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OPERATING EXPERIENCE OF THE NUCLEAR SAFETY INFORMATION CENTER MARCH 1963 - MARCH 1965

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Abstract

This report is a review of the first two years of Nuclear Safety Information Center (NSIC) operation. It describes the services that the Center offers, the manner in which it operates, and problems it has encountered. NSIC stores its information both in a manual file and, since September 1964, on magnetic tape at the Oak Ridge IBM-7090 facility. The efficient services made possible by the computer are described.

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Introduction

The Nuclear Safety Information Center (NSIC) was established in March 1963 at the Oak Ridge National Laboratory under the sponsorship of the U.S. Atomic Energy Commission. The Center serves as a focal point for the collection, evaluation, storage, and dissemination of nuclear safety information. This report is a review of the first two years of operation. It describes the services that the Center offers, the manner in which it operates, and the problems it has encountered.

Scope

Due to the depth of coverage required of an information center, NSIC's scope was initially limited to six well-defined subject areas within the broad field of nuclear safety. Since the Center's inception, one new subject area has been added, and the coverage in another has been broadened. In each of these areas, a professional ORNL staff member or consultant continually analyzes current information, produces state-of-the-art reports, and is available for consultation. It is anticipated that in future years other pertinent and important areas will be added to the Center's coverage. The present NSIC subject areas are listed below.

1. Containment of Nuclear Facilities. This subject area encompasses all aspects of containment for reactors, radiochemical plants, hot cells, sources, etc., and will include such aspects as design considerations, leakage, penetrations, structural integrity, and testing.

2. Fission-Product Release, Transport, and Removal. The release of fission products from various materials and their movement within a nuclear facility containment system are included in this subject area. Transport of the fission products involves the physical and chemical characterization of the released radioactive materials, as well as the various mechanisms such as deposition, adsorption, filtration, fallout, etc. that would attenuate their concentration within the containment system.

3. Meteorological Considerations. This subject area considers not only diffusion and deposition of radioactive material near the earth's surface in connection with reactor operations but also the atmospheric transport and fallout in the troposphere and stratosphere as a result of nuclear weapons tests.

4. Nuclear Instrumentation, Control, and Safety Systems. The design of control and safety systems for various nuclear processes, as well as the required instrumentation and hardware, are included in this area. The problems involved are the performance required of safety systems; the specification of instrumentation; the concepts of coincidence, redundance, failure modes, and reliability; the adequacy of shutdown margins; the design features of different mechanical devices; and related subjects.

5. Radioactive Effluent Control, Monitoring, Movement, and Dosage. All aspects of the intentional or accidental release of radioactivity to the environment are included in this subject area, except atmospheric dis-

persion, which is covered in the "Meteorological Considerations" area. Waste disposal and effluent monitoring, environmental surveillance, radionuclide movement in soil and water and uptake by flora and fauna, processes that influence movement and retention, and the determination of ultimate radiation exposure to man are included here.

6. Reactor Transients, Kinetics, and Stability. This subject includes the various studies, both analytical and experimental, in which the transient behavior of reactors and criticality accidents are examined.

7. Operational Safety and Experience.* This area will include coverage of the safety aspects of routine reactor operation and of incidents or unusual operating occurrences, large or small. Power, research, and test reactors and fuel reprocessing plants will be covered. All available operating, incidents, safeguards, and inspection reports will be collected and indexed.

Staff and Operation

The staff scientists and engineers assigned to the seven subject areas work half time for the Center; the other half of their time is devoted to work in a group active in their particular subject area. These staff members generate or extract from each source an abstract and assign keyword selectors from the Center's thesaurus of coordinate indexing terms. This information is then transferred to 5- by 8-in. cards for storage by selector in the manual file and, since September 1964, to magnetic tape for computer storage at the Oak Ridge IBM-7090 facilities. These tapes may be searched by using various retrieval forms.

The NSIC staff, as presently comprised, is listed in Appendix A. Some general Center operating data are listed below:

Number of scientific specialists	4.5 (equivalent)
Number of information specialists	1
Number of nonprofessional staff members	2
Amount of work done outside Center (up to completion of reproducible manuscript)	1.5
Budget FY-65	$170,000
Tools used	IBM-7090 and manual card files
Number of sources of information in manual file	5,000
Number of sources of information in computer file	1,300

* To be included in scope as of FY-66.

Information Input

Scanning

NSIC employs a full-time information specialist to scan the literature for sources of information and data relative to its interests and to acquire these sources. The various potential sources are listed below:

1. Unclassified reports
2. Proprietary reports
3. Classified reports
4. Journals
5. News reports
6. Letters
7. Trip reports
8. Foreign literature
9. Meetings and symposiums
10. Preprints
11. Monographs
12. Data
13. Abstracts
14. Books
15. Personal contacts
16. Patents
17. Theses

There is inevitably duplication of information, and an extensive 3- by 5-in. card file of bibliographic data is maintained to prevent repetitive entries into the system. To be really effective, NSIC strives to obtain the information from the first available source.

Information sources that fall within the scope of the Center are divided by the information specialist into groups as they relate to the various subject areas and then are routed to the appropriate technical specialist. Some NSIC input statistics follow:

Number of journals scanned	600*
Number of report titles scanned	1200/week
Percent unclassified	80
Contract reports acquired	25/week
Percent unclassified	95
Number of references added to system per year	2500
Percent not in NSA	<10
Time lag of NSA	1 to 6 months
Average number of entries per reference	10
Man years spent on scanning, abstracting and indexing	Professional, 2 1/4 Clerical, 1 1/2
Keyword selectors	1000 +

* Appendix B contains a list of the journal titles.

Indexing

The technical specialists decide which of the documents sent to them are relevant (actually, very few are rejected at this point) and then generate or extract from the source an abstract of up to 100 words and assign keyword selectors from the Center's thesaurus of coordinate indexing terms, as mentioned above. A list of approximately 750 selectors (index terms) used to date in the computer is given in Appendix C. The selectors are weighted by assigning asterisks to the terms of prime importance for each source. All this information is indicated in writing or by reference on a special form prepared for that purpose (see Appendix D). Additional information on the source material (i.e., more than 100 words) may be extracted for inclusion on the 5- by 8-in. cards in the Center's manual storage files.

In the early days of NSIC operation, emphasis was placed on making an evaluation of the input information at the abstracting and indexing stage. Now, however, the evaluation is done as the information is retrieved and considered by the staff specialists for inclusion in state-of-the-art reports, review articles, or in answering technical inquiries. This decreases the amount of technical time involved in preparing input information, and thereby allows more of the staff members' time for special reviews, reports, and inquiries.

Storage

NSIC employs two secretary-typists to transfer the information input data from the special bibliographic form onto reproductive mats from which the manual indexing cards are prepared. A typical extract consisting of two 5- by 8-in. cards is shown in Appendix E. During the typing stage, a carbon copy is generated that serves as input for the keypunchers at the computer facility. In addition to the above duties, which include filing of the extract cards, about 25% of the typist's time is taken up by other secretarial duties (correspondence, phone calls, report drafts, etc.) In this connection it should be noted that most of the report preparation is handled by a group outside the Center.

In summary, more than one third of the NSIC manpower effort is involved in the acquisition and storage of information, with about half of the effort supplied by nonprofessional personnel involved in typing, keypunching, filing, etc.

Functions and Services

NSIC offers a variety of free services to the nuclear community. The only exception is the quarterly technical progress review Nuclear Safety, which is prepared under the auspices of the Center and sold on a subscription basis of $2.50 per year by the U. S. Government Printing Office. The list of all services available at the Nuclear Safety Information Center is given below; however, at the present time most of the output of the Center is directed to about half of this list (e.g., items 1-4, 6, 7 and 10):

1. Publish state-of-the-art reports
2. Publish Journal - Nuclear Safety
3. Prepare abstracts of nuclear safety literature
4. Publish indexed bibliographies of accessions
5. Prepare special bibliographies
6. Provide selective dissemination of information
7. Answer technical inquiries
8. Prepare data compilations
9. Provide information on current research and development
10. Provide technical consultation
11. Make collection accessible for use by qualified visitors
12. Provide literature searches
13. Propose experimental work
14. Prepare handbooks

Specific NSIC services that result in data or information output are summarized in the following:

Bibliographies	
Pages per year annotated	600
Pages per year unannotated	100
State-of-the-art reports	
Pages per year	200
References per year	360
Answers to inquiries	
Number brief	6/month
Number extended	6/month
Journal	
Pages per year	500
References per year	1300
SDI* (experimental)	
Number of users	~80
References per year	not yet in service

The more important functions and services provided by NSIC are discussed in some detail below.

State-of-the-Art Reports**

One of the most important functions of NSIC is the preparation of authoritative state-of-the-art reports by the technical staff. These reports, which require several man-months for preparation are vehicles for the analysis and evaluation of experimental and theoretical data and can even result in the synthesis of new data. It is NSIC's goal to produce one of these reports at approximately one-year intervals in each of its subject areas.

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* Selective dissemination of information.

** See Appendix F for a list of documents published by NSIC.

Nuclear Safety*

Though separately funded, the quarterly technical progress review Nuclear Safety is prepared under the auspices of NSIC. The Center's files provide the reference material used by the authors of the Journal review articles.

Indexed Bibliography of Accessions**

Bibliographical notations of the Center's accessions are sorted quarterly into 19 categories*** or types of nuclear safety information at the Oak Ridge IBM-7090 facilities and are automatically prepared for publication. A typical page from the first bibliography is shown in Appendix I. Each accession includes an abstract of up to 100 words and designated keyword selector terms. The machine code also prepares selector and personnel authors' indexes that are included with each issue of the bibliography.

Selective Dissemination of Information

NSIC is undertaking an experiment in the selective dissemination of information (SDI). Over eighty management-level personnel have been contacted and asked to submit a summary paragraph of their particular specialized interest in the field of nuclear safety. The NSIC staff is using its keyword selector thesaurus to convert each of the summaries into the individual's interest profile. Bibliographic information and abstracts of pertinent documents will be automatically sent to the participants on the card forms shown in Appendix J as the computer storage system is updated each week. The number of participants in the SDI program will be increased to include a much larger audience after several months if the results of the experiment indicate that this is warranted.

Technical Inquiries

Technical inquiries from the nuclear community, both foreign and domestic, are answered. Requests are received at the Center by telephone, letter, or personal contact. So far in 1965, requests are being received at the rate of about 12 per month.

Counseling and Guidance

The NSIC staff is available to visitors for counseling and guidance on nuclear safety problems in its subject areas. The Center's unclassified manual files are open for visitors to use as they see fit. Visits to the Center have occurred at the rate of seven per month so far in 1965.

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* See Appendix G for table of contents of Nuclear Safety, 6(1) and 6(2).

** See Appendix H for list of categories used in bibliography.

*** See Appendix F for a list of documents published by NSIC.

Special Bibliographies

Computer coding has been developed to allow retrospective searches of the NSIC computer store of information by querying the file with combinations of keyword selector terms. The machine will print a bibliography appropriate to the selectors used in the query. It is anticipated that in about two years a remote typewriter will be located in the Center that will allow direct dialogue with the computer. (For more detail see section on "Machine Storage and Retrieval of Information," beginning on page 17).

Special Reviews for the AEC

Occasionally the AEC requests the Center to undertake a critical review of a proposal or report of analytical or experimental work related to nuclear safety. Since the Center's inception, six such reviews have been completed and the results made known to the Commission.

Community Awareness

State-of-the-art reports, Nuclear Safety, the indexed bibliography, and the SDI program all serve to acquaint the nuclear community with the existence of the NSIC and the services that it may perform for them. Additional awareness was created by two exhibits involving the Center. Further awareness will be generated by a coming display, as well as by an ad hoc symposium in which NSIC is serving as co-host.

Geneva Exhibit

NSIC furnished and operated a miniature information center in Geneva, Switzerland, August 30-September 10, 1964, as a part of the USAEC Division of Technical Information exhibit at the Third International Conference on the Peaceful Uses of Atomic Energy. The nuclear safety collection consisted of selected information from the Oak Ridge files related to the containment of nuclear facilities. More than 1300 documents providing information on design, leakage, penetrations, structural integrity, testing, etc., as well as the many aspects of fission-product release and transport within containment systems, were included in the display.

The display employed the conventional 5- by 8-in. cards containing pertinent information extracted from the original documents. The cards were suitably indexed by keywords, author, and corporate author. In addition to the extract card files, microfiche copies of the original documents were also on file. An assortment of microfiche readers and reader-printers were available at the display so that the microfiche could be perused. In addition a microfiche negative duplicator was on hand to make personal microfiche copies for delegates desiring them.

It was estimated that during the course of the conference over 20,000 people visited the U. S. information exhibit (which, in addition to the Center, included a reference library, a book display, and a pamphlet distribution counter). Members of virtually all, if not all, the delegations

represented in Geneva visited the NSIC exhibit. Approximately 2000 microfiche copies of documents were made at the request of conference delegates or observers.

San Francisco Exhibit

An NSIC exhibit similar to that in Geneva was operated at the ATOMFAIR in San Francisco, December 1-3, 1964, in order to acquaint attendees with the scope and services of the Center in Oak Ridge. The ATOMFAIR is an annual exhibit cosponsored by the American Nuclear Society and the Atomic Industrial Forum.

The extract cards and microfiche from Geneva were used in San Francisco. Microfiche reading and printing equipment were included in the display; duplicating equipment was not.

During the three days (one full day, two half days) of the ATOMFAIR, approximately 1000 persons visited the NSIC exhibit. Most of them were given a copy of the Center's descriptive brochure. In addition over 400 of the visitors took a sample copy of the machine-prepared bibliography. Several copies of the technical progress review Nuclear Safety and reports ORNL-NSIC-1 and -3 were also distributed.

Posters with mocked-up covers of eight forthcoming Center state-of-the-art reports were displayed so that those with interest in a particular report could request to be included on its distribution list. Between 50 and 75 names were collected for each of the reports.

Discussion with visitors to the display disclosed that those with any interest in the subject of nuclear safety were usually quite familiar with the Nuclear Safety journal. Few were, however, familiar with NSIC, and many of those who had heard of it had no understanding of its scope or functions. The exhibit provided an excellent means of acquainting them with the services NSIC provides. Publicity was given to other information and data centers by distributing about 200 copies of a leaflet giving the addresses of all centers supported wholly or in part by the USAEC.

Gatlinburg Display

All AEC-supported information and data centers are cooperating to prepare a display for the 11th annual meeting of the American Nuclear Society to be held at Gatlinburg, Tennessee, June 21-24, 1965. The display, which will consist of representative products and brochures describing the services of each of the centers, will be mounted on a wall in the lobby of the Gatlinburg Civic Auditorium, which will serve as headquarters for the meeting. The display will be staffed by the various centers so that there will always be at least two persons in the lobby to assist any attendees having questions.

Ad Hoc Forum

A number of information and data center managers and directors of Battelle Memorial Institute and the Oak Ridge National Laboratory have planned and organized an Ad Hoc Forum of Managers, directors, and professional analysts of U. S. scientific and technical information and data analysis centers. The Forum, which will be held November 9-11, 1965, at Battelle Memorial Institute will enable the participants to share experiences, develop theories, and compare their modus operandi.

The NSIC personnel participating in the planning for the Forum are:

W. B. Cottrell - Co-chairman, Coordination Committee
J. R. Buchanan - Chairman, Finance Committee

The Forum is expected to result in both tangible and intangible benefits, including:

1. A directory describing the participants' centers, personnel, specialities, and products. (Such a directory is not now available).

2. Meeting other information center directors, scientists, and engineers.

3. Discussion of "critical" problems affecting the operation of information analysis centers. (Such problems would be brought to the attention of interested groups, such as the 1965 Gordon Conference).

4. Knowledge of centers whose activities might supplement or complement others.

5. Improving each center's capacity to acquire pertinent information.

6. Promoting the acceptance of the importance of the scientist/engineer information analysis function.

Information Center Problems

Some of the more significant problems concerned with the operation of NSIC are discussed below, together with, in some cases, actual or potential solutions. The problems are grouped into two categories: (1) those unique to the NSIC situation and (2) the general problems that any information center is likely to encounter.

Problems Unique to NSIC

1. Defining the Scope of the Center's Coverage. In an area as broad as nuclear safety, which involves many disciplines, it is difficult to establish in detail what the scope is or should be. At the present time,

NSIC can offer services in only about half the subject matter that is commonly associated with nuclear safety. This half was selected because of its critical nature and was somewhat arbitrarily defined in scope by the Center's safety analysts on the basis of their experience with AEC facility-licensing procedures.

2. Areas Outside the Specialities. NSIC is extremely fortunate in that so much of the subject field of the Center lies in areas in which ORNL has some of the best specialists in the country. NSIC is, of course, able to consult with these people and to draw from their experience. However, ORNL is not in such an advantageous position in all areas pertinent to nuclear safety. As an example, the meteorological area is staffed through a contractural agreement with the Oak Ridge branch of the U. S. Weather Bureau.

3. Design and Approval Implications. NSIC operates in a field in which the AEC is required to perform a licensing function. It is, therefore, necessary for the Center to avoid filling the needs of any requestor in such a fashion as to imply the adequacy of his design or the ultimate approval of his facility by the licensing and regulatory authorities.

4. Operating and Accident Information. NSIC indexes information on all accidents or unusual operating occurrences in nuclear facilities that it can learn about. However, due to the sensitive nature of the information and the possibilities for future litigation, it is quite often difficult to obtain this information. A significant portion of that which is obtained falls into an "official use only" category. While this proprietary data can be analyzed by the Center's specialists, its usefulness for public dissemination is inherently limited.

General Information Center Problems

1. Identification and Procurement of Source Material. NSIC, in order to locate its source material, has one person involved full time in the job of identifying and obtaining reports, articles, etc. of interest. With growth in the volume of nuclear literature, it is reasonable to assume that eventually an additional person will be involved in this scanning.

2. Time Involved for Indexing and Abstracting. The time required by scientific experts to assign keyword indexing terms and abstract incoming source material is of concern both because much of this effort could be done more efficiently at an earlier stage and because a significant fraction of NSIC's effort at this time is devoted to such "nonproductive" activities. At one time, a critical review of the incoming material was performed at this stage but, as was mentioned earlier, this is no longer stressed, since it can be done more efficiently as the sources are used in preparing state-of-the-art reports, etc.

3. Duplication. In defining the scope of interest to a specialized information center, it is natural to include all subject matter related to

the interests for which the information center was established. However, by so doing, information centers run a real risk of duplicating work already being performed - and possibly with better justification - elsewhere. In defining the ultimate scope of NSIC (which is considerably broader than the initial scope previously described), an attempt was made to minimize unnecessary potential duplication. Thus, NSIC is not concerned with medical effects of radiation, nuclear risk insurance, the atomic energy liability law, radiation embrittlement, and many other areas, either because these subjects are included in the scope of other information centers or because it is believed that they could better be included elsewhere.

4. Documents on Microfiche Negatives. The number of documents of interest to the Center that are available only on microfiche negatives is steadily increasing. Normally, reports in "hard copy" are handled by several individuals in the scanning, indexing, abstracting, and typing stages. Center specialists most frequently use pencil to mark the material they wish to have extracted from the report for the computer abstract and the manual file. The time required to handle microfiche and, when necessary, make prints of individual pages adds to the already significant input burden of NSIC. It is highly desirable for information centers to be able to receive all input material in hard copy; in fact, the hard copy is practically required by the specialists when they are preparing state-of-the-art studies.

5. Use of Machines for Information Retrieval. Machines can only retrieve information that is stored in them and then only in such form as the machines have been instructed by the codes that have been developed to use or manipulate that information. In addition to the capital outlay for the machine, added costs are associated with the preparation of the input data, development of codes, and the operation and running time of the machine. Small information collections probably cannot warrant machine manipulation, but the larger the collection, the more sophisticated and expensive are the machines and the functions they can perform. In the NSIC we have stored certain descriptive information about each source on IBM-7090 tape and have developed output codes for retrospective searching, preparation of bibliographies, and SDI (see next item). Other centers will use other machines for similar functions and may use the same or other machines for other functions; e.g., data analyses. The determination as to whether or not a machine would be advantageous to any particular information center (plus in the former case the selection of the best machine for a particular application) is a major problem.

6. Profiling for SDI Program. For its selective dissemination experimental program, NSIC has received expressions from selected management-level personnel of their nuclear safety interests. Specification of the proper keywords for each profile based on these statements of interest is essential if the participants are to receive the citations that match their interests. Care must be exercised to prevent the flow of citations becoming too great by making the profile too broad. The program will have user feedback built into it so that adjustments in the profile can be made if needed.

7. Thesaurus Growth. NSIC has found it necessary to add new selectors to its thesaurus since it was formulated two years ago. It has also been necessary to adjust the form of certain of the existing terms. Since the nuclear safety field is a growing one and certain areas receive increased emphasis as time goes by, such change is expected to continue.

8. Publicity. Once an information center has been established and has become operational, it is important that all those with a need to know of the information thus available are informed. It would be expected that the scientist who has been working in the area for some time would know of its existence; however, the scientist in a peripheral area and the engineer in any area generally are not aware of such information sources.

9. State-of-the-Art Report Scheduling. One of the most important services of NSIC is the preparation and issuance of state-of-the-art reports. However, due to the depth of coverage and analysis, each report requires several man-months of effort from one of the staff specialists. Each report, therefore, represents an investment of $15,000 to $20,000. Experience is showing that it is necessary to establish fairly rigid goals for the various report stages (rough draft, editing, inside and outside review, etc.) in order to maintain reasonable schedules with these reports.

10. Classified Information. Some information available to the Center is classified as Secret, Confidential, etc., and, within the AEC literature, is also given such restrictive category designations as Production, Navy, Weapons, etc. While classification may pose little difficulty as far as the procurement of the information is concerned, it is a major complication in the dissemination of information in any form.

11. Handling Routine Progress Reports. Within AEC programs, routine progress reports appear at intervals varying from one week to one year. The usefulness of information or data appearing in these reports varies considerably. As a general rule, those reports appearing most frequently have the lowest yeild of information, in fact many could be ignored by the Center without the loss of any essential nuclear safety information. To date, NSIC has not done this so as not to break continuity and because there is some information to be gained, however small. In most programs, the information is summarized eventually in a more cohesive manner in topical reports.

Though there can be no general rule, NSIC's experience indicates the amounts of time spent in abstracting and indexing a particular progress series should be weighed against the amount of information that that series has been shown to yield. We would suggest that AEC program monitors consider the reporting needs carefully when establishing the reporting period requirements. It appears that when these periods occur too frequently, the reports contain many words but have nothing to say.

12. Miscellaneous Literature Problems. For completeness, it should be noted that information centers are to some degree subject to problems commonly associated with libraries and with editorial and printing groups; e.g., document availability, form, reproducibility, publishing time, etc.

Discussion of NSIC Operation

In handling and processing the large quantity of source material (now around 2500 items per year) with which NSIC is concerned, it is important to establish techniques that minimize the time required by the Center staff, both professional and clerical. If care were not given to this most important consideration, we could drift into a situation where, surfeited by documents, the Center's staff would become little more than paper shufflers. We have taken two significant steps in an attempt to relieve the NSIC staff of much routine paper handling: the first, machine storage and retrieval of information, is already a proven success; the second, scanning and indexing by a central clearinghouse (DTIE), is being tested. Both these steps are discussed further below.

Machine Storage and Retrieval of Information

The fact that the Center is frequently called upon to produce bibliographies from its storage system, coupled with the desire to initiate a program of selective dissemination of information in the reactor safety literature, has led to extensive use of the IBM-7090 computer for information handling. This mechanization not only provides the Center with additional capability but also reduces the time of the Center staff in the preparation of bibliographies from routine literature searches. In principle, the procedure for machine storage and retrieval is quite simple. In practice, it has required the modification of previously existing forms (so that the same master from which the manual file cards are prepared may also be used for keypunching IBM cards), the decision as to what functions the machine is to perform, and the development of practical codes for the manipulation of the storage file as required for the retrieval functions. This programming work has been performed under the direction of F. C. Hutton at the K-25 Central Data Processing facility for the IBM-7090. A separate report is being prepared describing in considerable detail the codes that have been developed for retrieving information. Briefly, the machine is required to perform the following functions:

1. Prepare a periodic (quarterly) bibliography with a listing of sources by information category, an author index, and a keyword selector index. In order to generate NSIC's first quarterly bibliography of 670 document entries, the computer running times were 10 min for production on the IBM-7090 and 20 min for the subsequent printing of the IBM-1401. The cost was about $15.

2. Prepare special bibliographies based upon a retrospective search of the Center's files in which the search may be based upon any of the following: author, corporate author, category, and keywords. Searches may be based on a combination of any of the four and negation may be permitted on any of the four. The keywords used in asking a question are weighed and a target score is assigned. A bibliographic item must equal or exceed this score before the item is considered to meet the search parameters.

3. Prepare information for periodic (weekly) distribution in an SDI program which involves matching of a "user profile" against document profiles where both profiles are made up of index terms.

For the several uses indicated above, it was decided that the information to be stored on tape should include the following:

1. NSIC accession number
2. Authors
3. Title
4. Corporate author
5. Number of pages, figures, tables, and references, date, and document number
6. An abstract of 100 words or less
7. Index terms (keyword selectors)

In addition to the principle codes that have been developed for the three functions discussed above, several subroutines have been written for such things as incorporating new index terms, correcting errors, etc.

Indexing and Scanning by DTIE

Inasmuch as it is a cardinal objective of NSIC to utilize the technical staff in the most effective manner, i.e., in the technical evaluation of the subject matter, it is necessary to reduce as much as possible the time that technical personnel spend in nonproductive activities. Brief reflection on the operation of NSIC revealed that the scanning and indexing function required an inordinate amount of time. Consideration of possible ways of reducing this time led to an experimental program, described below, in which AEC-DTIE will undertake to perform most of these functions.

In general, all AEC centers are looking at the same literature in order to select that pertinent to their own interests. DTIE also looks at the same literature in order to locate the items that will appear in Nuclear Science Abstracts (NSA). It would seem reasonable to consider a master clearinghouse that would identify and direct the information to these groups in a master selective dissemination program. DTIE would appear to be in the best position to assume this responsibility. NSIC and DTIE are currently undertaking an experiment to check their common coverage in the Center's containment subject area. The keyword match will be ascertained for those documents indexed by both groups.

Although it is obvious that the bulk of the literature with which most centers are concerned can be processed through one or more central clearinghouses, it is also probable that some fraction of the literature of interest to a center will not be handled in that fashion. Each center will have to locate the source of such material and arrange for its procurement. As an aid in locating progress, topical, and other reports issued by government contractors doing safety work, NSIC has issued, and will shortly update, a file of nuclear safety contracts.

While theoretically a clearing house could accomplish indexing for the specialized information centers, it remains to be seen whether or not the concept will work in practice. There are many problems in such centralized indexing which relate to the fact that the central clearinghouse would require a large number of highly trained specialists who would have to work with a large cumbersome thesaurus (made up of the many highly specialized thesauri).

Another possible point for early indexing that has intrigued many is at the source of the material, i.e., the author. Again there are the problems of the large cumbersome thesaurus. The best that could be hoped for would be uncontrolled indexing by the author. Under this plan the author would be asked to list some arbitrary number of subjects covered by his article without the guidance of a formal thesaurus. While it would undoubtedly require supplemental indexing at the center, this sort of indexing conceivably could provide an adequate basis for the central clearinghouse to direct the information to relevant centers.

The success of final indexing by some central group for the information centers hinges on the premise that the central group must index each center's material exactly in the same manner as that center's specialists would index it. Otherwise, the Center's information retrieval system would cease to function properly. In addition, the center would also lose whatever proficiency the technical specialists might have developed in their ability to recall knowledge previously indexed. This is, however, probably an expendable virtue, in view of the large mass of material that they must process. It is obvious that the information centers will still have to do some indexing - on the material that is not processed through the central clearinghouse - even if for nothing else.

Conclusions

NSIC has become a useful and effective tool for the nuclear community since its formation two years ago. It has either issued or has in the final stages of preparation, nine state-of-the-art reports and indexed bibliographies (see Appendix F). The Center is currently answering requests for specific nuclear safety information at the rate of about 12 per month. Since its inception, the Center has, at the AEC's request, completed six critical reviews of proposals or reports of analytical or experimental work related to nuclear safety. The Center's usefulness will no doubt increase as it produces increasing numbers of state-of-the-art reports, perfects its selective dissemination programs, and through various forms of publicity, alerts those who are unaware of the Center and its services to the fact that help may be received free of charge.

In order to increase the efficiency and utilization of its technical staff, NSIC has undertaken the machine storage and retrieval of information. This allows the Center to produce, in the most expeditious manner, indexed and retrospective bibliographies and to operate its selective dissemination program. As another step in the direction of increased efficiency, NSIC is participating in a scanning and indexing experiment with DTIE to investi-

gate their possible service as a central clearinghouse for information center input.

Bibliography

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2. J. R. Buchanan and W. B. Cottrell, Nuclear Safety Program Semiannual Progress Report, December 31, 1963, USAEC Report ORNL-3547, pp. 79-80.

3. J. R. Buchanan, et al, Nuclear Safety Program Semiannual Progress Report, June 30, 1964, USAEC Report ORNL-3691, pp. 107-109.

4. J. R. Buchanan, et al, Nuclear Safety Program Semiannual Progress Report, December 31, 1964, USAEC Report ORNL-3776, pp. 129-132.

5. W. B. Cottrell, Functions and Practices of Nuclear Information and Data Centers in the United States, paper prepared for presentation at the Conference and Workshop for Nuclear Science Information, Stresa, Italy, September 14-16, 1964, under the auspices of USAEC Division of Technical Information and Euratom. Proceedings to be published.

6. W. B. Cottrell, The Role and Operation of Scientific Information Centers, September 1963, unpublished paper, Oak Ridge National Laboratory.

APPENDIX A

Nuclear Safety Information Center Staff Members

Wm. B. Cottrell - Director
J. R. Buchanan - Assistant Director, Specialist on Containment of Nuclear Facilities
J. P. Blakely - Technical Information Specialist
E. N. Cramer* - Operational Safety and Experience
K. E. Cowser - Radioactive Effluent Control, Monitoring, Movement, and Dosage
W. K. Ergen - Reactor Transients, Kinetics, and Stability
N. L. Fisher* - Technical Information Specialist
W. F. Hilsmeier - Meteorological Considerations
D. G. Jacobs - Radioactive Effluent Control, Monitoring, Movement and Dosage
G. W. Keilholtz - Fission-Product Release, Transport, and Removal
C. S. Walker - Nuclear Instrumentation, Control and Safety Systems
S. P. Hendrix - Information Specialist

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* Joining staff as of FY-66

APPENDIX B

JOURNALS SCREENED FOR NSIC INFORMATION

Academy of Sciences (USSR)
Acta Chimica, Academiae Scientiarum Hungaricae
Acta Chemica Scandinavica
Acta Crystallographica
Acta Metallurgica
Acta Physica Academiae Scientiarum Hungaricae
Acta Physica Austriaca
Acta Physica Et Chemica
Acta Polytechnica Scandinavica
Acustica
Adhesives Age
Advances in Physics
Advances in Space Science and Technology
Aeronautical Quarterly
Aerospace Medicine
l'Aerotechnica
Afinidad
American Institute of Chemical Engineers
Aircraft Engineering
Air Conditioning, Heating, and Ventilating
Air Pollution Control Association
Akusticheskii Zhurnal (Acoustics Journal)
American Ceramic Society Bulletin
American Documentation
American Engineers
American Journal of Mathematics
American Industrial Hygiene Association Journal
American Journal of Physics
American Journal of Science
American Mathematical Monthly
American Mineralogist
Anales de la Real Scoiedad Espanola de Fisica y Quimica
The Analyst
Analytica Chimica Acta
Analytical Chemistry
Angewandte Chemie
Annalen der Chemie, Justus Liebigs
Annalen der Physik
Annales d'Astrophysique
Annales de Chemie
Annales de Géophysique
Annales de Physique
Annales de Radioelectricité
Annales des Télécommunications
Annales de la Société Scientifique de Bruxelles, Series 1, Sciences Mathematiques, Astronomiques et Physiques
Annali di Chimica
Annals of Mathematics
Annals of Mathematical Statistics
Annals of Physics
Annual Review of Nuclear Science
Applied Optics
Applied Physics Letters
Applied Scientific Research, A. Mechanics, Heat, Chemical Engineering, Mathematical Methods
Applied Scientific Research, B. Electrophysics, Acoustics, Optics, Mathematical Methods

Applied Spectroscopy
Archiv Für Das Eisenhuttenwesin
Archiv der Elektrischen Ubertragung
Archiv für Elektrotechnik
Archiv für Technisches Messene und Industrielle Messtechnik
Archiv für Fepik
Archiv für Kemi
Astronautica Acta
Astronaut and Aeronaut
The Astronomical Journal
Astronomicheskii Zhurnal (Astronomical Journal)
Astrophysical Journal
Atom
Atomic Energy Review
Atomics
Atomkernenergie
Atomnaya Energiya (Atomic Energy (USSR)
Atompraxis
Atomwirtschaft - Atomtechnik
Audio
Australian Journal of Applied Science
Australian Journal of Chemistry
Australian Journal of Instrument Technology
Australian Journal of Physics
Automation Express
Avtom Telemekhan (Automation and Remote Control)

Bell Laboratories Record
The Bell System Technical Journal
Berichte der Bunsengesellschaft für Physikalische Chemie
Biometrics
Biometrika
Brennstoff - Chemie
British Chemical Engineering
British Communications and Electronics
British Journal of Applied Physics
British Journal of Radiology
Bulletin de l'Academie Polonaise des Sciences, Series des Sciences Chimiques
Bulletin de l'Academie Polonaise des Sciences, Geologiques Geographiques
Bulletin de l'Academie Polonaise des Sciences, Mathematiques, Astronomiques et Physiques
Bulletin de l'Academie Polonaise des Sciences, Techniques
Bulletin of the American Mathematical Society
Bulletin of the Chemical Society of Japan
Bulletin de la Classe des Sciences, Academic Royale de Belgique
Bulletin Mathematical Biophysics
Bulletin des Societés Chimiques Belges
Bulletin de la Société Chimique de France
Bulletin de la Société Francaisi de Ceramique
Bulletin de la Société Francaise de Mineralogie
Bulletin de et de Cristallographie
Bulletin de la Société Mathematique de France
Bygningsstatiske Meddeleser
Bulletin of the American Meteorological Society

Canadian Aeronautics and Space Journal

Canadian Electronics Engineering
Canadian Journal of Chemical Engineering
Canadian Journal of Chemistry
Canadian Journal of Mathematics
Canadian Journal of Physics
Ceskoslovensky Casopis pro Fysiku
Chemical Communication
The Chemical Engineer
Chemical and Engineering News
Chemical Engineering Progress
Chemical Engineering Science
Chemical and Process Engineering
Chemical Reviews
Chemicke Listy
Chemicke Zvesti
Chemie-Ingenieur-Technik
Chemiker-Zeitung Chemische Apparatur
Chemische Berichte
Chemische Technik
Chemistry and Industry
Chemistry in Britian
Chemistry of High Polymers (Japanese)
Chimia
La Chimica e L'Industria
Chimie Analytique
Chimie and Industry
Ciencia
Collection of Czechoslovak Chemical Communications
Combustion and Flame
Communications of the ACM
Communications on Pure and Applied Mathematics
Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences
The Computer Bulletin
Computer Journal
Computers and Automation
Control
Control Engineering
Corrosion
Corrosion et Anticorrosion
Corrosion Technology
Croatica Chemica Acta
Cryogenics
Current Science
Czechoslovak Journal of Physics

Datamation
Die Atomwirtschaft
Die Makromolekulare Chemie
Discovery
Dissertation Abstracts
Doc-Air-Espace
Doklady Akademii Nauk B.S.S.R.
Doklady Akademii Nauk S.S.S.R.
Doklady Akademii Nauk U.S.S.R., Physics Section
Doklady Bolgarskoi Akademii Nauk
Dopovidi Akademii Nauk Ukrains/Koi R.S.R
Duke Mathematical Journal

EEP Focus
Electronic Design
Electronic Engineering
Electronic Industries
Electronic Procurement
Electronic Products
Electronic Technician
Electronics
Electronics Express
Electronics and Power
Electronics and Record
Electronics World
Elektrosvyaz (Electrical Communications)
Elektrotechnische Zeitschrift
Energia es Atomtechnika
Energia Nucleare (Milan)
Energie Nucléaire
Environmental Quarterly
Erdoel und Kohle - Erdgas - Petrochemie
Euronuclear
Experientia

Faradaz Society Transactions
Finska Kemistsamfundets Meddelanden
Fiz Atmosfery Oklana (Phics, Atmosphere and Ocean)
Fiz Metal Metalloved (Metal Physics, Science Metals)
Fiz Tverd Tela (Solid State Physics)
Fiz Zemli (Physics Earth)
Flugwelt
Fuel

Gazzetta Chimica Italiana
Geochemistry
Genie Chimique
Geochimica et Cosmochimica Acta
Geofisica e Meteorologia
Geokhimiya (Geochemistry)
The Geological Society of America Bulletin
Geophysics
Glass Technology

Health Physics
Helvetica Chimica Acta
Helvetica Physica Acta
Hydraulics and Pneumatics

IBM Journal of Research and Development
Icarus
I/EC Process Design and Development
IEEE Spectrum
IEEE Transactions on Aerospace

IEEE Transactions on Aerospace and Navigational Electronics
IEEE Transactions on Antennas and Propagation
IEEE Transactions on Applications and Industry
IEEE Transactions on Audio
IEEE Transactions on Automatic Control
IEEE Transactions on Bio-Medical Engineering
IEEE Transactions on Broadcasting
IEEE Transactions on Broadcast and Television Receivers
IEEE Transactions on Circuit Theory
IEEE Transactions on Communications and Electronics
IEEE Transactions on Communication Systems
IEEE Transactions on Communication Technology
IEEE Transactions on Component Parts
IEEE Transactions on Education
IEEE Transactions on Electromagnetic Compatibility
IEEE Transactions on Electron Devices
IEEE Transactions on Electronic Computers
IEEE Transactions on Engineering Management
IEEE Transactions on Engineering Writing and Speech
IEEE Transactions on Geoscience Electronics
IEEE Transactions on Industrial Electronics and Control Instrumentation
IEEE Transactions on Information Theory
IEEE Transactions on Instrument and Measurement
IEEE Transactions on Microwave Theory and Techniques
IEEE Transactions on Military Electronics
IEEE Transactions on Nuclear Science
IEEE Transactions on Power Apparatus and Systems
IEEE Transactions on Reliability
IEEE Transactions on Sonics and Ultrasonics
IEEE Transactions on Space Electronics and Telemetry
Illinois Journal of Mathematics
Indian Journal of Chemistry
Indian Journal of Pure and Applied Physics
Indian Journal of Technology
Indian Journal of Theoretical Physics
Industrial Electronics
Industrial and Engineering Chemistry
Industrial and Engineering Chemistry, Fundamentals
Industrial and Engineering Chemistry, Process Design and Development
Industrial and Engineering Chemistry, Product Research and Development
Industrial Research
Industrial Chimique Belge
Information and Control
Information Storage and Retrieval
Infrared Physics
Ingenieur-Archiv
Inorganic Chemistry
Instrument Practice
Instrument and Control Systems
International Journal of Control
Internationale Elektronische Rundschan
International Journal of Air and Water Pollution
International Journal of Electronics
ISA Journal
ISA Transactions
Israel Journal of Chemistry
Israel Journal of Earth-Sciences
Israel Journal of Mathematics

Israel Journal of Technology
Izmeritel Tekhnika (Measurement Technology)
Izvestiya Akademii Nauk Armyanskoi S.S.R., Khimicheskie (Bulletin Academy Science Armenian S.S.R. - Chemistry)
Izvestiya Akademii Nauk Azerbaidzhanskoi S.S.R. - Fiz-Tekhn-Mat (Bulletin Academy Science Azerbardzhan S.S.R. - Physics, Technology and Mathematics)
Izvestiya Akademii S.S.S.R.-Fiz (Bulletin Academy Science U.S.S.R. - Physics)
Izvestiya Akademii Nauk S.S.S.R. - Geofizicheskaya (Bulletin Academy Science, U.S.S.R. Geophysics)
Izvestiya Akademii Nauk S.S.S.R., Khimicheskikh Series (Bulletin Acadany Science U.S.S.R. Chemistry)
Izvestiya Akademii Nauk S.S.S.R., Otedelenie Tekhnicheskikh Nauk (Metallurgiia)
Izvestiya Vysshikh Uchebnykh Zavedenii, Aviatsionnaya Tekhnika (Bulletin, Institute Higher Education - Aviation Technique)
Izvestiya Vysshikh Uchebnykh Zavedenii - Radiotekhnika (Bulletin Institute Higher Education - Radio Engineering)
Izvestiya Vysshikh Uchebnykh Zavedenii - Fizika (Bulletin Institute Higher Education - Physics)

Japan Analyst
Japanese Journal of Applied Physics
Journal of The Accoustical Society of America
Journal of The American Ceramic Society
Journal of The American Chemical Society
Journal of The American Oil Chemists' Society
Journal of American Statistical Association
Journal of Applied Chemistry
Journal of Mechs. Transactions of the ASME, Series E
Journal of Applied Meteorology
Journal of Applied Polymer Science
Journal of Applied Physics
Journal of the Association for Computing Machinery
Journal of the Astronautical Sciences
Journal of the Atmospheric Sciences
Journal of Atmospheric and Terrestrial Physics
Journal of the Audio Engineering Society
Journal Basic Engineering; Transactions of the ASME, Series D
Journal of The British Interplanatory Society
Journal of The British Nuclear Society
Journal of Catalysis
Journal of Chemical Documentation
Journal of Chemical Education
Journal of Chemical and Engineering Data
Journal of Chemical Physics
Journal of the Chemical Society
Journal of the Chemical Society of Japan (Industrial Chemistry Section)
Journal of the Chemical Society of Japan (Pure Chemistry Section)
Journal de Chimie Physique et de Physics Chimie Biologique
Journal of the Chinese Chemical Society
Journal of Colloid Science
Journal de Mechanique
Journal de Physique
Journal of Documentation
Journal of Electroanalytical Chemistry
Journal of Electrochemical Society
Journal of the Electrochemical Society of Japan

Journal of Electronics and Control
Journal of Engineering for Industry, Transactions ASME, Series B
Journal of Engineering for Power, Transactions ASME, Series A
Journal of Fluid Mechanics
Journal of the Franklin Institute
Journal of Gas Chromatography
Journal of Geomagnetism and Geoelectricity
Journal of Geophysical Research
Journal of Heat Transfer - Transactions ASME, Series C
Journal of the Indian Chemical Society
Journal of the Indian Institute of Science
Journal of Industrial Engineering
Journal of Inorganic and Nuclear Chemistry
Journal of the Institute of Metals
Journal of the Institute of Petroleum
Journal of the Iron and Steel Institute
Journal of the Less-Common Metals
Journal of the London Mathematical Society
Journal of Mathematical Analysis and Applications
Journal of Mathematical Physics
Journal of the Mathematical Society of Japan
Journal of Mathematics and Mechanics
Journal of Mathematics and Physics
Journal de Mathémaliques Pures et Appliquíes
Journal of Mechanical Engineering Science
Journal of the Mechanics and Physics of Solids
Journal of Metals
Journal of Molecular Spectroscopy
Journal of the New Zealand Institute of Chemistry
Journal of Nuclear Energy, Parts A/B: Reactor Science and Technology
Journal of Nuclear Energy, Part C: Plasma Physics-Accelerators-Thermonuclear Research
Journal of the Optical Society of America
Journal of Organic Chemistry
Journal of Organometallic Chemistry
Journal of Petroleum Technology
Journal of Physical Chemistry
Journal of the Physics and Chemistry of Solids
Journal of the Physical Society of Japan
Journal of Polymer Science, Part A, General Papers
Journal of Polymer Science, Part B, Polymer Letters
Journal of Polymer Science, Part C, Polymer Symposia
Journal fur Praktische Chemie
Journal fur die reine und Angewandte Mathematik
Journal of Research of the NBS, A. Physics and Chemistry
Journal of Research of the NBS, B. Mathematics and Mathematical Physics
Journal of Research of the NBS, C. Engineering and Instrumentation
Journal of Research of the National Bureau of Standards, D. Radio Science
Journal of Royal Aeronautical Society
Journal of Scientific and Industrial Research
Journal of Scientific Instruments
Journal of the Society for Industrial and Applied Mathematics
Journal of the Society of Organic Synthetic Chemistry, Japan
Journal of Sound and Vibration
Journal of Spacecraft and Rockets
Journal of Vacuum Science and Technology

Khimicheskaya Promyshlennost (Chemical Industry)
Khimiya Tekhnologiya Topliva Masel (Chemical Technology Fuels Oils)
Kinetika Kataliz (Kinetics and Catalysis)
Kolloid-Zeitschrift and Zeitschrift fur Polymere
Kolloidnyi Zhurnal (Colloid Journal)
Koninklijke Nederlandse Akademie Van Wetenschappen (Proceedings, Series A, Mathematical Sciences)
Koninklijke Nederlandse Akademie Van Wetenschappen (Proceedings, Series B, Physical Sciences)
Kristallografiya (Crystallography)
Kunststoff-Plastics
Kybernetik

Lichttechnik
Lodzkie Towarzystwo Naukowe Wydziat III, Acta Chimica
Lubrication
Lubrication Engineering
Luftfahrttechnik Raumfahrttechnik

Machine Design
Magyar Kemiai Folyoirat
Magyar Kemikusok Lapja
A Magyar Tudomanyos Akademia Kemiai Tudomanyok Osztalyanak Kozlemenyei
The Marconi Review
Matematisk-Fysiske Meddelelser, Kongelige Danske Videnskabernes Selskab
Matemalisk-Fysiske Skrifter Kongelige Danaku Videnskabunes Selskab
Materials in Design Engineering
Materials Evaluation
Materials Protection
Materials Research and Standards
Mathematics of Computation
Mathematika
Mathematische Nachrichten
Mathematische Zeitschrift
Measurement and Control
Mechanical Engineering
Mechanical Translation
Mededelingen van de Vlaamse Chemische Vereniging
Les Memoires Scientifiques de la Revue de Metallurgie
Metallurgy
Metalloved Term Obrabiet Metal (Metal Science and Heat Treatment of Metals)
Metallurg (Metallurgist)
Metallurgia
Metal Progress
Meteorological Magazine
Microchemical Journal
Microelectronics and Reliability
Mikrochimica et Ichnoanalytica Acta
Mineralogical Magazine
Missili
Modern Plastics
Modecular Physics
Monatshefte fur Chemie

Nachrichtentechnische Zeitschrift
Nature
Naturwissenschaften
Nauchno-Tekhnicheskii Informatsionnyi (Science and Technology Information)
Naval Research Logistics Quarterly
Neftyanoe Khozyaistvo (Petroleum Economy)
NTZ - Communications Journal
Nuclear Energy
Nuclear Engineering
Nuclear Fusion
Nuclear Instruments and Methods
Nuclear Physics
Nuclear Safety
Nuclear Science and Engineering
Nuclear Structural Engineering
Nuclear News
Nucleonics
Nukleonik
Il Nuovo Cimento

Operational Research Quarterly
Operations Research
Optica Acta
Optik
Optika Spektroskopiya (Optics and Spectroscopy)
Ordnance, Land, Sea, Air, Space

Pacific Journal of Mathematics
Papers in Meteorology and Geophysics
Periodica Polytechnica - Chemical Engineer
Periodica Polytechnica - Electrical Engineer
Periodica Polytechnica - Engineering
Phillips Research Reports
Phillips Technical Review
The Philosophical Magazine
Philosophical Transactions of the Royal Society of London, Series A, Mathematics and Physical Science
Phonetica
Photographic Science and Engineering
Physica
Physical Review
Physical Review Letters
Physica Norvegica
Physica Status Solidi
Physics and Chemistry of Glasses
Physics Express
Physics Letters
Physics of Fluids
Physik der Kondensierten Materie
Physique Appliquie
Planetary and Space Science
Point to Point Telecommunications Post Office Electrical Engineers Journal
Power Engineering
Power Reactor Technology

Pribory Tekhnika Eksperimenta (Experimental Instr. Technology)
Prikladnaya Matematika Mekhanika (Applied Mathematics and Mechanics)
Priroda-Moscow (Nature)
Proceedings of the American Mathematical Society
Proceedings of the Cambridge Philosophical Society
Proceedings of the Chemical Society
Proceedings of the Geological Association of Canada
Proceedings of the IEEE
Proceedings of the Institute of Electrical Engineers
Proceedings of the Institute of Radio and Electronics Engineers, Australia

Proceedings of the Japan Academy
Proceedings of the London Mathematical Society
Proceedings of the National Academy of Sciences, India, Section A, Physical Sciences
Proceedings of the National Academy of Sciences, United States of America
Proceedings of the Physics Society
Proceedings of the Royal Irish Academy
Proceedings Royal Society, Series A, Mathematical and Physical Sciences
Proceedings Royal Society of Edenburgh, Section A - Mathematical and Physical Sciences
Progress of Theoretical Physics
Przemysl Chemiczny
Pure and Applied Geophysics

Quarterly of Applied Mathematics
Quarterly Journal of Mathematics
Quarterly Journal of Mechanics and Applied Mathematics
Quarterly Journal of the Royal Meteorological Society
Quarterly Reviews

Radiation Research
The Radio and Electronic Engineer
Radio - Electronics
Radiocarbon
Radio Engineering and Electronic Physics
Radiotekhnika Elektronika (Radio Engineering and Electronics)
RCA Reviews
Reactor Fuel Processing
Reactor Materials
La Recherche Aerospatiale
Record of Chemical Progress
Recueil des Travaux Chimiques des Pays-Bas
Review of the Electrical Communication Laboratory
Review of Scientific Instruments
Reviews of Geophysics
Reviews of Modern Physics
Reviews of Pure and Applied Chemistry
Revue Francaise d'Astronautique
Revue Generale d'Electronique
Revue de l'Institut Francais du Petrole
Revue de Metallurgie
Revue Roumaine de Chimie
Revue Roumaine de Physique
Ritista di Medicina Aeronautica e Spaziale
Ritista di Meteorologia Aeronautica
Roczniki Chemii
Rubber Age

SAE Journal
SAE Technical Progress Series
Science
Science Progress
Science Reports of the Research Institute of Tohouku University, Series A, Physics, Chemistry and Metallurgy
Scientia
Scientia Sinica
Scientific American
Semiconductor Products and Solid State Technology
SIAM Review
Solar Energy
Solid/State/Design Communications and Data Equipment
Solid State Communications
Solid State Electronics
Space/Aeronautics
Spaceflight
Space Science Reviews
Spectrochimica Acta
Steklo Keram (Glass and Ceramics)
Suomen Kemistilehti
Svensk Kemish Tidskrift
Surface Science

Technique
Technometrics
Tellus
Teoriya Veroyatnostei Primeneniya (Theory of Probability and Its Application)
Tetrahedron
Tetrahedron Letters
Textile Research Journal
Theoretica Chemica Acta
Tidsskrift for Kjemi, Bergvesen og Metallurgi (Norwegian Journal of Chemistry, Mining, and Metallurgy)
Transactions American Geophysics Union
Transactions of the American Mathematical Society
Transactions of the Faraday Society
Transactions of the Institute of Chemical Engineers
Transactions of the Japan Institute of Metals
Transactions and Journal of the Plastics Institute
Transactions of the Metallurgy Society of AIME
Transactions of the New York Academy of Sciences
Transactions of the Society of Instrument Technology

Ukrains/Kii Khemichnii Zhurnal
Uspekhi Fizicheskikh Nauk (Program Physical Science)
Uspekhi Khimii (Program Chemistry)

Vacuum
Vestnik Akademii Meditsinskikh Nauk S.S.S.R. (Bulletin Academy Science, U.S.S.R.)
Vest Leningradskogo Universiteta Fiziki, Khimii (Bulletin Leningi University Physics and Chemistry)

Vestnik Leningradskogo Universiteta, Matematiki, Mekaniki, Astronomii (Bulletin Leningi University, Mathematics, Mechanics, Astronomy)
Vestnik Moskovskogo Universiteta, Fizika, Astronomiya (Bulletin Mosc. University, Physics, Astronomy)
Vestnik Moskovskogo Universiteta Khimiya (Bulletin Mosc. University, Chemistry)
Vestnik Moskovskogo Universiteta Matematika, Mekhanika (Bulletin Mosc. University, Mathematics, Mechanics)
Le Vide
Vysokomolekul Soedineniya (High Molecular Weight Compounds)

Welding Journal
Wireless World

Zavodskaya Laboratoriya (Industrial Laboratory)
Zeitschrift fuer Analytische Chemie
Zeitschrift fuer Angewandte Geologie
Zeitschrift fuer Angewandte Mathematik und Mechanik
Zeitschrift fuer Angewandte Mathematik und Physik
Zeitschrift fuer Angewandte Physik
Zeitschrift fuer Anorganische und Allgemeine Chemie
Zeitschrift fuer Flugwissenschaften
Zeitschrift fuer Instrumentenkunde
Zeitschrift fuer Kristallografie
Zeitschrift fuer Metallkunde
Zeitschrift fuer Meteorologie
Zeitschrift fuer Naturforschung
Zeitschrift fuer Physik
Zeitschrift fuer Physikalische Chemie, Frankfurt
Zeitschrift fuer Physikalische Chemie, Leipzig
Zeitschrift fuer Vissenschaftliche Photographie, Photophysik und Photochemie
Zhurnal Analiticheskoi Khimii (Journal Analytical Chemistry)
Zhurnal Eskperimental Theoreticheskoi Fiziki (Journal Experimental Theoretical Physics)
Zhurnal Fizicheskoi Khimii (Journal Physical Chemistry)
Zhurnal Nauchnoi Priklandnoi Fotografi Kinematografi (Journal Sci. Appl. Photog. Chinematog)
Zhurnal Neorganicheskoi Khimii (Journal Inorganic Chemistry)
Zhurnal Obshchei Khimii (Journal General Chemistry)
Zhurnal Prikladnoi Khimii (Journal Applied Chemistry)
Zhurnal Strukturnoi Khimii (Journal Structural Chemistry)
Zhurnal Tekhnicheskoi Fiziki (Journal Technical Physics)
Zhurnal Vsesoyuznogo Khimicheskogo Obshchestva Im. D.I. Mendeleeva (Journal All-Union Chemical Society, Mendeleev)

APPENDIX C
Selector Terms Used in Computer

	NO.	SELECTOR
0000	0000	ACCIDENT ANALYSIS
1127	0599	*ACCIDENT MODEL
1130	0600	*ACCIDENT, CRITICALITY
0001	0001	ACCIDENTS
0002	0002	ACCIDENTS, EXPOSURE
0727	0471	ACCIDENTS, FUEL SLUMP
1131	0601	*ACCIDENTS, NONNUCLEAR
1132	0602	*ACCIDENTS, RADIOISOTOPE
0003	0003	ACCIDENTS, SL-1
1133	0603	*ACCIDENTS, SURVEY
0004	0004	ACCIDENTS, WINDSCALE
0730	0472	ACRS
0005	0005	ACTIVATION
0731	0473	ACTIVATION PRODUCTS
0006	0006	ACTIVITY BUILDUP
0007	0007	ADMINISTRATION AND PROCEDURES
0010	0008	ADSORPTION
1134	0604	*ADSORPTION SURFACE
0011	0009	AEROSOL
0732	0474	AEROSOL PRODUCTION
0733	0475	AEROSOL PROPERTIES
0012	0010	AEROSPACE SAFETY
1135	0605	*AGESTA REACTOR
0734	0476	AGGLOMERATES
0735	0477	AGRICULTURAL CONSIDERATIONS
1136	0606	*AIR
0013	0011	AIR CLEANING
0736	0478	AIR LOCKS
0737	0479	AIR SAMPLING INSTRUMENTS
0014	0012	AIRBORNE RELEASE
1137	0607	*AIRCRAFT
0015	0013	AIRCRAFT REACTORS
0016	0014	ALLOY
0017	0015	ALUMINUM
0020	0016	ANALOG COMPUTERS
0705	0453	ANALYTICAL MODEL
1140	0608	*ANALYTICAL TECHNIQUES
1141	0609	*ANALYTICAL TECHNIQUES, CALIBRATION
1142	0610	*ANALYTICAL TECHNIQUES, FOOD
1143	0611	*ANALYTICAL TECHNIQUES, MILK
0741	0481	ARGON
1144	0612	*ARGONNE ADVANCED RESEARCH REACTOR
1145	0613	*ARGONNE NATIONAL LABORATORY
0021	0017	ARMY REACTORS
0742	0482	ARSENIC
0743	0483	ATMOSPHERE
1146	0614	*ATOMICS INTERNATIONAL

* NEW SELECTOR

NO.		SELECTOR
0022	0018	BARIUM
0023	0019	BERYLLIUM
0024	0020	BETHE-TAIT
1147	0615	*BETTIS ATOMIC POWER LABORATORY
0025	0021	BIBLIOGRAPHIES
0026	0022	BIG ROCK POINT REACTOR
0027	0023	BIOLOGICAL CONCENTRATIONS
1150	0616	*BIOLOGICAL CONCENTRATIONS, AGRICULTURAL PRODUCE
1151	0617	*BIOLOGICAL CONCENTRATIONS, ANIMAL FEED
1152	0618	*BIOLOGICAL CONCENTRATIONS, AQUATIC ORGANISMS
1153	0619	*BIOLOGICAL CONCENTRATIONS, FOOD
1154	0620	*BIOLOGICAL CONCENTRATIONS, MAN
1155	0621	*BIOLOGICAL CONCENTRATIONS, MILK
1156	0622	*BIOLOGICAL CONCENTRATIONS, VEGETATION
0030	0024	BIOMEDICAL
0031	0025	BODEGA BAY REACTOR
0032	0026	BOILING HEAT TRANSFER
0033	0027	BOILING WATER REACTORS
0034	0028	BONUS REACTOR
0035	0029	BORAX I, II, III, IV, V
0036	0030	BORON
0037	0031	BOUNDARY LAYER
0040	0032	BREEDER REACTORS
0744	0484	BREEZES, LAND
0041	0033	BREEZES, SEA
0745	0485	BREEZES, VALLEY
0042	0034	BRITTLE FRACTURE
1157	0623	*BROOKHAVEN
0043	0035	BUCKLING
0044	0036	BURNABLE POISONS
0045	0037	BURNOUT HEAT FLUX
0046	0038	BURST PRESSURE
0746	0486	BURST REACTORS
0047	0039	CADMIUM
0050	0040	CALCIUM
0051	0041	CANADIAN REACTORS
0052	0042	CARBIDE
0053	0043	CARBON
0054	0044	CERAMICS
0055	0045	CERIUM
0056	0046	CESIUM
0057	0047	CHAMBERS
1160	0624	*CHARCOAL
0747	0487	CHARCOAL ADSORBERS
1161	0625	*CHARIOT
1162	0626	*CHEMICAL ANALYSIS
0060	0048	CHEMICAL REACTIONS

NO.		SELECTOR
0061	0049	CHEMICAL TOXICITY
1163	0627	*CHEMISORPTION
0750	0488	CHROMIUM
0062	0050	CIRCULATING FUEL REACTORS
1164	0628	*CIRCULATION, ANTICYCLONIC
1165	0629	*CIRCULATION, CYCLONIC
0063	0051	CIRCULATION, GLOBAL
0064	0052	CLIMATOLOGY, DIFFUSION
0751	0489	CLIMATOLOGY, SITE
0065	0053	COATED PARTICLES
0066	0054	COBALT
0067	0055	CODES AND STANDARDS
0070	0056	COEFFICIENTS, ATMOSPHERIC
0752	0490	COEFFICIENTS, ATMOSPHERIC DIFFUSION
0071	0057	COLD COOLANT ACCIDENTS
0072	0058	COMPONENT FAILURES
0073	0059	COMPUTER PROGRAMS
0074	0060	COMPUTER PROGRAMS, METEOROLOGICAL
0075	0061	CONCENTRATION, CENTERLINE
0753	0491	CONCENTRATION, GROUND LEVEL
0076	0062	CONCENTRATION, MAXIMUM
0077	0063	CONCRETE
1166	0630	*CONCRETE, PRESTRESSED
0754	0492	CONDENSATE
0100	0064	CONGRESSIONAL ACTIVITIES
0755	0493	CONNECTICUT YANKEE REACTOR
0101	0065	CONSEQUENCES OF ACCIDENTS
0102	0066	CONTAINMENT
0103	0067	CONTAINMENT ANALYSIS
0756	0494	CONTAINMENT CONSTRUCTION
0105	0069	CONTAINMENT DESIGN
1167	0631	*CONTAINMENT INSPECTION AND MAINTENANCE
0106	0070	CONTAINMENT INSTRUMENTATION
0757	0495	CONTAINMENT INTEGRITY
0760	0496	CONTAINMENT RESEARCH AND DEVELOPMENT
0107	0071	CONTAINMENT SOURCE
0110	0072	CONTAINMENT SPRAY
0111	0073	CONTAINMENT VESSEL LOADING
0104	0068	CONTAINMENT, CAVERN
0112	0074	CONTAINMENT, FUEL REPROCESSING
0113	0075	CONTAINMENT, HIGH PRESSURE
0114	0076	CONTAINMENT, LOW PRESSURE
0115	0077	CONTAINMENT, MULTIPLE
0116	0078	CONTAINMENT, PRESSURE RELIEF
0117	0079	CONTAINMENT, PRESSURE SUPPRESSION
0120	0080	CONTAINMENT, PRESSURE VENTING
0761	0497	CONTAINMENT, RESEARCH AND DEVELOPMENT
0762	0498	CONTROL

* NEW SELECTOR

NO.		SELECTOR
0121	0081	CONTROL ROD
0122	0082	CONTROL ROD BURNUP
0123	0083	CONTROL ROD DRIVES
0763	0499	CONTROL ROD FABRICATION
0124	0084	CONTROL ROD INTERACTION
0125	0085	CONTROL ROD PROGRAMMING
0126	0086	CONTROL ROD WORTH
0127	0087	CONTROL SYSTEM
1170	0632	*CONTROL, METEOROLOGICAL
0764	0500	COPPER
0130	0088	CORE SPRAY
0765	0501	CORROSION PROTECTION
0131	0089	COUNTERS
1171	0633	*CREEP BEHAVIOR
0132	0090	CRITICAL ASSEMBLIES
1172	0634	*CRITICAL NUCLIDES
0133	0091	CRITICALITY SAFETY
0766	0502	CSE
0134	0092	CVTR
0135	0093	CYLINDERS
0136	0094	DECAY HEAT
0137	0095	DECONTAMINATION
1173	0635	*DECONTAMINATION SPRAY
1174	0636	*DEFORMATION
0140	0096	DELAYED NEUTRON
0141	0097	DEPOSITION
0767	0455	DESALINATION REACTORS
0142	0098	DESIGN
1175	0637	*DESTRUCTIVE TRANSIENTS
0143	0099	DEUTERIUM
1176	0638	*DIETARY HABITS
0144	0100	DIFFUSION
0145	0101	DIFFUSION, ATMOSPHERIC
0146	0102	DIFFUSION, GLOBAL
0767	0503	DIFFUSION, POROUS
0147	0103	DIGITAL COMPUTERS
0150	0104	DILUTION
0770	0504	DISTANCE
0151	0105	DOPPLER COEFFICIENTS
0152	0106	DOPPLER EFFECT
0153	0107	DOSE
0771	0505	DOSE CALCULATION
1177	0639	*DOSE CALCULATION, INTERNAL
0772	0506	DOSE MEASUREMENT
0154	0108	DOSIMETRY
1200	0640	*DOSIMETRY, RADIOPHOTOLUMINESCENCE
1201	0641	*DOSIMETRY, THERMOLUMINESCENCE
0155	0109	DRESDEN REACTOR

NO.		SELECTOR
1202	0642	*DRINKING WATER
0156	0110	EBR 1 AND 2
0157	0111	EBWR
0160	0112	ECONOMICS
0161	0113	EFFLUENT
0162	0114	EGCR
1203	0643	*ELASTICITY
0710	0456	ELECTRIC POWER
0773	0507	ELECTRICITY, ATMOSPHERIC
0774	0508	ELECTROSTATIC
0163	0115	ELEMENTS AND ISOTOPES
0164	0116	ELK RIVER REACTOR
0165	0117	EMERGENCY COOLING
0166	0118	EMERGENCY POWER
0775	0509	ENEA
0167	0119	ENERGY SOURCES
0170	0120	ENGINEERED SAFEGUARDS
1204	0644	*ENVIRONMENTAL MONITORING
0171	0121	EOCR
0172	0122	EQUATION OF STATE
0173	0123	EQUATIONS
0174	0124	EQUIPMENT FAILURES
0776	0510	EQUIPMENT HATCHES
1205	0645	*ESADA VESR REACTOR
1206	0646	*ESTUARY
0175	0125	ETR
0176	0126	EURATOM
0177	0127	EXCESS REACTIVITY
0200	0128	EXPANSION REACTIVITY EFFECT
0201	0129	EXPERIMENTS, ATMOSPHERIC DIFFUSION
0777	0511	EXPERIMENTS, WIND TUNNEL
0202	0130	EXPLOSIONS
0203	0131	EXTERNAL
1207	0647	*EXTRAPOLATION FACTORS
0204	0132	FABRICATION
0205	0133	FABRICATION FACILITIES
0206	0134	FAILURES
0207	0135	FALLOUT
1210	0648	*FARET REACTOR
1211	0649	*FAST NEUTRONS
0211	0137	FAST REACTORS
0212	0138	FEDERAL RADIATION COUNCIL
1212	0650	*FEED MATERIALS PRODUCTION CENTER
0213	0139	FERMI REACTOR
0214	0140	FILTER
1213	0651	*FILTER DESIGN
0215	0141	FILTER EFFICIENCY

* NEW SELECTOR

	NO.	SELECTOR
C216	0142	FILTER EXPERIENCE
1214	0652	*FILTER IMPACTION
1215	0653	*FILTER LIFE
1216	0654	*FILTER MAINTENANCE
1217	0655	*FILTER MATERIALS
1220	0656	*FILTER OPERATION
1221	0657	*FILTER PLUTONIUM
1222	0658	*FILTER SAFETY EVALUATION
C217	0143	FILTER SYSTEMS
1001	0513	FILTER TESTING
1002	0514	FILTER TYPE, ABSOLUTE
1003	0515	FILTER TYPE, AEROSOL
1223	0659	*FILTER TYPE, ASBESTOS
1005	0517	FILTER TYPE, CERAMIC
1224	0660	*FILTER TYPE, CHARCOAL
1225	0661	*FILTER TYPE, COARSE
1226	0662	*FILTER TYPE, COMMERCIAL
1227	0663	*FILTER TYPE, CYCLONE
1230	0664	*FILTER TYPE, ELECTROSTATIC
1231	0665	*FILTER TYPE, FIBER
1006	0518	FILTER TYPE, FIBERGLAS
1232	0666	*FILTER TYPE, GLASS
1233	0667	*FILTER TYPE, HIGH EFFICIENCY
1234	0668	*FILTER TYPE, HIGH TEMPERATURE
1007	0519	FILTER TYPE, MAY PACK
1010	0520	FILTER TYPE, MEMBRANE
1235	0669	*FILTER TYPE, METALLIC
1011	0521	FILTER TYPE, MILLIPORE
1236	0670	*FILTER TYPE, PAPER
1012	0522	FILTER TYPE, PARTICULATE
1237	0671	*FILTER TYPE, PLASTIC
1240	0672	*FILTER TYPE, RESIN
1241	0673	*FILTER TYPE, ROUGHING
1013	0523	FILTER TYPE, SAMPLING
1242	0674	*FILTER TYPE, TRAP
C220	0144	FILTERS, ABSOLUTE
		FILTERS, CELLULOSE
C225	0149	FIRES
C226	0150	FISSION FRAGMENTS
C227	0151	FISSION GAS RELEASE, GENERAL
C230	0152	FISSION GAS RELEASE, RARE GAS

NO.		SELECTOR
0231	0153	FISSION PRODUCT RELEASE, GENERAL
0713	0459	FISSION PRODUCT TRANSPORT
0232	0154	FISSION PRODUCTS, IODINE
0233	0155	FISSION PRODUCTS, NONVOLATILE
1243	0675	*FISSION PRODUCTS, USE OF IN WASTES
0234	0156	FISSION PRODUCTS, VOLATILE
0235	0157	FISSION RECOIL
1244	0676	*FLAW
0236	0158	FLOW THEORY AND EXPERIMENTS
1014	0524	FLUORINE
0237	0159	FLUX DISTRIBUTION
0240	0160	FOAM
0241	0161	FOG
0242	0162	FOREIGN REACTORS
0243	0163	FORMULA, GAUSSIAN PLUME
0244	0164	FORMULA, SUTTON DIFFUSION
0245	0165	FRENCH REACTORS
0246	0166	FUCHS MODEL
0247	0167	FUEL BURNUP
0250	0168	FUEL ELEMENT BOWING
0251	0169	FUEL FAILURE
0252	0170	FUEL HANDLING
0253	0171	FUEL INTEGRITY
0254	0172	FUEL MELTDOWN
0255	0173	FUEL SEGREGATION
0256	0174	FUSES
0257	0175	GAS COOLED REACTORS
0260	0176	GEOLOGICAL CONSIDERATIONS
1245	0677	*GETR
0261	0177	GLOVE BOXES
0262	0178	GRAPHITE
0263	0179	GRAPHITE MODERATED REACTORS
1246	0678	*GROSS ALPHA
1247	0679	*GROSS BETA
1250	0680	*GROSS GAMMA
0264	0180	GROUND WATER
1251	0681	*GROUND WATER, NUCLIDE OCCURRENCE
1252	0682	*GROUND WATER, PROPERTIES
1253	0683	*GROUND WATER, TRACERS
0265	0181	HAFNIUM
0266	0182	HALF-FAST REACTORS
0267	0183	HALLAM REACTOR
1254	0684	*HALOGENS
1255	0685	*HANFORD
0270	0184	HEALTH PHYSICS TRAINING
1015	0525	HEAT EXCHANGERS
0271	0185	HEAT TRANSFER
0272	0186	HEAVY WATER

* NEW SELECTOR

NO.		SELECTOR
C273	0187	HEAVY WATER REACTORS
1256	0686	*HEIGHT OF RISE
C274	0188	HOMOGENEOUS REACTORS
C275	0189	HOT CELLS
1C16	0526	HOT SPOTS
C276	0190	HRT
C277	0191	HUMAN FAILURES
C3C0	0192	HUMBOLDT BAY REACTOR
1C17	0527	HUMIDITY
C3C1	0193	HWCTR
C3C2	0194	HYDRAULIC ANALYSIS
C3C3	0195	HYDRAULIC EFFECTS
C3C4	0196	HYDRAULIC EXPERIMENTS
1257	0687	*HYDRODYNAMIC ANALYSIS
C3C5	0197	HYDROGEN
C3C6	0198	IAEA
1C20	0528	IMPACT SHOCK
1C21	0529	IMPACTION
C3C7	0199	IN HOUR EQUATION
C310	0200	IN PILE LOOPS AND EXPERIMENTS
C311	0201	INDIAN POINT REACTOR
C312	0202	INGESTION
C313	0203	INHALATION
1C22	0530	INSPECTION AND COMPLIANCE
1C23	0531	INSTRUMENTATION
1260	0688	*INSTRUMENTATION CONTROL
1261	0689	*INSTRUMENTATION, CALIBRATION
C314	0204	INSTRUMENTATION, IN CORE
C315	0205	INSTRUMENTATION, METEOROLOGICAL
C316	0206	INSTRUMENTATION, MONITORING
C317	0207	INSTRUMENTATION, NUCLEAR
C320	0208	INSTRUMENTATION, PROCESS
C321	0209	INSTRUMENTATION, PROTECTIVE
C322	0210	INSTRUMENTATION, REGULATING
C323	0211	INSURANCE
C324	0212	INTEGRITY
1C24	0532	INTERCEPTION
1C25	0533	INTERLOCK
C325	0213	IODINE
C326	0214	IONOSPHERE
1262	0690	*IRON
C327	0215	ISOPLETH, CONCENTRATION
C330	0216	KEWB
1263	0691	*KNOLLS ATOMIC
C331	0217	KRYPTON
1C26	0534	LAMPRE I
C333	0219	LAPSE RATE, ADIABATIC, NEUTRAL

NO.		SELECTOR
0334	0220	LAPSE RATE, STABLE
0335	0221	LAPSE RATE, UNSTABLE
0336	0222	LARGE REACTORS
0337	0223	LAW
1264	0692	*LAYERS
1027	0535	LEAD
1030	0536	LEAK DETECTORS
0340	0224	LEAK RATE
0341	0225	LIABILITY
0342	0226	LIAPUNOVS FUNCTION
0343	0227	LICENSING STATUS OF NUCLEAR PROJECTS
0344	0228	LIQUID FUEL
0345	0229	LIQUID METAL COOLED REACTORS
1265	0693	*LOFT
0346	0230	LOSS OF COOLANT
0347	0231	LOSS OF FLOW
0350	0232	LOSS OF LOAD
0351	0233	LOSS OF POWER
0352	0234	LOSS OF PRESSURE
0353	0235	MAINTENANCE
1031	0537	MALIBU REACTOR
1032	0538	MANGANESE
0354	0236	MARITIME PROPULSION
0355	0237	MAXIMUM CREDIBLE ACCIDENT
0356	0238	MAXIMUM PERMISSIBLE BODY BURDEN
0357	0239	MAXIMUM PERMISSIBLE CONCENTRATION
1033	0539	MAXIMUM PERMISSIBLE DOSE
0360	0240	MEASUREMENTS
0361	0241	MELTDOWN
0362	0242	MERCURY
0363	0243	METAL
0364	0244	METAL WATER REACTIONS
0365	0245	METEOROLOGY, SAFEGUARDS REPORTS
0366	0246	MH-1A
0367	0247	MILLING
0370	0248	MINING
0371	0249	MISSILE GENERATION AND PROTECTION
1266	0694	*MIXING DEPTH
0372	0250	MOCKUP
0373	0251	MODERATOR COEFFICIENTS
0374	0252	MOLECULAR SIEVES
1034	0540	MOLTEN FUEL
0375	0253	MOLTEN SALT REACTORS
0376	0254	MOLYBDENUM
1035	0541	MONITOR, ACCIDENTS
0377	0255	MONITOR, ACCIDENTS, EMERGENCY
1036	0542	MONITOR, AIR

* NEW SELECTOR

NO.		SELECTOR
1037	0543	MONITOR, GAS
0401	0257	MONITOR, GENERAL PRACTICE
0402	0258	MONITOR, LIQUID
0403	0259	MONITOR, PERSONNEL
1040	0544	MONITOR, SAMPLING
1041	0545	MONITOR, SOLID
0404	0260	MONITOR, STACK
1267	0695	*MOUND LABORATORY
0405	0261	MSRE
0406	0262	MTR
0407	0263	N S SAVANNAH
1270	0696	*NAK
0410	0264	NATURAL CIRCULATION
0411	0265	NDT DATA
1042	0546	NEPTUNIUM
1271	0697	*NEVADA TEST SITE
1044	0548	NICKEL
0412	0266	NINE MILE POINT REACTOR
0413	0267	NIOBIUM
1045	0549	NITROGEN
0414	0268	NOBLE GASES
0415	0269	NOISE
0416	0270	NOISE CROSS CORRELATION
0417	0271	NONLINEAR EQUATIONS
0420	0272	NRTS
1272	0698	*NUCLEAR DETONATION
1273	0699	*OAK RIDGE
0421	0273	OCEANS AND SEAS
1046	0550	OECD
1274	0700	*OPERATING EXPERIENCE
0422	0274	OPERATION
0423	0275	OPERATION OF CONTAINMENT SYSTEMS
0424	0276	OPERATIONS REPORTS
0425	0277	ORGANIC COOLED REACTORS
1275	0701	*ORGANIC IODIDE
0426	0278	ORR
0427	0279	OSCILLATOR
0714	0460	OUT OF PILE LOOPS AND EXPERIMENTS
0430	0280	OXIDATION
0431	0281	OXIDE
0432	0282	OXYGEN
0433	0283	OYSTER CREEK REACTOR
1276	0702	*PADUCAH PLANT
0434	0284	PARAMETERS, ATMOSPHERIC STABILITY
0435	0285	PARTICLE SIZE
0436	0286	PARTICULATE
0437	0287	PATHFINDER REACTOR

NO.		SELECTOR
0440	0288	PEACH BOTTOM REACTOR
0441	0289	PENETRATION CLOSURES
0442	0290	PENETRATIONS OF CONTAINMENT
0443	0291	PERSONNEL PROTECTIVE DEVICES
1277	0703	*PHOSPHATE
1047	0551	PHOSPHORUS
1050	0552	PHOTOGRAPHY, SMOKE PLUME
1300	0704	*PINELLAS PENINSULA PLANT
0444	0292	PIPE FAILURES
0445	0293	PIQUA REACTOR
1051	0553	PLATE TYPE CORES
0446	0294	PLATE-TYPE CORES
0447	0295	PLOWSHARE
1052	0554	PLUM BROOK
1053	0555	PLUME BEHAVIOR, GENERAL
1301	0705	*PLUTO PROJECT
0450	0296	PLUTONIUM
0715	0461	PLUTONIUM OXIDE
1054	0556	POLONIUM
1302	0706	*POROUS
1303	0707	*PORTSMOUTH
1055	0557	POTASSIUM
1304	0708	*POWER BURST FACILITY
0451	0297	POWER COEFFICIENTS
1056	0558	POWER DISTRIBUTION
1057	0559	POWER REACTORS
0452	0298	PRESSURE
0456	0302	PRESSURE TUBE REACTORS
0453	0299	PRESSURE VESSEL
0454	0300	PRESSURE VESSEL FAILURES
0455	0301	PRESSURE VESSEL TESTING
0457	0303	PRESSURIZED WATER REACTORS
1305	0709	*PROBABILITY OF ACCIDENTS
1306	0710	*PROCESSED
1061	0561	PROMETHIUM
0461	0305	PROMPT NEUTRON
1307	0711	*PROMPT NEUTRON LIFETIME
1310	0712	*PROTACTINIUM
1311	0713	*PROTECTIVE SYSTEMS
0462	0306	PRTR
1312	0714	*PYROLYTIC
0463	0307	PYROPHORIC REACTIONS
0464	0308	RADIATION DAMAGE
1313	0715	*RADIATION EFFECTS
1314	0716	*RADIATION EFFECTS REACTOR
0465	0309	RADIATION IN PERSPECTIVE
0716	0462	RADIATION INJURIES

* NEW SELECTOR

NO.		SELECTOR
1315	0717	*RADIATION UNITS
1316	0718	*RADIUM
1317	0719	*RADON
0466	0310	RAINOUT
1062	0562	RARE EARTH
0467	0311	REACTIVITY ACCIDENTS
0470	0312	REACTIVITY COEFFICIENTS
0471	0313	REACTIVITY EFFECTS
1320	0720	*REACTOR CONTROL
0472	0314	REACTOR DESCRIPTION
0473	0315	REACTOR DYNAMICS
0474	0316	REACTOR KINETICS
0475	0317	REACTOR STABILITY
0476	0318	REACTOR TRANSIENTS
1063	0563	REACTOR, COOLING WATER
1064	0564	REFERENCE SYSTEMS
0477	0319	REFUELING ACCIDENTS
1321	0721	*REGULATING SYSTEMS
0500	0320	REGULATIONS
1322	0722	*REGULATIONS, AEC
0501	0321	RELATIVE HAZARDS
0502	0322	RELEASE RATES
0503	0323	RELIABILITY ANALYSIS
0504	0324	RESEARCH REACTORS
1065	0565	RHODAMINE B
0505	0325	RIVERS
1323	0723	*RIVERS, CLINCH
1324	0724	*RIVERS, COLUMBIA
1066	0566	RIVERS, OTTAWA
1326	0726	*RIVERS, SAVANNAH
1327	0727	*ROCKY FLATS
0506	0326	ROD DROP ACCIDENTS
0507	0327	ROD WITHDRAWAL ACCIDENTS
0510	0328	ROVER
0511	0329	RUTHENIUM
0512	0330	SAFEGUARDS REPORTS
1067	0567	SAFETY INJECTION
0513	0331	SAFETY REVIEWS
0514	0332	SAFETY SYSTEMS
0515	0333	SAMARIUM
1070	0568	SAMPLING
0516	0334	SAMPLING, HIGH ALTITUDE
1071	0569	SAN ONOFRE NUCLEAR GENERATING STATION
1330	0728	*SAVANNAH RIVER PLANT
0517	0335	SAVANNAH RIVER PRODUCTION REACTORS
0520	0336	SAXTON REACTOR
0521	0337	SCATTERING (SKYSHINE)

NC.		SELECTOR
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0523	0339	SCRUBBERS
1072	0570	SEDIMENTS
0524	0340	SEISMOLOGY
1331	0729	*SEPARATORS
1073	0571	SERVOMECHANISM
0525	0341	SHIPPING CONTAINERS
0526	0342	SHIPPINGPORT REACTOR
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0530	0344	SHOCK WAVES
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1332	0730	*SIC PROTOTYPE REACTOR
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0546	0358	SODIUM
0547	0359	SODIUM COEFFICIENTS
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0553	0363	SOURCE, CONTINUOUS, INSTANTANEOUS
0554	0364	SOURCE, GROUND LEVEL, ELEVATED
0555	0365	SOURCE, LINE
0556	0366	SOURCE, NEUTRON
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0561	0369	SPACE REACTORS
0562	0370	SPECTRAL SHIFT REACTORS
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* NEW SELECTOR

NO.		SELECTOR
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C566	0374	SPERT 4
C567	0375	SPHERES
1337	0735	*SRE REACTOR
1C77	0575	STACK
11C0	0576	STAINLESS STEELS
C571	0377	STARTUP ACCIDENTS
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11C1	0577	STRESS ANALYSIS
11C2	0578	STRESS ANALYSIS, FUEL
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C6C3	0387	STRONTIUM
C6C4	0388	STUDIES, DIFFUSION, DRY GULCH
C6C5	0389	STUDIES, DIFFUSION, FRT 1 AND 2
C6C6	0390	STUDIES, DIFFUSION, GREEN GLOW
C6C7	0391	STUDIES, DIFFUSION, NRTS SERIES
C61C	0392	STUDIES, DIFFUSION, OCEAN BREEZE
C611	0393	STUDIES, DIFFUSION, PRAIRIE GRASS
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11C3	0579	SULFUR
C614	0396	SUPERHEAT REACTORS
C615	0397	SURFACE CONTAMINATION
11C4	0580	SURFACE TO VOLUME RATIO
C616	0398	SURFACE WATERS
1342	0738	*SURFACE WATERS, DISPOSAL MEDIA
11C5	0581	SURFACE WATERS, NUCLIDE OCCURRENCE
1343	0739	*SURFACE WATERS, SEDIMENTS
11C6	0582	SURFACE WATERS, SUSPENDED MATERIAL
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C617	0399	SURVEYS, EMERGENCY
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1110	0584	SURVEYS, USPHS
1345	0741	*TANTALUM
1111	0585	TAYLOR THEORY

NO.		SELECTOR
0621	0401	TELLURIUM
0622	0402	TEMPERATURE COEFFICIENTS
1346	0742	*TEMPERATURE GRADIENT
1347	0743	*TEMPERATURE MEASUREMENT
0623	0403	TEMPERATURE TRANSIENTS
0624	0404	TENSILE PROPERTIES
0460	0304	TEST PROCEDURES
0625	0405	TEST REACTORS
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0627	0407	TESTS, DESTRUCTIVE
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0633	0411	THERMAL MECHANICAL EFFECTS
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0655	0429	UNITED KINGDOM REACTORS
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0657	0431	URANIUM
0660	0432	URANIUM CARBIDE
1353	0747	*URANIUM HYDRIDE
0661	0433	URANIUM OXIDE

* NEW SELECTOR

NO.		SELECTOR
C662	0434	URANIUM SULFIDE
1354	0748	*VACUUM BREAKERS
1114	0588	VACUUM RELIEF
C663	0435	VBWR
1115	0589	VELA UNIFORM PROGRAM
1116	0590	VELA UNIFORM PROGRAM, PROJECT SHOAL
C664	0436	VENTILATION SYSTEMS
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C666	0438	WASTE DISPOSAL, ATMOSPHERIC
1117	0591	WASTE DISPOSAL, BIBLIOGRAPHIES
C724	0468	WASTE DISPOSAL, ECONOMICS
1355	0749	*WASTE DISPOSAL, GASES
C667	0439	WASTE DISPOSAL, GENERAL
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APPENDIX D

REPORT NUMBER

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41 – 49 CORPORATE AUTHOR

NEW KEY WORDS

KEY

UCN-6107
(3 9-64)

APPENDIX E

D,L,Y 5052 1/2

02 Engle PM + Bauder CJ
03 CHARACTERISTICS AND APPLICATION OF HIGH PERFORMANCE DRY FILTERS
04 Cambridge Filter Corporation

05 4 pages, 5 figures, 3 references; ASHRAE Journal, May 1964; Application of Air Cleaners Symposium at the ASHRAE Semiannual Meeting held in New Orleans, La., January 27-29, 1964

...

06 During the past five years a quiet revolution has taken place in the air filter industry. This revolution involved the general acceptance on a large scale of high efficiency, dry, extended-media filters. Simultaneously, and apparently dependent on the discovered advantages of these filters, there has been a sharp increase in the number of new commercial buildings which are using high efficiency air cleaning of all types.
Nomenclature
Characteristics
Methods of Collection
Filter Design and Pressure Drop
Dust Holding Capacity
Operation at Different Capacities

07 *air cleaning + filter design + *ventilation systems + *filter type, air cleaning + *filter type, commercial
08 *filter life + *filter operation + *filter type, paper

...

5052 2/2

The pressure drop equation for a filter of this type then becomes:

$$\Delta P = \frac{C_1 Q}{A} + C_2 Q^2$$

where
ΔP = Pressure drop across filter
A = Net effective media area
Q = Flow rate in volume per unit time
C_1 and C_2 = Constants

$C_1 Q$ represents the pressure drop of the media alone, so C_1 can be determined easily by measuring the pressure drop of a flat piece of media at known flow rate. C_1 will depend primarily on the thickness, density, and fiber size of media, and will be closely related to media efficiency. Progress has been made by various investigators toward establishing quantitative relationships between these variables which will allow predictions of efficiency and pressure drop from the physical characteristics of the media.

...

GWK:rf
April 9, 1965
(Y-12)

APPENDIX F

Documents Issued by NSIC

1. M. H. Fontana and W. E. Browning, Jr., Effect of Particle Agglomeration on the Penetration of Filters Utilized with Double Containment System, USAEC Report ORNL-NSIC-1, September 1963.

2. J. R. Buchanan, Nuclear Safety Contract File, USAEC Report ORNL-NSIC-2, November 1963. (limited distribution)

3. K. E. Cowser, Current Practices in the Release and Monitoring of ^{131}I at NRTS, Hanford, Savannah River, and ORNL, USAEC Report ORNL-NSIC-3, August 1964.

4. G. W. Keilholtz and C. J. Barton, Behavior of Iodine in Reactor Containment Systems, USAEC Report ORNL-NSIC-4, February 1965.

5. W. B. Cottrell and A. W. Savolainen, (editors), U. S. Reactor Containment Technology - A Compilation of Current Practice in Analysis, Design, Construction, Test and Operation, USAEC Report ORNL-NSIC-5. (in preparation)

6. Index to Microfiche Collection of Selected Technical Information on Containment of Nuclear Facilities, USAEC Report ORNL-NSIC-6, September 1964. (This report indexed the microfiche collection of the NSIC exhibit at the Third International Conference on the Peaceful Uses of Atomic Energy, Geneva Switzerland.)

7. C. S. Walker, Secondary Shutdown Systems of Nuclear Power Plants, USAEC Report ORNL-NSIC-7. (in preparation)

8. NSIC Staff, Indexed Bibliography of Current Nuclear Safety Literature - 1, USAEC Report ORNL-NSIC-8, April 1965.

9. NSIC Staff, Indexed Bibliography of Current Nuclear Safety Literature - 2, USAEC Report ORNL-NSIC-9. (in preparation)

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APPENDIX H

Bibliographic Categories

1. General Safety Criteria
2. Siting of Nuclear Facilities
3. Transportation and Handling of Radioactive Materials
4. Space Safety
5. Accident Analysis
6. Reactor Transients, Kinetics, and Stability
7. Fission-Product Release, Transport, and Removal
8. Energy Sources
9. Nuclear Instrumentation, Control, and Safety Systems
10. Electrical Power Systems
11. Containment of Nuclear Facilities
12. Plant Safety Features
13. Radiochemical Plant Safety
14. Radionuclide Release and Movement in the Environment
15. Environmental Surveys, Monitoring, and Radiation Exposure of Man
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18. Safeguards Reports
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APPENDIX I
Sample Page From Computer Produced Bibliography

CATEGORY 7
FISSION PRODUCT RELEASE, TRANSPORT, AND REMOVAL

7-02773 BEATTIE JR
AN ASSESSMENT OF ENVIRONMENTAL HAZARD FROM FISSION PRODUCT RELEASES
UNITED KINGDOM ATOMIC ENERGY AUTHORITY
90 PAGES, 15 FIGURES, 21 TABLES, 57 REFERENCES, 1963, AHSB (S) R 64
REPORT CONSISTS OF ASSESSMENT AND DISCUSSION OF HEALTH HAZARDS WHICH COULD BE EXPECTED FROM FISSION PRODUCT RELEASE FOLLOWING REACTOR ACCIDENT. PROPORTIONS OF FISSION PRODUCTS COMPRISING ASSUMED RELEASE WERE CHOSEN AFTER CONSIDERATION OF WINDSCALE ACCIDENT DATA. ATMOSPHERIC DIFFUSION IS DISCUSSED- CONCENTRATION V. DISTANCE CURVES ARE GIVEN FOR NEUTRAL AND STABLE LAPSE RATES BASED ON PASQUILL'S WORK. ALLOWANCE IS MADE FOR DEPOSITION. ALTHOUGH IODINE-131 IS USUALLY MOST IMPORTANT, TELLURIUM, STRONTIUM, CAESIUM, CERIUM, RUTHENIUM, KRYPTON, AND XENON ISOTOPES ARE CONSIDERED.
*ACCIDENTS, WINDSCALE + *DEPOSITION + *DIFFUSION, ATMOSPHERIC + *IODINE + ADSORPTION + AEROSOL + AIRBORNE RELEASE + BARIUM + CERIUM + CESIUM + ELEMENTS AND ISOTOPES + KRYPTON + LAPSE RATE, ADIABATIC, NEUTRAL + LAPSE RATE, STABLE + NOBLE GASES + PARTICULATE + RUTHENIUM + STRONTIUM + SURFACE CONTAMINATION + TELLURIUM + XENON

7-03222 BARTLETT RW ET AL
INVESTIGATION OF MECHANISMS FOR OXIDATION PROTECTION AND FAILURE OF INTERMETALLIC COATINGS FOR REFRACTORY METALS PART I. MOLYBDENUM DISILICIDE
AERONUTRONIC, A DIVISION OF PHILCO CORPORATION, NEWPORT BEACH, CALIFORNIA
68 PAGES, 36 FIGURES, 4 TABLES, 13 REFERENCES- ISSUED BY U. S. AIR FORCE, JUNE 1963, ASD-TDR-63-753, PART I
THIS REPORT COVERS THE FIRST YEAR, PHASE I, OF A STUDY TO DETERMINE THE MECHANISMS OF PROTECTION AND FAILURE ASSOCIATED WITH INTERMETALLIC COMPOUNDS EMPLOYED AS OXIDATION RESISTANT COATINGS FOR REFRACTORY METALS.
*MOLYBDENUM + *OXIDATION

7-03225 MORRISON DL + ELLEMAN TS + SUNDERMAN DN
POSTIRRADIATION RELEASE OF XE 133 FROM OXIDE CERAMICS
BATTELLE MEMORIAL INSTITUTE
12 PAGES, 3 FIGURES, 10 REFERENCES- OCTOBER 17, 1963, BMI-1651
POSTIRRADIATION MEASUREMENTS WERE MADE AT 700 TO 1500 C OF THE RELEASE OF XE 133 RECOILED INTO ALPHA AL203, BEO, MGO, AND ZRO2 DURING NEUTRON IRRADIATION IN CONTACT WITH UO2 POWDER. THE RELEASE PATTERN FROM MOST OF THE SPECIMENS WAS IDENTICAL- A HIGH RATE OF LOSS OF XE 133 FOR SEVERAL MINUTES FOLLOWED BY A SLOWER RELEASE FOR WHICH THE CUMULATIVE FRACTIONAL RELEASE WAS LINEAR WITH THE SQUARE ROOT OF THE HEATING TIME. DIFFUSION COEFFICIENTS FOR XE 133 WERE CALCULATED FROM THE SLOPE OF RELEASE CURVE FOLLOWING THE BURST. THE MAGNITUDE OF THE DIFFUSION COEFFICIENTS WAS NEARLY THE SAME FOR ALL OF THE MATERIALS STUDIED, AND THE ACTIVATION ENERGY FOR XE 133 RELEASE FROM ALPHA AL203 ABOVE 1000 C WAS FOUND TO BE 64 KCAL PER G MOLE. THE XENON RELEASE BEHAVIOR WAS COMPARED TO ANION DIFFUSION IN THESE OXIDES.
*CERAMICS + *XENON + DIFFUSION + OXIDE

7-03226 COX B
THE EFFECT OF SOME ALLOYING ADDITIONS ON THE OXIDATION OF ZIRCONIUM IN STEAM
UNITED KINGDOM ATOMIC ENERGY AUTHORITY, HARWELL
54 PAGES, 36 FIGURES, 3 TABLES- SEPTEMBER 1963, AERE-R 4458
THE OXIDATION CURVES OF ZIRCONIUM AND BINARY AND TERNARY ALLOYS CONTAINING LESS THAN 10% OF SB, BE, CU, GE, MO, PD, SI, SN, TE AND V IN ATMOSPHERIC PRESSURE STEAM AT TEMPERATURES OF 300 TO 600 DEGREE C ARE PRESENTED. BY COMPARING THESE CURVES WITH THOSE FOR ZIRCALOY-2 AN ATTEMPT HAS BEEN MADE TO DEDUCE WHICH ALLOYS ARE LIKELY TO SHOW SATISFACTORY BEHAVIOUR IN HIGH PRESSURE STEAM OR WATER. THE PRESSURE DEPENDENCE OF THE OXIDATION OF UNALLOYED ZIRCONIUM HAS BEEN STUDIED. IT IS SHOWN THAT THE EFFECT OF ALLOYING ELEMENTS, WHICH APPARENTLY DECREASE THE OXIDATION RATE OF ZIRCONIUM, IS NOT TO REDUCE THE RATE OF DIFFUSION OF OXYGEN THROUGH THE OXIDE BUT TO ELIMINATE (OR RETARD) THE INFLUENCE OF INCREASING STEAM PRESSURE ON THE OXIDATION.
*OXIDATION + *ZIRCONIUM + ALLOY + BOILING WATER REACTORS + DIFFUSION

7-03227 BABCOCK DF + HOOD RR
HEAVY WATER MODERATED POWER REACTORS PROGRESS REPORT SEPTEMBER-OCTOBER 1963
E. I. DUPONT DE NEMOURS + COMPANY, WILMINGTON, DELAWARE
43 PAGES, 9 FIGURES, 8 TABLES- DECEMBER 1963, DP-875
THIS REPORT REVIEWS THE PROGRESS OF THE DU PONT DEVELOPMENT PROGRAM ON HEAVY-WATER-MODERATED POWER REACTORS. THE OVER-ALL GOAL OF THE PROGRAM IS TO ADVANCE THE TECHNOLOGY OF THESE REACTORS SO THAT THEY COULD BE USED IN LARGE POWER STATIONS TO GENERATE ELECTRICITY AT FULLY COMPETITIVE COSTS. PROGRAM EMPHASIS IS BEING PLACED ON REACTORS THAT ARE COOLED BY LIQUID D2O. THE PRINCIPAL PHASES OF THE PROGRAM ARE- (1) THE IRRADIATION OF CANDIDATE FUELS AND OTHER REACTOR COMPONENTS IN THE HEAVY WATER COMPONENTS TEST REACTOR (HWCTR), (2) THE DEVELOPMENT OF LOW-COST FUEL TUBES FOR USE IN LARGE WATER-COOLED REACTORS, AND (3) THE TECHNICAL AND ECONOMIC EVALUATION OF VARIOUS REACTOR DESIGN CONCEPTS.
*HWCTR + ALLOY + FUEL FAILURE + URANIUM + URANIUM OXIDE + ZIRCONIUM

7-03229 OVERHOLSER LG
REACTOR CHEMISTRY DIVISION ANNUAL PROGRESS REPORT FOR PERIOD ENDING JANUARY 31, 1964- REACTIVITY OF GRAPHITE AND OF FUELED GRAPHITE SPHERES WITH OXIDIZING GASES
OAK RIDGE NATIONAL LABORATORY
4 PAGES- MAY 1964, ORNL-3591, PP. 124-127
A 1-IN.-DIAM SPHERE OF SPEER MOD-2 GRAPHITE WAS REACTED WITH HE-CO2 AND HE-H2O MIXTURES. THE APPARENT ORDER OF THE REACTION AT 975 DEGREE C WAS FOUND TO BE APPROXIMATELY 0.7 FOR BOTH CO2 AT 300 TO 1650 VPM (PARTS PER MILLION BY VOLUME) AND H2O FROM 100 TO 760 VPM. THE DATA SUGGEST THAT THE APPARENT ORDER OF BOTH REACTIONS INCREASES AT LOWER CONCENTRATIONS. ACTIVATION ENERGIES MEASURED AT 110 AND 460 VPM OF H2O WERE FOUND TO DECREASE FROM APPROXIMATELY 58 TO APPROXIMATELY 40 KCAL/MOLE AS THE TEMPERATURE WAS INCREASED FROM 825 TO 1025 DEGREE C. HYDROGEN ADDITIONS RETARDED THE H2O-GRAPHITE REACTION.
*ACTIVATION + *GRAPHITE + CARBON + OXIDATION

7-03232 STEINBERG M + FARBER G
CHEMONUCLEAR FISSION FRAGMENT SOURCE AND FUEL ELEMENT DEVELOPMENT PROGRESS REPORT
BROOKHAVEN NATIONAL LABORATORY
17 PAGES, 6 FIGURES, 2 TABLES- OCTOBER 1963, BNL 827 (T-322)
A U-PD ALLOY CONTAINING UP TO 20 W/O U 235 WAS ROLLED INTO 0.1 MIL-THICK FOIL WHICH CAN BE ETCHED TO ABOUT 0.05 MIL. THE ALLOY IS CORROSION RESISTANT IN AIR STEAMS UP TO 1000 DEGREE F. A 4 IN. SPAN WAS AERODYNAMICALLY STABLE UP TO A GAS VELOCITY OF 120 FT/SEC. FISSION FRAGMENT ENERGY DEPOSITION EFFICIENCY OF 63% WAS OBTAINED WITH A 0.05-MIL-THICK FOIL.

ACCESSION NUMBER 7-02773 TO 7-03232

APPENDIX J

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338. J. A. Lieberman, AEC-DRD
339. G. S. Simpson, Jr., BMI

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