latest edition of this volume is dated 1951 and it has achieved some degree of currentness in the publication of three supplements covering reference materials through 1958. It may be of interest to many of you to learn that Miss Winchell, now retired, is working on the eighth edition of this book — and she probably will continue to work on it for the next two or three years!

Following the identification of a publication there is still the problem of locating the volume for your or your requester's use. We suggest a good lead might be obtained through the new edition of Lee Ash's book Subject Collections. This is a guide to special book collections and subject emphasis as reported by various libraries in the United States and Canada. This volume

has a detailed subject arrangement and gives the name and address of those libraries specializing in each subject.

The American Library Directory is of some help in identifying subject specialties, but its arrangement is geographical and it does not have a subject index. However, you can scan it for libraries in your area in an effort to locate the subject field in which you are interested.

All of us are faced with the ever present problem of the identification of abbreviations. This may be in terms of professional or industrial organizations, government agencies or technical terminology. There are a number of books devoted to abbreviations, some of which are included in the bibliography which has been distributed to you. One volume mentioned in this list is the Yearbook of International Organizations. It should be mentioned that this book is arranged with the organizations in alphabetical order with the names spelled completely. However, there is an index of initials or abbreviations provided at the end of the volume. The search, however, must not terminate when these obvious sources are exhausted. Frequently handbooks include lists of abbreviations peculiar to the field covered. Biographical tools and dictionaries may often contain such a list. Consult the National Union Catalog Author List. Occasionally you will find abbreviations of organizations used in a main entry, with the spelled out version included in the descriptive cataloging. Another fruitful spot is the Corporate Author Index for Nuclear Science Abstracts. For example if you check AGARD you are referred to North Atlantic Treaty Organization, Paris. Advisory Group for Aeronautical Research and Development. If you have the name of an individual connected with the abbreviation of an organization, try to locate a biographical sketch on the man and hopefully check for his affiliation in connection with his by line or as an indication of where his work was performed. In identifying technical terminology don't forget the books which are pertinent to the subject — if the subject relationship can be determined!

I should like to deviate from the subject of reference services for a moment. I should like to say a few words about the Library of the Oak Ridge Institute of Nuclear Studies and how its services may relate to you. Actually, this is not too remote from the subject of reference services because it is usually the reference desk which handles interlibrary loan requests. The functions of the ORINS Library tie in very closely with many of the operations of DTI Extension. The journals which are abstracted in NSA are routed to DTI Extension from the Library. In fact, most of the published literature referred to in NSA, is included in the holdings of the ORINS Library. One of the important functions of the Library is to make this literature, much of it sparcely held in the United States, available through interlibrary loan channels. We are especially anxious to make this known to AEC contractor libraries. This is a service which has increased through the years as librarians have become aware of our resources. In order to serve other libraries efficiently we prevail upon you to observe some of the common courtesies which should be routine in negotiating for interlibrary loans. We find that the universal use of the ALA approved interlibrary loan request forms would standardize procedures. This form has provided space for the complete identification of the requested publication.

We find that the most ignored or misused spot on the form is that which should be filled in with the source of your reference or place of verification. This is an extremely vital piece of information. If the item requested is a book, every effort should be made to establish its complete identity in some commonly held source such as the Cumulative Book Index, Books in Print or the National Union Catalog. Cite the specific volume and page of the source.

The same is true for journal references. You cannot accept as gospel truth (how well you know!) the reference as requested by your library user. Don't ask another library to do your dirty work. Identify your complete reference in some commonly held source such as Chemical Abstracts, NSA or Index Medicus. The title of the source is not adequate. Get down to the fine points of citing chapter and verse! Indicate the volume, page or abstract entry number, and date. Typographical errors can be made and the lending library can frequently, by consulting a secondary source, retrieve a publication which is otherwise lost because of erroneous information. This is particularly true in the case of material included in NSA which stands a good chance of being held by the ORINS Library. Upon occasion we find ourselves in disagreement with our AEC colleagues over descriptive cataloging. When we know that our handling of a piece of literature differs from the NSA citation, we correct the reference in our copy of NSA, to agree with our filing method.

We never cease to be amazed at the number of libraries that give as a source for a reference NST (New Serial Titles). All this means is that you have determined that the ORINS Library should hold the journal title you seek. It does nothing to clarify the reference and is, essentially, a useless piece of information.

We encourage you to avail yourself of our holdings. We ask that you supply us with sufficiently complete information to facilitate the lending procedure.

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IV-A-2

LOCATING INFORMATION IN A TECHNICAL LIBRARY

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ABSTRACT

Methods of locating answers to quick reference questions are illustrated by approaches to questions of biographical data, location of information through directories and the problems presented by meetings.

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As I understand my particular role in this discussion, presumably my usefulness is to be in stimulating your thinking in regard to the problem of how tc go about as efficiently and effectively as possible answering the hundred and one little reference questions which come across your desk every day. Obviously many of you know much more about this than I, but even a cat can look at a queen, so I will try to give some idea of the way we go about these problems at ORNL.

To illustrate these situations I have chosen three fields where we have many questions from a variety of users: questions relating to biographical data and to directories, who makes a certain product or where a research laboratory is lccated, for example, and last, to the area of meetings both past and in the future.

Our requests for information about people, probably in common with yours, vary from wanting complete biographical information on an individual, to his present location, previous positions, field of work, list of his published papers or just a simple verification of the spelling of his name. Here is a good place to be careful and check all the possibilities. Perhaps the inquirer has asked his secretary to check for him and the spelling may have been garbled.

Since we are all aware of American Men of Science and Who's Who in Atoms, let us consider the need for information about people who are not to be found there. (Incidentally, I might suggest that if you have the opportunity be sure to encourage your scientific personnel to fill out requests for such information when they are asked. Perhaps they will be the very person someone will want to check on tomorrow.)

We purchase most of the Who's Who, for example, Who's Who in France, but unfortunately the people we want to find usually are not located there. Once in a while we are lucky, but not nearly as often as we would like to be. After we have tried these possibilities we start out in the abstracting tools; Chemical Abstracts, Index Medicus and Mathematical Reviews, for example, index biographies.

If we are merely seeking an address, we check under the name to see if we can locate a recent paper and usually, as Miss Garber pointed out, this gives his location. We also use such tools as Chemical and Engineering News, Physics Today, AEC Press Release Indexes, and Nucleonics. If indexes are not available, particularly for recent appointments or changes sometimes it is a case of scanning. Hopefully, we have some clue as to where to start looking.

For works of earlier scientists we find Poggendorf very helpful for brief biographical material and for lists of published papers. By the way this may frequently be of help in identifying obscure journal references.

At times we must work from the other direction. Not long ago we had a request for the name of a former vice-president of a large midwestern university who had served back in the 1940's. A check of Cumulative Book Index revealed a history of the university which was in the University of Tennessee Library and the answer to the question was available.

In the case of foreign scientists, World Nuclear Directory will often at least locate them physically. Many are connected with institutes at universities and sometimes World of Learning or Index Generalis will be helpful. You will notice that Who's Who in British Science has not been revised since 1953 which illustrates the problem of locating the younger scientists.

I failed to put it on the list of suggested references but Scientific Research in British Universities, which is published annually by the Department of Scientific and Industrial Research, lists universities, associated institutions, and technology colleges alphabetically with work being carried out and names of permanent staff involved. Staff "too junior to supervise research students are not mentioned." There is a name index and a fairly complete subject index. The coverage has been expanded in the 1961-62 edition and I believe you will find it useful.

We have in our vertical file under Atomic Energy a breakdown by countries where we hoard annual reports put out by laboratories, institutes, atomic energy agencies, and just plain "advertising" brochures of individual laboratories. These can be most helpful in answering who, what, and where questions. Many times our people when abroad will acquire ephemeral material of this type and give it to us.

The Russian scientists are one of our main problems, since their published works do not always reveal their location. The books listed in the bibliography are sometimes helpful. Brookhaven's BNL-4955, A Directory of Soviet Physics, has been very helpful to us in describing the type of work going on at various academies and institutes and in identifying people.

As to the questions which can be answered by directories. We follow much the same procedures. We find such compilations as World Nuclear Directory, Industrial Research in Britain, and the International Atomic Energy Agency's Directory of Nuclear Reactors most helpful. Incidentally, in connection with reactors, we maintain a very informal card file on reactors usually filed under the name of the reactor except in the case of Russia where again information is rather scarce. This file is frequently helpful when someone wants a piece of information in a hurry. As a rule, we simply refer to an article about the reactor as a place to start for information needed in a hurry.

If we are checking for companies and do not find the answer in a conventional source, we branch out into directories published by journals such as Chemical Week buyers' guide. Last week we had a request for the address of a company which we did not turn up, but from the sound of the name we decided that it was probably a fairly new company and sure enough we discovered that they had an advertisement in the latest Nucleonics buyers' guide which we had just received and we could go on to the next question.

We have at ORNL, as I imagine most of you do, a great many questions dealing with meetings both in the past and in the future. Unfortunately, not all societies are as helpful to us as the American Physical Society with their regular bulletin and then, of course, many meetings are sponsored by several organizations which sometimes can complicate the problem. We maintain in addition to our issues of Scientific Meetings and World List of International Meetings an alphabetical file of folders on all organizations in which our people might be interested and who send out programs or announcements of meetings. These can be quickly checked to see if we have received information about forthcoming meetings and if not we go on to other possibilities. Here again, such journals as Science, Physics Today, and Chemical and Engineering News are frequently helpful. Of course, if we know the organization the news media of that particular organization is usually the best source.

As to the proceedings of meetings, I believe that we all have little files besides the conventional ones for our elusive proceedings. We try to keep up with proceedings published in journals although we fall short of this mark for lack of scanning time. We do this mainly because people frequently inquire about them before they are abstracted. We also try to make note of statements regarding the fact that proceedings are not to be published. Sometimes negative information can save a long and unrewarding search. Our cataloging department helps our searching the catalog by listing meetings under their location. This is frequently a quick identification if an impatient inquirer is checking on an international conference, or congress, or symposium and obviously he doesn't know which and right at the moment doesn't care. Frequently he does know where it was held or you may have some idea but not be able to remember exactly how it is entered. Of course, you already know that NSA indexes conferences under that heading. People working with books and journals are sometimes prone to overlook this helpful source or to forget that meetings frequently are issued as reports. If all else fails, we call Margaret Pflueger; she also has a little file.

In conclusion, I should like to reiterate Miss Garber's remarks that we try to make use of all of our resources including our own memories, our educated guesses or sometimes just a plain hunch. Before we give up we try to pool our ideas; very often a possible source one has forgotten for the moment will occur to someone else on the staff. ORNL also has many experts in many different fields and they are almost universally helpful in giving us suggestions or information if we need their assistance. I am afraid I can't say that we always find the answer, but we try and once in a while we are rewarded with "How would we ever get along without people like you!"

DISCUSSION: SESSION IV-A

LOCATION OF INFORMATION

Margaret L. Pflueger, Discussion Leader

MARGARET L. PFLUEGER: If these two stimulating talks have aroused any questions or induced you to volunteer, I would like to take time either to have questions, or to have information from you on this matter of reference work that would be helpful to others. I am thinking particularly of the special little files that all librarians love so dearly. Lois Morris mentioned their file on abbreviations and on symposiums. I do think it is interesting to note that Lois said they had an approach to symposiums by the name of the society, and an approach by place. A number of years ago when I personally handled more of the information requests that came in than I do now, I was very frustrated trying to find proceedings and information on meetings. I decided that one of the easiest ways to keep the information was by the date, because it almost always appeared in the references. So, our file is by date. I feel I speak for Lois and myself when I say when you have trouble locating information on a meeting that has the word "nuclear" or "atomic" or "half life," or one such word in the title, and you can't find anything on it, come either to Lois or me. It is possible that one of us can help you out. Now, I would like to hear questions from you, or as I say, even more preferably to hear of any tricks of the trade in the way of reference work that you, as practicing librarians, have developed or found useful.

MARY J. RYAN: I have a question for Miss Garber. Do you lend journals on inter-library loan, or make photostats? What do you want us to ask for?

MARION GARBER: I am glad you asked that question. We do frequently get inter-library loan requests, which ask that we supply photographic copy, and bill the requester. Unfortunately, our photocopying resources at the library are limited to a Verifax machine. Our general policy is this: we ask you to submit your request in the form of an inter-library loan. We will fill the request at our discretion based on the following factors: (1) the gutter margin of the paper desired; (2) whether it is physically possible to Verifax it; (3) the existence of halftone illustrations, which won't photograph well on the Verifax machine; and (4) the length of the article. We have arbitrarily set ten pages or under as the type of article that we will photograph in lieu of inter-library loan. We make no charge for this. We have no facilities for making a charge. We just ask your indulgence in leaving the matter to our discretion. If we can copy the article, under the conditions mentioned, we will do so.

M. L. PFLUEGER: Is there another question?

ROBERT E. STEPHENSON: Miss Garber, can you supply NP numbered reports?

M. L. PFLUEGER: Why don't you two get together alone after the session? Miss Garber has said they have only a Verifax machine.

ADRIANA P. ORR: I would like to ask Miss Garber something. When you mentioned verification of the article, I have always felt that the inter-library loan form should have two places for verification: one for the bibliographic verification, and another verification as to how the requester knows you have it. Because sometimes a perfectly good article is cited correctly, and the reference is given correctly, but you don't have it in the library. I think it is wrong not to give both, because the person who is lending should know why the person sent the request to you in the first place, if the reference is correct. How do you feel about that?

M. GARBER: It is a point well taken. Although there are places for identifying the fact that a library holds a particular piece of material, such tools, being what they are, are obsolete before publication. A union list of serials might indicate scattered holdings or an incomplete volume. You are going to try that library now even though the holdings might not include the particular reference you want. You try that library on the long shot they might have it. You also assume that once a library has started to build a run on a particular publication, the library should have an interest in completing at least what they have on hand. I think this would be interesting information to have, but not especially necessary. I would like to add one thing to that. I think that there are many situations that we all encounter where we attempt to identify in some recognizable source an obscure reference, and are not successful in doing it. I think that courtesy requires us to indicate to the library from whom we are requesting this material our inability to verify the reference. Even more helpful would be an indication of what sources we have checked, such as Chemical Abstracts, NSA, Biological Abstracts, and what have you. That automatically eliminates those sources for searching efforts for the library.

M. L. PFLUEGER: I touched on inter-library loan in my talk. I think that possibly ORINS Library receives a great many requests for inter-library loans, as a result of a standard answer we have here that is often given to requests for published literature. People see the item in Nuclear Science Abstracts and come to us for it. Our answer in these cases is that this is a journal article, we don't supply it, and that ORINS Library holds most of the published literature abstracted in Nuclear Science Abstracts. If any of you have been on the receiving end of one of these standard answers from us, I hope you won't construe this as a mandate to go immediately to ORINS Library for the particular item you need. I think that ORINS has really had some very peculiar inter-library loan requests that probably stem from our answers of this kind.

People have gone to them from practically across the continent for material that should be right in their own back yards. Isn't this true, Marion?

PAULINE ATHERTON: I have something to add to the list. It wasn't prepared for librarians but it may be useful. The American Institute of Physics has completed it for all the physicists that go abroad. It is a pamphlet, just published this May in the second edition, "Physics Organizations Abroad." It is arranged in geographic order giving the name of the contact at the various labs or other physics organizations in all the countries, I think, around the world. It is not too large, but it, again, might supplement information you have somewhere else. Write to the Institute, and I am sure they will provide you with as many copies as you want. To bring this edition up to date, one person from the Institute made contacts all over the world with any organization that might sound like a physics organization, and this file has been maintained. So, if you don't find something there—as Margaret was saying about atomic, nuclear, half life in the title—if it has anything about physics in the title, write us and perhaps we can provide you with some information.

ELISE FISHBEIN: I have another little file by catch word projects. For example, Project SQUID, or any of the projects that have these short, catchy names, and I list each report by report number on one card, and you can easily pick out the one you want very quickly.

M. L. PFLUEGER: Very good. Can we hear from some more of you about these files.

HELEN HAUCK: A little more than a year ago we started, rather innocently, a file on specifications. We are serving primarily an industrial community manufacturing for the entire world. And we are finding, as this file develops, that it is invaluable. Many a time on a rush noon hour phone call, we can answer a question that might have taken three or four hours of searching. All of the staff have contributed to the file, but one individual is constantly on the alert and constantly searching for the information. We arrange it by the sponsoring society. I am not talking about ASTM standards. I am talking about very obscure systems that have been the standard or specification for 20 or 30 years, and are still current, and all of a sudden appear on some contract.

M. L. PFLUEGER: Thank you very much. Here in DTIE, we are very conscious of this need for specifications, and I am sure many of you have been faced with knotty problems, trying to run them down. I gather Miss Hauck is inviting us to write to her for help.

WALTER A. KEE: I understand the Institute for Scientific Information in Philadelphia is planning a new service beginning next year, which will list prior to the date of meetings, a list of the meetings, a list of the papers, a list of whether published proceedings are going to

be available. If so, what the source will be, etc. I thought it might be well to just make a note of this. I suspect we will be getting publicity blurbs. I thought you might be interested to know that such a service is contemplated.

M. L. PFLUEGER: Yes, it sounds as if it would be very useful. Speaking of conference papers, I might mention that DTI is endeavoring to improve its coverage of papers given at conferences and meetings. I can't go into this in detail now, but we do plan to treat this material as published literature, and in all liklihood ORINS Library will be the source for this. We feel there has been a gap in our coverage of the meeting--paper type of information. As probably some of you know and have read, there are statistics on how much of this ever gets into the permanent literature, and it is by no means 100%. We hope to capture a larger percentage of that than we have in the past, and it will be available on inter-library loan, as will the journal literature, from the ORINS Library.

ROSE KRAFT: We would like to see a record in which proceedings of a numbered conference, say the 7th conference, would indicate earlier conferences.

M. L. PFLUEGER: I think that none of us who have maintained these little private files, have kept our information this way, unfortunately.

R. KRAFT: No, I mean this information would be printed by AEC on the inside cover.

M. L. PFLUEGER: You mean the information should appear on proceedings published by DTIE.

R. KRAFT: Often you can find the fourth or fifth but can't find the third.

M. L. PFLUEGER: I am very familiar with this problem. The reason is often that the fifth was printed but the third wasn't. It is difficult for us to find this, too. Will the note taker make a note of this for Daun Sample?

JOHN P. BINNINGTON: Brookhaven does a very nice thing on annual reports. They list all their preceding annual reports on the latest one, and it makes it easier to identify the earlier reports.

M. L. PFLUEGER: In other words, they do with annual reports what we are suggesting for numbered conferences.

ALLEEN THOMPSON: I would also like to mention one file we do use. We quite often have a man come in and ask for the issue on reactors in Nucleonics. Nucleonics periodically has a whole issue on

reactors. We go through them and have spent too many hours hunting for this. We finally now have a card by reactor name, with very complete information on it. We don't have the complete bibliographical business for all the articles, but just those that are really full, and throw this at them and say, here it it. We have found it very useful.

M. L. PFLUEGER: Any more of these tricks of the trade you can share with others?

LUCILE R. WESCOTT: Just in mentioning about meetings that are coming up. I think you sent to us a little book from the International Atomic Energy Agency, and for approximately nine months in advance, giving them by the month. This covers the dates of meetings that are expected or planned, or at least meetings they have had some word about. And this, also, is a very good reference tool at times.

M. L. PFLUEGER: That is a very good little tool. I think many of the contractors, and also the depository libraries get that from us. If not, I believe you can get on the mailing list and get it free of charge from the Atomic International Agency.

MARIE S. GOFF: I would like to mention that the latest published source of biographical information that we use is the patentee index in the U. S. Patent Office. It gives assignee, gives the man's current connection if in industry, and the city. This could send you off on another tangent if you have a good friend in that city.

M. L. PFLUEGER: The importance of personal contacts in doing reference work has been mentioned. I think it can't be stressed too strongly, really, and I hope that one of the results of this meeting today, or these three days, will be that you will go away with many more personal contacts that will be helpful to you in your work. I hope you will feel free to call on any of the people, at least here in Oak Ridge, whom you have met and whom you have heard. And I hope that you will have also made many pleasant and useful contacts with others who are participating from outside of Oak Ridge. We have time for one or two other questions.

CHRIS G. STEVENSON: I thought I might mention that at Hanford we publish monthly a special letter which is an attempt to keep our technical people informed of new specifications. We don't have an off-site distribution, but if any of you are interested in getting this, we would be happy to send this to you.

R. KRAFT: We are revising our library brochure that we give out to new people, and to scientific and technical personnel. I am wondering if there are any other agencies who have this same type of publication that would be willing to send us a copy of it.

M. L. PFLUEGER: I don't need to repeat the request. This is Miss Rose Kraft from Lawrence Radiation Lab at Livermore. If you have such a library guide or handbook, would you please send them to her? Incidentally, while mailing them out, mail one to us, too. There was one other question there, and I want to get it before the thought slips away from me. I would like to go from this matter I just touched on, of the personal contacts and that is to put in a plug for the Technical Information Bulletin which we have recently revived. We hope to make it truly a two-way instrument of communication, but we can't do this unless you people who use it will contribute. And if we can make it a forum for problems that are common to us all, we would be very, very happy. I hope you will do that.

B. LITERATURE SEARCHING

LITERATURE SEARCHING TECHNIQUES

Hugh E. Voress

Division of Technical Information Extension
U. S. Atomic Energy Commission

Mr. Jacobs and I will each present the details of a specific literature search prepared by this office. However, before this is done, a brief talk on basic techniques which we use may be helpful. We realize that many of you may not prepare as comprehensive a product as does this office. Manpower, time, and money are indeed great equalizers. However, these general concepts can be useful regardless of the comprehensiveness involved.

There are many aspects to consider in making an effective literature search. Initially, it is assumed that one must attempt to locate all available information relevant to a subject at the level required by the requester. With patents, all available information is required in order to establish priority in the recording of ideas and inventions. With the volume of literature now growing at an accelerated and unprecedented rate, retrieval is made more difficult by the sheer volume of information available. An effort to retrieve specific information concerning a specific subject or an effort to retrieve general information concerning a general subject must be carefully planned. Efficiency in literature searching can be gained only by experience, but certain principles which may be modified to suit the conditions of almost any particular situation can be set forth.

In order to perform a comprehensive examination of literature, the following steps should be taken:

1. Determine the subject scope
2. Determine the temporal scope
3. Determine the depth
4. Determine the literature to be used, e.g., abstract journals, handbooks, books, etc.
5. Familiarize oneself with the indexes to be used
6. Determine the subject headings involved
7. Scan the subject indexes

8. Check the abstracts cited in the indexes for pertinency
9. Prepare a list of authors of selected references
10. Scan the author indexes for additional references
11. Prepare a list of corporate authors (issuing agencies)
12. Scan the corporate author indexes for additional references
13. Arrange all the references in the order desired
14. Edit the citations into the same format
15. Compose the finished copy

EXACT NEEDS OF THE REQUESTER

The searcher must first determine the scope of the subject. In other words, he must determine "what the requester wants." Although a written statement should be obtained of his needs, it is frequently necessary to have several discussions with the requester in order that these needs be understood clearly. Requesters may not know just what type of information will be helpful or available, or just what type of information they want. Such a discussion may help to better formulate the exact requirements. The requester should be asked if he has done any investigating himself in order to avoid duplication of effort. If he does not understand how to examine the reference tools he has already used, this work may have to be done again by a trained searcher.

The parameters or limits of the requester's needs often go beyond subject alone. It may be that only information developed after a certain date is sought. Or, he may only want that developed by a certain person, company, or in certain countries. Adding qualifications of this type will greatly reduce the amount of time and effort required for retrieval.

SCOPE OF THE REQUESTER'S NEEDS

The definition of the scope of the request should be explored from a subject standpoint so that all possible information related to the request will be considered. An experienced searcher examines textbooks, encyclopedias, and dictionaries to find related subjects of probable interest. No one, regardless of his subject specialties, can know all of these relationships. Discussion with a scientist or specialist in the field, other than the requester, often serves to determine whether any fields have been overlooked.

SOURCES AND REFERENCE TOOLS TO BE USED

In making the search itself, the first step is to examine various guides to scientific literature in the reference section of the library for selection of the proper reference tools. Those offering the most promise should be chosen before work is begun. Use of such a publication as Science Reference Sources by Frances Briggs Jenkins will assist in making this determination.

HEADINGS TO BE EXAMINED

It is necessary in the case of abstract journal indexes to understand the particular method of indexing used. This is usually explained in the introduction to the index. The U. S. Atomic Energy Commission issues a publication entitled "Subject Headings Used by the Atomic Energy Commission," TID-5001, which provides such an explanation. Constituting the subject heading authority for Nuclear Science Abstracts, TID-5001 lists permissible headings that can be used by the indexer and cross-refers to other related information. This publication has been distributed to all contractor and depository libraries.

Pertinent subject headings vary from one abstract journal to another, and it has been found helpful to list the subject headings selected for each journal. Revision of these lists becomes necessary as the work progresses when relationships are discovered that were not readily apparent at the outset.

COMPREHENSIVENESS AND TIME PERIOD

A fundamental decision that must be made is whether the investigation needs to be brief or comprehensive. Occasionally, a preliminary determination is made of the amount of literature that will have to be covered. This will permit the searcher to advise the requester of the probable time involved. In general, comprehensive subjects usually require months of work and a requester should be advised of the probable cost in both time and effort. Just how comprehensive the review should be is only one facet of the problem; another concerns the span of time in months and years to be covered in the literature. A third consideration is the body of literature that should be covered, i.e., patents, periodicals, handbooks, books,

monographs, bibliographies, reviews, encyclopedias, etc. Review articles, books, monographs, and bibliographies frequently summarize older information and thereby may reduce the necessity of reviewing some of the older literature. It is helpful to arrange these sources of information in order of importance; then, should expediency be a factor, the most important source can be checked first. Usually, the most recent sources are explored first.

EVALUATION OF REFERENCES AND ABSTRACTS

After an index has been searched, the cited abstracts must be read to determine whether they are pertinent. This is necessary since all people do not think alike, and methods of conveying information through indexes are often not consistent. Indexes cannot fully express the content of titles and abstracts. Should the information uncovered be of a particular nature, e.g., patents, scanning of publications specializing in patent literature may turn up additional references.

AUTHORS AND CORPORATE AUTHORS

Another aid is to list the authors of the selected references. Examination of the author index in an abstract journal may result in the location of additional references that were not indexed as those found initially. An examination of the corporate authors or issuing agencies can also be fruitful using this technique. Work being performed at an installation may be subject-indexed by several different people over a period of time. This can result in variations in style, as the subject considered by one person to be worthy of indexing may not be by another. A search of the corporate author index may give additional help in alleviating this problem.

STYLING OF THE REFERENCES

Editing of all references found into a single style is the next step. This is advisable because there are many individual styles used by the various abstracting services. Almost all abstract journals vary as to journal abbreviations in the citation. However, the same abbreviations should be used for references from a given journal source. In addition, some journals may list references by author, while others may cite by title.

TERMINATION OF SEARCH

During styling and consolidation, if evaluation indicates that the information desired has been located, this phase may be terminated. However, location of only scanty amounts of information may indicate that a greater time span may be necessary or that a different body of literature should be surveyed. As mentioned before, the most important abstracting journals pertinent to the subject should be examined first, starting with the most recent issues. As one examines the older issues of an abstract journal, it is important to remember that there may be changes in nomenclature and terminology which will obviously affect subject headings.

PRESENTATION OF REFERENCES

A final point to consider is the manner in which the information will be presented to the requester. Within our organization, any literature search which has taken appreciable time or has resulted in a significant list of references is published in order to provide this material to others with similar needs. These publications are distributed both to the Atomic Energy Commission contractors and to the Depository Library collections. They are also cited in the TID-3700 series of "Informal Listing of Bibliographies of Atomic Energy Literature," which covers on a current basis bibliographies in preparation and completed. "Bibliographies of Interest to the Atomic Energy Program," TID-3043(Rev. 2), is a cumulation covering all bibliographies and literature searches through November 1961, and is supplemented on an annual basis. These documents are in the depository collections and should be kept in the reference section.

BIBLIOGRAPHIES AND LITERATURE SEARCHES IN PREPARATION

SUBJECT	COMPILER(S)	IDENTIFICATION NO. (REPORT NO.)	DATE STARTED	ESTIMATED COMPLETION DATE	SCOPE (SUBJECT MATTER—EXTENT OF LITERATURE TO BE SELECTED, COMPREHENSIVE, CRITICAL, ETC.)	WILL DTI EXTENSION RECEIVE COPIES?	FOR AEC CONTRACTORS	
							WILL YOU MAKE STANDARD DISTRIBUTION?	WILL IT BE FOR SALE BY OTS?

Mail to: U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee
Attention: Technical Literature Section

SUBMITTED BY _____

_____
ORGANIZATION AND LOCATION

OTI-89(1-62) USAEC Division of Technical Information Extension, Oak Ridge, Tennessee

A LITERATURE SEARCH ON THORIUM TECHNOLOGY

James M. Jacobs

Division of Technical Information Extension
U. S. Atomic Energy Commission

Mr. Voress demonstrated to you the basic procedures necessary to perform a literature search. I will discuss a specific example resulting from a request of the Reactor Division of Oak Ridge Operations Office, AEC, to prepare a formal bibliography encompassing the subjects thorium technology, conversion of thorium-232 to uranium-233, nuclear reactors used for this conversion, and reactors designed to use uranium-233 as fuel. The primary purpose of this task was to provide background material for the Thorium Utilization Program presently underway at the Oak Ridge National Laboratory. This bibliography is scheduled for publication in 1963. At first glance, the subject appears to be straightforward, and should be fairly simple. However, there were a number of complicating ramifications involved.

In advance of the literature search, an administrative decision was made to prepare a formal bibliography because of the nature of the program to be supported by the information gathered. The work which I will describe, then, was the initial step in the preparation of a compilation which unlike the usual search, will be fully annotated and indexed prior to publication. However, the techniques and mechanisms involved here do not vary in any way from any other examination of technical literature made to provide a scientist with specific types of references.

Before describing the search itself, I would like to review some basic procedures required in the performance of any such survey. The parameters must first be determined to ensure efficiency and effectiveness. In the case of thorium, I met with scientists from both Oak Ridge Operations Office and Oak Ridge National Laboratory to ascertain precisely what was wanted. First, we discussed the scope involved, and arrived at the subject mentioned above. We decided that information on the prospecting for, mining, extractive metallurgy, and analytical chemistry of thorium was outside the scope of interest. On the other hand, fuel element fabrication methods, purity requirements, radiochemical reprocessing of irradiated fuel and blanket materials, irradiated

fuel element handling, corrosion, thermal properties, nuclear properties, cost studies, etc., were definitely of interest as well as breeding ratios and reactor design. Thus, as a result of the discussions, I was familiar with the subject matter that should be covered.

Next, we discussed the distribution of the finished bibliography -- who was going to be able to receive or see it. Since the program is unclassified security-wise, the bibliography will be unclassified. It was decided that the bibliography would be offered for sale through the Office of Technical Services, and that it would be deposited at the domestic and foreign depository libraries. This portion of the discussion accomplished more than arriving at an administrative decision on how to distribute our products; it told me that I would be limited to unclassified sources.

As a further result of the discussions with requestors, it was determined that no limit would be placed on original sources of information. "Include all the information regardless of who developed it, what country it was developed in, or what organization did the work," I was told. However, since Nuclear Science Abstracts is generally accepted to be the leading abstract journal in this field, it was felt that use of secondary sources other than NSA would yield meager additional information and would be uneconomical.

Another parameter established was concerned with dates of coverage. It was decided that most useful work in this area would be reviewed in the last five years. This was certainly agreeable to me because it meant that I would have to examine only two NSA cumulative indexes -- Volumes 11-15 cumulative index and the Volume 16 annual index, which will be published early next year. Thus 1957 to date was established as the period to be explored.

Let me digress a moment at this point to hedge a little. We normally do not operate on the kind of schedule I have described here. The nature of this particular job allowed us to delay the final output for several months, so I was permitted to set up my working schedule in as efficient a manner as possible. But, I can assure you that I will be doing other things beside sitting around waiting for that Volume 16 index to be published. Under usual circumstances, a search is performed as quickly as it can be, without interruptions.

Now, let me summarize the aforementioned ideas. Before you can get into the details, you have to determine your goals first. Too much emphasis cannot be placed on making these determinations. It helps both you and the user. For the searcher, it cuts down working time, and permits the job to be done more efficiently. For

the user, it gives him what he wants, promotes relative assurance that what is wanted is not being overlooked, and insures that the user will not get a multitude of references in which he has no interest. No one will be thanked for irrelevant literature.

Offhand, the thorium breeding and thorium breeders search appeared to be simple in scope. First, it was necessary to determine what subject headings in the NSA index might refer us to pertinent information. TID-5001, Subject Headings Used by the USAEC Technical Information Service, provides the key to the manner in which information is subject indexed in NSA. In order to perform a proper search in NSA, it is essential that TID-5001 be consulted. In addition to main headings, cross references are also included which are necessary to develop a complete survey. The value of consulting TID-5001 when using the NSA indexes cannot be overemphasized. In fact, we at DTIE do not think that a truly complete literature search in NSA can be performed without it.

I began with the obvious headings like Thorium, Thorium Isotopes Th-232, Uranium, Uranium Isotopes U-233, Thorex Process, Breeder Reactors, Power Breeder Reactors, etc. Next, I went to general headings like Reactor Fuel Elements, Reactor Breeding Blankets, Slug Elements, etc. These headings lead to some information in the NSA indexes; in addition, scanning this portion of TID-5001 leads to more specific subject entries such as Reactor Fuel Disks, Reactor Fuel Spheres, Reactor Breeding Elements, Slug Elements (Th-U), etc. Each of these headings, which may lead to references containing needed information, must be reviewed in the NSA indexes. The next step is to turn to specific fuel and breeding materials: alloys, ceramics, salts, etc. which may be used in reactors. These include such materials as Aluminum-Thorium Alloys, Beryllium Fluoride-Sodium Fluoride-Thorium Fluoride Systems, Bismuth-Lead-Thorium Alloys, Graphite-Thorium Carbide Systems, Plutonium Oxide-Thorium Oxide Systems, etc. This is a lot of work, but it is unavoidable; and yet there is one more area which must be developed -- reactors. It is necessary to look for references to pertinent reports on all reactors which use thorium-232 in the fuel or blanket, or are fueled with uranium-233. Unfortunately, TID-5001 cannot be used for this. I went to several of the reactor survey charts published in journals in the nuclear engineering field, and checked off the fissile and fertile materials used in each reactor. When I had identified each of these reactors which use uranium-233 or thorium-232, I then returned to TID-5001 to determine the proper heading for each reactor under which to search in NSA.

Let us pause again to review these last ideas. In order to properly perform a survey of literature, the subject must be approached from all conceivable directions. The thorium - thorium

breeder case which I have just described illustrates this idea of a multidirectional approach. I began first with the elements or isotopes of thorium and uranium. Next, I turned to the radiochemical processing method used to separate the irradiated thorium and converted uranium-233 from each other, from fission products, and from other contaminants -- the Thorex Process. The problem was then approached from the general headings used for the assemblies inserted in reactors: Reactor Fuel Elements, Reactor Breeding Blankets, and their more specific headings, Reactor Fuel Disks, etc. Following this came those alloys and systems which contain thorium, and of which fuels and blankets are constructed, Aluminum - Thorium Alloys, Graphite - Thorium Carbide Systems, etc. Then, finally, I reviewed the headings for the complete assemblies -- reactors.

Even a simple search may not be simple. I do not care to waste your time now, in listing all of the subject headings I selected for this survey. A complete list is included as an appendix to this paper and in your packet. Let it suffice to say that I determined a total of 154 different headings to be applicable.

At this point, it is possible to begin the search itself. There is no need to delve too deeply into this operation, because it is rather routine. The main headings which have been selected are arranged alphabetically and, using them as a guide, the index is entered. The modifier for each entry probably will indicate whether that particular reference is pertinent. If there is doubt as to the applicability of a particular entry, include it at this stage.

While there undoubtedly are a number of methods by which reference citations may be noted from the index, the method used at DTIE has proven to be both simple and efficient. A 3 x 5 paper slip is prepared for each citation. On it, we note the abstract number and the report number if the citation is to a report. This allows for certain manipulations when this phase is completed.

When the indexes have been reviewed, the paper slips are arranged by abstract number. This arrangement serves two purposes: 1) it permits immediate elimination of duplicate citations, and 2) it allows for an easy method of entering the abstract journal. There will be a large number of duplicates, but they are thus eliminated during this first collation.

When the slips have been arranged in abstract number order, the abstracts are then reviewed for pertinency. The complete descriptive cataloging from those abstracts which are selected are copied onto 3 x 5 slips or cards. This allows for a final arrangement of these references in any order which may be desired -- by subject, author, corporate author, etc.

In some cases it will not be possible to make a selection from the abstracts; for such references, the report or journal article itself must be consulted.

After the final arrangement of slips is completed, the literature search is essentially finished. All that remains is to transcribe the results into whatever form is needed.

LIST OF SUBJECT HEADINGS USED IN THORIUM
BREEDING AND THORIUM BREEDER REACTOR SEARCH

Advanced Epithermal Thorium Reactor

Aluminum-thorium alloys

Aluminum-thorium-uranium alloys

Beryllium fluoride-lithium fluoride-thorium fluoride systems

Beryllium fluoride-lithium fluoride-thorium fluoride-uranium fluoride-zirconium fluoride systems

Beryllium fluoride-lithium fluoride-thorium fluoride-uranium fluoride systems

Beryllium fluoride-sodium fluoride-thorium fluoride systems

Beryllium fluoride-thorium fluoride systems

Beryllium fluoride-thorium fluoride-uranium fluoride systems

Beryllium oxide-thorium oxide systems

Beryllium oxide-thorium oxide-uranium oxide systems

Beryllium-silicon-thorium systems

Beryllium-thorium alloys

Beryllium-thorium-uranium alloys

Bismuth-lead-thorium alloys

Bismuth-silicon-thorium systems

Bismuth-thorium alloys

Bismuth-thorium carbide systems

Bismuth-thorium oxide systems

Bismuth-thorium oxide-uranium systems

Bismuth-thorium-uranium alloys

Boron-thorium systems

Boron-thorium-tungsten systems

Boron-thorium-uranium systems

Breeder Reactors

Calcium fluoride-thorium fluoride-zinc fluoride systems

CANDU Reactor

Carbon-chromium-thorium systems

Carbon-thorium systems

Cerium-magnesium-thorium alloys

Cerium-thorium alloys

Cesium fluoride-thorium fluoride systems

Chromium-thorium alloys

Copper-thorium alloys

Elk River Power Reactor

Sodium fluoride-thorium fluoride-uranium fluoride systems

Sodium Reactor Experiment

Spectral Shift Control Reactor

Strontium fluoride-thorium fluoride systems

Thorium

Thorium alloys

Thorium Breeder Reactor

Thorium carbide-uranium carbide systems

Thorium carbides

Thorium compounds

Thorium isotopes Th^{232}

Thorium nitrides

Thorium oxide compacts

Thorium oxide powders

Thorium oxide slurries

Thorium oxide-titanium oxide systems

Thorium oxide-uranium oxide slurries

Thorium oxide-uranium oxide systems

Thorium oxide-uranium oxide systems (clad)

Thorium oxide-water-d_2 systems

Thorium oxide-zirconium systems

Thorium oxides

Thorium powders

Thorium silicides

Thorium slurries

Thorium systems

Thorium-tin alloys

Thorium-titanium alloys

Thorium-titanium-uranium alloys

Thorium-tungsten alloys

Thorium-tungsten-uranium alloys

Thorium-uranium alloys

Thorium-uranium-zirconium alloys

Thorium-ytterbium alloys

Thorium-yttrium alloys

Thorium-zirconium alloys

Uranium isotopes U^{233} production

Uranium Production Reactor

IV-B-3

A LITERATURE SEARCH ON RADIOACTIVE FALLOUT

Hugh E. Voress

Division of Technical Information Extension
U. S. Atomic Energy Commission

Mr. Jacobs has presented a case study of a comprehensive literature search in which only Nuclear Science Abstracts was used. In this second case, which I am going to describe, ten abstract journals, in addition to Nuclear Science Abstracts, were examined in order to locate information in the field of radioactive fallout.

First of all, let us review some of the facts concerned with radioactive fallout so that the scope of this subject can be better understood. Following nuclear weapons testing in 1954, inherent dangers of fallout to the present and succeeding generations engendered two Congressional Hearings. More recently, interest in this field has been increased manyfold by the resumption of weapons testing.

Studies have been made concerning all aspects of radioactive fallout. Such studies have included different methods for collecting and measuring the distribution of atomic debris in the atmosphere, measurement of the material deposited in rainout, and determination of the areas of the world where fallout deposition is relatively concentrated. Studies on soil absorption, migration, and biological uptake of radioactive materials are of prime importance. Ecological studies of both plants and animals in a fallout environment are pertinent also. Other areas of interest include somatic and genetic effects of radiation on plants, animals and human beings; determination of the amount of radioactivity in various natural materials, such as foodstuffs and water; and certain aspects of civil defense.

As you can see in considering these subjects, there is no one place where all fallout information would be found. Therefore, to carry out a complete survey of the literature in this field, one must explore many abstract journals and other secondary tools dating back to the inception of thermonuclear testing in 1954.

As I mentioned in our basic talk, TID-5001, "Subject Headings Used by the Technical Information Service," was scanned in order to find subject headings to be used to retrieve information in Nuclear Science Abstracts. The identification of such subject headings covered, in addition to the term "fallout", the isotopes involved in fallout, the weapon tests themselves, the places where the fallout

occurred, related projects such as the Sunshine Project, etc. This step revealed 95 headings that should be searched. However, this did not mean that all the information behind each of these headings would be relevant.

After each of the headings were examined in the subject indexes, the results were recorded on "P" slips and the "P" slips were arranged in alphanumerical order by abstract number, so that each abstract could be reviewed in Nuclear Science Abstracts. This constituted the base list of titles against which all other abstract journal references could be "dupe checked".

The more prolific authors and installations were examined in the author and corporate author files respectively, these in turn revealing additional references not located by the subject approach.

A search of the other abstract journals was commenced when all the titles selected from Nuclear Science Abstracts had been prepared on 3 x 5 cards. Study of the introduction to the index and the index itself helped in determining appropriate headings in each of the abstract journals. The abstract journals used and the number of headings selected were:

Applied Science and Technology Index	16	headings
Biological Abstracts	55	"
Chemical Abstracts	20	"
Chemical Titles	55	"
Engineering Index	10	"
Index Medicus	9	"
Industrial Hygiene Index	12	"
International Abstracts of Biological Science	7	"
Meteorological and Geoastrophysical Abstracts	66	"
Readers' Guide	13	"

Lists of all headings scanned in each abstract journal have been reproduced and passed out to you.

After these journals were reviewed and titles were selected, a "dupe check" of the items selected was made by comparing them with

the material obtained from Nuclear Science Abstracts. For ease in "dupe checking", all references were arranged by senior author after they had been styled and typed in the same form as NSA. During the time that the references were being typed and interfiled for one journal, the searcher would be working with another.

When this task was finished, it was decided that the references should be arranged under some kind of a subject classification scheme as no time was available to prepare a subject index. Therefore, a subject classification scheme was devised which seemed to cover all of the classes of information that had been located. However, as the papers were arranged, it was found that this classification scheme required modification to fit the circumstances. As with all classification systems, many papers fit into two or more categories, and it was necessary to prepare cross-references to papers that appeared in more than one category. After all papers were categorized, they were arranged into the first appropriate category. They were further arranged within each category by reports, journal articles, and miscellaneous publications. The reports were entered alphanumerically by report number and the journals alphabetically by journal name and chronologically. The miscellaneous literature was arranged by title. Then each title was numbered, so that author and report number availability indexes could be prepared.

An introduction and a table of contents were prepared, the table of contents being fundamentally a listing of the classification scheme.

The entire material was finally typed on multilith plates, printed, and distributed to contractor and depository libraries.

LIST OF SUBJECT HEADINGS USED IN
RADIOACTIVE FALLOUT SEARCH

Nuclear Science Abstracts

Aerosols

Air

Animal Metabolism

Animals

Atmosphere

Atomic Clouds

Atomic Weapons

Barium Isotopes Ba^{140}

Barium Isotopes Ba^{144}

Beta Radiation

Bombs

Buster Operation

Carbon Isotopes C^{14}

Castle Operation

Cerium Isotopes Ce^{141}

Cerium Isotopes Ce^{144}

Cesium Isotopes Cs^{137}

Civilian Defense

Contamination

Crossroads Operation

Decontamination

Diet

Earth

Ecology

Explosion Clouds

Fall-Out

Fission Products

Food

Gamma Radiation

Genetics

Greenhouse Operation

Ground

Hardtack Operation

High-Altitude Explosions

Iodine Isotopes I^{131}

Ionosphere

Ivy Operation

Jangle Operation

Lanthanum Isotopes La^{140}

Man

Man (Standard)

Metabolism

Meteorology

Milk

Molybdenum Isotopes Mo^{99}

Niobium Isotopes Nb^{95}

Particles

Nuclear Science Abstracts (cont'd)

Plant Metabolism

Plants

Plumbbob Operation

Plutonium Isotopes Pu^{239}

Radiation Damage

Radiation Detection Instruments

Radiation Detection Instruments (Colorimetric)

Radiation Detection Instruments (Ion Current Type)

Radiation Injuries

Radiation Monitoring

Radiation Protection

Radioisotopes

Radioactive Contamination

Radiological Defense

Radiological Telemetering Systems

Radiological Warfare

Radiological Warfare Agents

Radiological Weapons

Ranger Operation

Rate Meters

Redwing Operation

Rhodium Isotopes Rh^{106}

Ruthenium Isotopes Ru^{103}

Ruthenium Isotopes Ru^{106}

Sandstone Operation

Snapper Operation

Soils

Soils - Contamination

Stack Disposal

Stratosphere

Strontium Isotopes Sr^{85}

Strontium Isotopes Sr^{89}

Strontium Isotopes Sr^{90}

Sunshine Project

Teapot Operation

Telemetering Systems

Thermonuclear Weapons

Trinity Operation

Tumbler Operation

Tungsten Isotopes W^{185}

Underground Explosions

Underwater Explosions

Upshot-Knothole Operation

Water

Wigwam Operation

Yttrium Isotopes Y^{90}

Yttrium Isotopes Y^{91}

Yttrium Isotopes Y^{94}

Zirconium Isotopes Zr^{95}

Applied Science and Technology Index

Air raid shelters

Atomic bombs

Atomic weapons

Carbon

Cesium

Iodine

Isotopes

Plutonium

Radiation

Radioactive fallout

Radioactive substances

Radioactive substances in the body

Radioactive waste disposal

Radioactivity

Strontium

Weapons

Bibliography of Agriculture

Food - contamination

Radiation

Radioactive contamination

Radioactivity

Biological Abstracts (KWIC Index)

Aerosols

Animals

Atmosphere

Atomic--

Barium

Beta--

Biosphere

Bombs

Bread

Carbon

Cerium

Cesium

Civil Defense

Contamination

Decontamination

Defense

Deposition

Dose

Dosimeter

Ecology

Excretion

Explosions

Biological Abstracts (KWIC Index)
(cont'd)

Fallout

Food

Gamma--

Human

Injury

Iodine

Lanthanum

Man

Metabolism

Milk

Molybdenum

Niobium

Nuclear

Plants

Plutonium

Protection

Radiation--

Radioactive--

Radioisotopes

Radionuclides

Rhodium

Ruthenium

Shelters

Soils

Strontium

Tungsten

Uptake

Vegetation

Waste

Water

Weapons

Yttrium

Zirconium

Chemical Abstracts

Barium

Carbon

Cerium

Cesium

Explosions

Iodine

Isotopes

Lanthanum

Molybdenum

Niobium

Plutonium

Radioactive substances

Chemical Abstracts (cont'd)

Radioactivity

Radioelements

Rhodium

Ruthenium

Strontium

Tungsten

Yttrium

Zirconium

Chemical Titles (KWIC Index)

Aerosols

Animals

Atmosphere

Atomic--

Barium

Beta--

Biosphere

Bombs

Bread

Carbon

Cerium

Cesium

Civil Defense

Contamination

Decontamination

Defense

Deposition

Dose

Dosimeter

Ecology

Excretion

Explosions

Fallout

Food

Gamma--

Human

Injury

Iodine

Lanthanum

Man

Metabolism

Milk

Molybdenum

Niobium

Nuclear

Plants

Chemical Titles (KWIC Index)
(cont'd)

Plutonium

Protection

Radiation--

Radioactive--

Radioisotopes

Radionuclides

Rhodium

Ruthenium

Shelters

Soils

Strontium

Tungsten

Uptake

Vegetation

Waste

Water

Weapons

Yttrium

Zirconium

Engineering Index

Aircraft - Shelters

Civil Defense - Shelters

Explosions - Nuclear

Isotopes

Meteorology - Radioactivity

Radiation

Radiation - Hazards

Radiation - Measurement

Radioactive Materials

Telemetering

Index Medicus

Atomic Warfare

Radiation

Radiation Effects

Radiation Injury

Radiation Protection

Radioactive Fallout

Radioactive Waste

Radioactivity

Radiometry

Industrial Hygiene Digest

Aerosols

Air sampler

Air sampling

Industrial Hygiene Digest (cont'd)

Dust sampling

Iodine-131

Radiation

Radiation (atomic, ionizing, nuclear)

Radioactive—

Radioactivity

Radioelements, radioisotopes

Radiologic(al)

Strontium-90

Waste disposal

International Abstracts of Biological Science

Isotopes

Radiation

Radiation, ionising

Radiation, ionising, electromagnetic

Radiation protection

Radiation sickness

Radioactivity

Meteorological and Geoastrophysical Abstracts

Atmospheric counter radiation

Electromagnetic radiation

Fallout probability predictions

Radiation

Radiation absorption

Radiation effects

Radiation instruments

Radioactive aerosols

Radioactive clouds

Radioactive diffusion

Radioactive dust structure

Radioactive fallout

Radioactive fallout analysis

Radioactive fallout calculations

Radioactive fallout data

Radioactive fallout dose calculations

Radioactive fallout dose patterns

Radioactive fallout effects

Radioactive fallout effects on leukemia

Radioactive fallout forecasting

Radioactive fallout from clouds

Radioactive fallout hazards

Radioactive fallout measurement techniques

Radioactive fallout mechanism

Meteorological and Geoastrophysical Abstracts (cont'd)

Radioactive fallout pattern forecasting

Radioactive fallout patterns

Radioactive fallout probability forecasting

Radioactive fallout propagation

Radioactive fallout research

Radioactive fallout shelters

Radioactive isotopes

Radioactive particle dispersion

Radioactive plants

Radioactive pollution of atmosphere

Radioactive precipitation

Radioactive rainfall

Radioactive rainout

Radioactive rainwater

Radioactive tracers in meteorology

Radioactive transfer

Radioactive variation

Radioactive waste disposal

Radioactive water supply

Radioactivity of the atmosphere

Radioactivity in the atmosphere measurement techniques

Radioactivity measurement techniques

Radioactivity measurements

Radioactivity measuring devices

Radioactivity meteorology

Radioactivity in precipitation

Radioactivity of rainwater

Radioactivity in the stratosphere

Radioactivity in the upper atmosphere

Radiocarbon distribution

Radiocarbon in the ocean

Strontium^{90}

Strontium^{90} in animals

Strontium^{90} data

Strontium^{90} fallout

Strontium^{90} in human bones

Strontium^{90} measurements

Strontium^{90} in rainwater

Strontium^{90} in sheep bones

Strontium^{90} stratospheric storage

Strontium^{90} tropospheric storage

Strontium^{90} in wheat plants

Reader's Guide

Atomic bomb shelters

Atomic power and meteorology

Atomic warfare

Food contamination

Milk contamination

Radiation

Radiation sickness

Radioactive fallout

Radioactive waste disposal

Radioactivity

Radioisotopes

Radiological warfare

War

DISCUSSION: SESSION IV-B

LITERATURE SEARCHING

Margaret L. Pflueger, Discussion Leader

M. L. PFLUEGER: One of our primary purposes in having these papers on our program is to give you who offer this kind of service in your own libraries, some pointers on how it is done here in our building. I think that many of you know that the DTI Extension does offer literature search service. On the other hand, DTI Extension also urges the depository libraries and the contractor libraries to do as much of this in their own libraries as they can. We feel our first responsibility is to provide you with the materials to enable you to give this kind of service to your own users. We will act as supplements to this service, if we can call it that. Hugh, I wonder, before I call for questions, if we might not tell these people that we not only offer this literature search service, but in specific cases, if they come to you with a particular topic, you would be glad to give them guide lines as to how to proceed so they can do their own.

HUGH E. VORESS: I certainly would be glad to try. The only thing I can say is we have only a certain number of people who work in this area, and our work load is getting higher and higher all the time. We try to do the best we can with the number of people available.

M. L. PFLUEGER: The point I was trying to make was not that you should come to us with the literature searches, but, when you are in trouble, come to us and ask what should you do next to help yourselves. I would like to hear any of your questions that either Jim or Hugh can answer. I also think they would be interested to have you bring up particular subject areas in the field of nuclear science that are particularly knotty to search. Would anyone care to speak to either of these two points?

J. C. WYLLIE: The implication is that literature searches you want reported are intended for publication. Is this correct? Because we have run, just since the first of June, three literature searches which are not outside the field of your interest, and one of which is definitely within. But none of these was intended for publication, and none of them has been reported.

H. E. VORESS: Yes, we would certainly like to have any literature searches which you have and would permit us to publicize or print. However, I don't see any point in listing those that cannot

be distributed. Our main purpose is to act as a central clearing house for literature, to distribute searches to all people and also cite them in bibliographies.

J. C. WYLLIE: Perhaps I can make my question more pointed by giving an example. We have no objection in anyone else using these. On the other hand, in trying to meet a specific commitment in our laboratories, and we meet that and are prepared then, to drop it. In one case, there was a man working on the radical group theory of neutron fluxes. This would presumably be of interest to you, but in the search, which was fairly extensive, we turned up only six reports, which are outside of Nuclear Science Abstracts. These concerned mathematics and two groups on theory.

H. E. VORESS: We would certainly be interested in that.

J. C. WYLLIE: You have got Nuclear Science Abstracts.

H. E. VORESS: As Mr. Jacobs mentioned, you can have 152 headings in a search in order to pull information out of the science abstract journals and get it in one place. If we can have any such searches, and if we can have permission to publish them, I wouldn't be a bit surprised that we would publish them to make them available to all people who can use the information.

J. C. WYLLIE: One further point would be simply that the preparation of these for publication would require additional work, because much of this work, we got only 6 references and it was no special problem. I mean six in addition to those from Nuclear Science Abstracts, which will be in uniform style. But when you make one say on a molecular beam of given intensity after charge, much of this work is done by Xerox, and the forms of citations are quite variant. It would take, therefore, perhaps--well a week's extra work to prepare these for publication.

H. E. VORESS: I am sure if they are considered pertinent enough, we would be willing to print them, and possibly do the editorial work.

J. C. WYLLIE: Thank you, sir.

ROSE KRAFT: I wondered if we could come to you for guide lines. If you are asked to do a literature search for a particular project, and you go through the abstracting tools and indexes, and check the corporate authors, and come up with nothing, then could we come to you? Maybe we have missed it. Of course, this assures that the person

we are doing this for can't give us any help.

H. E. VORESS: We would be glad to try. If you haven't found anything, possibly we wouldn't either. We would be happy to try. And we do, as Lois Morris mentioned confer with the various scientists in the area. You just can't know all about everything. And so, we have to call on other people to help us. I might mention one thing. In the last ten years, I scarcely remember a single search that hasn't produced a number of references. I don't think we have really been faced with the problem of too few references.

M. L. PFLUEGER: We would really be interested to hear of specific subjects or areas that from your experience you find particularly difficult to search for. Can anyone offer anything of this kind?

C. J. WENSRICH: Margaret, I have been wondering if you used the GPO monthly catalog for this fallout? Would you also check, say, with the Office of Civil Defense to see what they have floating around?

H. E. VORESS: In this particular search, we did not.

C. J. WENSRICH: There are a number of research projects on this activity.

H. E. VORESS: We attempted to search only in answer to a specific request, and, should we have gone to these additional things, it would have delayed the publication somewhat. We were aware of this aspect.

C. J. WENSRICH: Because of the number of hearings of the Sub-Committee.

H. E. VORESS: I might mention something about bibliographies. We have enlarged our scope a bit, and we are not completely committed to nuclear science in our bibliography of bibliographies. We have stretched it some, and so anybody who has a bibliography should let us know about it.

M. L. PFLUEGER: We might put in a particular plea in this regard to depository libraries. They have large science and technology sections, and issue things of this kind. I hope you will consider yourselves in the family, too, and report your bibliographies to us. We have scheduled on the program a session on cooperation.

MARY J. RYAN: I wonder if I could find out by a show of hands, how many depository libraries undertake literature searches.

M. L. PFLUEGER: How many depositories give searches? I saw only one,

Mr. Wyllie. John Sherrod of the Library of Congress says they do, but they are a little special. Miss Hauck, do you?

HELEN HAUCK: We have a limited staff. We do assist by pointing out reference tools.

M. L. PFLUEGER: Many libraries give this kind of assistance. Your staff doesn't actually identify the references and bring out a list does it?

NADINE GEORGE: I would like to explain this literature search feature. I represent a departmental library at Southern Methodist, which is rather new. We opened a new science building about a year ago. We are, therefore, at least partly in the planning stage. One of the things we do plan to do is offer literature searches, and at the moment, we have the staff and we are building the references. I would like to point out in comparison to most of the librarians here, our resources are relatively limited, and I am not at all sure they would be of tremendous help to many of you. However, we stand ready to do what we can.

MIRIAM ALLEN: I thought that it was said that in the literature that came out, OTS was setting up depositories and that these depositories would give reference service. And I thought OTS was providing in these regional libraries, people who would give some reference service.

G. B. STULTZ: They give reference service, but don't do literature searching. The reference service is what you would call quick reference. OTS has a literature searching plan whereby they charge $8 an hour for doing this, but the depository libraries are not asked to do extensive literature searching. They just do not have the staff to do it.

MARY EILLEEN ROBERTS: I think that the paper given this morning on procedures, is one of the best that I have seen. It covers the things that we try to tell the people who are making the literature searches. I know that I, myself, have to condense it many times into five or ten minutes. I wonder if there would be any objection to reproducing that to give to the patrons as an aid in directing them in their literature searches. Also, how soon would it be available, if such is the case.

M. L. PFLUEGER: Hugh, do you want to answer that?

H. E. VORESS: I feel flattered, especially since she is representing my own school. I will be very happy to give her copies of this, and it is going to appear in the published proceedings.

M. E. ROBERTS: I wonder how soon it will come out?

H. E. VORESS: It is dependent upon how quickly we get these papers that have not been provided to us so far. Some of the people said they have to go back and polish their speech before we get it.

C. O. DEAN: I had to talk on mechanization yesterday and couldn't mention that we had found one of the greatest aids you could give to someone making a search. Is it pertinent to speak of this now?

M. L. PFLUEGER: Yes. Like the method ORNL was devising, is that right?

C. O. DEAN: Yes.

M. L. PFLUEGER: I am sure everyone would be interested to hear this.

C. O. DEAN: The compiling of a bibliography is a lot of work. Any search is a lot of work. You spoke of P-slips awhile ago. Anything I hate to do is use a P-slip, because first I have to write it, and then I am not sure I can read my own writing, because I am in a hurry, and I copy fast. Also I am running into the very common risk of getting something wrong right at that time. I know there are a lot of librarians here who are concerned with that. There are several devices that can help in this. Many of the librarians don't know how cheap it is to provide this service. It also makes all this shuffling that you have to do to put it together if it is of any length, much easier. I would just like to recommend it. We could never do the reference service we do if we did everything by hand.

M. L. PFLUEGER: Crowell, would you make this the subject of a short paper for the AEC Technical Information Bulletin? Let's have a show of hands about having something on it. Your audience is here. It is a very good point.

C. O. DEAN: I will see what I can do.

VIRGINIA D. ROSE: I have an example of a literature search in which I found nothing at all: the physical properties of graphite at temperatures of 4000 degrees centigrade. I also suggest there is a relative value of many of the literature searches, so maybe it would not

be of interest to more than one or two other people. The AEC Technical Information Bulletin might publish searches that may or may not be worthy of circulation and give a brief idea of the time, scope and depth of the searches it covers.

M. L. PFLUEGER: Excellent idea.

H. E. VORESS: Make them available to us. I am sure I can put it this way - it would be very rare to ever find a literature search that we wouldn't be interested in.

M. L. PFLUEGER: If they are sent here, we have them under bibliographic control, whereas they would not necessarily be under control if they were reported only in the Technical Information Bulletin.

V. D. ROSE: Many are not in form for reproduction. They are in the form of marks in reference books or on cards; they are still in card form. They have not been prepared in any way for transmittal.

H. E. VORESS: We have received things in many different, strange forms before.

ROY J. NIELSEN: We get some reference questions occasionally that demonstrate the type of problem that Miss Atherton mentioned yesterday. We were asked for cross sections of nuclear reactions at 15 to 20,000,000 electron volts, and this means that we have to look through quite a few references to find out which ones were studies which were performed at that particular energy range. So, I just wanted to substantiate her thesis to that extent.

M. L. PFLUEGER: I really think we must stop at this point, because what we want to talk about next, we consider very important, too. I will now turn the meeting over to Mr. Postell.

C. ROLE OF SPECIALIZED INFORMATION AND OATA CENTERS

Bernard M. Fry

National Science Foundation
Washington, D. C.

I think that much of what I had planned to say is a little of an anticlimax after Dr. Weinberg's talk last night. But I would like to examine with you some of the implications of the Specialized Information Centers, and particularly with regard to the current and increasing emphasis on specialized service.

I think Dr. Weinberg pointed out very significantly last night some of the reasons for the specialized information centers having come into being. I think it is not so much a failure of service on the part of the libraries, or the specialized libraries, as the development of a new area of need on the part of the scientists. It seems to me that it represents a further step beyond the abstracting service, for example, in providing a scientist with a further selection, a further digest, if you will, of information. I think that the specialized information service as developed by centers and by libraries here and there, is really symptomatic of the deepening crisis, as he put it, among scientists in their frustration at approaching and obtaining access to the world's literature on a current and on a retrospective basis.

Now, what is a Specialized Information Center, I think, is a good question. And I am sure it would be impossible for all of us to agree to a single definition. The principal distinguishing characteristic seems to be the evaluative element that has appeared in many of the Specialized Information Centers. The Centers that were mentioned by Dr. Weinberg last night, and others, e.g., the Radiation Affects Center, and, of course, the Defense Medical Center at Battelle, are probably best known to us. Many of these utilize an evaluation process in disseminating information in various degrees. Some of them, of course, start by putting out bibliographies as the conventional library does. Many times, however, they have specialists in the subject fields on their staffs, and these people not only review all the literature, but they prepare state of the art pieces, critical reviews and also frequently utilize direct interview information. The Battelle group is a good example. They have about sixty metallurgists on their staff, I

think that they utilize either full or part time, and many of these people travel around the country visiting laboratories, agencies, and installations where the work is being done. They pick up a lot of information that has never been published that is very fresh, very new, and they incorporate it many times in the specific request service which they provide, and then later in some of the state of the art papers. But I think, we should keep in mind their whole spectrum of specialized information service, with the highly evaluative element on the one end, and on the other, the typical bibliographical service, which most of us have been providing over the years.

Now it is hard to say where the specialized library leaves off and the specialized information center begins, but in many cases--and frequently you hear expressed the distinction that the specialized information center provides faster service, fast intensive service and in depth, which is a favorite expression. The implication, of course, is that the libraries do not provide such service. Now this, in a way, is a libel against libraries, because many of them do provide such service. Of course, some of them don't, and it is a constant challenge to all specialized librarians to provide such service.

On the national scene as a whole, as Dr. Weinberg indicated last night, there are at least four hundred of these centers. I think he probably was referring to the survey which the Science Foundation issued last year, or sponsored through Battelle, which identifies, I think, 427. This is a first directory, and is a very imperfect one. As I recall, there were close to 5000 responses, for example, to inquiries and to questionnaires in this area. Others have estimated that there are at least 3000 specialized information centers in the United States. Now, of course, you have the few on the one end who provide the evaluative service, and you have the great mass of them who provide a selective and intensive service and choose to call themselves information centers and not libraries.

This specialized information center is, of course, not a phenomenon peculiar to the United States. There have been directories in various Western European countries. France has issued a directory identifying over 300 specialized information centers. But, again, their characteristics have been very much like those in this country that are not well defined. Some of them evaluate and prepare state of the art papers, and others do not.

The National Science Foundation hopes to issue a revised directory of specialized information centers. It probably will be a much larger directory than the present one. We have underway now a directory of specialized information centers in the social sciences, for example, which should be out in about another year. The principal role of the Foundation, however, is to try to improve compatibility and exchange of information among these centers.

Many of the centers actually are not very well known. The Department of Defense reputedly has over 70 specialized information

centers. Many of them you know in plastics and solar power and such. I think DOD does not have really a complete record itself of its specialized information centers, because some of them appear to be set up in response to a local need, and there is very little announcement or exchange of information with the other parts of the community.

In order to utilize these centers to maximum effectiveness, there, of course, needs to be a common knowledge of their existence, of the services they will provide, the kinds of services, the public--the clientele they will serve, and this is where the Foundation is trying to do some work, in bringing together the resources of all the centers into a national pattern. Dr. Gray described to you the recent establishment of the National Referal Center at the Library of Congress. This is one step in the direction in which we propose to harness the resources of all the specialized centers. It just doesn't make sense, of course, for the government to spend a great deal of money on a center in plastics, and then have it duplicated elsewhere in the country. Probably a more familiar field is the duplication on the information on physical properties. Now at the present time, physical property information is obviously duplicated all over the country. Every organization, or most organizations, like to establish their own physical property data. This is an area that we hope to make some progress in, in bringing about some practical kind of cooperation.

Now it is easy to over-generalize in this area, but I think we can look forward to the greater availability, especially of the government sponsored specialized information center services, and more than half of them are sponsored by the government today. I think we can look forward to the availability of their resources to each and all of your libraries in time to come, so that you will be able to draw on them. It will be a matter of a year, or two or three before this can be brought about, but this is the aim of the government's position in general.

Now, there are two or three other areas that should be mentioned in passing. The area of the critically evaluated data. Of course, this is in the physical properties, but the Office of Critical Tables that the National Academy of Sciences -- most of you are familiar with the 11 volume set that was published quite a few years ago. The decision was made about five years ago that it would be unwise ever to try to publish again a set of international critical tables, because the effort would be so large and costly. I think thirty million dollars was the figure mentioned at the time, and it would be so out of date by the time it was published that it would be useless. So, the Office of Critical Tables is now concentrating its energies on bringing about coordination in this area, and I think we will see some definite improvements along this line as time goes on.

The only thing I think we should all keep in mind, is the specialized information center is really something that is not replacing the library. It is being added on to the library in many places, a part of the library in some places, and completely separate from the library. But it is something we can all work with and utilize.

DISCUSSION: SESSION IV-C

ROLE OF SPECIALIZED INFORMATION AND DATA CENTERS

Margaret L. Pflueger, Discussion Leader

CHRIS G. STEVENSON: I wonder whether or not technical people aren't a little bit distrustful of having somebody else do an evaluation for them of a report, or data, or anything else. Isn't a technical man generally inclined that he would rather do it than have somebody else do it?

BERNARD M. FRY: I think this will vary. You hear one story sometimes and another one another time, but this certainly is a critical factor. It seems to me we need, in all of our thinking here, to go back to the basic cause of this development. In industries like the petroleum industry, the pharmaceutical industry, and to some extent the chemical industry, we see the literature specialist coming very strongly into the forefront these days. He is doing a job pretty much like the specialized information center is doing on a broader scale, but he is selecting, screening, digesting, doing state of the art pieces for the particular research team he is associated with. An example of this is in the oil industry where literature specialists are being used on each research team. Maybe the specialist is a member of the team, and the responsibility is rotated for covering the literature. These are all expressions, it seems to me, of basic discontent of approaching the literature as it exists in the conventional library.

Now, if we have a minute longer, to say a word about Mr. Berg's mentioning yesterday the matter of selective dissemination. Selective direct dissemination, I think, is another development in this area, and one in which the libraries and information centers are given an opportunity to re-establish direct contact with the scientists. Many of you, I am sure, back at the end of the war, read Vannevar Bush's "Science, the Endless Frontier". He made the observation that there was a tendency not to use the library. This has been remarked on in endless meetings and conferences, and, of course, it is true in many cases, but the re-establishment of communication between the source of materials and the bench scientist is the basic need, and anything the library can do there, I think, will be very helpful.

IV-D

D. GENERAL DISCUSSION

Robert L. Shannon, Discussion Leader

ROBERT L. SHANNON: Since there wasn't enough time to handle questions completely yesterday I felt rather than giving this paper, it would probably be more profitable to take this particular time to open this session for questions. I will put myself on the spot. Ask any question that comes to your mind, and I hope I can come out of it. If I can get enough of my henchmen around me, we will try. Paul, Margaret, John and anyone else that feels they can help me out here, will you come up? We will go right back to the beginning of the conference, and we will try to go back and answer your questions. They don't have to be in any particular kind of order. Whatever is bothering you, you can ask us. If something was not clear, or we didn't give the right kind of an answer, we will take this time to do it.

One of the things we wanted to ask you about, was the type of conference we are holding here, a mixture of people. Chris Stevenson had a particular interest in this. I don't know whether it was announced or not, but Chris Stevenson is a member of the AEC Technical Information Panel representing General Electric at Hanford, and as such, he had some responsibility in arranging the meeting. Chris, do you want to talk about this.

CHRIS G. STEVENSON: Those of us who had some responsibility for planning this meeting, were well aware, I think, in the very beginning that we were bringing together two groups, and perhaps two quite different groups. And we were not at all certain they had the same information problems and the same information interests. These were, of course, the people who manage the document collections at the contractor sites and had long and extensive experience in this area, and the librarians at the depository libraries. As a result, we spent a great deal of time thinking about how to organize and manage these sections, and what we would do about an agenda.

We considered, for example, the possibility of having separate sections of the depository librarians and the AEC librarians, or the contractor librarians, and then perhaps having joint sessions where we would meet together. This had some real organizational problems. We also were aware from looking at the list of people that were going to attend, that there was a wide variation in the experience of the people who were going to attend. And putting together an agenda that would be useful to a group of such widely varying backgrounds and experience in the fields, was a problem.

Now, you are aware the last two or three days, of the kind of

agenda we came up with, and the way we have organized these meetings. I will be expected, I know, to carry back to the Panel some recommendations for future meetings, and I want to be able to do this. What we would like (and I thought perhaps you could use the questionnaire form distributed to you to do this) is to get from you a rather frank and honest appraisal of these meetings. You might use the questionnaire form and call this question No. 11, if you want to.

First of all, do you think that these joint meetings are profitable, are good? We were aware that there would be a rather large amount of interaction between the participants and there might be some very profitable results because of this interaction. Oh, for example, a man who runs a depository library and works in a university library, came to me today and said he was interested in mechanizing his periodicals. We have 2800, he has some 28,000, and I can certainly see the problem he has. It is this kind of interaction we felt joint conferences might produce. If you will indicate, be so kind as to do so frankly and honestly, your appraisal would be whether you think the meeting has been worth while at all. If you think so, tell us why you think so. We will follow your guidance in planning future meetings. If it is not a good meeting, we want to know why, particularly if you think the interests of these two groups are so widely separated that it is not practical bringing them together in one such meeting such as we have had. Give us any other general suggestions that you have on organizing these meetings.

You see, those of us who work on the Panel are well aware that we are not nearly as close to the work-a-day problems as many of the people who are here. It is very necessary and useful to get a feel for these work-a-day problems. Among the things most important to me in attending the meetings are the little things that have been brought up, like the question of not having full bibliographic information on the Microcards, for example. These things don't come to our attention. It is worth knowing what takes up time. The poor old gentleman transferring the document numbers from the right hand column - - the upper right hand corner to the left hand corner.

R. L. SHANNON: Does anyone have anything to say about that now? If so, speak up, or we can go on to something else. Maybe you will want to mull this thing over before you can talk about it. We asked you a question, now you can ask us a question.

ROSE KRAFT: I want to comment on your organization chart. I think this will be very useful to us. Many times we don't know whom to go to, and this will help us. If there are any significant changes, I would like us to be notified of this. I don't know but what a DTI 'phone book would help us, too.

R. L. SHANNON: I believe you have telephone numbers on that chart, don't you? We have it on our utility chart. We can provide numbers for that.

ALLEEN THOMPSON: We would find it useful. Send us more copies of this and add telephone numbers to it.

R. L. SHANNON: Some of the things need more positive answers than have been given, such as getting copies of Hugh Voress's thing. Surely you can get copies, all you want, as soon as it is printed.

C. G. STEVENSON: A question has been asked me two or three times since the meeting began, as to whether or not the Commission has any plans to do a full indexing job on the earlier volumes of NSA. In other words, complete the indexes in the fashion they have recently been doing.

R. L. SHANNON: I doubt it. We have a cumulative index for volumes one through four, and five through ten, and eleven through fifteen, and we did go back and take care of numbers eleven and twelve, which are current and we can still use the machine on it. We are not going back too far.

ROBERT GREENE: From survey results of your survey coming in on the use of Microcards, it is apparent that most of the librarians are favoring the Microcards and want to stick with them. However, I think for our use, the negative would be more beneficial. Any chance that we might get the negative instead of the Microcard, even though the majority of the librarians want the Microcards?

R. L. SHANNON: I am going to hedge. We didn't know anything more about this than you did. We went out with a questionnaire and wanted to know how you felt about this. And we will withhold our judgment until all of the questionnaires come in. If the trend continues, there probably will be enough requirements for us to make some negatives for those of you that want them. I do believe we will be doing that. Yes, sir. Margaret has a question.

MARGARET L. PFLUEGER: I was wondering if any of these people that replied to these questionnaires and said yes to the Microcards, would care to express why they prefer Microcards.

R. L. SHANNON: This is a strange thing. You have to go back some period in time to appreciate why you have Microcards, and nowadays, with the sophisticated this and that and one thing and another, it is hard to get this in perspective. You have to understand that if you hadn't gotten Microcards over these years, you wouldn't have gotten anything. We never expected it to take the place of full-sized printed documents; that was not the intention. We could do Microcard reports and get them out of here in a hurry. And with the volume we are doing, let's say three million Microcards last year, and it is predicted there will be more than that this year, it costs us about $18. a title. You can't beat that. You can't print everything. Now, it seems to me that if the manufacturers do come up with some sort of a decent machine to blow back Microcards, this is going to be - - well, it is what we need. On the other hand, if those of you want negatives, will take them and

and assume the responsibility of reproducing them, and you can get better production on a negative, O. K. We have advanced that far.

RICHARD J. TOMMEY: We replied in the affirmative that we did want the Microcards, but would accept the micronegatives, in cases where it was just for emergency use only. We did not want to get into the reproduction business of accepting micronegatives, and this is what would happen. In cases of emergency, micronegatives are a good thing. You can get a better copy of it, and it is quite a good deal more legible on a MMM microreader printer.

M. L. PFLUEGER: The negative too can be read.

R. J. TOMMEY: Yes, but you run into the problem immediately of getting full sized copy. As soon as they find out you can reproduce it, they want it reproduced.

NADINE GEORGE: When we sent in the original answer to the questionnaire, I believe that we said we would like, if possible, to get both. Our present reproduction equipment scratches the negatives badly. As an OTS depository, we get other equipment. Anyway, at this point, we would like to emphasize, we would be glad to have the negatives.

MARION GARBER: We voted in favor of the Microcard, and I believe our primary reason is related to this scratching business. But also on the general format of the sample received, it would have been a difficult physical problem in the filing and identification of the microfilm in a file. Although you have the conventional three by five size, as I recall, still it is not easily eye-legible type of thing to retrieve from a file.

R. L. SHANNON: I think that part of it we could accomplish all right.

M. GARBER: If it was mounted on some kind of card, with some kind of identifiable print on it, this would alleviate the problem.

CROWELL O. DEAN: The reproduction equipment of microfilm is not as expensive as it is from the other--from the card. I am talking now to the people that are thinking of costs. If you are just going to read them anyway, and not copy them for people, this cuts down on the amount of service you can do. The note taking they will have to do. Just reading them in a reading machine with no copy facilities, you will have to replace that screen a great many times, because people are going to try to trace the graphs and stuff on there, and it becomes a horrible problem. All at once in going to the machine, it is hardly usable, and then you have to get the screen replaced. Many people will read a document. We have thousands of them on microfilm. They will read it, copy only one graph, or one type of table--one table in there they want, make a few remarks on it and they are through. And the problem of scratching the microfilm is certainly not very serious. A lot of them will never be used. The ones that are

used often enough, you can make a little check mark, we do this on ours, some place on it, and if you reproduce it too many times, put a full-sized copy of that on the shelf.

R. L. SHANNON: That is interesting.

PAUL E. POSTELL: I notice most of the comments come from the AEC contractors. I want to hear more from the depositories. When we set up this meeting, we had the depositories also in mind and talked about a separate meeting, as Bob, Chris, and Walter indicated. I have had a little conversation with one or two people from the depositories, and I can recognize the problems of the large university or the large public library where there are many thousands of documents from many agencies both foreign and domestic. They say, why single out AEC information as opposed, e.g., to the Bureau of Standards? Of course, as one government agency we want our reports and services highlighted. We have as our basic authority the provisions of the Atomic Energy Act, which requires that research and development done by the AEC and the contractors be made available to the scientific community. We have had people say, are we supposed to give service to AEC contractors rather than send them to Oak Ridge? We have many small contractors - universities or small organizations, and we believe it is not practical for them to set up full report collections. If there is a depository in the city, it would be better for them to go to the depository for service rather than come to Oak Ridge. There are also questions about what should be the loan policy of depositories? We have never tried to dictate to you and your organization what loan policies should be established for AEC documents as opposed to some other government agency's reports. AEC's policy is a very liberal one. If you lose a document, come to us if you need another one, and we will give it to you. We urge you to be liberal as far as your management or board will allow. One of the principal purposes for this meeting was to stimulate the use of the collections made available through the AEC depository library system. I repeat, I know you have other documents to make available to your users, and you may question the desirability of singling out one government agency's output over others. I can only say that we are interested in the stimulation of the use of the AEC research and development information. The AEC has gone to a lot of expense in making it available through the depository library system. We urge you to make known its availability in your organizations.

R. L. SHANNON: What was your question?

P. E. POSTELL: It was not a question. It was a statement to clarify any misunderstanding that may exist in the minds of depository librarians as to the AEC's objectives in this program.

L. W. WALKER: I would like to speak to a point Mr. Postell raised about loan policies to industries, particularly contractors. We have been very generous in this ourselves, and loan reports to some AEC contractors in our area. Also we obtained the depository

collection late in the game and many of our earlier reports are on Microcards, probably more so than many people at other depositories. To be geared to Microcards, we have several readers, and have ordered a printer. Several of our biggest users have also purchased Microcard readers because we have so many reports on Microcards. This is a good point to bring up. In lending Microcards to these people, we send them out in the mail. We could send the requesters up here, but they get them from our collection, because we have gotten a Microcard reader.

R. L. SHANNON: I don't know whether to be glad or not. But certainly I am glad to develop this information. I think we listen to so many experts on this film business, we felt like a bunch of nitwits if we didn't go out and do something on it. We are getting enough responses and getting some defenses for Microcards, and lo and behold we never heard anybody defend it.

M. L. PFLUEGER: I am interested in what Mr. Walker said about the service they give to contractors. I know other depositories do this too. We see this from the hundreds of requests from depositories that serve the contractors.

GEORGE E. OWENS: I find the literature on high energy physics is mostly preprints. Would it be possible for Nuclear Science Abstracts to index this without waiting the six months, or whatever the arbitrary period is for all preprints on meetings, papers, etc., which would be of interest to high energy physicists.

R. L. SHANNON: Yes, Chris?

C. G. STEVENSON: I just want to second your remarks. It seems to me that if a paper is submitted and it is going to be given at a conference and the proceedings are going to be a year or a year and a half coming up, and if the Commission immediately announced that it would be made available, it would be much more helpful to us if this took place. If the people get the proceedings, I don't think they are going to complain.

We have a rather interesting problem I am going to mention. It concerns the foreign requests for preprints. Once in a while preprints are requested and received by foreign agencies, and they make wide distribution of these in Europe, and make them available. They frequently end up with the information being more widely available in Europe than here, because we have delayed six months, waiting for the proceedings to come out. I see no reason, Bob, for not publicizing those immediately. I think it is a good idea.

R. L. SHANNON: In answer to this question, we have to learn to walk before we can fly on this. This six months decision of ours is a recent decision. As a matter of fact, it was based on an elaborate and extensive study that we made covering twenty-one months experience, in regard to publication of journal articles. We decided that since

66 percent of papers get published in six months, we could wait that long and quit fooling around with this year business. More recently, we have gone ahead on oral papers and proceedings, which had nothing to do with their inclusion later on. We are going to do that and they will be in NSA. We will do them in Microcards.

ROBERT T. FREESE: I want to go back to the 89 year old man, which, in our case, is a pretty young girl.

R. L. SHANNON: This seems to be wide-spread. I was told when the question first came up, it was investigated before we decided to put the number in the right-hand corner, and it was discovered most people wanted it in the right-hand corner. I don't know whether it should be left there, but it seems to be the thing to do to ask for a show of hands. How many go through this task of transferring the numbers to the left-hand corner?

FLORENCE R. SHARP: Ours is strictly an AEC report collection. We started with the numbers all in the right-hand corner, so we filed them spine in, upright on the shelves. We have about forty thousand filed in that way. If the report numbers are changed, we will have to file just the opposite.

ELIZABETH G. SANFORD: Our reports have to be filed horizontally with the shelves, and this brings up another problem. We need it on the bottom left-hand corner. Why not put it on all corners?

ROSE KRAFT: One other thing I would like to find out is whether anybody is dividing their reports between classified and unclassified, and putting the unclassified into the open literature section. If so, do they have two catalogs--a classified catalog and unclassified catalog?

R. L. SHANNON: Well, all right, we want a show of hands on this. How many divide your reports between classified and unclassified? (A great many.)

R. KRAFT: Then you would have two catalogs?

R. L. SHANNON: Do you have two catalogs, one for classified and one for unclassified?

R. L. SHANNON: How many put accession numbers on reports?

CARL J. WENSRICH: Let us have their experiences.

M. L. PFLUEGER: I am extremely surprised this didn't come up yesterday when we were talking about management of the collection. I have been in on discussions of this subject where the participants almost came to blows. One situation was where they were faced with a brand new depository collection of how many tons, and a decision had to

be made as to how they should be filed. We are interested in knowing whether anyone made a study of the comparable space required by filing by report number rather than accession number. This is the question so many of you are interested in.

R. L. SHANNON: Margaret, didn't you go down to South America, and find them filing by color?

M. L. PFLUEGER: Color is very helpful for the first sorting.

CARL J. WENSRICH: I just wanted to hear some more talk on this accessioning of documents. I see several people doing this. Let's hear from them.

R. L. SHANNON: Defend yourself.

HERMINA BRINKMEIER: We just changed over a year and a half ago, our entire system, and found that filing time has been cut in half, both in filing a report back into the system after having taken it out, and putting it in originally. Not only that, but by leaving room on each shelf--we use open shelving--we have cut our work time in accessioning in half.

BARBARA M. PROBERT: We have an IBM accountability system, and in addition to this space saving technique of accession numbers, we have found our margin in errors is about 50% less. You have difficulty when you have a report to file, with perhaps ten alpha letters. It is very easy to mis-file this. Numbers are much simpler, and the IBM accountability lends itself very well to accession numbers.

FLORENCE McKENNA: I would like to know about the use of the reports filed by accession number. If people come in and want everything from Hanford you can go to the shelf and find them in one place. With accession numbers, you have to check your cards and pull out one at a time. This is what the clientele has to say about the accession numbers.

ELIZABETH G. SANFORD: I just started in March. It is nice to be able to make your own mistakes. I have raised the question, do you want everything alphabetically or arranged by originator? The physicists said they needed certain reports there, and they want to come in and look by originator. All unclassified books and reports are in the same room. They come in and help themselves. There were strong objections to the accession number system.

R. KRAFT: Maybe the books are out in circulation. Until they go to the card file, you are not really getting a complete listing of what is available.

M. L. PFLUEGER: I think it is more feasible in small collections

rather than complete depository collections.

UNIDENTIFIED: I would like to say along that line, you can use the alpha-numerical system as a reference tool. We have the man that was talking to somebody--oh, yes, Brookhaven did a report on this some years back. Well, corporate author indexes then, back at that time, didn't give the information, and you would have to look it up, so we simply go and thumb through the Brookhaven reports that were coming through about this time. Maybe it is an unsophisticated system, but it produces results at times when nothing else works.

ROBERT E. STEPHENSON: I wanted to comment that we have our collection--all of our federal documents, arranged by the Superintendent of Documents classification, and just include the AEC documents in with those. Along with that, the monthly catalog, of course, lists AEC documents by their classification, and the arrangement is easier for people to find them.

P. E. POSTELL: You superimpose the AEC numbering system over the "Y" number, or along with the "Y" number.

R. KRAFT: If there are any written studies, would they send them to Margaret, and could we borrow them from Margaret?

R. L. SHANNON: If anybody makes a study, will you send them to Margaret, and she will loan them. Send in your recommendations.

P. E. POSTELL: Let me make a comment. I was in Mexico with Ray Schlueter, and some of you know he is with the International Atomic Energy Agency, and used to be with ORINS. He gave these people a little lecture on his filing system. Ray has gone to the accession number system. He has found it economical of space and time, even though he has to provide cross reference files. He has a system of instructing all new library users. He instructs them on the library organization and how the documents are arranged. He is sold on the system. If he had to do it the third time, he would do it that way. I said, Ray, how about the people that want to browse, e.g., through ORNL progress reports, and want to go to the open shelves for browsing? He said that experience showed they have not had that type of need, and because of their system of filing cards for corporates in the catalog this objection is overcome.

C. G. STEVENSON: I would like to make one comment, Bob. We have filed our documents in alpha-numerical order for many, many years. When we went to the second one, the remark was made, "Where are we going on the machine system"? Proliferation in numbers since then has been a real problem to us. As a matter of fact we had to go to standardization of numbers to get them on the machines. Mrs. Puckett spent more time than was profitable standardizing numbers so they were machine usable. I don't see any hope for us curing this proliferation

of numbers. As far as the machines are concerned, I am willing to agree that accession numbers are much more practical.

HAROLD G. MOREHOUSE: On those occasions when a man does want to browse through the last--say couple of years from a certain agency, is it possible for a clerk to pull by accession number in a very short time that whole stack. This doesn't happen often enough to be a real disadvantage.

MADELEINE LEDIVELEC: In answer to Mr. Stevenson, in my depository, they are trying to put American reports--AEC reports on IBM equipment, and didn't go to the extent--trouble of making iventory numbers, but use the NSA numbers, the abstract numbers.

R. KRAFT: I think that is a good idea, too.

M. L. PFLUEGER: This works only for depositories that get only what goes in NSA. Many of these people get more reports and originate their own.

EDNA R. BOWMAN: We use a combination system. We do use accession numbers, but for progress reports, we do keep them together, and put a zero in front of the number, and all progress reports are kept together.

R. L. SHANNON: We have beat this one to death. Do you want to go to something else.

ROY J. NIELSEN: I want to make one remark upon the subject we just left before we bring up the other thing. Often the report number for a group of progress reports skips. So, you have that problem to face. It has been suggested that maybe this could be avoided by having a special number for a series, or having -1, -2, or some such device to keep those reports in a given series together on a shelf, if you are filing by report number.

Now, the second thing I wanted to mention was the possibility of showing in Nuclear Science Abstracts right where you present the abstract, that certain of the things listed are in all probability not available from Oak Ridge. Have you ever considered doing that? It would eliminate a lot of requests you have to deny.

R. L. SHANNON: I was under the impression our introduction to report number indexes took care of that.

M. L. PFLUEGER: We don't earmark reports in NSA and say, "Depositories and DOD contractors, don't come to us for this". But there are ways that they can tell. We have issued guides that show the characteristics of different kinds of contract numbers. The report number index in NSA is a guide. If it shows a report to be non-AEC, and we do not supply non-AEC reports to your organization, this is

something. Short of actually putting an asterisk beside those we don't supply, I think that there is sufficient information to guide you.

Bob is doing the work toward spreading the gospel to the other agencies to make sure that everything that is non-AEC that goes in NSA is actually available to you in the appropriate sources, like OTS. I mentioned this yesterday, and I think Dr. Gray mentioned this. I think the situation is improving. If you can, with our help and with the guides that you have, learn to pick out these reports that you should obtain from OTS rather than from us, you will find soon that the availability of non-AEC reports is much, much better than it has been in the past.

R. J. NIELSEN: The distribution of a little summary to the contractors and depositories summarizing these very points, might be helpful. I think in the hand-out material you gave us, there is a lot of guidance on this very topic.

M. L. PFLUEGER: We are conscious, as I said, that we need to improve some of these guides for people. We do have certain standard answers that try to point this out.

EVELYN B. HENRY: Mine is not a question, but a problem we have. As contractors, we are required to have two or three separate mailing addresses for the AEC classified material, Department of Defense material, and unclassified. It is becoming increasingly difficult problem for us to handle some of the material. Each of the libraries is separated. I am wondering if there was something that could be done about the unclassified distribution guide, and if the people sending out the material would please use that in place of the classified guide. We find we are getting--perhaps every day we will get ten documents that are unclassified in our classified box. This means that an armed guard must go to the city post office and pick this up and deliver it to me, and I find I don't need it anyway, it goes to another building. Addresses are listed, but they seem not to be used.

We feel it has been a requirement that this mail from the classified post office box must be picked up by armed guards. And about ten o'clock, we get unclassified from the classified mail box. We get everything.

R. L. SHANNON: Well, we can certainly emphasize the use of correct addresses in 4500 and M-36.

E. B. HENRY: This would solve the problem very nicely.

R. L. SHANNON: On the next issuance, we could say something about this.

M. L. PFLUEGER: I suggest you write to the offenders, or have you done this already?

E. B. HENRY: Yes.

R. L. SHANNON: We, too, have a local post office problem. We keep seven people busy handling our stuff, and we still go and get it all, and they don't know what is classified or what comes in the back door.

HELEN HAUCK: I have an interesting observation. In Cleveland, small contractors, or at least some people who contact us, get very angry to think they have to pay for anything from OTS. They expect to get it free from AEC or us.

I have a question I would appreciate a show of hands on. How many of the depository libraries and university libraries have the policy of pulling the cover-to-cover translation numbers and putting them in your serial or journal collections? It seems to me that in the future in referencing that material in the next two or three years, all trace of that fact that it originated through AEC efforts will be lost. And I'm wondering, too, about such other things referenced by any such numbers--larger proceedings, etc.--if we, in our responsibility, are thinking seriously of how we are ever going to get back to that material even though we know NSA is a very wonderful tool.

M. L. PFLUEGER: How many pull out their cover-to-cover translations that they get from us, and file them with journal collections? Could we have a show of hands on this? This was touched on in integrating your depository material with your regular book collections. How many of you catalog your monograph translations--monographs as books, and your big proceedings. Does that answer your questions, Miss Hauck?

Personally, I think it is an excellent idea.

CORUM SCOTT: I would like to emphasize the use of this correct address that we have been talking about, both in our plant and in material that we receive from other plants, in using the standard address that is shown, because then we can get it to the right place.

P. E. POSTELL: Let me make one comment. We distributed this questionnaire to get some feed-back, as I mentioned before. Some of you may still have them, some of you may have lost them. We would like feed-back. So, if you will, not only answer these questions, but answer any others, make any other comments about your needs and services on this form. We will be very happy to have it.

R. L. SHANNON: I would be very glad to have you people stay here over lunch, and I will read this paper for you.

E. DIVISION OF TECHNICAL INFORMATION-CONTRACTOR AND DEPOSITORY COOPERATION

Robert L. Shannon

Division of Technical Information Extension
U. S. Atomic Energy Commission

We had a very specific purpose in including the topic of cooperation among our organizations on this program. First, we wanted to make it quite clear that the Division of Technical Information has no illusions that it carries out the AEC's information program alone and single handedly. We are well aware that a large and important portion of that program is carried out in the libraries represented by you who are here today. Second, we wanted you to know that we realize how dependent we are on your cooperation for whatever success the AEC's technical information program has achieved. This afternoon we will hear more about the Commission's technical information program as it is carried on in the depository and contractor libraries. Now I want to mention more areas of cooperation and responsibility that will make for a better joint program.

I. TWO-WAY COMMUNICATION

An important aspect of any coordinated program is two-way communication. In order for us to provide the best centralized services to meet your needs, we must know your needs. It is also important for you to know our plans and progress.

The AEC Technical Information Bulletin has recently been given new life. All of you should receive it regularly. If you have not seen recent issues, inquire about it when you go back to your libraries. If your library is not on the mailing list, through inadvertency on our part, let us know, and we will see that you get it, in as many copies as you need. It is our hope that this small publication will help to provide this two-way communication on a continuing basis. We intend to use it to tell you of our current activities and future plans and publications. In turn we hope that you will use its pages to inform us and other libraries of your activities and progress. We solicit your contributions and letters. Tell us of new tricks of the trade that you want to share. You can even use the Bulletin to voice your criticisms.

Another device that we hope will give us valuable information is the list of questions we have included in the packet you received. This is not a survey or a questionnaire. It is primarily a list of topics on which we want your views for our guidance. In some cases we have asked for information about your activities, but these questions are not intended to be used as a measure of your services. We hope that you will give them thought and time, and that you will return them to us. Possibly some of the questions will prompt you to write on other matters. We welcome your comments on all phases of our work.

II. CONTRACTOR RESPONSIBILITIES

In this coordinated information activity about which I spoke, each group has responsibilities. The AEC contractors responsibilities include the following:

1. The responsibility to ensure that DTI receives all the AEC technical information necessary to carry out its mission. The DTI does not create technical information. We use the information and reports generated in your laboratories and manipulate it to make it accessible, available, and usable. But we cannot work with what we do not have. We ask you who are librarians and who realize the importance of timely and adequate reporting and dissemination to carry this message back to your management. We cannot conduct an effective program unless the laboratories provide us with the results of their investigations so that others may benefit therefrom.

2. The responsibility to cooperate with DTI in giving service to the depository libraries. The most direct way that this can often be done is through the prompt reply to DTI's requests for the contractors reports. This matter was forcibly brought to the attention of an information officer from one AEC laboratory who visited a number of our depositories in Europe. The depositories told of having sometimes to wait a matter of months to receive a negative reply. DTI receives many requests for AEC reports we do not have; when we ask the contractor for them, we often must wait several weeks for a reply. The information officer, who heard directly from the depository libraries of their plight, recognized that the responsibility for this delay often lay directly with the originator of the report. If you can keep in mind that a request from DTI represents a request from a scientist who wants to use the report, the knowledge may speed the processing of our requests to you.

3. There are two specific activities wherein DTI seeks directly to coordinate the DTI program with that of the contractors. These activities are in the field of bibliographies and of translations.

   a. In the matter of translations, there is an AEC Manual Chapter that is very specific regarding the contractors responsibilities. Chapter AEC-3220-01 says in part that translations in process shall be reported to the Division of Technical Information for inclusion in the Translation List, and that translations shall be distributed in accordance with Chapter 3202. This reporting of translations in process and announcing them in the Translation List is truly a cooperative venture. It is successful in its aim of preventing duplication only insofar as the contractors do their part in complying with the Chapter's instructions.

   b. The periodic listing entitled, Informal Listing of Bibliographies of Atomic Energy Literature, is another cooperative venture. We try to prevent duplication in the preparation of bibliographies in the field of nuclear science by listing bibliographies in preparation. While the reporting of such bibliographies is not required by a manual chapter, it is nevertheless highly desirable. We urge that you share with others the literature searches you prepare, and that you keep us and them informed on those in progress.

III. DEPOSITORY RESPONSIBILITIES

The depository's primary responsibility insofar as its AEC collection is concerned is to give the best possible service with that collection to its community. When a library agrees to serve as an AEC depository, the library undertakes the responsibility to make available reference tools, including a full set of Nuclear Science Abstracts so that patrons may make searches in the literature; to provide specifically requested reports to any requester for consultation in the library; to make reports available on inter-library loan under the terms of the ALA Interlibrary Loan Code; to inform requesters of the availability of AEC reports; to provide facismile copy or microcopy of reports at their standard rates for such reproduction service. This is minimal. The amount of additional services the library gives depends largely on the library's policies and capacity. I know that we in the Division of Technical Information who are so familiar with AEC publications and are so convinced of their value sometimes are apt to forget that in the depository libraries their AEC collection is only one among many collections. We do feel, however, that having accepted the responsibility of being designated as a depository, the library should provide for its adequate housing and servicing so that any one who needs to use it may do so with maximum facility.

IV. DTIE's RESPONSIBILITIES

Our part on this team of DTI, contractors, and depositories, has been covered in earlier talks. We collect and distribute the information, then provide the tools and services that enable you to pass the information on to its ultimate users. Our primary responsibility is to continue to look for ways to improve our products, reduce delays, and increase our services.

SESSION V

A. SERVICES PROVIDED BY CONTRACTOR AND DEPOSITORY LIBRARIES

SERVICES PROVIDED BY THE LOS ALAMOS SCIENTIFIC LABORATORY LIBRARIES

Helen J. Chick
Los Alamos Scientific Laboratory

To be presented at a meeting: The Literature of Nuclear Science: Its Management and Use, September 11-13, 1962, at Oak Ridge, Tennessee.

Before telling you about the services provided by our Library at Los Alamos, a general description is in order. First, I should tell you that although books and journals are a large part of the total collection, our catalogs and procedures are based upon those which seemed most suitable for reports. Thus, though the Report Library, handling reports, and the Main Library, handling books and journals, are physically separated and each has its own catalog, all cataloging is done centrally by our technical processes group, and the catalogs are similar. Also, many of our forms are the same. I have brought copies of our charge forms. For unclassified reports we use a two-copy receipt. One copy is filed by report number and the other by the patron's name. The same receipt is used for books and journals. For classified reports, we use a four-copy receipt. The extra two copies are used one as a suspense copy, and one as the patron's copy. These forms are used for transferring reports from one patron to another as well as charging them directly from the Library. Transfers are made directly from one patron to another without returning the document to the Library. Copies of the receipt are sent to us so our records may be altered accordingly. This seems to work very well, and is a great saving in the clerical work of typing receipts.

There are some basic differences in our Main and Report Libraries. Report Library stacks, since classified and unclassified reports are interfiled, are closed. Main Library has open stacks and is open to patrons 24 hours a day; however, no staff is present after five o'clock.

Another basic difference is that while books are handled by call number, we handle all reports by report number. And, where possible, we carry cataloging for reports only so far as having one card, with descriptive cataloging and holdings record, which is filed numerically. This is possible for those reports which are abstracted and indexed by DTIE. This does mean more places to look, i.e., our catalog plus Nuclear Science Abstracts and Abstracts of Classified Reports, when a patron doesn't know the report number of the report he wants. But Nuclear Science Abstracts, in particular, is an easy-to-use and thorough tool. For reports which will not be picked up by DTIE abstracting services, complete cataloging is done. In almost all cases, the report is completely processed within twenty-four hours, and there is no backlog.

For purposes of organization, I have divided this report into two parts: services to LASL patrons and services to others. And since our responsibility rests mainly with our LASL patrons, and most of our time is spent in duties directed toward their benefit, I will cover that first.

Mainly, it may be said that we supply patrons with reports. Our circulation of reports for 1961 was 59,591 and transfers were 21,717. Most of this is the result of requests which come in by telephone. I mentioned that the stacks are closed, so patrons are not free to browse. While we do have a reading room, the majority of our patrons are working miles away from the Library and prefer to have their reports delivered to them by the Laboratory

messenger service. We send our reports out on what would be considered permanent loan, since with few exceptions we do not have a date due. What does happen is that we refer other patrons to those people holding the reports if the supply of copies in the stacks is exhausted. Then they may arrange a transfer, on a charge receipt, from the patron holding the report to the patron who wants it. Whenever there seems to be need for it, though, we order additional copies of the report.

Now that you know what our main job is, i.e., distributing reports among LASL patrons, let me tell you how we keep busy doing this.

Our LASL people seem to have more ways of finding out about the existence of reports than the uninitiated would dream existed. References in other reports, in journal articles, in Nuclear Science Abstracts, in other abstracting services, word of mouth, seeing the report on someone else's desk, and, mainly, references on our Title Lists.

I have copies of our Unclassified Title List here. This list goes out once a week. We have a classified list, similar to this one, which appears every two weeks. These are listings of all the unclassified and classifield reports, respectively, which we have received during the time period indicated on the cover. These are made up from the cards prepared for the reports as the reports arrive. The title lists are distributed to the Group and Division Leaders automatically, and to anyone else who requests them. Altogether, about 400 copies of the unclassified title list are distributed. The number is smaller for the classified list. After the title list goes out, our phones start ringing. In most groups the secretary orders all the reports; in other groups each man orders his own. We get interoffice memos with long

lists. We get very busy! We ask our patrons to give us the report number, only, for anything listed on the title list. Since all our records are by report number this saves time.

Main Library issues a similar list, smaller of course, since the number of new books is smaller than the number of new reports. I brought copies of it because I consider it especially attractive. Also, it usually has space for any announcements, not restricted to Main Library announcements. It also has a handy form for ordering items listed on it. Since the form is on the reverse side of the address the patron need not even write his name on an order.

We get all these reports which are listed on the title lists by various means. Most come in on standard distribution. Some others are special orders requested by the men themselves. For these requests we TWX the order when there is a real cause for getting the document quickly. Another large chunk consists of reports ordered from ASTIA. The Technical Abstract Bulletin is scanned as it comes in, and reports which are of possible interest to people at LASL are ordered. I think we shall also start scanning the NASA Technical Publications Announcements in the near future. In the process of scanning I note particularly new reports on contracts which are of interest to individuals and when these arrive they are sent to the individual who has expressed interest in that contract.

All incoming reports, whether they be from standard distribution, special orders from individuals, orders from ASTIA, or other distribution, are examined when they arrive. We keep a file, by installation, which gives the names of people who want to see particular progress reports, reports on a certain contract, or on a certain subject. Such reports are sent to the individual automatically after cataloging.

As custodians of the report collection, we also have the job of making corrections in reports when we receive an errata sheet. Likewise. changes of classification are made by the Library. We consider that these tasks which sometimes seem menial can in reality be very important -- in the case of numerical data, for instance.

We're also treated to quite a bit of what I consider the librarian's fun and reward: reference work. Having the reports, as well as the appropriate tools (Nuclear Science Abstracts, card catalog, the Technical Abstract Bulletin, etc.) at hand, we can usually find the needed report or data much faster than the patron. In addition, the patrons cannot use our stacks; this gives us an added advantage. And I mentioned before that most of the patrons are many miles away, and find it handier to do phone business anyway.

Reference questions are varied. Most are of the type where the patron knows the subject, knows that the report has a red cover and is unclassified, and knows that it was written by J. Slant in 1959. The subject is usually right (!); the report <u>is</u> unclassified; the cover is blue; the author is J. S. Flint, and the report was written in 1956. But the patron is very appreciative when his report is found.

Besides this quick type of reference work, we get into full-fledged literature searches, which may result in practically nothing turned up, or which may result in a two-volume bibliography. I mention translations, too, both of the type where a patron needs to know the meaning of one word, or where the patron needs a letter, preprint or journal article translated. In the latter two cases, the patron must agree to having a rough draft which he must edit, in order to get a quick job done. Translations are done by

personnel at the Report Library and in Branch Library Offices -- since this happens to be where personnel with language background are located.

Before a translation is undertaken, a search is made to see if one already exists. If none is found, a TWX is sent to DTIE to see if one can be located through their facilities. The same is done before a translation is ordered from a commercial translation service.

In the nature of public relations and education, we have tours for new secretaries and new scientific personnel. Since in so many cases the secretary is our liaison with the patron, it is very important to us that they be properly familiar with our charge receipts and other forms, as well as with which things they should request of us and which of the Main Library. Tours for new scientific personnel are especially valuable, since for some patrons it is almost the first contact with a report collection.

During these tours, we distribute our library leaflet, the yellow booklet of which each of you have a copy. We hope it helps our patrons remember the things we show and tell them on the tours, as well as being a supplement to the tours. We also keep a supply of these in the reading room so anyone who desires may pick them up.

I consider our microcard reader part of our public relations. Most patrons react with shock when first confronted with a microcard. We try to counteract this by assuring them that microcards <u>are</u> legible, at least if they use a good reader. Then, if they insist that they cannot read microcards, we invite them to try <u>our</u> reader. Our reader gets fairly heavy use, and therefore isn't always in perfect condition. Nevertheless it seems to put

to shame some of the old ones scattered around the Lab, and has been the direct cause of many new readers being ordered. We have something new, too -- namely a microcard printer, which we hope will be valuable when a patron needs a copy of a table or graph from a microcard. Since we haven't received our order of paper and fluid yet we haven't advertised our new purchase. I expect that we are going to be swamped with work for it as soon as it is working and its existence is known.

Films from all over the Lab have been sent to the Report Library and we are now administering them, too. Besides the films permanently in our collection, we also have the responsibility of acquiring films on loan for showing at LASL.

So much for LASL patrons, who are our main consideration and take up most of our time. We also have work which deals with agencies outside our isolated community. We make the distribution of Los Alamos reports. This includes addressing, wrapping, and, for classified reports, taking care of receipts. We also get special requests for LASL reports from universities, commercial agencies, etc. When we have copies available, we sent unclassified reports to universities, government agencies, or anyone listed in the "Standard Distribution Lists for Unclassified Scientific and Technical Reports". When the requester does not fit one of these categories, we refer him to OTS. Likewise, we send reprints of LASL papers, since they are stored in our sub-basement. For classified reports, we will send, if we have copies available, LASL reports where we have appropriate channels. Very often, however, we have no channels and must refer the requester to the AEC Division of Military Application. If the DMA's decision is that the requester may see the particular report, DMA forwards the request to us.

On these outside requests, occasionally it happens that the requester is near a depository library and doesn't seem to know it. Then we refer the requester to that library, and enclose a copy of TID-4550, "What's Available in the Atomic Energy Literature" with our letter.

These are our main services, as I was able to think of them. They keep us quite busy.

CALL NUMBER

REPORT NUMBER

COPY &
SERIES

COPY NO.:

THIS RECEIPT TO BE USED ONLY FOR UNCLASSIFIED, OR OUO MATERIAL.

I HAVE PERSONALLY RECEIVED THE MATERIAL IDENTIFIED ABOVE AND ASSUME FULL RESPONSIBILITY FOR ITS SAFE HANDLING, STORAGE, TRANSFER AND/OR RETURN IN ACCORDANCE WITH EXISTING LABORATORY REGULATIONS.

BORROWER'S SIGNATURE:

GROUP: PHONE NO.:

DATE TAKEN:

DATE DUE:

LIBRARY RECEIPT

UNIVERSITY OF CALIFORNIA

LOS ALAMOS SCIENTIFIC LABORATORY

LIBRARIES

12 11 10 9 8 7 6 5 4 3 2 1

CLASSIFIED REPORT RECEIPT No. 337353

LOS ALAMOS SCIENTIFIC LABORATORY

REPORT LIBRARY

Date .....

PLEASE HANDLE PROMPTLY — DO NOT DESTROY

Classification	Report Number	Copy - Series -

TO:

FROM:

If this receipt is signed by a person authorized to sign for the addressee, it should carry the name of the addressee: whether function, organization or individual, and the signature, not the initials, of the person actually signing.

I have personally received the report identified above and assume full responsibility for its safe handling, storage, transmittal elsewhere and/or return in accordance with existing regulations.

1 SENDER forwards to RECIPIENT for signature and return.

RSE-3550

Registry Number

Signature

Date

FORM 410 B

2 SENDER forwards to RECIPIENT for signature. RECIPIENT sends to REPORT LIBRARY

RSE-3550

Registry Number

Signature

Date

FORM 410 B

3 SENDER retains until Copy No. 1 is returned, then forwards to REPORT LIBRARY

RSE-3550

Registry Number

Signature

Date

FORM 410 B

4 SENDER forwards to RECIPIENT - RECIPIENT retains for his file.

RSE-3550

Registry Number

Signature

Date

FORM 410 B

UNCLASSIFIED

LOS ALAMOS SCIENTIFIC LABORATORY
of the
UNIVERSITY OF CALIFORNIA

Report Issued:
August 21, 1962

UNCLASSIFIED REPORTS ADDED TO THE REPORT LIBRARY FOR THE WEEK ENDING AUGUST 15, 1962

In this Title List the reports are arrang ghly by subject in accordance with the distribution categories used ir andard Distribution Lists for United States Atomic Energy Researc Development Reports. Each report is listed in only one category, and n s references are given. Therefore, this Title List should not be conside . subject bibliography.

THIS TITLE LIST SHOULD NOT BE RETURNED TO THE REPORT LIBRARY; PLEASE DESTROY IT WHEN YOU ARE THROUGH WITH IT.

UNCLASSIFIED

Distribution: Master Group and Division Leaders
Los Alamos Scientific Laboratory

GENERAL, MISCELLANEOUS & PROGRESS REPORTS

AD-272,833 (Report: UNCLASSIFIED)

American Univ., Washington. Special Operations Research Office
CASE STUDY IN GUERRILLA WAR: GREECE DURING WORLD WAR II. D.M.Condit. 1961. 338p.

1. Warfare
I. Personal Author
II. Corp. Author

DTIE-AL-50U (Report: UNCLASSIFIED)

Division of Technical Information Extension, AEC.
REPORTS RECEIVED BY DIVISION OF TECHNICAL INFORMATION EXTENSION, AUGUST 3, 1962 THROUGH AUGUST 9, 1962. 150p.

I. Corp. Author

IDO-10037 (Report: UNCLASSIFIED)

Idaho Operations Office, AEC.
MANUAL FOR OPERATIONAL DOCUMENTARY PHOTOGRAPHY (ODP). V.V. Hendrix. June 21, 1962. 19p.

NOTS-TP-2803 (Report: UNCLASSIFIED)

Naval Ordnance Test Station, China Lake, Calif. Michelson Laboratories.
EFFECTIVENESS OF CLUSTERED WARHEADS. TECHNICAL ARTICLE NO. 15. ...are many heads better than one' Fldon L. Dunn. April, 1962. 11p. 1p. abs. cds.

1. Warhead Clusters --Theory
I. Personal Author
II. Corp. Author

*NP-11439 (Report: UNCLASSIFIED)

Kernforschungsanlage, Julich, Germany.
LITERATURHINWEISE ZU RECHTS- UND WIRTSCHAFTSFRAGEN DER ATMOMENERGIE. (Literature References on Legal and Economic Questions of Atomic Energy). Jan. 2, 1962. 69p.

ONRL-35-62 (Report: UNCLASSIFIED)

Office of Naval Research, London
PHYSIKALISCH-TECHNISCHE BUNDESANSTALT (German National Physical Laboratory). I. Estermann. April 30, 1962. 10p.

1. Germany--Research Programs
I. Corp. Author
II. Personal Author

RCS-OAR-L2 (4-6/62) (Report: UNCLASSIFIED)

Air Force, Wash., D.C. Office of Aerospace Research.
OAR INDEX OF RESEARCH RESULTS, APRIL - JUNE, 1962. (Formerly Quarterly Index of Technical Documentary Reports). July 15, 1962. 265p.

I. Corp. Author

TID-11404 (Report: UNCLASSIFIED)

Office of Technical Information, AEC.
INTERNATIONAL ATOMIC ENERGY AGENCY RESEARCH PROJECTS. April, 1961. 16p.

AERONAUTICS AND MISSILE TECHNOLOGY

AGARD-348 (Report: UNCLASSIFIED)

NATO. Advisory Group for Aeronautical Research and Development.
EFFECTS OF AEROELASTICITY ON THE STABILITY AND CONTROL CHARACTERISTICS OF AIRPLANES. H.L. Runyan, K.G. Pratt and F.V. Bennett. April, 1961. 30p. 2p. abs. cds.

Presented at:
Stability and Control AGARD Specialists Meeting, Rhode-Saint-Genese, Belgium, 10-14 April 1961.

1. Aircraft--Control
2. Aeroelasticity
I. Authors (3)
II. Corp. Author
III. Conference

AGARD-352 (Report: UNCLASSIFIED)

NATO. Advisory Group for Aeronautical Research and Development.
SOME STATIC AEROELASTIC CONSIDERATIONS OF SLENDER AIRCRAFT. G.J. Hancock. April, 1961. 24p. 2p. abs. cds.

Presented at:
Stability and Control, AGARD Specialists' Meeting, Rhode-Saint-Genese, Belgium, 10-14 April 1961.

1. Aircraft--Aerodynamic Characteristics
2. Aeroelasticity
I. Personal Author
II. Corp. Author
III. Conference

AGARD-353 (Report: UNCLASSIFIED)

NATO. Advisory Group for Aeronautical Research and Development.
PITCH-YAW-ROLL COUPLING. L.L. Cronvich and B.E. Amsler. April, 1961. 24p. 2p. abs. cds.

Presented at:
Stability and Control, AGARD Specialists' Meeting, Rhode-Saint-Genese, Belgium, 10-14 April 1961.

1. Missile Stabilization
2. Missile Control Systems
I. Authors (2)
II. Corp. Author
III. Conference

*Microcard

lasl libraries

WHAT'S NEW -

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MAIN LIBRARY

This list includes books, periodicals and translations recently added to the Main Library. They will be displayed for one week. After that all except reference copies will be available for circulation. To place your name on the list to see any of the items call the Main Library Loan Desk (7-4175), or use the request form on the back of this sheet.

BOOKS

Advanced calculus. Olmsted. 1961. 706p. (517:O51a)

Analysis of electric energy usage in Air Force [illegible] to-air heat pu[illegible]

Who's who in the USSR 1961/62 - A biographic dictionary. 1962. (920:W628u) (Ref. copy only)

PERIODICALS

Japan Institute of Metals. Transactions, v.2- 1961-

Japan science review. Mechanical and electrical engineering, v.8- 1961- (Ref. copy only. Does not route).

Japanese journal of applied physics, v.1- July 1962-

Master's abstracts, v.1- 1962-

Nuclear instrumentation, vo.1- 1959-

PS for private secretaries, v.5- Aug. 1962-

SAE transactions, v.70. 1962.

Strahlenschutz in Forschung und Praxis, v.1. 1961.

Vacuum engineer, v.1- 1962-

TRANSLATIONS

Analysis of a gaseous diffusion separative unit. Oishi. Atomic Energy Society of Japan. Journal, v.3, p.923-28. 1961. (717)

Compressibility of metals as a periodic function. Gladkovskii. Chelyabinsk. Nauchno-Issledovatel'skii Institut Metallurgii. Sbornik nauchno-tekhnicheskikh Trudov, 1960, no.2, p.163-67. (718)

Create a commission on science and technology. Senate. Committee on Government Operations. 1962. Pts. 1 & 2. (353:S474cr 1962:2)

Design manual: electrical engineering. Bureau of Yards and Docks. 1962. looseleaf. (621.3:B949d)

Directory of national associations of businessmen. 1961. (658:D598na) (Ref. copy only)

Eastern joint computer conference, Washington, D. C., Dec. 12-14, 1961. Computers - key to total systems control. 1961. 380p. (510:E13c 1961)

[illegible]ffect of cold-work on the x-ray diffraction pattern [illegible]f a copp[illegible]icon-manganese alloy. Welch. 19[illegible]

Ticks and disease. Arthur. 1961. 445p. (616.9:A788t)

Whole-body counting. Symposium, Vienna, 12-16 June 1961. International Atomic Energy Agency. 1962. 535p. (542:I61w)

REPORT LIBRARY

Reports are listed in the following title lists recently issued:

Unclassified reports. August 22, 1962.

TL-621 Classified reports. August 15, 1962.

If you are not on regular distribution for reports title lists and wish to receive them, please call the Report Library 7-4446.

LASL AUTHORS IN PRINT

The following publications by LASL authors have recently appeared in the open literature. If we have failed to mention your article or publication, please send us a copy of the reprint or call the Library Serials Unit at 7-4177 (Barbara Hendry or Marge Johnson) for future listing. To obtain copies of LASL reprints call the author or request them by LADC number from the Report Library (7-4446).

Battat, Morris E. "Critical experiments and nuclear calculations - Lampre-I" in Physics of fast and intermediate reactors. Proceedings, v.1, p.263-70. 1962. LADC-4834.

Bidwell, Richard M. "Fission product behavior in

To: MAIN LIBRARY LOAN DESK

Please place my name (as shown on reverse side) on the list to see:

BOOKS (Give call no.)	TRANSLATIONS (Give item no.)	PERIODICALS (Single issue only) (Give title)

Tear off and drop in Interoffice Mail.

International conference on properties of reactor materials and the effects of radiation damage, Gloucestershire, May 30 to June 2, 1961. Proceedings. 1962. 562p. (626:I61pr)

International tables for x-ray crystallography, v.3. Physical and chemical tables. International Union of Crystallography. 1962. 362p. (548:In8i v.3)

List of journal articles by Bureau of Mines authors published July 1, 1910, to January 1, 1960, with subject index. Bureau of Mines. 1960. 295p. (622:B952Li) (Ref. copy only)

Manual on fitting straight lines. American Society for Testing Materials. Special Technical Publication No. 313. 1962. 28p. (519:A512 STP313)

Radioisotopes in the physical sciences and industry. Proceedings of the conference, Copenhagen, Sept. 6-17, 1960. International Atomic Energy Agency. 1962. 2 v. (663:I61ra)

Recherches algebriques sur le theoreme de Picard-Montel. Anastassiadis. 1959. 52p. (505:Ac8h No.1273)

Reflection and refraction of progressive seismic waves. Cagniard. 1962. 282p. (551:C11rt)

Russian-English mathematical dictionary. Milne-Thomson. 1962. 191p. (510:M658r) (Ref. copy only)

Science of surface coatings. Chatfield. 1962. 594p. (672:C492s)

Selectivity and timing in research. Suits. 1962. 6p. (607-

Warning to Report Catalog Users

The Report Library catalog has changed. Cards have been removed from it for reports included in "Nuclear Science Abstracts" and "Abstracts of Classified Reports". This was done to make room for cards for reports not covered by them. Now "Nuclear Science Abstracts" and "Abstracts of Classified Reports" together with "Research and Development Abstracts" and NASA's "Technical Publications Announcements" and their cumulative indexes must be consulted along with the catalog for complete coverage of available reports. Full instructions will be posted at the catalog.

New Abstract Journal

"Technical Publications Announcements" is a new periodical published by the National Aeronautics and Space Administration. It announces and indexes results of investigations supported by NASA that are published in the open literature. It is issued biweekly and covers unclassified reports, journal articles, papers presented at meetings, etc. To be placed on routing for it, submit a routing request form signed by your Group Leader to the Library Serials Unit. People who have been receiving the previous NASA TPA's from the Report Library will be placed on routing automatically. Classified reports of investigations supported by NASA are indexed in "Classified Technical Publications Announcements" which is still available from the Report Library.

ANNOUNCEMENTS

Orientation Tours Set for Fridays

The libraries have a continuing program of orientation tours. Regular tours begin at 1:30 p.m. on Friday of each week in the D-2 Group Office (Room D-10). New staff members and research assistants will be called and invited to join tours. Others who wish to be included are urged to call the D-2 Group Office, 7-4448.

SERVICES OF THE GEORGIA TECH LIBRARY AS AN AEC DEPOSITORY

Robert J. Greene
Georgia Institute of Technology

We don't like to think of Georgia Tech as typical in any endeavor. I was, however, hoping I could say that we are typical of the AEC university depository libraries. After talking with several librarians at this meeting I find that this is far from the case. No two depository libraries seem to be alike in the way they manage their document collection. We do, I find, offer many of the same services. Therefore the services described in this talk will be available at most of the university depository libraries.

The Georgia Institute of Technology Library serves a variety of patrons. Our first responsibility is to the more than 6,000 science and engineering students and the 400 faculty of the university. The library is also the source of information for a large experiment station. The scientist and engineers of the station work on a number of projects which cover the spectrum of research. A secondary responsibility of the library is to help fill the information needs of a number of industries throughout Georgia and the Southeast. We also serve other educational institutions and to a small degree the general public.

Before we look at our services, I think a short summary of our resources is in order, for after all, good service would mean nothing if we had nothing to offer.

The library has more than a quarter of a million bound volumes, nearly 8,000 current serials, and long runs of several scarce periodicals. We also have 650,000 patents and 35,000 maps. In addition the library is a depository for unclassified AEC reports, OTS PB reports and translations, NASA reports, RAND reports, and other smaller collections of documents. Through these and other sources Georgia Tech has amassed over one hundred thousand technical reports.

Now for a look at our services. We will lend most of the materials listed above to our campus patrons or to off-campus patrons through our Interlibrary Loan Department. We will make Xerox copies, upon request, of any of our printed materials. The charge for this service to off-campus patrons is ten cents per page plus a small charge for handling. (Our Interlibrary Loan Department has set up a deposit system against which any off-campus patron may charge photocopying services. Inquiries are invited for further detail of this service). We can also make full-size copies of microfilm in our cllection, but we do not have equipment for making enlargement copies of Microcards.

We provide reference service and aid in using our collection. The reference service consists mainly of answering specific queries which require only short answers. We depend heavily on printed indexes such as Nuclear Science Abstracts and U. S. Government Research Reports for subject access to the reports collection. The library does not ordinarily compile lengthy bibliographies or make extensive literature searches. The Experiment Station does have an information department which offers this service. A great deal of our work is helping patrons locate specific reports from citations given in periodicals and other sources. This often involves correlation from the given report designation to one that we use.

Another service is the location and ordering of reports requested which are not in our collection.

Since we handle the ASTIA service for the Experiment Station, much of our borrowing is done from this agency.

An announcement list of recently acquired reports is compiled and sent to project directors and other interested patrons. The list is short and covers only a small fraction of our acquisitions.

Georgia Tech has recently been named one of twelve Federal Regional Report Centers. The services we offer will change somewhat because of this new arrangement. For example, we will be able to handle requests for reports by teletype. Our coverage of OTS and DOD documents will be much more complete. We will, however, have to wait for a more complete picture of our services as we see how this program develops.

Finally, I would like to take this opportunity to pass on a compliment to the AEC. At Tech we receive reports from many sources. The AEC reports stand out from the rest because of the ease with which we can handle them and the control provided by Nuclear Science Abstracts.

THE TECHNOLOGY DEPARTMENT OF CARNEGIE LIBRARY AS AN AEC DEPOSITORY

D. R. Pfoutz

Carnegie Library of Pittsburgh
Pittsburgh, Pennsylvania

ABSTRACT

The Technology Department, Carnegie Library of Pittsburgh, functions as a public library and as a special, science-technology library. Its collections and services as a Regional Technical Reports Center and depository for the unclassified or declassified AEC reports are described. The use of these reports is steadily increasing as the Department provides reference service and acts as an outlet for AEC information.

* * * *

When I first talked with Walter Kee about this meeting, I told him we were doing nothing unique in the way we handled or made use of the AEC reports. We may be unique to the extent that Carnegie Library of Pittsburgh is a public institution which serves not only Pittsburgh and Allegheny County but also acts as a Pennsylvania State Resource Library for Science and Technology. The Technology Department plays a double role: it serves as a conventional public library and, more specifically, as a special science-technology library.

Since it functions as a special library, members of the staff have, occasionally, conducted literature searches, acted as consultants, abstracted or scanned articles and prepared bibliographies on technical subjects. In no way does the Department wish to supersede or supplant any business or industrial library. On the contrary, it attempts to further the services offered by special libraries in the area and to extend their collections by acquiring materials smaller libraries would not stock.

To give you some idea of the Department's scope and organization, perhaps I should tell you that it functions primarily for reference and research in both the pure and applied sciences with emphasis on industrial technology, especially in the chemical and metallurgical fields.

The basic collection, consisting of approximately 230,000 volumes, contains many of the early scientific and technical journals published both in this country and abroad. About 2500 serials are received currently. Bound and cataloged for permanent reference, most of these publications are complete from the beginning.

A key to this material is provided by a classified card catalog based on the Universal Decimal Classification. Service is provided by 10 professional librarians and 10 non-professional assistants who man the Department.

As far as the AEC reports are concerned, the general services we provide include:

(1) Reference assistance and help in locating information in response to letters, telephone calls, or personal visits.

(2) Accessibility to reports.

(3) Photocopies.

(4) Assistance to users who wish to purchase copies from OTS.

(5) And, guidance for those who may be considering a request to the Division of Technical Information for a literature search.

The size of our government reports collection is beginning to present problems. I have no idea of the total number, but the documents occupy approximately 650 shelves. Of these, about 252 are devoted to the AEC reports. There are 74 catalog trays filled with Microcards.

The reports collection goes back to the beginning of the AEC depository system and the days of the OSRD. It includes copies of the old BIOS, CIOS, NACA, and AEC reports; copies of those that appeared on TOM reels; and others which came to us directly from different agencies. Along with current material from ASTIA and NASA through the OTS, this forms a pool from which the general public, and special librarians in particular, can draw upon to locate reports quickly.

As long as the Department is a depository, it isn't possible or desirable to reduce the size of the collection by weeding or limiting acquisitions. Requests are not related to the Pittsburgh region or limited to certain subject areas. We are just as likely to be asked for an old report, to which someone has found a citation, as a current one. If a company librarian is asked for a report which is not in his collection, he usually first calls upon us for a copy.

At this time, I might inquire whether the AEC could help control the size of the collection. Would it be feasible to issue old reports on 35mm microfilm so that the printed copies could be discarded? This would save space; and the use of microfilm, which is easily read and reproduced on well-known machines, would save a lot of headaches. I might add that a library, such as ours, which does not have unlimited funds cannot do this microfilming itself; and it cannot afford expensive machines to read or reproduce each of the different forms and sizes of microprint. Even the machines soon take up a lot of space!

In order to maintain and service the AEC collection, the reports are preserved in their original form as either ink-print or Microcard copies. Very few reports are ever bound unless we get duplicate copies to be cataloged. Reports are shelved upright on standard book shelves; the thin ones are placed in Magafile boxes with a few Princeton files interspersed to lend support. The arrangement is by AEC designation.

When filed in this manner, it is difficult to see the AEC number if it is printed on the upper right corner of the cover. Recently some series have been printed with the number on the upper left corner. This is more convenient when shelving or locating reports. Our staff has found it necessary to letter the number in the left corner when it does not appear there.

To provide a quick check of the holdings, a check-in card file is maintained. Arranged alpha-numerically, reports are entered as they are received. Microcard copies are indicated on this record.

There is no author file except for translations. For these, a card is added to a master, author index for all the translations in the Department. This work, of course, duplicates the index in the Translation Title List...(TID 4025 and supplements).

Maintaining and servicing the collection is a fairly simple matter. There are no subject indexes, no dictionary or classified catalog, and no electronic machine to retrieve the information in these reports. The only approaches are provided by such tools as:

> Nuclear Science Abstracts, its indexes, and, for availability, the Cumulative Number Index, Volumes 1-15, With Public Availability Citations.
>
> United States Government Research Reports
>
> Monthly Catalog of United States Government Publications
>
> Bibliographies of Interest to the Atomic Energy Program (TID 3043 and supplements)
>
> Translation Title List and Cross Reference Guide
>
> Index to PB reports issued by Technical Information Service in Washington.

We try to use the AEC reports just as any other type of technical literature. The requests for assistance or questions we receive are usually of three broad types.

First, and most frequent, is the request for, or dealing with, a given report: its price, availability, how to obtain it. These requests are usually by report number and present no difficulty. If a contract number is given, then there is trouble since we have no list by contract numbers. The Department is not often troubled with reports in a series, as requests are usually for specific reports, but there is likely to be a problem of reports missing within a series. They may not have been received or were issued under a different designation. Occasionally there is a request for all the reports from a certain agency. For example, all quarterly reports from the Nuclear Engineering Section of Brookhaven National Laboratory.

The second type of question is for a specific bit of information. These reference questions may be answered quickly but often require considerable digging.

A third type involves more searching and approaches the bibliographic

literature search. Although the staff has compiled lists of references on occasion, and a few of these have snowballed into rather extensive bibliographies, an attempt is made to limit this work and prevail on the user to do his own searching. This is not always possible or easy! Often it is a matter of judgement, and always it is a continuous process. Since the Department is limited by staff and time, it is necessary to teach those who come to the Department how to use material and locate information.

When answering a question, the normal procedure for a reference librarian is to decide quickly whether to go directly to books on the shelves, to use the card catalog, or to consult bibliographies, indexes, abstracts, and so forth. Our staff members now use Nuclear Science Abstracts and United States Government Research Reports as automatically as they turn to Chemical Abstracts or Engineering Index. And most people, I should add, are quite willing to use NSA when they want information.

But a few people will not use the NSA and feel that the library ought to provide an index or that the library card catalog is an index to the report literature. In August we had a copy of a letter from a user who had written to McGraw-Hill, and sent copies to the AEC, the Library of Congress, and Senator Joseph Clark.

In it the writer complained that Carnegie Library tries to "index" the National Nuclear Energy Series on a single card, partly printed, with illegible, pencilled-in additions. He goes on to state that "it is almost impossible.....to 'make head or tail' of the material without an unreasonable amount of searching."

Then the writer asks McGraw-Hill: "Can you supply me....with a complete index to this extensive material? I am interested" he continues, "only in the non-military aspects of this record. In particular," he says, "I need Geology of Heavy Water (or D_2O) to answer such questions as: 'Does this deuterium-oxide occur in approximately the same percentage in ALL H_2O water--oceans, lakes, rivers, rainfall, etc? Can the percent of D_2O be increased artificially by exposing H_2O to radiation of various kinds, ranging up to cosmic-rays? Or, does the quantity of D_2O in a limited, natural body of water resemble a gold-mine in that when the valuable material is once depleted, does it then stay depleted forever, or does this D_2O in time tend to renew itself (due to any sort of NATURAL radiation?) What is the best modern commercial method(s) for separating D_2O from H_2O; and what is the approximate cost of separation when desalting in a plant of several million gallons per day?"

And so on for several paragraphs!

This man came to the Library to find this information for his son who is working on a researoh project. Staff members had given considerable help in using Nuclear Science Abstracts, Chemical Abstracts and other reference tools. He wouldn't use them although the indexes, especially in NSA, carried page after page of citations. He wanted to use the National Nuclear Energy Series only and thought it should be completely indexed on cards in the catalog.

You see, we have our problems!

Nevertheless, we do get the more conventional and reasonable questions. Here are a few examples of questions which have been brought to our attention:

(1) A subject search involving the automatic control of nuclear reactors.

(2) Reports on atmospheric contamination

(3) Material for a research report dealing with the disposal of radioactive waste. (This came from a local college.)

(4) Nuclear Science Abstracts was found to be very useful when making a search for a chemist involving the use of mercury as a catalyst in dissolving ceramic reactor fuel materials.

(5) A rather extensive literature search was conducted for a patent attorney who wanted information on a radio-activity detector of wide range. He stated that: "Typically, this detector may include a Geiger-Muller tube and a suitable circuit. At lower radio activity levels, such a tube produces separate pulses; at higher levels it fails to become deionized for separate pulses and produces continuous current." The purpose of the search was to find references to a device that would operate over both ranges.

These last two searches were conducted by staff members working on their own time. Such time-consuming searches can not be handled as Department projects.

The use of AEC materials is steadily increasing. During the first six months of 1962, there were more questions recorded than for all of 1961.

But the AEC reports are not used more extensively because many people--especially the general public--do not realize that such things exist or that Carnegie Library maintains a collection of these reports. Many people think they are all secret and not for public use; few men in business and industry, or the interested layman, are aware of the material available and have no conception of how to search for information.

Of course, special librarians in the Pittsburgh area are acquainted with the reports and use them. These librarians help to enlighten some of the research men, the chemists, and engineers, and suggest visits to Carnegie Library when men are seeking information. But it is amazing how comparatively few people think of using Nuclear Science Abstracts, for example, to supplement Chemical Abstracts, Biological Abstracts, or other tools they are accustomed to using.

The public library has had some AEC-related publicity directed towards the interested layman, the engineer, the scientist. But actually the library can do very little. There is a need for more publicity to make people realize that reports are a part of every research project and that, often, they are available.

More publicity coming directly from the AEC might be helpful. Perhaps some of it could take the form of releases and pictures for the depositories to use. It should be directed to both the general public and to those in business, research, and industry who often have a special need for the AEC materials. Traveling exhibits that could be easily shipped and erected would be desirable also. Such exhibits might well be placed in the hallways or central courts of libraries, banks, office buildings and so forth.

Before concluding, I should like to state that not only our own staff, but many other librarians to whom I have talked, feel that the AEC is about the best of any government agency with which to work. We have found that it is prompt and requires a minimum of red tape.

The AEC does an outstanding job in producing Nuclear Science Abstracts. It is a fine abstract service with excellent indexes that cover recent reports without a long time-lag. I can think of nothing to be desired at this time but hope that Nuclear Science Abstracts does not go in for a machine-produced index of key words in titles. Such an index is a very poor excuse for doing a thorough job. Indexing words in a title only cannot help but omit references to much of the subject content in the full text of an article or report.

Although just about everything I can say is complimentary, I should like to object to the recently issued Research and Development Abstracts of the USAEC. It seems to be unfortunate that these reports do not appear, perhaps as a part or section, in Nuclear Science Abstracts. It is always much better to have only one instead of two places to look for information. Why not broaden the scope of NSA slightly to include these reports? They have similar numbers and are available on the same basis as other reports in NSA. Since RDA appears to have the same kinds of indexes and the same subject arrangement as NSA, producing another service would seem to require a considerable duplication of time, effort, and money.

I have tried to give you a general picture of the Technology Department's functions and some of its services. As a depository for the unclassified and declassified reports, this Department provides reference assistance and serves as an outlet for AEC materials which help promote the peaceful uses of nuclear energy. In performing these services, the Library, as a communications center, accomplishes its mission of disseminating information.

DISCUSSION: SESSION V-A

SERVICES PROVIDED BY CONTRACTOR AND DEPOSITORY LIBRARIES

Walter A. Kee, Discussion Leader

W. A. KEE: We thought you might be interested in having two of our overseas friends talk briefly to give us some highlights of what they are doing in terms of services. We have asked Miss Gabriele Mulert of the Gmelin Institute in West Germany and Mrs. Madeleine Ledivelec of the EURATOM organization in Brussels to talk to us for a few minutes.

GABRIELE MULERT: Our primary job at the Gmelin Institute is the compilation of the Inorganic Chemistry Handbook. This Handbook was first published by Gmelin Institute in 1817. The present one was started in 1921. The Gmelin Handbook is considered a classic compendium in its field. The subject matter of the Gmelin Handbook is handled according to chemical substances. There are one or more volumes devoted to the chemistry, physics, etc., of elements and compounds. Each element is covered systematically starting with the history, occurrence, formation and preparation, its chemicals, physical properties, etc. This material is followed by a similar treatment of the compounds of the elements.

The subject matter is organized on the basis of a definite system employing some 2,000 sub-headings. Details and arrangement used may be found in a special volume in which all Gmelin writings have headings in both German and English. All volumes contain a complete English table of contents. In addition, many headings and sub-headings appearing in the text are given in the margin in English. These headings are a good feature and facilitate filing and review of the material, as well as location of the specific heading. That is enough about the Gmelin Handbook. Most people know it as the encyclopedia.

A few words about the AEC Documentation Center at Frankfurt, which serves as a central information agency in the field of nuclear science and engineering. It is a non-profit organization attached to and operated by the Gmelin Institute of Inorganic Chemistry, under the direction of Dr. Pietsch of the Institute. The Center itself is responsible to and supported by the Ministry of Atomic Energy. It was established under the German Republic.

The Center collects and makes available to its users material available in the field of atomic science. In addition to publications, that is to say books and journals, it specializes in the large and important conference papers, dissertations, etc. The availability of these known conventional publications is announced in indexed bibliography Series A-B.

The Center further procures specific documents in response to requests. It may be of interest to you that we have about 3,000 to address in a month for such people. The Center is the depository library for the AEC reports. We now have 70,000 reports. We try to get all unclassified reports from all other countries in the world to make our collection as complete as possible.

The Center has two periodic publications in English. Series A-B and Series C. Series A-B, published for the first time a year ago, is an announcement bulletin of reports, conference papers and dissertations received by the Center. In addition to bibliographic listings, it contains detailed indexes consisting of reactor and report number indexes. Each original paper is interlisted and the content indicated by descriptors entered in subject matter indexes. Only reports or conference papers are listed in the Series A-B publications. We have now about 6,000 papers covering about 500 conferences. Copies of these documents, I mean now the conference papers, can be made available at charges covering reproduction and handling. Series C special bibliographies appear in series. Those Series A-B and C are available and free of charge to interested users in the United States.

MADELEINE LEDIVELEC: EURATOM has nothing to offer to compare to Gmelin Institute, but we look to it for help. When we are in trouble we go to that organization. What can I say after Miss Mulert has talked? I'm a bit handicapped because English is not my mother tongue.

We are a very young organization, only about three and a half years old, and we are not only a scientific organization, but also a political one. I have been learning a lot. I think I am going to go home and make requests for all the gadgets and wonderful equipment I have seen at the ORNL Library, which some of you will visit tomorrow.

We have a book collection of about 30,000 volumes which have been received over a period of three years. And I think that means around 15,000 titles, with only about 10,000 technical publications. The rest are political or legal books. We have problems too.

Our report section is the one we love most. I think we have about 10,000 copies, mostly American and eye-legible, and 25,000 to 30,000 Microcards. I don't know exactly as I haven't counted them.

We are trying to set up at EURATOM a union list of all reports available at our organization or that we have handled. The EURATOM agencies shouldn't bother the AEC agencies, if we have a copy available. It is hard to get reports, many reports. We try to keep a master copy so there will be a reference file.

We bring out a weekly accessions list--not exactly weekly--for all reports received. And reports not American, we keep separated by country of publishing and make interim indexes. We file the last one with the reports and see what reports are from Israel or Norwegian projects or something like that.

We try to do our best and all hope to see the first EURATOM Library in a proper building in the near future.

B. EDUCATION FOR SCIENCE LIBRARIANS

Bernard M. Fry
National Science Foundation
Washington, D. C.

I am planning on keeping this title reasonably short for one very good reason, and that is that this is not so much a new field, but an emerging and changing field, and one which is going to require the best confidence that all of us can bring to bear, to make any definite progress, so that we can take some forward steps in this whole field.

Most of you are familiar with the training practices of library schools and more particularly the practices in training special librarians. The special librarian is no new breed of animal, but one that goes back quite a number of years before the war, and we, of course, had science librarians before the war. We had chemistry librarians, biology librarians, physics librarians and other fields, and I think prior to the war, most science librarians felt they had the situation pretty well in hand and there was no real cause for alarm, or no real need to bring about any major improvements in their practices or in their command and service of the literature.

Now all of you know what happened during and after the war in the terms of the proliferation of materials. There is some controversy as to the total rate of growth of the literature, but whatever the growth rate may be, it certainly has expanded a great deal in terms of the accumulated volume.

Now, it has not been only a matter of the size of the literature, though that has caused so many problems in the handling of it, the complexity of the literature, the increasing innerdisciplinary nature of the literature. These and other matters, such as the appearance of a very large proportion in unfamiliar languages, this has been a further complication to the science libraries.

I think it would be a mistake for us to consider training in this field as limited only to science librarians or science librarians. Actually, the whole school of the dissemination of the scientific information begins in the spectrum of functions before the science librarians,

and continues beyond what the conventional science librarian is prepared to do. So, I would like for us to consider rather than just the training of science librarians, per se, the whole range of training that may be necessary in order to bring about major improvements in the dissemination of technical information. This is one area which, to date, has not received its full share of attention. Largely as a result of congressional and executive branch actions, there have been national programs set up and many are underway to improve existing information services and to increase a great deal the research effort applied to the development of new and more powerful techniques in dealing with information and the information services.

But the training of people--of people who will be competent in the quite large spread of activities involved with this field of work, with this discipline, if you will, this has not really received any systematic attention to date. So, it is really a matter of a great concern to many of us, not only those of us who are trying to develop programs in this field, but to all of us who are, in fact, working in the field.

Now this paper that has been passed out to you--I would hastily disavow it myself--it is not a very good set of definitions, I don't think. However, it represents an effort on the part--largely on the part of the conferences held at the Georgia Institute of Technology last spring, trying to identify the major categories of work in this field. Aside from the typographical errors in it, I think many of you could probably find fault with some of the principal statements in the definitions, but I think this is part of the effort to bring our field of work to maturity, to advance it in terms of not only its specialized techniques, but also in its philosophy and its approach to the problems and to the community that it serves.

With respect to the Science Foundation's program or development in this field to date, we have prepared a chart. I have a few copies here, in case some of you are interested, which attempts to identify in major outline the science library and science information specialists, the kinds of programs and pilot projects, fellowship studies, and such, involved in each of these areas. I would be glad to discuss them with you individually, if you have any particular interests.

Now, the major effort has been, and will continue to be directed toward the development of curricula. We feel that there needs to be certainly a re-examination of present library school curricula, in terms of the more modern methods of handling scientific information and the new approaches to the complex problems which all of us have faced in the dissemination of information. We have done a good deal of study work, of surveys, and such, both between the Foundation under contract and grant, on library school curricula and contents, the kind of students they have. We have discovered, and of course it is generally known there are very few science majors attending library schools. As a matter of fact, I think recently, a recent census showed up only five

in the total country with degrees in science. In addition to this, we have tried to accumulate information in this country and from groups studying this problem abroad in England, France, Germany and the Scandinavian countries. We have accumulated and examined the content of various institutes, short courses, and curricula which have been developed both here and abroad.

Some of you, I know, attended the Georgia Institute of Technology conferences which were held last fall, and then later this spring. I think a lot of very good spade work was accomplished at these conferences. There was a further examination and identification of such matters as refinement of curricula, manner of recruiting students, faculty requirements, relative values of short programs--the Gregg program, etc. The general conclusion, I think, of the conferences, and it was a very general one, is that university programs for training specialized work in various aspects of science information can and should be developed. There are two reports which were issued by these conferences, and there will be a final report out this fall, which, if you will write to us, we will be glad to send you.

I think you will discover a good deal of advanced thinking in some of these fields that came out of the conferences. These were not only conferences on behalf of the Georgia Institute of Technology, but were designed to be national planning conferences, and a great deal of competent opinion was brought to bear on many of the problems there.

Now, of course, in addition to training people to work in science libraries and information centers, and in publishing and disseminating general science areas, other areas need improvement. We are all familiar with more effective presentation of the writing of reports, for example. All testify to the need of improvement in this area. Many reports, just traditional reports are prepared rather loosely and with poor presentation. There has been a good deal of study devoted to this, and a number of experiments tried. A number of places, laboratories and others, are making definite attempts to improve the quality of presentation of their scientists without adding to this burden in reporting research results.

Another area in which we are trying to do work to bring about improvement in the whole field, is in the instruction of both undergraduate and graduate science students, in the more effective use of the literature in their fields, and the bibliographic tools in the fields. I am sure many of you are familiar with the stories you hear quoted every once in a while of chemists being graduated without using Chemical Abstracts and such. Of course, for a number of years there have been specialized courses in the use of bibliographic tools in chemistry, physics, engineering, which are some of the more obvious examples. There are recent indications that the crowding of the curriculum information in many fields of science has forced a reduction--actual reduction, in recent years of such courses. Mr. Miller at Purdue University, who has been teaching chemists the use of bibliographic tools in chemistry for

twenty-five years, is on the point of retiring. The University announced his course would be abandoned when he retires. This sort of thing is occurring in many places, simply because there is so much competition for the students' time. As a result of this competition, university administrators are saying information work is a little bit lower on the priority list than other kinds of training. So, this is something that needs to be combated.

There is the matter of recruitment in this field. I think most of us here are probably accidentally in the field. This is no derogation, but it is just a fact that to date, there really has been no training--no training of scientific information people generally, or science librarians. Most science librarians, I think, in the past have gotten into the field accidentally. They get a science degree, and then, except for a very few of them, go in to work in laboratories and discover they would rather work in a library, go to library school and get a library degree. But by and large, it has not been a planned program of training. Now, we are trying to develop and encourage better and more systematic recruitment in two or three ways. The use of visiting scientists, scientists of some stature to visit the various universities and talk with faculty and graduate students on the needs and the promises in this field, is something we are trying to get underway. Also another effort is going to be in the direction of beginning even in the secondary schools. Some of you may be familiar with this pamphlet that the AAA has published--"Careers in Science." It is widely used by counselors. They expect to have a companion piece on this on "Careers in Scientific Information Work." There will not be--this, of course, will not produce very large results for a number of years, but it is necessary to begin, I think, as soon as possible, to acquaint the student as early as possible with both the necessity and the opportunities of working in this field.

And thirdly, we have a program to bring about the systematic exploitation or persuasion of the heads of departments of science and engineering to acquaint them with the needs in this field. There is an obvious need to work here, in order that the heads of the departments and the faculty will understand the needs of this field, the kinds of work that are involved, and the opportunities for its students. Many graduate students--many of them either trying to complete their doctorate or their master's work, have a sudden realization they are not meant to work at the laboratory bench, or to be a bench scientist, so-called. Many of these people are not second-rate people, they just have an aptitude for a different kind of work, and we need to reach out to these people and make them aware of our field of work and the various opportunities it affords. In that connection, one of the steps underway now is a nation-wide manpower survey, which will have as its first purpose, identification of functions of work in this field, and secondly, a census of people. There have been various estimates. At a meeting last year of the American Chemical Society, I think someone dreamed up a number of about twelve thousand professionals working in the field.

But this could be plus or minus two or three thousand, I am sure.

I would just like to run over, finally, the principal areas of activity that we are sponsoring, and I might say that this program is just at the point this fall, of changing over from a study program to an action program. We expect to support a number of universities in taking various steps and establishing various institute pilot projects.

In the specific field of science librarians, we are planning to support summer institutes and in-service programs, retrain and give additional training to librarians presently working in the field. We hope, also, to support in science libraries, work pilot projects to experiment with new concepts of training and new curricula. I think all of us agree that new ideas are very much needed.

Finally, we are supporting studies for the curriculum development, and, of course, content studies aimed at new educational concepts and curriculum. There are a number of universities interested in working in this field. I mentioned before the Georgia Institute of Technology, the University of Illinois, Columbia, Western Reserve University, University of California, U.C.L.A., Florida State, Drexel Institute—at least a dozen that are ready to undertake new and experimental training programs.

A few universities feel there is a very definite area of training that needs to be taken out of the library school. There are pros and cons on this. There is certainly bound to be a good deal of controversy in this area, in the matter of training science information specialists. There is the group of people who are working in the field that plan to sponsor programs to provide additional training to those people largely in summer institute programs, and also to provide short-term training for those individuals engaged in other fields that would like to come into the scientific information field. Again, we are planning to support educational programs to prepare science students for entrance into the field, the integrated programs--integrated science librarianship and science information programs generally.

In the other area, the third area of information specialists, this is a new field largely concerned with information system mechanics, retrieval, new methods of presenting scientific information. Again, the interim plan of providing additional training through summer institutes, going along with pilot projects for the development and experimentation of new concepts in curricula. At the University of California at Los Angeles, for example, Bob Hayes has developed a collection of courses in which the University grants a Certificate of Information Systems. Lehigh University, Columbia, and two or three others are trying to move ahead in this field.

In any field involving graduate training, if the graduate training is to be worthwhile, there must also be research connected with it. Research on the part of the library schools, or on the part of research

libraries, has been almost negligible. Two or three universities have undertaken programs of research with varying results, but I think that probably not a single library has a staff member whose major concern is research on information problems. We have been working with the Association of Research Libraries to try to correct this trend. A number of university libraries have indicated they will undertake research programs, and have actually set up research departments in the library.

There is a great deal of research that needs to be done, not only on the information needs of scientists, but on means of relative effectiveness of different means of communication, even over into the area of artificial intelligence and such, that have been left largely untouched by librarians in the past. Research graduate training of scientific information personnel must be accompanied by research. From the looks of things, I think that this twin program, in the next few years, is going to provide a whole new method of training people who are working in our field. I don't think we will necessarily be replaced, but I think all of us can profit by the developments.

Attachment 1 - Definitions

SCIENCE LIBRARIAN

A science librarian is an individual with custody of a collection of books, documents, etc. for use by a group of scientists. This implies intelligent acquisition, standard cataloging, and understanding circulation of such material. Should not subject specialist be available for retrieval of subject information from the collection, the science librarian should aid the investigator as much as he (often she) can, and sometimes with experience on such jobs, science librarians become quite skillful in answering questions or gathering significant documents or reports needed by an inquirer.

A science librarian ought to have science undergraduate courses, as well as library professional training. It often happens that one or the other of these qualifications is lacking, but then personal effort to compensate for either lack must be successfully achieved in order that a science librarian serve satisfactorily.

SCIENCE INFORMATION SPECIALIST

A science information specialist is better understood if, instead of this general term "science", a more specific term such as Chemical Information Specialist or Biological or Engineering Information Specialist is used. Nobody could be universal enough in knowledge to be a specialist in the information concerning all the sciences. A Chemical Information Specialist, for example, would be a person concerned with the means and effects that characterize

the flow of new and/or recorded knowledge, mainly chemical, among chemists and others who use chemical knowledge (e.g., Chemical Engineers, Bio-medical Specialists, etc.). He might be as much concerned with called scientific conferences and their management, values, and defects, as he would be with print as a medium. Or such a person could be on the professional staff of Chemical Abstracts, concerned with day-to-day decisions about terminology, classification, etc.

As for education, he should have, to continue the above example, at least an M.S. in Chemistry or a closely related field, and preferably a Ph.D. He might be an individual who, because of a sudden onslaught of an allergy, found himself unfitted for laboratory work (he should not be just a "weak" individual, or an odd-ball). He should have, by training (as is preferable) or experience (as is usual), some knowledge of communication principles and practices (librarianship, journalism, etc.), and should have a continuing concern for the aims and developments in these areas, especially as they affect his particular subject.

INFORMATION SCIENTIST

These individuals are scientists in the presently evolving fields of communications in general, applying skills based for example on mathematics and linguistics to the over-all problems and methods of the flow of information among humans in all disciplines and areas of life including the sciences. They are concerned today among other things with mechanization of information storage and retrieval, using computers. But these are instruments, not principles, and it is for new principles and "laws" to handle the rising mountains of information that we are turning hopefully to a new scholar, the Information Scientist, who would help with the documentation of economics, law, medicine, etc., as well as chemistry, physics, and engineering. Basic knowledge of the communication of information would be this scientist's forte.

EDUCATION AND TRAINING PROGRAMS

	SCIENCE LIBRARIAN			SCIENCE INFORMATION SPECIALIST			INFORMATION SCIENTIST		
	NEED	METHODS	OBJECTIVES	NEED	METHODS	OBJECTIVES	NEED	METHODS	OBJECTIVES
INSTITUTE PROGRAMS AND PILOT PROJECTS	1. RETRAIN LIBRARIANS FOR WORK IN SCIENCE LIBRARIES 2. ADDITIONAL TRAINING FOR SCIENCE LIBRARIANS 3. PILOT PROJECTS TO EXPERIMENT WITH NEW CONCEPTS FOR TRAINING SCIENCE LIBRARIANS	1. INSTITUTE PROGRAMS A. Summer Institutes B. Academic Year Institutes C. In-Service Institutes 2. CONFERENCES 3. INTERNSHIPS AT SCIENCE LIBRARIES 4. ADVANCED EDUCATION PROJECTS IN LIBRARY SCHOOLS	1. TRAIN MORE COMPETENT SCIENCE LIBRARIANS BY EMPHASIZING SUBJECT KNOWLEDGE AS BASIC PREREQUISITE 2. DIRECT EFFORTS IN EDUCATION TOWARDS DEVELOPMENT BY SCIENCE LIBRARIANS OF MORE EFFECTIVE BIBLIOGRAPHIC AND REFERENCE SERVICES 3. DEVELOP MORE EFFECTIVE RESEARCH IN LIBRARY AND LIBRARIANSHIP PROBLEMS	1. ADDITIONAL TRAINING FOR PERSONNEL PRESENTLY ENGAGED IN SCIENCE INFORMATION ACTIVITIES 2. PILOT PROJECTS TO EXPERIMENT WITH NEW CONCEPTS FOR TRAINING SCIENCE INFORMATION SPECIALISTS 3. DEVELOP PROGRAMS FOR TRAINING SCIENTISTS IN USE OF LITERATURE	1. INSTITUTE PROGRAMS A. Summer Institutes B. Academic Year Institutes C. In-Service Institutes 2. INTERNSHIPS AT TECHNICAL AND SCIENCE INFORMATION CENTERS 3. ADVANCED EDUCATION PROJECTS AT UNIVERSITIES	1. STIMULATE DEVELOPMENT OF EDUCATIONAL PROGRAMS AT UNIVERSITIES FOR TRAINING SUBJECT SPECIALISTS WHO CAN PROVIDE INFORMATION SERVICES FOR SCIENTISTS 2. ENCOURAGE DEVELOPMENT OF NEW AND MORE EFFECTIVE METHODS OF COMMUNICATING AND DISSEMINATING SCIENTIFIC INFORMATION 3. ENCOURAGE TRAINING OF SCIENTISTS IN USE OF INFORMATION AND THE RELATIONSHIP OF INFORMATION TO SCIENTIFIC RESEARCH AND DEVELOPMENT	1. ADDITIONAL TRAINING FOR PERSONNEL PRESENTLY ENGAGED IN DOCUMENTATION WORK, MECHANIZATION OF INFORMATION STORAGE AND RETRIEVAL, AND SYSTEMS DEVELOPMENT 2. PILOT PROJECTS TO EXPERIMENT WITH EDUCATION AND TRAINING CONCEPTS AND PROGRAMS 3. SUPPORT RESEARCH ACTIVITIES AT UNIVERSITIES	1. INSTITUTE PROGRAMS A. Summer Institutes B. Academic Year Institutes C. In-Service Institutes 2. CONFERENCES 3. ADVANCED EDUCATION PROJECTS AT UNIVERSITIES	1. DEVELOP PROGRAMS AND ACTIVITIES FOR TRAINING INDIVIDUALS TO CONDUCT RESEARCH TO DEVELOP MORE EFFECTIVE METHODS FOR ORGANIZING, MANAGING, AND CONTROLLING THE GROWING VOLUME OF REPORTS OF SCIENTIFIC RESEARCH 2. PROVIDE MANPOWER FOR CONDUCTING BASIC RESEARCH IN INFORMATION AND COMMUNICATIONS PROBLEMS AND FOR APPLYING NEW TECHNOLOGY TO THE DEVELOPMENT OF MORE EFFECTIVE MEANS FOR DISSEMINATING AND COMMUNICATING SCIENTIFIC INFORMATION 3. TRAIN MANPOWER NEEDED TO STUDY AND DEVELOP MORE EFFECTIVE METHODS FOR COMMUNICATING THE RESULTS OF RESEARCH
COURSE CONTENT STUDY AND DEVELOPMENT	DEVELOP NEW CONCEPTS AND CURRICULUMS FOR EDUCATION AND TRAINING OF SCIENCE LIBRARIANS	1. STUDY LIBRARY SCHOOL CURRICULUMS 2. DEVELOP NEW COURSES FOR TRAINING SCIENCE LIBRARIANS		1. DEVELOP CURRICULUMS FOR EDUCATION AND TRAINING OF SCIENCE INFORMATION SPECIALISTS 2. DEVELOP METHODS FOR TRAINING SCIENTISTS IN USE OF LITERATURE	1. STUDY BASIC CURRICULUM REQUIREMENTS FOR EDUCATION AND TRAINING OF SCIENCE INFORMATION SPECIALISTS 2. STUDY SCIENCE AND OTHER COURSES TO DETERMINE APPLICABILITY TO NEW CURRICULUMS FOR EDUCATION OF SCIENCE INFORMATION SPECIALISTS 3. INVESTIGATE MEANS FOR TRAINING SCIENTISTS IN USE OF THEIR LITERATURE		1. DEVELOP CURRICULUMS FOR TRAINING INFORMATION SCIENTISTS 2. ANALYZE AND CONTINUE TO DEVELOP COURSES NECESSARY TO SUPPORT NEW CURRICULUMS	1. STUDY BASIC CURRICULUM REQUIREMENTS FOR EDUCATION AND TRAINING OF INFORMATION SCIENTISTS 2. STUDY SCIENCE AND OTHER COURSES TO DETERMINE APPLICABILITY TO CURRICULUM FOR EDUCATION OF INFORMATION SCIENTISTS	
FELLOWSHIPS	1. SUPPORT HIGH CALIBER STUDENTS AND ATTRACT STUDENTS WITH SCIENCE BACKGROUNDS 2. SUPPORT RESEARCH IN LIBRARY PROBLEMS AND LIBRARIANSHIP 3. PROVIDE MEANS FOR REFRESHER TRAINING OF LIBRARY SCHOOL FACULTY	1. COOPERATIVE GRADUATE FELLOWSHIPS 2. POSTDOCTORAL FELLOWSHIPS 3. LIBRARY FACULTY FELLOWSHIPS		1. ATTRACT HIGH CALIBER STUDENTS TO FIELD 2. SUPPORT RESEARCH TO STUDY SCIENCE INFORMATION PROBLEMS AND PRESENTATION OF SCIENTIFIC INFORMATION 3. PROVIDE MEANS FOR SCIENCE FACULTY TO IMPROVE TEACHING OF USE OF LITERATURE TO SCIENCE STUDENTS	1. COOPERATIVE GRADUATE FELLOWSHIPS 2. POSTDOCTORAL FELLOWSHIPS 3. SCIENCE FACULTY FELLOWSHIPS		1. DEVELOP BASIC RESEARCH ACTIVITIES 2. SUPPORT GRADUATE STUDENTS 3. ATTRACT HIGHLY COMPETENT RESEARCHERS 4. PROVIDE MEANS FOR TRAINING FACULTY IN NEW TECHNIQUES AND METHODS OF HANDLING INFORMATION	1. POSTDOCTORAL FELLOWSHIPS 2. SENIOR POSTDOCTORAL FELLOWSHIPS 3. COOPERATIVE GRADUATE FELLOWSHIPS 4. SCIENCE FACULTY FELLOWSHIPS	
STUDIES	BASIC TO THE DEVELOPMENT OF ACTIVITIES FOR EDUCATION AND TRAINING OF MANPOWER FOR WORK IN THE FIELD OF SCIENTIFIC INFORMATION IS DETERMINATION OF PRESENT AND FUTURE MANPOWER REQUIREMENTS BOTH IN NUMBERS AND IN KIND AND DETERMINATION OF PRESENT UTILIZATION OF MANPOWER ENGAGED IN SUCH ACTIVITIES. A SERIES OF STUDIES TO DETERMINE MANPOWER REQUIREMENTS AND UTILIZATION SHOULD BE CONDUCTED CONCURRENT WITH DEVELOPMENT OF EDUCATIONAL PROGRAMS. THESE STUDIES SHOULD BE CONDUCTED ON A CONTINUING BASIS NOT ONLY TO PROVIDE QUANTITATIVE DATA AND DESCRIPTIONS OF WHAT TYPES OF WORK SCIENCE INFORMATION PEOPLE DO BUT ALSO TO OBTAIN INFORMATION THAT WILL HELP IN DEVELOPING NEW SERVICES AND NEW CONCEPTS OF UTILIZATION OF PERSONNEL.								

DISCUSSION: SESSION V-B

EDUCATION FOR SCIENCE LIBRARIANS

Walter A. Kee, Discussion Leader

HELEN CHICK: Would the study in the summer institutes you mentioned be in science literature or science itself?

BERNARD M. FRY: It will probably be institutes covering both areas. I think most people are agreed that you can't make a scientist out of a librarian in a short space of time. However, there have been two or three experiments which have shown definite improvement in the competence of library people in exposure to a given set of courses in the major scientific disciplines. It depends largely on to whom the institutes are addressed. If you are planning to train librarians, the curriculum of the institutes is planned largely around giving as much orientation or direction in the new scientific fields as possible, and the bibliographic tools, organization of research in these fields along that line. If the people are scientists, who already have degrees in science and are completely unfamiliar with information techniques, it would be the other way around, then the curriculum would consist largely of training in methods of promoting access to the literature.

H. CHICK: Then you mean there would probably be a two-fold program going both ways?

B. M. FRY: Yes.

C. G. STEVENSON: Bernie, I believe there is an Association of Library School Directors. Have you met with these people and talked to them at all about some of the things that might be done to make more rigorous their science information curriculums?

B. M. FRY: We have not met with the Association. We have met, I think, most of the members individually. Many of them are willing to re-examine their curricula. On the other hand, the

library school directors frequently raise the question "Where are we going to get our students in the first place, and secondly, are they going to find jobs?" Now the matter of getting started, of providing trained people--we know that there are many needs throughout the country that are not being filled at the present time. But these are not specific jobs. If you take a poll of any given company, group of companies, or agencies, they will say that over the next ten years they will need "X" number of people. Now this usually appears to be a very conservative estimate, simply because there are apparently also many functions, many needs which haven't found expression in their organization simply because there are not people there trained to handle them. So, it is a rather closed circle, and it is the first few years here that are going to be difficult.

C. G. STEVENSON: I heard some remarks by Dr. Shaw of Rutgers at an SLA meeting, and he appeared to be under the impression that basically very little change was needed, and what changes were needed were about to be made. I wanted to know if his views represent the views of directors of library schools generally.

B. M. FRY: I don't think so. I think many of us admire Ralph Shaw and his contributions to the field, but I think there are many also, and among the scientists themselves, who feel that new approaches need to be made altogether.

C. INTER-AGENCY RELATIONSHIPS IN SCIENCE INFORMATION

THE SCIENTIFIC AND TECHNICAL INFORMATION PROGRAM OF THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Melvin S. Day

The NASA scientific and technical information program is based upon five operating principles, which merit identification and explanation as background for subsequent discussion of the organization, program elements, and operating details of the NASA system.

Service Designed for the Ultimate Consumer. All products, tools, and services provided by the NASA program have as a primary consideration their usefulness to the ultimate consumer of scientific information: the scientist, the technician, the laboratory worker. They can also, of course, be utilized by intermediate services -- by technical libraries or by information centers -- wherever this is desirable. But the intent is to give the scientist and technician a free choice: to maintain his own current literature awareness, make his own literature searches, and obtain his own information, or to refer his requirements to information specialists or librarians whenever circumstances so dictate.

Timeliness - An Essential. With the current pace of technological progress, in which today's critical breakthrough is frequently tomorrow's commonly accepted fact, such a general principle probably needs no emphasis. It should be emphasized, however, that the NASA program is designed to ensure maximum timeliness in all aspects of scientific information service: in the preparation and publication of reports on NASA undertakings; in the acquisition and processing of non-NASA information bearing on aeronautical and space programs; in the announcement of

all materials produced by or flowing into the NASA scientific information system; and in the response to specific document requests or bibliographic inquiries. It is in support of this principle that the NASA program is designed as an active rather than a passive function: that is, available materials will in all possible cases be provided to NASA installations, major contractors, and other participating organizations concurrently with their announcement. This will permit a scientist or technician, noting an entry in a NASA announcement journal, to consult the document or documents concerned in his local reference facility without having to request the material from a central Government agency service point.

Reliance on Existing Systems. The NASA program must profit from, not compete with or displace, other existing information systems and services. In the field of report literature, upon which NASA's internal bibliographic efforts must concentrate, this requires coordination, collaboration, and wherever possible system compatibility with all other major systems sharing this report-literature orientation. These are primarily Government or Government-sponsored activities such as the Armed Services Technical Information Agency of the Department of Defense; the Technical Information Division of the Atomic Energy Commission; the Office of Technical Services in the Department of Commerce; other agency information systems such as those in the Federal Aviation Agency and the National Institutes of Health; and major Government libraries, including the Library of the Department of Agriculture, the Library of Congress, and the National Library of Medicine. Through general collaboration under the

aegis of the National Science Foundation, and through specific collaboration with agencies whose information systems are directly related to NASA's, the policies and procedures of the NASA program are being keyed as directly as possible to those of all complementary systems. In most cases, this direct tie-in, and the resulting operational compatibility, will even permit direct interchange of machine-processed information between the NASA and the related information systems.

Similar collaboration has already been established in many cases with abstracting, indexing, and related services that concentrate on the vast bulk of formally published journal literature. Through contact with professional societies, such as the Institute of the Aerospace Sciences, and with other members of the National Federation of Science Abstracting and Indexing Services, arrangements are being made to promote and where possible improve existing coverage of journal literature through abstracting and indexing services in fields of concern to NASA.

Centralization Only When Necessary. In any large-scale information system, the concept of centralized processing and control is at least superficially attractive. More economical production-line operations, more effective control over the myriad details of a documentation service -- these and other factors can be cited in support of a strongly centralized system. To do so, however, runs the hazard of rating the needs of the system, per se, above those of its customers, since no completely centralized system can ever be as rapidly and as flexibly responsive to local needs as those of a decentralized operation. The NASA program, in keeping with its first principle of customer orientation, is designed to restrict centralization to those areas where it is advantageous on economic or functional

grounds -- examples are in the preparation of indexes, the maintenance of distribution authority records, operation of the agency translation clearing house. In other respects, decentralization is the guiding premise of the NASA program. Even in the area of machine-search capability, it is intended to make machine records available to cooperative activities, such as NASA field centers, so that machine searches can be carried out on-site at the point of actual need. As previously emphasized, all document materials in the NASA system will be made similarly available within the NASA community. Through arrangements with other information systems and by a major depository library program, the same principle will be applied to information requirements external to the NASA community.

A Variety of Products and Tools for a Variety of "Publics." As a principle unto itself, and in support of those outlined in the preceding paragraphs, the NASA program recognizes that no one type of service, no one reference tool, and no one bibliographic pattern can ever satisfy the multiple "publics" -- the multiple needs of thousands of organizations and hundreds of thousands of individual scientists and technicians -- which the NASA scientific and technical information program must serve. The NASA publication program must obviously produce technical reports as primary records of NASA undertakings, but it must also produce many secondary publications which collate, resynthesize, integrate, or "repackage" the mass of material contained in such basic records. Its bibliographic services must provide announcement journals and indexes to serve the widest possible need; but there must also be provided a

wide range of continuing and demand bibliographies, an extensive and flexible reference service, and a machine-search capability to satisfy specific requirements in the greatest depth possible. The NASA dissemination program must satisfy in advance, wherever possible, known requirements of participants in the NASA aeronautics and space programs; but provision must also be made for rapid satisfaction of additional or new requirements as they may be requested by the same audience or by other audiences. In all these ways, and others, the NASA program must continually strive to satisfy efficiently and economically the widest variety of needs with the widest practicable variety of products, tools, and services.

PROGRAM ELEMENTS

The varied responsibilities and functions of NASA's scientific and technical information program form a closely integrated complex of activities.

The task headings and notes in this section describe the documentary portion of this complex in terms of three major program elements. The description is necessarily a simplified one, limited to essentials for purposes of clarity.

A fourth element, concerned with records of current and projected research, is excluded from the description, as are such supporting functions as information-systems research, coordination of library services, and the like, since they do not bear directly on the documentary system as such.

1. Publication
2. Collection and Bibliographic Control
3. Dissemination

These headings pertain to the documentary portion of the program. While each represents a relatively well-defined area of endeavor, it should be clearly recognized that in practice they interlock and interact at too many points to permit their functioning as truly discrete entities.

PUBLICATION

1. NASA's Technical Results and Findings

   NASA Technical Reports

   NASA Technical Notes

   NASA Technical Reprints

   NASA Technical Memorandums

   Contractor Reports

This part of the publications effort comprises basic reporting, in approximately the forms indicated, of work performed under NASA technical programs. Reports and Notes are, respectively, final and interim statements of results and findings; Memorandums are limited in distribution for security reasons; Reprints present NASA information published in journals; contractor reporting duplicates these series in recording the results of extramural effort. Emphasis is on high technical quality, but also speedy publication and distribution. To overcome the limitations inherent in the extreme specialization of such reports, they are thereafter used as input for the "secondary" publications described below.

2. Related Information and "Repackaged" Products

   Conference and Symposium Proceedings

   State-of-Art Monographs

   Technical Reviews

   Technical Translations

   Handbooks and Data Compilations

   Dictionaries

Publications of the general types indicated here are designed to integrate and resynthesize information derived from NASA programs and related activities. The effort involves a variety of forms to ensure the widest possible utility of the information presented. Preparation of these materials by contracts or other external arrangements should ensure the highest degree of technical competence in the publications. With the exception of Symposium Proceedings and Technical Translations, periodicity of publication is determined by the degree of activity in particular subject areas of coverage.

COLLECTION AND BIBLIOGRAPHIC CONTROL - INPUT

1. Acquisition

   All NASA Publications

   Report Inflow from Non-NASA R&D Activities
   - Interagency Agreements
   - Exchange Arrangements

   Books

   Journal Subscriptions

2. Evaluation

   Check for Duplicates

   Review for Relevancy

   Coverage of Given Subjects

   Scanning for Special Treatment (Express announcement, bibliography entries)

   Exchange Benefits

3. Abstracting

   Review and Editing of Author Abstracts

   Preparation of Abstracts Where Necessary

   Precis Translation

4. Indexing

   Preparation of Descriptive Entry

   Preparation of Subject Entry

   Selection of Subject Terms for Journal Index

   Selection of Subject Terms for Machine Retrieval

These headings identify, in self-explanatory detail, the input functions of the documentation system. However, in the acquisition phase it is important to note that the system concentrates almost entirely upon report literature; books and journals are obtained for reference use, but are not in subsequent processing. All four phases are the operational responsibility of the Scientific and Technical Information Facility, but all are conducted under precise NASA guidance and control in terms of the standards and procedures to be observed. Under acquisition, particularly, NASA itself acts in making all contacts and arrangements necessary to ensure adequate receipt. In the first year of operation, it is estimated that some 25,000 to 30,000 reports will flow into the system.

A final point worthy of note is to be found in the indexing phase. Here, under the selection of subject terms, appears the two-level search capability which the documentation system provides: One level for direct use by consumers in the journal index, and a second level -- in far greater depth than the first -- for literature searching and bibliographic preparation by the computer system. (The first, or journal index level, provides an average of four access points per item because of the size limitations inherent in a printed index: for machine retrieval, where greater depth of indexing and retrieval is optimized by the machine capacity, the average is 15 or even more access points.)

COLLECTION AND BIBLIOGRAPHIC CONTROL - OUTPUT

1. Reference and Retrieval

   Identification of Requested Items

   Performance of Literature Searches

   Provision of Specific Data

2. Abstract Journals and Indexes

   Categorization of Abstracts

   Assembly and Publication of Journal Sections

   Preparation of Indexes - Subject, Author, Source

   Publication of Cumulated Indexes

3. Bibliographies

   Preparation and Publication of Continuing Bibliographies

   Preparation of Demand Bibliographies

   Provision of "Express" Announcements

These "output" headings are again largely self-explanatory, but certain items justify particular mention. Under Reference and Retrieval, the identification and literature search functions are performed by machine in most cases (except for special search requirements, such as for reports under a given contract, where manual methods are far more effective). The provision of specific data will require human endeavor to provide factual answers until such time as the system can be refined to permit actual data storage, either comprehensively or in particularly susceptible fields. Under Abstract Journals and Indexes, the proposed time cycle is of particular interest. It is intended to publish journals twice monthly, complete with four indexes, with a maximum four-to-six-week time lag between receipt of reports and their announcement. Cumulated indexes will be prepared quarterly, semiannually, and annually, with a lag of no more than four weeks after the conclusion of the period covered. Two items in the bibliographic area deserve mention. First is the fact that continuing bibliographies in selected subject areas permit a form of specialized reference and announcement service in any terms that NASA's interests dictate, whether disciplinary, programmatic, or other; this provides flexible bibliographic service that can be tailored to any specific need. The second point concerns "express" announcements: geared to the continuing bibliographies, or to other identifiable requirements, receipts can be identified and circulated as frequently as necessary (weekly, or even daily) to those with pressing interests in particularly active fields.

DISSEMINATION

1. NASA Publications to Widest Possible Audience

   Depository Libraries

   Exchange Programs

   Other Systems -
   OTS (Public)
   ASTIA (DOD)
   AEC

   Automatic Distribution

   Request Distribution

2. Non-NASA Reports in the System to NASA and Its Contractors

   Request Distribution

   Automatic Distribution

   Microform

Two distribution systems, as indicated, must be provided: one to disseminate NASA publications, the other to disseminate non-NASA reports. In the first category, the depository library entry includes both the Government Research Reports Regional Reference Centers being established by the National Science Foundation and the Office of Technical Services, as well as complementary depository libraries established by NASA itself. Both the depository and exchange programs are international in scope. Dissemination to other systems, of course, includes not only those specifically identified here but others with comprehensive or selective interests in NASA publications. Automatic distribution to satisfy the foregoing requirements is supplemented by satisfaction of specific requests wherever necessary. Automatic distribution and request distribution also are part of the system whereby non-NASA materials are disseminated within the NASA community itself. It is intended that either microform copies of such reports, or full-size copies if available, will be distributed to NASA Centers and contractors before or concurrently with their announcement. This is to ensure availability, on a decentralized basis, of all materials needed by any user at the earliest possible time. Although not so indicated in the headings as given, microform copies of NASA publications are available to any recipient who has a need for such a medium for reference or reproduction.

CONTRACT EFFORT

As indicated elsewhere in this report, the NASA scientific and technical information program is designed to rely heavily on external assistance, obtained through contracts, rather than trying to develop a large in-house operational capability. Contractual efforts are thus required in several areas of the program: translations, preparation of publications, information research, and documentation.

The most significant single contract now existing or contemplated is one in the documentation area. Since this contract provides for products and services that underlie and support all phases of the program, it deserves description in some detail.

To provide assistance in collecting information and developing bibliographic controls, NASA has contracted for the operation of a Scientific and Technical Information Facility in the Washington metropolitan area. The Contractor is Documentation, Incorporated, Bethesda, Maryland, an information-system organization with wide experience in the abstracting and indexing of scientific documents. Under the close technical direction of NASA and employing special procedures for processing information by advanced techniques, the Contractor acquires and selects documentary materials to be added to the NASA collection; abstracts and indexes these materials as appropriate; prepares announcements and indexes for the newly acquired materials; provides concurrent and continuing dissemination service; provides a supporting reference service; and compiles bibliographies in specialized subject areas. These activities are described in the following paragraphs.

Acquisition and Selection. The Facility automatically receives all significant scientific and technical documents that result from NASA supported investigations. Such documents, which include those written at NASA Centers as well as those by NASA contractors, subcontractors, and grantees, are cataloged without exception.

The Facility also receives documents derived from NASA inter-agency agreements and from NASA exchange arrangements with domestic and foreign organizations. The Facility provides assistance both in requesting documents or exchanges and in locating organizations that may be engaged in work related to NASA's space and aeronautical programs. Every document received is reviewed for relevancy to NASA programs. Those of potential use to a scientist or engineer working in NASA-related fields are selected for cataloging and announcing. Individual exchange arrangements are to be periodically reviewed for possible termination in the event no useful material has resulted.

Abstracting and Indexing. The Facility utilizes the accepted medium of a short abstract to communicate scientific information in a convenient and economical form. Abstracts of an informative and specific nature are provided insofar as possible. Those received with the documents are frequently suitable for this purpose, but if not, they serve as a basis for the preparation of a proper abstract.

To provide for subsequent retrieval of the abstracts and the reports which they describe, all documents selected for the collection are indexed in depth. A printed index is prepared for retrieval of the information on a broadly decentralized basis. At the same time, magnetic tapes are

prepared to permit more effective computer retrieval at the Facility and at field locations having access to computer equipment.

Indexing is provided at two levels so that both retrieval systems may be used at maximum efficiency. For the printed index, documents are analyzed to determine the three or four most significant index points -- the limitation is necessitated by the sheer bulk and awkwardness of the index if it carries a greater number of index entries. In the case of a computer tape, the fundamental manipulative ability of the computer permits an almost unlimited number of index entries -- the number to fully characterize a document is usually in the range of fifteen to twenty.

The indexing language or vocabulary for both purposes is carefully controlled. Special attention is given to providing enough flexibility for the vocabulary to grow with scientific and technological advances, while at the same time placing the index terms in an ordered system so that all users -- indexers, documentalists, librarians, and scientists alike -- may receive full benefit from the retrieval devices.

Announcements and Indexes. Abstracts prepared by the Facility are published biweekly in an announcement journal. The publication cycle is such that all items received within any two-week period are announced within four to six weeks. While the basic announcement journal is unclassified, a classified version is published on the same schedule to list all receipts which require security classification.

For the present, the announcement journal is a continuation of Technical Publications Announcements (TPA) -- the publication used

heretofore by NASA to announce new NASA publications and a few other selected report categories. TPA is being greatly expanded so as to provide adequate coverage for an estimated total of approximately 25,000 to 30,000 NASA and relevant non-NASA documents per year. TPA is also being revised in format and typography to ensure greatest ease of use.

The Facility prepares four indexes to the announcement journal: subject, corporate source, personal author, and report number. All four indexes appear in each issue of the announcement journal, and will also be cumulated quarterly, semi-annually, and annually. The cumulations are to be issued within two to four weeks after the close of the period covered by the cumulation. Each item announced is given a specially prepared notation of content which the computer manipulates and reproduces at appropriate points in the indexes.

For an initial period, it is intended to continue issuing a single announcement journal, with the abstracts in each issue categorized by general subjects to simplify scanning and location. This will produce an effective but rather bulky journal. Future plans, therefore, call for separation of the single journal into several sections, each one designed to cover a discrete area within the broad field of aeronautical and space sciences. Indexes and their cumulations will cover all sections and will thus serve as a unified reference mechanism for the entire series.

Dissemination Service. The Facility is responsible for automatic dissemination of all documents accepted into the collection to official users -- including NASA field installations, contractors, and grantees;

to other Government agencies and their contractors; and to any other recognized participants in the NASA scientific and technical information program. This automatic dissemination must be accomplished within ten days after new materials are received. It must also be either comprehensive or selective, according to subject categories, depending upon the stated needs and interests of individual recipients.

The dissemination program is designed to assure availability of documents on a broadly decentralized basis concurrent with the announcement of these documents. Its objective is to provide immediate access to reports of interest to any user without the delays imposed by having to request them from geographically remote points of service. Documents will be disseminated in full-size copies when supplies permit. All documents, however, will also be available for distribution in microform.

After initial automatic dissemination, the Facility is responsible for satisfying specific requests. Individual documents -- again in full-size or microform -- are provided to qualified requestors.

The microform dissemination employs a 5 x 8 inch diazo transparency which represents a departure from, but a compromise with, other existing microform programs. The 5 x 8 transparency was selected because it is highly compatible with other programs and because it provides a unitized record with extremely high readability and reproducibility qualities. Each microform, using a reduction ratio of 15.4 to 1, may record up to 75 standard page images. An estimated eighty percent of the documents in NASA's collection comprise fewer than 75 pages each and so can fit on a single microform unit; all but an insignificant portion of the

remaining twenty percent can fit on two units. The microform can be viewed in most existing film readers, and can be reproduced on almost all available reader printers. Although the basic microform selected is a 5 x 8 film sheet, it has been engineered to permit easy conversion to a tab-card microform size should future developments render this desirable.

Reference Service. The Facility provides three categories of reference service. One of these satisfies a requirement to identify specific documents requested by users who do not know -- or do not use -- a precise title or number for the document they need. A second type of service provides literature-search reference assistance to satisfy requests for documents bearing on a given subject, produced under a given contract, written by a given author, etc. The third type is designed to provide factual answers -- instead of bibliographic citations -- wherever the nature of the question and the capabilities of the Facility's staff permit.

Computer techniques provide the means for literature searches that require more than a simple look-up in a manual file. Use is made of the indexing-in-depth described previously. This information, recorded in computer language on magnetic tape, is manipulated by the computer to provide the necessary coordinations. As the computer also manipulates descriptive information already recorded on tapes, the product is a rapidly prepared literature search that requires no additional labor over that which went initially into the key-punching of descriptive entries and abstracts for Technical Publications Announcements.

Bibliographies. Using computer techniques, the Facility prepares continuing bibliographies in selected subject areas. As noted elsewhere in this report, the preparation and publication of such bibliographies provides specialized reference tools which can also be used as a current-awareness announcement mechanism.

Where activity in any given area, or known needs of any participant in the program require it, the continuing bibliographies prepared by the Facility also provide a capability for "express" announcement service. In other words, new items identified as appropriate to a bibliography are flagged for special dissemination in advance of the announcement journal.

Supplementing the continuing bibliographies are bibliographies prepared on demand. Again, the computer capability is utilized to the greatest possible extent so as to ensure timely response.

CLOSING REMARKS

Edward J. Brunenkant, Director
Division of Technical Information
U. S. Atomic Energy Commission

Many of you, in responding to invitations, included questions about relationships between NASA, AEC, and ASTIA, and if our time hadn't run out, I had hoped to be able to field the questions for the AEC and ask Mel Day to field the questions for NASA, and let Bernie Fry field the questions for ASTIA, since we don't have an ASTIA representative here. There is one point I want to add so far as the AEC is concerned. We have covered our entire program, or at least attempted to cover the entire program.

We are starting, hopefully this year, a fellowship program for science librarians. We didn't get into it. If any of you are interested in it, you can write to Walter Kee, who is Chief of Library Services in Washington, and I am hopeful we will in a month or two have out some sort of announcement or guide lines to the program.

I had also hoped to summarize some general consenus of opinion from both the participants and from the AEC participants. But even though I have tried to talk to many of you, I can find no consensus of opinion on any single question. As a matter of fact, I have asked librarians from the large contractor installations whether or not they felt it was desirable to have the meeting with the university and depository librarians, and one told me it was very fruitful because there were similar problems. Another one told me they had entirely different problems and really ought to separate them.

So far as DTI is concerned, it has been a very useful experience for us. We appreciate very much your time, and the fact you have been able to come to Oak Ridge for three or four days.

It goes without saying that we are also very appreciative of the Oak Ridge National Laboratory for hosting the dinner and for all the other things they have done for us.

We hope very much most of you can go to the library tomorrow, and hope you can see the Museum, if you have any energy left after three or four days in Oak Ridge.

I would like to thank Paul Postell, Margaret Pflueger, and Alden Greene. To them fell the big burden of making all the arrangements for this meeting. Thank you and all the other DTI and DTIE people who helped make this meeting a success.

APPENDIX

CONFERENCE ON

THE LITERATURE OF NUCLEAR SCIENCE: ITS MANAGEMENT AND USE

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF TECHNICAL INFORMATION
OAK RIDGE, TENNESSEE

SEPTEMBER 11-13, 1962

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Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee

Mary E. Timberlake
University of South Carolina
McKissick Memorial Library
Columbia 19, South Carolina

Richard J. Tommey
General Atomic Division
General Dynamics Corporation
P. O. Box 608
San Diego 12, California

Mary C. Trapasso
Union Carbide Corporation
P. O. Box 6116
Cleveland 1, Ohio

Anna E. Truett
Oak Ridge Institute of Nuclear Studies
P. O. Box 117
Oak Ridge, Tennessee

Marie H. Tuttle
National Aeronautics & Space Administration
Langley Research Center
Hampton, Virginia

William M. Vaden
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Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee

Hugh E. Voress
U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee

L. W. Walker
University of Florida Library
Gainesville, Florida

Alvin M. Weinberg
Union Carbide Nuclear Company (ORNL)
X-10 Laboratory Records Department
P. O. Box X
Oak Ridge, Tennessee

Gyneth E. Welton
Milwaukee Public Library
814 West Wisconsin Avenue
Milwaukee 3, Wisconsin

Virginia J. Weniger
Pratt and Whitney Aircraft Division
Connecticut Operations - CANEL
P. O. Box 611
Middletown, Connecticut

Carl J. Wensrich
University of California
Lawrence Radiation Laboratory
Technical Information Division
P. O. Box 808
Livermore, California

Lucille R. Wescott
New Brunswick Laboratory, AEC
P. O. Box 150
New Brunswick, New Jersey

J. C. Wyllie
University of Virginia
Alderman Library
Charlottesville, Virginia

QUESTIONNAIRE

AEC CONTRACTOR AND DEPOSITORY LIBRARIANS' MEETING

SEPTEMBER 11-13, 1962

THE DIVISION OF TECHNICAL INFORMATION OFTEN FEELS THAT IT OPERATES IN A VACUUM. WHILE CERTAIN OF OUR SERVICES, SUCH AS THE FILLING OF REQUESTS FOR REPORTS, ARE DIRECT, MANY OF OUR PROGRAMS AND SERVICES ARE CONDUCTED WITH LITTLE KNOWLEDGE ON OUR PART AS TO HOW THEY ARE RECEIVED BY THE USERS. ALSO, WE FEEL THAT DTI WOULD BENEFIT FROM KNOWING MORE ABOUT THE LIBRARY SERVICES OF YOUR ORGANIZATION. THUS, MORE COMPLETE INFORMATION ABOUT DTI SERVICES AS WELL AS THOSE PROVIDED AT THE AEC CONTRACTOR AND DEPOSITORY LIBRARIES, SHOULD BE MUTUALLY BENEFICIAL.

THE FOLLOWING QUESTIONS CONCERN DTI PUBLICATIONS AND SERVICES, AND THE SERVICES OF YOUR LIBRARY ON WHICH WE WOULD WELCOME YOUR COMMENTS. ON THOSE TOPICS THAT PERTAIN TO DTI SERVICES, WE CANNOT PROMISE TO CARRY OUT EVERY SUGGESTION. EVEN IF WE WERE ABLE TO, THERE WOULD BE CONFLICTING SUGGESTIONS SO THAT WE COULD NOT MAKE EVERYONE HAPPY. WE DO HOPE, HOWEVER, THAT YOU WILL GIVE THE QUESTIONS CAREFUL THOUGHT AND PROVIDE US THE BENEFIT OF YOUR ANSWERS. IF YOU WISH, YOU MAY ANSWER THE QUESTIONS DURING THE DAYS OF THE MEETING AND LEAVE IT WITH THE RECEPTIONIST IN ROOM 101. IF YOU PREFER TO GIVE THE QUESTIONS MORE THOUGHT, TAKE THEM HOME WITH YOU AND RETURN THEM TO:

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF TECHNICAL INFORMATION EXTENSION
P. O. BOX 62
OAK RIDGE, TENNESSEE

ATTN: PAUL E. POSTELL

1. NUCLEAR SCIENCE ABSTRACTS

As librarians, you undoubtedly make frequent use of Nuclear Science Abstracts. No one is in better position than you are to offer constructive criticism. For example, you probably use it many times to identify, locate, and verify references. Are you occasionally surprised at items you don't find? They appear to be within the subject scope of NSA as defined in TID-4552, but they were never abstracted or indexed. Won't you jot these references down and send them to us, as informally as you wish. You may be able to point out to us a whole important area of information that we have overlooked.

Or you may be using the subject index and find that, in your opinion, the material you need could have been more easily located if it were indexed under different terms, or in a different manner, or more finely. Please write us your experiences and recommendations. The following items are to serve as a check list of possible features of NSA that you might discuss:

A. Subject scope:

Additional subjects:

Subjects to be omitted:

B. Literature coverage (e.g., specific journals or other literature that should or should not be covered)

C. Bibliographic identification of literature

D. Abstracts

E. Indexes

F. Format (type size, arrangement, etc.)

G. Special features

H. Other

2. EDUCATIONAL MATERIALS

A. Do you receive a substantial number of inquiries from students (elementary through beginning college level) and their teachers for information on atomic energy? Yes ___ No ___

B. If yes, can your library make use of a reference collection of selected brochures that were described at this meeting? Yes ___ No ___

Indicate educational level of materials that would be most useful:

_____ Elementary _____ High school _____ College

Address: _____

_____

_____

_____

NOTE: Organizations having AEC contracts should submit their requests to the Operations Office which administers their contract.

3. LITERATURE SEARCH SERVICE

Does your library provide literature search service to scientific and technical staff, i.e., search abstract journals, card catalogs, etc., and prepare lists of reference? Yes ___ No ___

If no, would you care to indicate why this service is not provided?

4. TRANSLATIONS AND BIBLIOGRAPHIES IN PROCESS

Have you any suggestions that might improve the DTI efforts to pool information in regard to translations and bibliographies in process?

5. AEC TECHNICAL INFORMATION BULLETIN

A. Do you receive this publication? Yes ___ No ___

B. Does it contain information of use to you? Yes ___ No ___

C. If yes, what types of items are of particular interest to you?

D. It has been suggested that DTI include in the Technical Information Bulletin as a regular feature the new corporate authors that are adopted. Would this information be useful to you? Yes ___ No ___

E. Suggest the Technical Information Bulletin include:

F. Would you be willing to contribute newsworthy items that may be beneficial to other users of this DTI publication? Yes ___ No ___

6. ENGINEERING MATERIALS CATALOG

Do you have a continuing need for subject and corporate indexes to engineering materials included in TID-4100? Yes ___ No ___

7. PUBLICATIONS DESCRIBING THE LIBRARY SERVICES

Has your library prepared and issued a guide to the services provided?

Yes ___ No ___

Is there a section covering the technical report literature?

Yes ___ No ___

Please send a copy of any guides prepared by your library to:

U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62
Oak Ridge, Tennessee

ATTN: P. E. Postell, Chief
Reference Branch

8. SERVICES TO USERS

A. Depository Libraries

Have you completed a DTI questionnaire on the services of your library during the past year? Yes ___ No ___

If not, please pick up a copy of the questionnaire at the receptionist's desk (room 101), complete, and return to DTI after you return to your library. The completed questionnaire should be addressed to:

U. S. Atomic Energy Commission
Division of Technical Information
Washington 25, D. C.

ATTN: Walter A. Kee, Chief
Library Services Branch

B. Contractor Libraries

Do you provide information to new employees of your organization on the services and resources of your library? Yes ___ No ___

Do you serve sub-contractors of your organization? Yes ___ No ___

Do you issue an accession list or some other type of announcement medium? Yes ___ No ___

9. IDENTIFICATION NUMBERS FOR DTI NON-RESEARCH AND DEVELOPMENT PUBLICATIONS

Do you recommend that DTI publications of a non-research and development nature, i.e., those describing its programs, services, cataloging tools, etc., (TID-485, TID-5059, TID-5001, TID-3043) be identified by a separate numbering system and published with distinctive covers? Yes ___ No ___

If yes, what would you suggest?

U. S. ATOMIC ENERGY COMMISSION
DIVISION OF TECHNICAL INFORMATION EXTENSION
P. O. BOX 62
OAK RIDGE, TENNESSEE

CATALOGING AND REFERENCE AIDS

Most of the AEC publications listed below, including revisions and supplements, are automatically sent to AEC contractors and depository libraries at the time of issuance. If you would like to receive sample copies, please indicate the number of copies desired in the space provided and fill out your complete mailing address on the last page. You may leave the completed form with us at the close of the conference, or if you prefer, mail it to DTI Extension at your convenience.

____ TID-4850(4th Rev.). THE TECHNICAL INFORMATION SERVICES OF THE UNITED STATES ATOMIC ENERGY COMMISSION. 1962. (in press).

____ TID-4550(8th Rev.). WHAT'S AVAILABLE IN THE ATOMIC ENERGY LITERATURE. June 1962.

____ TID-4552(2nd Rev.). SUBJECT SCOPE AND LITERATURE COVERAGE OF NUCLEAR SCIENCE ABSTRACTS. Sept. 1960. 61p.

____ TID-5001(4th Rev.). SUBJECT HEADINGS USED BY THE USAEC DIVISION OF TECHNICAL INFORMATION. Charles W. Hargrave. Aug. 1962.

____ TID-5059(5th Rev.). CORPORATE AUTHOR ENTRIES USED BY THE DIVISION OF TECHNICAL INFORMATION IN CATALOGING REPORTS. Everett J. Hoffman, ed. Feb. 1962.

____ TID-4576. GUIDE TO ABSTRACTING AND INDEXING FOR NUCLEAR SCIENCE ABSTRACTS. October 1961. 42p.

____ TID-85(3rd Rev.). REPORT NUMBER SERIES USED BY THE DIVISION OF TECHNICAL INFORMATION IN CATALOGING REPORTS. To be published early in 1963.

____ RDA-1. RESEARCH AND DEVELOPMENT ABSTRACTS OF THE USAEC. January - March 1962. 49p.

____ TID-3043(Rev. 2). BIBLIOGRAPHIES OF INTEREST TO THE ATOMIC ENERGY PROGRAM. James M. Jacobs, Naomi K. Smelcer, and Hugh E. Voress. Mar. 1962. 304p.

____ TID-3712. INFORMAL LISTINGS OF BIBLIOGRAPHIES OF ATOMIC ENERGY LITERATURE. Bibliographies Issued or in Progress During the Period, June - July 1962. Issued bimonthly.

____ TID-4025(1st Rev., Pt. I). TRANSLATION TITLE LIST AND CROSS REFERENCE GUIDE. PART I. Frances E. Stratton, comp. and ed. 1961.

____ TID-4025(1st Rev., Pt. II). TRANSLATION TITLE LIST AND CROSS REFERENCE GUIDE. PART II. SUBJECT INDEX. June 1961.

____ TID-4553(2nd Ed.). GUIDE TO THE SUBJECT SCOPE OF THE ENGINEERING MATERIALS PROGRAM. Francis L. Sachs and Richard E. C. Duthie, comps. Jan. 1961. 24p.

____ TID-4100(1st Rev., Suppl. 15). ENGINEERING MATERIALS LIST: SUPPLEMENTAL INSERT SHEETS. Richard E. C. Duthie, ed. April 1962.
The basic text, Supplements 1 through 15, and the Cumulative Index through Supplement 12 should be requested by separate letter.

____ TID-4554(1st Rev.). EXCHANGE LIST: ORGANIZATIONS HAVING PUBLICATION EXCHANGE AGREEMENTS WITH THE AEC OFFICE OF TECHNICAL INFORMATION. April 15, 1961. (being reprinted).

____ TID-4563(3rd Rev.). SPECIAL SOURCES OF INFORMATION ON ISOTOPES. 1961. (Division of Isotopes Development, AEC).

____ AEC NEWS RELEASE INDEX. (Division of Public Information, AEC). January 1961 - December 1961. July 1962. (in press).

____ AEC TECHNICAL INFORMATION BULLETIN NO. 5. September 1962. 6p.

____ JOURNAL ABBREVIATIONS USED IN NSA. Reprinted from Nuclear Science Abstracts, Volume 16, Number 12B, pp. VII-XX22.

____ MOTION PICTURE FILM LIBRARY. Popular Level. (U.S. Atomic Energy Commission). Jan. 1961. 27p. With two supplements.

____ MOTION PICTURE FILM LIBRARY. Professional Level. (U.S. Atomic Energy Commission). Sept. 1961. 29p. With one supplement.

____ PROCEEDINGS OF TECHNICAL MEETINGS PUBLISHED BY UNITED STATES ATOMIC ENERGY COMMISSION. Oct. 1961. 56p. A Catalog.

____ SELECTED TECHNICAL TRANSLATIONS SPONSORED BY UNITED STATES ATOMIC ENERGY COMMISSION. March 1962. 23p. A Catalog.

____ U. S. AEC TRANSLATION LIST NO. 72. August 16, 1962. 42p.

____ TECHNICAL BOOKS AND MONOGRAPHS SPONSORED BY THE UNITED STATES ATOMIC ENERGY COMMISSION. 58p. A Catalog.

___ ATOMIC ENERGY. NUCLEAR SCIENCE AND TECHNOLOGY. A Preliminary Classification Scheme. Used by U. S. Atomic Energy Commission Technical Library, Washington, D. C. January 1960. 38p.

___ ATOMIC ENERGY. NUCLEAR SCIENCE AND TECHNOLOGY. Subject Headings Used in Conjunction with the "QCD" Book Classification Schedule. (U. S. Atomic Energy Commission. Technical Library, Washington, D. C.). March 1960. 58p.

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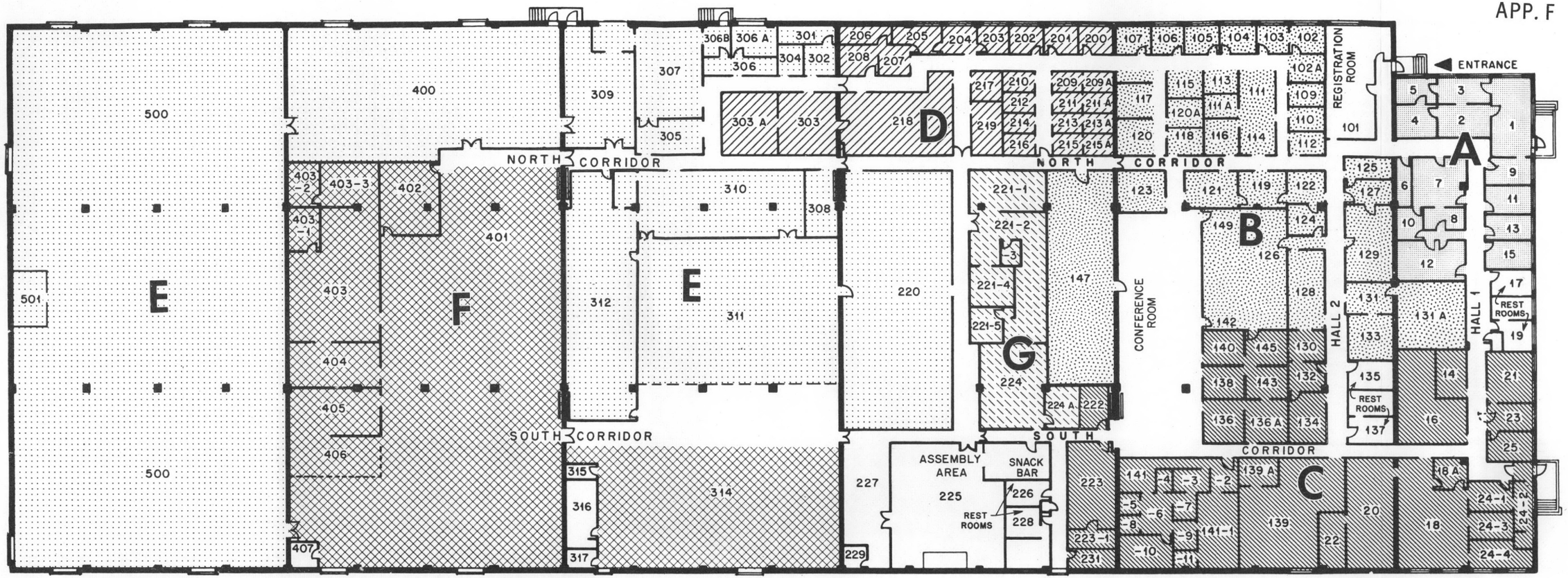
Please indicate below your complete address in proper form for mailing:



USAEC Division of Technical Information Extension, Oak Ridge, Tennessee

DIRECTORY

The following DTI staff members, as well as others, are available for consultation:

C. R. Bruce	25	M. H. Newman	303A
W. E. Clark	106	J. W. Norris	205
D. D. Davis	203	M. L. Pflueger	105
R. E. C. Duthie	124	P. E. Postell	121
A. G. Greene	122	E. C. Schulte	402
J. M. Jacobs	110	R. L. Shannon	1
R. C. Kelly	208	F. E. Stratton	104
T. W. Laughlin	306A	L. M. Thompson	303A
H. B. Mayfield	304	W. M. Vaden	3
R. L. Metter	7	H. E. Voress	103

DTI EXTENSION FACILITIES
OAK RIDGE, TENN.

COMPONENTS

A. OFFICE OF THE MANAGER
B. REFERENCE BRANCH
C. PUBLISHING BRANCH
D. CATALOGING BRANCH
E. DOCUMENT MANAGEMENT BRANCH
F. PRINTING BRANCH
G. MICROCARD CORPORATION (CONTRACTOR)

FUNCTION CHART
Division of Technical Information

DIVISION OF TECHNICAL INFORMATION

Plans and directs a comprehensive technical information program to meet the needs of the AEC, its contractors, other government agencies, industry, and the world-wide scientific community. Develops AEC-wide standards, policies, and procedures for technical information.

Director — Edward J. Brunenkant
Deputy Director — Richard M. Berg
Asst. Director for DTI Extension — Robert L. Shannon (Oak Ridge)
Special Assistant to the Director — David L. Hake
Administrative Officer — Florence E. Buckley

TECHNICAL INFORMATION PANEL

ADVISORY COMMITTEE ON TECHNICAL INFORMATION

HEADQUARTERS LIBRARY

Provides technical library services to the AEC Headquarters and legislative reference services to the AEC Headquarters and field offices. Coordinates purchases of books and technical periodicals for Headquarters' use. Plans, analyzes and evaluates AEC domestic and foreign depository library systems.

Chief — Walter Kee

SCIENTIFIC PUBLICATIONS BRANCH

Plans, directs, and administers a program for the writing and publication of scientific books, handbooks, monographs, technical progress reviews, technical newsletters, and proceedings of scientific meetings.

Chief — Joseph G. Gratton
Chief, Technical Book Section — James D. Cape
Chief, Special Publications Section — T. W. Hazard

INFORMATION SERVICES AND SYSTEMS BRANCH

Evaluates AEC-wide systems for collecting, exchanging, processing, controlling, and disseminating technical information. Develops and supervises installation of improved methods, including machine techniques for handling technical information. Develops and recommends AEC-wide policies and procedures for technical information management. Serves as focal point for liaison with other agencies on technical information matters.

Chief (Vacant)

EXHIBITS AND EDUCATIONAL SERVICES BRANCH

Plans and administers a program of exhibits and demonstrations to inform U. S. students, teachers, and lay public of the fundamentals of nuclear science and its applications. Develops booklets and brochures for use in answering inquiries from students and teachers. Plans and coordinates AEC participation in domestic exhibitions sponsored by industrial groups, professional societies, and government organizations. Plans and manages technical information centers in foreign exhibitions and scientific conferences.

Chief — J. William Young

Washington, D. C.

Oak Ridge, Tenn.

DIVISION OF TECHNICAL INFORMATION EXTENSION

Plans, directs, and coordinates all publishing and reference functions assigned the Oak Ridge Branches of the DTI Extension, including the acquisition, organization, reproduction, and dissemination of scientific information in support of AEC research and development, civilian application, weapons, international cooperation, and educational assistance programs.

Extension Manager — Robert L. Shannon
Deputy Extension Manager — William M. Vaden
Production Control Officer — Raymond L. Metter
Administrative Officer — James H. Parks
Operations Officer — Thomas B. Abernathy

CATALOGING BRANCH

Provides complete announcement media and bibliographic controls for nuclear science information. Acquires, reviews, and evaluates informational materials for dissemination in accordance with AEC and national program needs and compartmentation requirements. Coordinates AEC report distribution system.

Chief — John W. Norris
Assistant Chief — Donald D. Davis

EVALUATION SECTION

Reviews and evaluates classified and unclassified information materials for dissemination and acquisition in accordance with program needs to ensure appropriate release according to requirements of the AEC technical information programs. Coordinates AEC report distribution system. Selects classified material for foreign nations having exchange agreements for technical cooperation with the United States.

Chief — Robert C. Kelly

CATALOG OPERATIONS SECTION

Abstracts and indexes scientific and technical literature for the AEC abstract journals *NSA*, *ACR*, and *RDA*. Develops and maintains authoritative tools for the central AEC cataloging program and monitors their application.

Chief — Lawrence T. Whitehead

REFERENCE BRANCH

Provides complete reference and literature service in accordance with AEC and national program needs. Coordinates the AEC translation program. Prepares current research projects and special indexes.

Chief — Paul E. Postell
Assistant Chief — Alden G. Greene

EDUCATIONAL MATERIALS SECTION

Catalogs, announces, and disseminates AEC engineering materials (drawings, specifications, photographs, etc.). Acquires, evaluates, and categorizes material for the Educational Assistance Program and supplies educational materials to the public.

Chief — Richard E. C. Duthie

INFORMATION SECTION

Supplies reports and other technical information materials to AEC, to other official requesters, to participants in the Civilian Application Program, and to the public. Conducts the publication exchange and the translation programs of the AEC. Maintains the AEC master card catalog and the reference center and acquires new material.

Chief — Margaret L. Pflueger

TECHNICAL LITERATURE SECTION

Prepares bibliographies, literature searches, indexes, and tabulated data for use in AEC and national nuclear energy program. Coordinates the AEC contractor bibliographic program. Abstracts and indexes current research projects for announcement to the AEC. Prepares special indexes for AEC Manual, congressional hearings, technical progress reviews, etc.

Chief — Hugh E. Voress

PUBLISHING BRANCH

Provides professional editorial and technical writing services to participants in the AEC technical information program. Furnishes illustrative, photographic, and copy preparation, format arrangement, and makeup assembly for material processed by DTI Extension for printing and publication.

Chief — Charles R. Bruce

EDITORIAL SECTION

Provides professional editorial and indexing services and technical writing to participants in the AEC technical information programs and to other governmental agencies engaged in joint cooperative scientific and technical information projects with the AEC.

Chief — Bobbie J. Colley

COMPOSITION SECTION

Converts manuscript copy through typewriter composition into typescript for offset lithography. Composes EAM cards for index portions of abstract journals. Provides styling and proofreading services for the material composed.

Chief — Irene D. Keller

ILLUSTRATION SECTION

Assembles typescript and illustrative material into final book page assembly for offset reproduction. Prepares specialized illustrative material for AEC publications, displays, and oral presentations.

Chief — James N. Holt

ART AND DRAFTING SECTION

Provides drafting services including the preparation of drawings and forms for inclusion in AEC publications and budgeting presentations.

Chief — Wert J. Pearson

TECHNICAL CAMERA SECTION

Provides specialized photographic treatment of typescript, illustrations, and technical and scientific drawings for inclusion in AEC publications and other graphic art products. Operates mechanical index listing camera and related processing equipment for preparation of index portions of abstract journals.

Chief — Howard M. Jacoby

PRINTING BRANCH

Reproduces the AEC technical information materials.

Chief — Edwin C. Schulte
Assistant Chief — Thomas L. Ralls

PLATEMAKING SECTION

Operates lithographic process cameras; develops, etches, opaques, and strips negatives; and makes offset plates.

Chief — Blanche M. Neal

PRESS SECTION

Operates offset presses, continuous automatic Copy-flo, Photostat, and Ozalid equipment required for printing technical and administrative material.

Chief — Charles F. Kelley, Jr.

BINDERY SECTION

Operates paper cutters, folder, gang stitcher, paper drill, wire stitchers, collating equipment, etc., in connection with collating and binding printed material.

Chief — Lemuel G. Green

DOCUMENT MANAGEMENT BRANCH

Receives, stocks, distributes, and maintains accountability control for DTI Extension technical information materials. Maintains the DTI Extension master copy collection of all research and development and weapon test reports. Conducts comprehensive record control services involving classification changes, errata, etc. Sells classified documents to access permit holders. Provides IBM services for index preparation for *NSA*, *ACR*, and other recurring publications.

Chief — Thomas W. Laughlin
Assistant Chief — James G. Smith

RECEIVING SECTION

Receives and processes all reports and correspondence. Provides mail and file services. Serves participants in the Civilian Application Program and the AEC and non-AEC agencies by processing orders for informational materials.

Chief — Hannah B. Mayfield

CONTROL SECTION

Stocks and distributes classified technical reports, Microcards, and other technical information media for the AEC and its major contractors. Provides IBM machine services for index preparation for *NSA*, *ACR*, and other recurring publications.

Chief — Oscar A. Schultz

DISTRIBUTION SECTION

Stocks and distributes unclassified technical reports, Microcards, engineering drawings, and educational materials.

Chief — Herman A. Watkins

RECORDS SECTION

Operates the centralized AEC master copy vault. Coordinates documentary and classification changes for classified research and development and weapon test reports.

Chief — John L. Zulli

ORGANIZATION CHART
DIVISION OF TECHNICAL INFORMATION
August 1962

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Asst. Director for DTI Extension, Oak Ridge	Robert L. Shannon	4352
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SCIENTIFIC PUBLICATIONS BRANCH
Chief—J. G. Gratton 4556

INFORMATION SERVICES AND SYSTEMS BRANCH
Acting Chief—E. T. Sullivan 4371

EXHIBITS AND EDUCATIONAL SERVICES BRANCH
Chief—J. W. Young 4145

Washington, D. C.

Oak Ridge, Tenn.

Telephone:
DTI Washington, HAzelwood 7-7800 (Extensions as indicated)
DTI Extension, Oak Ridge, 483-8611 (Extensions as indicated)

Mailing address:
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U. S. Atomic Energy Commission
Division of Technical Information
Washington 25, D. C.

DTI Extension, Oak Ridge:
U. S. Atomic Energy Commission
Division of Technical Information Extension
P. O. Box 62, Oak Ridge, Tennessee

DIVISION OF TECHNICAL INFORMATION EXTENSION

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Deputy Extension Manager	William M. Vaden	4352
Administrative Officer	James H. Parks	4352
Production Control Officer	Raymond L. Metter	4237
Operations Officer	Thomas B. Abernathy	4354

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Asst. Chief—D. D. Davis 4221

EVALUATION SECTION
Chief—R. C. Kelly 4752

CATALOG OPERATIONS SECT.
Chief—L. T. Whitehead 4583

REFERENCE BRANCH
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Asst. Chief—A. G. Greene 4235

EDUCATIONAL MATERIALS SECT.
Chief—R. E. C. Duthie 4674

INFORMATION SECTION
Chief—M. L. Pflueger 4273

TECHNICAL LITERATURE SECT.
Chief—H. E. Voress 4168

PUBLISHING BRANCH
Chief—C. R. Bruce 4438

EDITORIAL SECTION
Chief—B. J. Colley 4713

COMPOSITION SECTION
Chief—I. D. Keller 4146

ILLUSTRATION SECTION
Chief—J. N. Holt 4110

ART AND DRAFTING SECTION
Chief—W. J. Pearson 4153

TECHNICAL CAMERA SECTION
Chief—H. M. Jacoby 4750

PRINTING BRANCH
Chief — E. C. Schulte 4477
Asst. Chief—T. L. Ralls 4477

PLATEMAKING SECTION
Chief—B. M. Neal 4477

PRESS SECTION
Chief—C. F. Kelley, Jr. 4477

BINDERY SECTION
Chief—L. G. Green 4477

DOCUMENT MANAGEMENT BRANCH
Chief — T. W. Laughlin 4668
Asst. Chief—J. G. Smith 4668

RECEIVING SECTION
Chief—H. B. Mayfield 4275

CONTROL SECTION
Chief—O. A. Schultz 4117

DISTRIBUTION SECTION
Chief—H. A. Watkins 4268

RECORDS SECTION
Chief—John Zulli 4151

USAEC Division of Technical Information Extension, Oak Ridge, Tennessee

ERRATUM

The attached pages (200A--200C) should be included in these proceedings to complete the paper by W. M. Vaden. This paper was inadvertently printed incomplete.

The preparation of a nonessential word list was an interesting task for another group in our committee. In addition to our own list, we reviewed the list furnished by Bell Labs and other lists provided by Biological Abstracts, Chemical Titles, and Jim Kennedy of UCRL. It is still only a working list and should be reviewed each time it is used to adjust it to the needs of the job. For example, "radiobiology" is a perfectly good key word ordinarily, but it would be useless in a large radiobiology bibliography index, and its appearance would occupy a very large number of needed lines when printed.

Because these test bibliographies were to function as the prototype for our radiobiology indexing task, our next problem was to format the indexes for the two bibliographies totalling 24,000 items. This is a very important consideration from the standpoint of printing. If one assumes 10 key words per title and multiplies these by 24,000 a great number of printed pages can be predicted. Because of this fact, we altered the Bell Labs program to shorten the line to allow for a two-column format on an $8\frac{1}{2}$ x 11 page when reduced photographically. We also improved the "wrap-around" of the title.

Samples of test number one have been handed out to show in greater detail what I have been discussing. If you are planning a KWIC Index, this very brief summary of our test may be useful. If you are already a user of a KWIC index, a knowledge of its manner of preparation may help you become a better critic of this type of indexing which librarians will certainly be encountering more and more.

MECHANIZATION OF CURRENT RESEARCH IN PROGRESS

Another project in the Reference Branch which is past the planning stage is Current Research in Progress--Biology and Medicine.

Flexowriters are being used to prepare these abstracts on IBM cards, eight lines at a time, or the equivalent of one inch of photographing on our Compos-O-Line camera. Tapes punched concurrent with the preparation of the abstract will provide indexing information by their being refed into the Flexowriter a second and third time for the author and corporate author indexes which will also be prepared on cards for photographing. As a consequence, only once is the operator's time used for the preparation of the abstract and two indexes.

FLEXOWRITER APPLICATIONS

Flexowriters are also used very efficiently in the Reference Branch to prepare the USAEC Translation List. One typing prepares the form which goes to the agency to request the translation, cards for our card catalog, and Part I of our Translation List. Later, when the translation is completed, the punched tape is used to prepare Multilith plates

for Part II of the Translation List and to prepare repro copy for TID-4025. In addition, standard prestige letters are prepared on the Flexowriter for requesting translations.

ENLARGED COPY FROM MICROCARD NEGATIVES

An area of interest to librarians and information people in general equal perhaps to that of computerization is the miniaturization of documents and hard-copy blow-back. We have been concerned for a long time in finding a method that would permit using our vast collection of Microcard negatives as a source for blowing back copy to answer requests for eye-legible copy.

Last fall we announced our requirements in the Commerce Business Daily which states in part that the contractor "would do all things necessary to produce eye-legible photoreproduction pages of (the material) from negatives; collate, assemble, fasten together and deliver the pages to the Commission as ordered at a rate of approximately three to four thousand pages per day (1500 to 2000 16mm film frames)."

The successful bidder was The Microcard Corporation of West Salem, Wisconsin, who produced eye-legible copy by means of a recently developed automatic step-and-repeat roll enlarger. The machine holds 500 feet of $8\frac{1}{2}$-inch paper which can be exposed in a continuous roll for continuous processing; or, the paper can be cut and stacked for hand processing in trays. The machine has the capability of making from one to 500 prints per individual frame. A different exposure for each frame in a given negative can be predetermined by selecting the desired amount of exposure from a console which is a separate unit wired to the camera. This is done by a series of pushbuttons. The machine can be stopped at any frame without losing count or will omit frames as desired.

The exposed roll is processed in a routine manner and drum-dried. Cutting is done automatically by means of an electronic Kodak roll paper cutter operated by means of a photoelectric cell that activates a knife when a graphite marking signal pre-positioned by the enlarger is read. Thirty prints per minute are cut in this fashion. Although the present enlarge is designed for the 3 x 5 inch stripped negative, it can be modified to accept varying sizes. It should be understood, however, that this equipment is designed for production operation rather than for routine library applications. A sample page of this blow-back copy has been provided you. It was made from one frame of a negative selected at random from our files and happens to be from an ORNL report.

PRINTING BRANCH IMPROVEMENTS

The subject of mechanization of DTIE would not be complete without mentioning the recent improvements in the Printing Branch. In the past two or three years we have obtained collators, saddle stitchers, and

and automatic book trimmers, plus larger presses that have permitted us to increase the number of printed pages per fiscal year from 50 million in the year 1960 to 65 million in 1961. For the current year we are predicting more than 85 million pages. We now have on order a Perfect Binder which will permit us to bind our larger publications in one binding without stapling and will allow printing of the title or report number on the spine. This should be a great advantage to those libraries where shelf filing is required.

When the new automatic three-knife book trimmers were installed and in operation, a new problem arose which required mechanization. The amount of confetti, or trimmings, became so great that wheelbarrows had to be used to give the operators space to work. So we now have engineering specifications drawn up to install an overhead duct system that will remove these trimmings by air suction to the dumpsters outside the building.

Some wag remarked facetiously that, since I was mentioning improvements in the Printing Branch, I should not overlook the fork lifts in the Document Management Branch which are used daily to move tons of documents in receiving and distribution. So, to give recognition to the riders of the fork lift, I will say that, although not a very sophisticated type of mechanization, it is in fact a type of equipment without which we could not long survive.

In summary, mechanization in DTIE runs the gamut from delicate equipment used in microphotography and automatic data processing to such "homey" items as the fork lift. We require tham all to better serve you.