This document consists of 1784 pages
No. 5 of 7 copies, Series "

[redacted]

Unique Document # SAB200068440000

727215

MONTHLY STATUS AND PROGRESS REPORT

FOR MARCH 1948

* 19940002378 *

[redacted]

BEST COPY AVAILABLE

A Report Submitted

by the

Office of New York Directed Operations

REPOSITORY Oak Ridge Opr. Records Holding area
COLLECTION Doc. 1944-94
BOX No. Folder #1 Bldg. 2714-H
FOLDER 4NN-326-87-8 8 of 45

April 6, 1948

W. E. Kelley, Manager

atch 1

[redacted]

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW-DATE: 11/23/94	DETERMINATION [CIRCLE NUMBER(S)]
AUTHORITY: ☐ADC ☐ADC ☒ADD	1. CLASSIFICATION RETAINED
NAME: J. D. Wyon	2. CLASSIFICATION CHANGED TO:
2ND REVIEW-DATE: 2-2-95	3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: ADD	4. COORDINATE WITH:
NAME: LH Smiley	5. CLASSIFICATION CANCELLED
	6. CLASSIFIED INFO BRACKETED
	7. OTHER (SPECIFY): 20 PAGES

1188963

[redacted]

MONTHLY STATUS AND PROGRESS REPORT

FOR MARCH 1948

TABLE OF CONTENTS

		Page
I.	ADMINISTRATION - - - - - - - - - - - - - - - -	1
II.	PRODUCTION - - - - - - - - - - - - - - - - - -	4
III.	RESEARCH AND DEVELOPMENT - - - - - - - - - -	11
IV.	BROOKHAVEN NATIONAL LABORATORY - - - - - - -	13
V.	MEDICAL - - - - - - - - - - - - - - - - - - -	15
VI.	LICENSING - - - - - - - - - - - - - - - - - -	17

[redacted]

1188964

I. ADMINISTRATION

Relocation of the Office of New York Directed Operations from the Empire State Building to a Government leased building at 70 Columbus Avenue was accomplished during the last week end of the month, and the office began operation at its new address on March 29. The problem of disposing of contaminated scrap material from a completed du Pont contract, which had been under consideration for several months, was resolved during the month by arrangements to dump the scrap into the Atlantic Ocean. Plans were completed during the month to acquire 650 acres of land at the Lake Ontario Ordnance Works in New York State for storage of contaminated equipment and material. Recruitment of a few outstanding graduates from June graduating classes was decided upon as an initial step in building a reserve of technical manpower for replacement of key personnel. Discussions and studies were carried out during the month on the subjects of security review procedure, procurement difficulties under the advertising law, and improvement of contractual methods.

New Office Location

Office furniture and equipment were moved from the Empire State Building to 70 Columbus Avenue after business hours Friday, March 26. The space at 70 Columbus Avenue is approximately equivalent to that formerly occupied in the Empire State Building, and consists of the entire 5th and 6th floors and a part of the 4th floor. This space is occupied under a rental arrangement with the Public Buildings Administration. The major portion of the space on the 4th floor had been occupied for some months previously by the Radiological Laboratory of the Office of New York Directed Operations.

While it is not so advantageously located as the former office in the Empire State Building, the new office has outstanding advantages of economy and efficiency. It has permitted consolidation of office and laboratory, and further consolidation of warehouse and garage facilities is in prospect. The arrangement of the new office space is designed to provide smoothness of operation. The new space is adequately lighted and ventilated, and the initial reaction of employees appears to be favorable. Rental cost is approximately 1/3 that of the Empire State Building.

Disposal of Contaminated Material

The problem of disposing of contaminated scrap material resulting from completion of du Pont contract W-7412-Eng-22 was discussed in the progress report for February. During the month, approval was given by the Medical Divisions of the New York and Washington offices to a proposed plan for disposal by sea immersion. Final arrangements have been

1188965

made through the Philadelphia Engineer District of the Corps of Engineers to tow the scrap to a point in the Atlantic Ocean 22 miles beyond the mouth of the Delaware Bay, and to dump the scrap at that point in water 95 feet deep. Approximately 100 tons of contaminated scrap material are involved.

Conclusion of this operating problem provides valuable experience to guide the formulation of a Commission policy governing future disposals of contaminated materials. The formulation of such a policy is currently being undertaken in the Washington office.

Acquisition of Land

Arrangements are being worked out with the Corps of Engineers to acquire some 650 acres of land, including existing buildings and other improvements, at the Lake Ontario Ordnance Works. Space and facilities have been previously utilized at this location for interim disposal of residue material of contract operations at Tonawanda, New York. Permanent title to land and facilities at this location will provide a place for storage of excess contaminated equipment and also a "bone yard" for contaminated material which can not be satisfactorily disposed of otherwise.

Recruitment

Recruitment is underway to obtain approximately five outstanding graduates from June graduating classes. It is planned to recruit two Chemical Engineers, one Electrical Engineer, one Physicist, and one Chemist, and to put these graduates through an on-the-job training program lasting several months. They will then be utilized to fill existing job vacancies. This is the initial step in a plan to build up, during the next few years, a reserve of trained, competent personnel to serve as replacements for key positions.

Development of Policies and Procedures

Much work was done during the month, in collaboration with members of the Washington staff, on the development of sound policies and procedures for the review of security cases involving individuals presently employed by the Commission or its contractors. These cases arise from reports, furnished by the Federal Bureau of Investigation and other agencies, which cast doubt on the character, loyalty, or associations of individuals now engaged in the Commission's work. There are many important factors which must be considered in developing sound policies on this subject. In addition to the basic problem of security risk, which must be evaluated by the Commission, consideration must be given to the importance of a particular individual to the project, the availability of replacements, public attitude, relations with

1188966

[redacted]

scientists and other groups, and the nature of the job. The fundamental purpose of the discussion has been to develop policies and procedures which will accomplish the paramount objective of assuring the common defense and security and, to the extent consistent with that objective, which will protect the individual from unfounded stigma on his career and reputation.

In many instances, procurement difficulties have been encountered in an endeavor to comply with Section 3709, Revised Statutes. At the request of Mr. Butterfield of the Field Operations Branch, Washington, D. C., the problem was presented with the suggestion that the $100 limitation in regard to advertising be increased to at least $1,000.

Specific study assignments have been given to key members of the NYDO staff to develop new contractual methods. Objectives include: improvement of present contractual arrangements for major continuing contracts; improvement of the record of negotiations to serve both as a guide to negotiations and as a support to contract action; and development, in collaboration with other AEC staffs, of basic policies regarding letter contracts, use of fixed price and price adjustment types of contract, criteria for fee determination, criteria for overhead compensation, and criteria for advanced payments. Much thought and discussion has been given by all of the Commission's offices to contractual policy. Our purpose is to develop operating policies and procedures consistent with general Commission policy, and to speed formulation of definite Commission policy on the major aspects of contractual relationships.

[redacted]

1188967

II. PRODUCTION

A new process for the recovery of uranium from waste cakes has been put into operation at the Mallinckrodt Chemical Works; improvements are also being planned in health-physics conditions at that installation. Considerable progress has been made in developing sources of alpha-rolled uranium. The production of UF_6 is being increased, and the recovery of scrap uranium is being speeded up.

The program for producing finned beryllium tubing has been considerably advanced. The casting plant of the Beryllium Corporation in Reading, Pennsylvania, and the pilot plant of the Brush Beryllium Company for the production of beryllium metal will commence full-scale operation early in April. The design and construction of a pilot plant for the production of beryllium metal flake at the Clifton Products Co. has been authorized. A proposal for a zirconium metal production program was submitted to the Washington Office by NYDO. A decision was reached to continue production operations at the Lorain plant of the Brush Beryllium Company. Consideration has been given to the formulation of a beryllium export licensing policy. Production of beryllium oxide bricks for the Daniels pile was continued.

Production of Uranium Dioxide

Until the latter part of March, two important by-products of the ore refinery at the Mallinckrodt Chemical Works --the gangue lead cake and the barium cake -- contained more than 2% of the total uranium put through the refinery. On March 22, a new installation called the C-3 process, was put into operation to recover more than 95% of the uranium remaining in the gangue lead cake. The process is operating successfully except for the minor difficulties commonly associated with a new operation. The gangue lead cake contains considerable radium and is being returned, according to contract, to its owners. Formerly, the gangue lead cake, containing unrecovered uranium, was packed in steel drums and stored. Now, provisions are being made to recover the uranium from this material by introducing it into the new C-3 process.

Through the installation of additional tanks and centrifugal filters, the barium cake is being recycled, and the remaining uranium is washed free.

Health Physics Alterations in Uranium Plants

In an effort to bring the plants in the St. Louis area to a safe operating condition from the health physics standpoint, approval has been given to hire an architect-engineer to complete detailed

1188968

designs for a health physics building. This centralized structure will not only house the health physics department but will also serve as an improved workers' change-house. As soon as a detailed design is approved, construction will begin. In addition, consideration is being given to obtain an architect-engineer to design a new metal plant.

Alpha Rolling of Hanford Feed Material

The Joslyn Manufacturing and Supply Company continues to be the supplier of metal rolled in the alpha phase. During the past month, an experimental rolling program was conducted at the Simonds Saw and Steel Company of Lockport, New York. Studies made at MIT showed that the rolled material was satisfactory; consequently, arrangements were made with the Simonds Saw and Steel Company to roll, in the alpha phase, a carload of uranium metal, beginning March 29, 1948.

In order to increase further the source of supply for rolled metal, an experimental rolling was performed on April 2, 1948, at the Rustless Division of Armco in Baltimore, Md. On the basis of visual inspection, the rolled material appeared to be the best prepared to date.

It is now planned to rate the producers of rolled metal as to costs, production capacity, and quality of product, and thereby to arrive at the best source of supply.

Recovery of Uranium from Scrap Residues

Operations previously carried out by the duPont Company for the recovery of uranium from scrap residues are now being performed by the Vitro Manufacturing Company in their Canonsburg, Pa., plant. Approximately 30,000 pounds of U_3O_8 have been produced in the form of black oxide. It is expected that the rate of operation will be increased from 10,000 to 20,000 pounds of U_3O_8 per month for the March-through-June period.

Facilities for UF_6 Production

Steps have been taken to increase Harshaw's production capacity for the manufacture of UF_6. The additional facilities are expected to be in operation by the middle of April, 1948.

Production of Finned Beryllium Tubes

In the January report, mention was made of a program to develop fabrication techniques for beryllium metal finned tubes suitable for use in canning uranium slugs for the Brookhaven pile.

1188969

This program was being carried out jointly by Massachusetts Institute of Technology, employing extrusion techniques, and the Brush Beryllium Company, employing powder metallurgy. It was stated that MIT had been successful in extruding short lengths of finned beryllium tubing and that the Brush Beryllium Company had likewise been successful in the fabrication of short lengths of finned tubing by powder metallurgy techniques.

During March, MIT succeeded in extruding tubes without the use of iron jacketing, by means of a tungsten-chromium-cobalt alloy die. The use of such an alloy die permits extrusion with high precision; it also lowers the cost, since the cost of canning beryllium billets and then removing the iron coating from the finished product can be eliminated. Inasmuch as the use of this die necessitates slightly different extrusion techniques, work was performed in adjusting extrusion methods to the new die to make possible the production of longer finned tubes.

During March, in addition to the progress made at MIT, a large-scale pilot plant type sintering furnace was constructed at the Brush Beryllium Company for the purpose of fabricating developmental lengths (3 to 6 feet) of finned beryllium tubing by the powder metallurgy technique. This furnace is designed to permit the production of test pieces of finned beryllium tubing up to a maximum of 7 feet in length. Preliminary "dry runs" were started with this furnace at the end of March, to test strength characteristics and electrical circuits, and it is expected that actual runs will be started early in April.

Beryllium Metal Casting Plant

In the January report, it was stated that a beryllium metal casting plant was being constructed at The Beryllium Corporation in Reading, Pennsylvania, to enable production casting of billets for the extrusion of beryllium shapes required at Oak Ridge National Laboratory and other AEC installations. It was implied that construction of the plant would be completed in March, 1948.

Construction was completed during March, as anticipated, and initial dry runs were made under the guidance of members of the staff of the Massachusetts Institute of Technology Metallurgical Laboratory. In addition, negotiations relative to the operation contract for this pilot plant were virtually completed. The prospective contract will provide for initial operations for a period of four months on a cost-plus-fixed-fee basis, in order that The Beryllium Corporation may gather sufficient data to enable a unit price contract to be negotiated after the four months' period has elapsed. During the initial four months' period, direct assistance will be given to The Beryllium Corp.

1188970

staff by the staff of the MIT Metallurgical Laboratory, who are experienced in the casting operation, in order that the production casting operations may be carried out in the most efficient manner and at the lowest possible cost to the Commission. It is expected that the operations contract will be executed early in April and that full scale operation of the casting plant will commence immediately thereafter.

Beryllium Metal Pilot Plant

Although the February report indicated that initial operation of the entire beryllium metal plant at the Brush Beryllium Company in Cleveland, Ohio, would commence during the month of March, initial operation of the plant was postponed because of a delay in the installation of special health and safety equipment. As a result of a survey by the Medical Division of NYDO, complete health and safety equipment was added by the end of March. Thus, except for a few minor pieces of equipment, the entire pilot plant is ready for operation; it is expected that full scale operation will be achieved not later than April 15.

Beryllium Flake Metal Pilot Plant

During the past fifteen months, Clifton Products, Inc. of Painesville, Ohio, has been carrying out a research and development program under contract to the Atomic Energy Commission, for the development of a process for the production of pure beryllium flake metal at low cost. The basis for this program was the development of a process involving the conversion of beryllium oxide to beryllium chloride, and the subsequent electrolysis of this beryllium chloride to beryllium flake metal. Within the past several months, work has progressed to such an extent that it was deemed advisable by NYDO to construct a pilot plant for the production of beryllium flake metal. Accordingly, Clifton Products was authorized to design and construct a pilot production plant. In this project assistance will be rendered by engineers of NYDO. It is expected that data will be obtained which will enable the construction of a full scale production plant of sufficient capacity to supply the beryllium flake metal requirements of the AEC.

During March, construction of the pilot plant chlorinator was completed, and initial operation was begun, the concurrence of the NYDO Medical Division having been obtained. The electrolysis portion of the pilot plant was also nearly completed. It is expected that, upon complete installation of the electrolysis equipment early in April, operation of the electrolytic portion of the process, in conjunction with the chlorination operation, will be possible.

It is expected that operation of the pilot plant under the development contract will be carried out for a period of two to three months, during which the most efficient means of operation will be

1188971

determined. At the end of the pilot plant period, negotiations will be carried out with Clifton Products for the procurement of beryllium flake metal on a regular production basis.

Zirconium Production

A widespread and increasing interest in zirconium metal has been manifested throughout the Atomic Energy Commission. Because of the difficulties inherent to the production of large quantities of this metal in the purity required to meet AEC requirements, it was apparent to this office that some type of coordinated production and development program was necessary to assure an adequate supply of zirconium metal for AEC installations.

In a memorandum from Mr. W. E. Kelley, Manager, ONYDO, to Mr. C. L. Wilson, dated March 9, 1948, it was proposed that a coordinated, centralized program for the production of zirconium metal be established within the Production Division of NYDO, to be administered similarly to the uranium, thorium, and beryllium programs. It was pointed out that, although zirconium requirements are now small, such a program would enable the Production Division of the New York Office to become sufficiently acquainted with production methods and production problems to be prepared for the inauguration of large scale zirconium production, when required. Further action by NYDO on zirconium production awaits Washington approval.

Operation of Beryllium Metal Production Plant

It was pointed out in the February report that the desirability of continuing operations at the Brush Beryllium Company's Lorain plant was being seriously questioned because of the health and safety problems inherent therein. It was stated that, after considerable deliberation, it had been decided to continue the production of beryllium metal at this plant. Accordingly, during March, negotiations were completed for a new three months' production contract. The Record of Negotiations has been completed, and it is expected that the contract supplement will be executed early in April.

Export Licenses for Beryllium Metal

Beryllium metal has been subject, for some time, to export license by the Department of Commerce. Such licenses have been granted by the Department of Commerce only after prior recommendation from the AEC. The advisability of granting each license was considered separately, contact being made between the Department of Commerce and the AEC through the Washington offices of each agency. This procedure resulted in considerable time delay, which, in some cases, imposed hardships on

1188972

Beryllium Production Schedule

In order that the AEC beryllium program might be carried out effectively, it has been necessary to develop a requirement and production schedule for the beryllium requirements of all AEC installations. It has been the practice to submit the complete AEC beryllium requirement and production schedule to the Washington Office for approval by the Research Division and to the NYDO Production Division for implementation. During March, the beryllium requirements of the various AEC installations for the next six to nine months were collected by NYDO and were compiled into a proposed requirement and production schedule for beryllium metal. Upon receipt of final information from one or two additional AEC installations, the completed schedules will be submitted to the Washington Office for concurrence and approval, after which arrangements will be made for the production of the required beryllium metal and beryllium products.

1188973

the organizations exporting beryllium or beryllium compounds. An attempt was therefore made by the Production Facilities Control Branch of the Atomic Energy Commission's Washington Office, in cooperation with NYDO and other AEC installations, to define an AEC policy on the export of beryllium products and thus expedite the handling of export licenses.

On March 16, 1948, a meeting was held at the Washington Office of the AEC. It was attended by representatives of three beryllium producers, the Washington AEC Office, NYDO, the Department of Commerce, and the Department of State. At this meeting, an attempt was made to draw up a beryllium export license policy satisfactory to all concerned. It was agreed that beryllium metal exports of less than five pounds, exports of beryllium compounds, including ores, containing less than ten pounds of beryllium metal, and exports of beryllium alloys containing less than 25 pounds of beryllium metal could all be made without license. In the case of alloys, consideration is still being given to raising the limit on beryllium content to 50 pounds in the case of beryllium-copper tools, since the beryllium content of the majority of these orders falls between 25 and 50 pounds and since beryllium shipped in this form will not be objectionable to the AEC. It was agreed that the License Division of NYDO would eventually take over the licensing function for beryllium metal and would work directly with the Department of Commerce on this problem.

Production of Beryllium Oxide for Daniels Pile Development Work

Although the actual construction of the Daniels Power Pile has been postponed indefinitely, development work has been continuing at the Oak Ridge National Laboratory. To supply the requirements of this development program, it has been necessary to produce two 5,000-pound batches of low boron beryllium oxide, one to be fabricated at the AC Spark Plug Division of General Motors and the other at the Norton Company. The first 5,000 pounds of low boron beryllium oxide (Brush SP grade) was completed in 1947 and was shipped to the AC Spark Plug Company for fabrication into pressed and sintered beryllium oxide bricks in accordance with the specifications of the Oak Ridge National Laboratory.

During March, 1948, production of the second 5,000 pounds of low boron beryllium oxide (Brush GC grade) was completed at the Brush Beryllium Company, where it is currently being held. Upon receipt of instructions from the Oak Ridge National Laboratory, this material will be thoroughly blended and shipped to the Norton Company, Chippewa plant, where it will be fabricated into beryllium oxide hot pressed bricks, in accordance with specifications submitted by the Oak Ridge National Laboratory.

1188974

III. RESEARCH AND DEVELOPMENT

During March, work on the design of a uranium recovery process was continued, and production of high purity graphite reached full scale. Progress was made in fundamental research on nuclear physics at Columbia University, and work was resumed on 2% molybdenum-uranium alloys.

Metal Recovery Process

Negotiations on a definitive contract with The Kellex Corporation for the development of a metal recovery process are in the final stages, and it is anticipated that the contract will be signed during April. Under letter contract, Kellex is proceeding with the alteration and construction of a tracer level laboratory in Jersey City. "Cold" studies are being conducted in available facilities until the laboratory is ready for partial occupancy in July. Work outlined in the monthly report for February is continuing as scheduled.

A detailed research program, submitted by Kellex, is under review by NYDO and will be forwarded to Washington within the week. On March 25, representatives of all interested installations met in Oak Ridge for a discussion on sampling of the Hanford tanks. A minimum sampling program was agreed upon, and a tentative schedule was adopted. Analysis of samples will depend upon completion of Kellex and Carbide laboratory facilities. The need for adequate facilities for this process development work, principally laboratory facilities for high level ("hot") work, is becoming increasingly apparent.

Production of High Purity Graphite

The United Carbon Products plant has reached full production, one complete run (approximately 800 lbs.) being processed each day. The purity of product, as determined by chemical tests, has shown considerable improvement. It is estimated that 50,000 lbs. of graphite will be processed by May 1, 1948.

Fundamental Research

The regular program of research in nuclear physics under the direction of Dr. John R. Dunning at Columbia University can now proceed at its normal pace, the cyclotron being back in operation. No measurements on the fissionable materials were made since the demands for cyclotron time by other departments at Columbia University had to be considered.

[redacted]

In conjunction with Dr. Rabi, Drs. Havens and Rainwater are conducting neutron-electron interaction measurements with lead and bismuth. Ten to fifteen pounds of bismuth having a purity superior to that available at Columbia is being borrowed from the Argonne National Laboratories. The energies of the beta rays from several radioactive isotopes have been measured with the beta ray spectrometer by Dr. Wu.

Three papers reporting the neutron cross sections of several gases and solids have been presented for declassification preliminary to presentation at a meeting of the American Physical Society in Washington. The materials investigated include aluminum, zinc, chromium, sodium bromide, oxygen, nitrogen, and argon. Dr. Rabi's measurements of the magnetic moments of tritium are being delayed pending clearance of one of his research scientists.

Experimentation on the detection of beryllium by the gamma-neutron reaction is proceeding satisfactorily; the new boron trifluoride neutron counter tubes procurred from Oak Ridge are being employed. A one-millicurie radium-beryllium neutron source is being calibrated at Columbia, and will be transferred to MIT for use as a standard in the neutron counting procedures used in conjunction with the beryllium analyzer.

H. M. Goldberg and I. Goldberg have presented a technical and budgetary proposal for the development of the step motor register which they invented, to be used in counting procedures.

Dr. Kehl's work on 2% molybdenum-uranium alloys, temporarily interrupted because of the health physics conditions in his laboratory, has been resumed. Arrangements have been made for machining the samples of alloys at MIT, where adequate health and safety facilities are in evidence. Unused, contaminated utensils previously used by Dr. Kehl have been removed from his laboratory. Some difficulty is still being experienced in disintegrating alloy samples in the lead heat-treating bath.

[redacted]

1188976

[redacted]

IV. BROOKHAVEN NATIONAL LABORATORY

Library facilities at Brookhaven have been materially expanded. Considerable progress was made during the month on the construction of the nuclear reactor and on the establishment of other laboratory facilities. The Scientific Progress Report for the period of July-December, 1947, the budget for fiscal year 1949, and the Program Report for 1948 have been prepared by Associated Universities, Inc.

Status of Information and Publications Services

The research library is now housed in a masonry structure which provides stack space for 20,000 books, display shelves for current periodicals, a reading room for 50 persons, microfilm facilities, and staff quarters. The book collection has reached 10,000, of which about 3,500 are bound periodicals. Over 500 current periodicals are now being received. A continual effort is being made to obtain those books and bound periodical sets which will be of the greatest value to the staff and visiting scientists.

The classified document section is housed in one wing of the restricted Pile Engineering Laboratory Building, where a large masonry storage vault has been constructed. The collection now numbers 15,000 documents, comprising 5,500 separate titles. An editorial and publication group publishes the Brookhaven Weekly Bulletin of Activities and prepares the final copy for all scientific reports. To date, approximately 15 comprehensive reports and 15 individual scientific papers have been published.

Nuclear Reactor Project

During the month, construction of temporary site facilities approached completion. Pile building foundation construction was completed, and the pile area was back-filled. Erection of pile building structural steel was started on March 17, and approximately 20% of the steel is now in place. On March 4, foundation excavations were begun for both the pile stack and the water cooling tower. Foundation forms for construction of the cooling tower basin are being erected. Concrete footings have been poured for the fan house, and reinforcing steel and forms for walls and piers are being placed. Excavation for the foundation of the boiler house was begun on March 19, and footings and walls below grade have been completed. Work on manholes for the electrical distribution system is 50% completed, and trenches for connecting ducts are being excavated. Erection of the temporary 69 KV substation has been completed, the station being energized on March 26. At a conference held at Brookhaven on March 26, the basic layout of the Hot Laboratory was determined; design work will start April 1, 1948.

1188977

The H. K. Ferguson Company's report of April 1, 1943, presents the following completion figures: engineering, 58%; construction, 20%.

Miscellaneous Construction

Contractors were given Notices to Proceed, on March 3, for the installation of a dust collecting system in the carpenter shop and, on March 10, for conversion of two buildings into safety and health physics facilities. On March 23, a contract was approved and construction was begun for conversion of Building T-471 into a radio-chemistry laboratory. Following the approval of the medical program, a contract was issued on March 30 for conversion of three infirmary buildings into hospital wards. Installation of humidity control equipment in the electronics laboratory and remodeling of two buildings for storage of radio-active materials have been accomplished. Building alterations for a nuclear moments laboratory are nearing completion, and the building is now occupied by the scientific staff. Fifteen monitoring stations have been constructed; these have been placed at their sites and, upon completion of necessary wiring installations, will be ready for operation in detecting radio-activity.

1188978

V. MEDICAL

During the month of March, the Medical Division issued its first progress report on the beryllium problem and began an intensive survey and corrective program for the uranium problem.

Beryllium

A progress report entitled "Environmental Studies in Plants and Laboratories Using Beryllium" was issued on March 25. It describes the status of the beryllium problem at the start of the investigation and gives findings on the acute and chronic diseases, naming compounds found to be hazardous. Future investigations are also discussed, and specific recommendations are made for two of the procedures.

Several hundred air samples were collected on filter paper and analyzed spectrographically. Compounds studied were beryllium sulfate, oxide, fluoride, hydroxide, metallic dust, and beryl. Those definitely shown to cause acute pneumonitis include the sulfate, fluoride, oxide, and metallic dust. (The hydroxide is thought to be capable of producing the acute disease due to its similarity to the oxide; this was not demonstrated conclusively because no workers were found who had been exposed exclusively to the hydroxide). Acute toxicity was not found to be associated with beryl. Toxicity of the oxide appears to be extremely variable, depending on a number of factors such as particle size, surface area, and temperature of processing.

Many acute cases have resulted from a single excessive exposure. In the case of the fluoride, a 25-minute exposure is known to have produced three cases of acute pneumonitis. The acute cases appear to be associated with levels in excess of 0.1 milligram per cubic meter of air. A level of 0.025 milligram of beryllium per cubic meter of air is suggested as a guide for control of the acute cases. Samples collected in the neighborhood of the Brush Beryllium Company, where four chronic cases have occurred among women who never worked in the plant, show the average atmospheric concentration to be well under .001 milligram per cubic meter.

In addition, the Washington Office was furnished with a complete report of experimental work on the beryllium problem to date, together with recommendations for future conduct of this program. Possibilities for beryllium research were outlined and evaluated at the University of Rochester, the Kettering Research Laboratory, and the Trudeau Foundation.

Uranium

A complete report on the hazards at Middlesex has been prepared. The report is now being discussed by the Production and Medical Divisions; recommendations included will be implemented insofar as practicable.

1188979

A survey team made up of members of the Industrial Hygiene, Safety, and Radiation Survey Sections spent a week at the Mallinckrodt Chemical Works for the purpose of investigating thoroughly all health and safety problems, including fire hazards. Attention was given to operating, storage, and transportation conditions, to ventilation and shielding problems, and to the new health building. The findings are being discussed with the Production Division. Further studies and investigations will be undertaken whenever required in order to evaluate all problems.

1188980

VI. LICENSING

Since March, 1947, 1,132 licenses have been issued by the Licensing Division in the following categories:

Producers	142
Processors	34
Distributors	222
Consumers	734

Nearly all of these licenses are for one year's duration. 230 have been renewed for an additional one year period. Others will be renewed from time to time as their expiration dates are reached and applications are made for renewal.

During March, inspection of inventories and sales records of major distributors was continued.

Exports of thorium nitrate for use abroad in the manufacture of incandescent mantles have not reached the level anticipated. This is due to the great difficulty experienced by manufacturers abroad in obtaining dollar credits. Thorium nitrate continues to be authorized for export subject to prior investigation of the plant and facilities to which it is destined. This investigation is carried out by the United States Foreign Service, acting for the Atomic Energy Commission.

The Licensing Division maintains close contact with the Customs Bureau in the port of New York, reviewing nearly all of the export declarations covering shipments to the U.S.S.R. and obtaining photostatic copies of invoices identifying the shipments. Sets of these photostats are supplied to the Office of Intelligence and Security, Washington, D. C. In addition, the Licensing Division has been assisting Customs in the examination of the contents of cases consigned to the U.S.S.R. by helping to identify technical and process equipment not readily recognized by their non-technical personnel. Among the items we have assisted Customs in identifying was equipment specifically designed for tracking rockets and guided missiles.

The following exports were authorized during March:

Incandescent Mantles	2,389,829*
Uranium Acetate	28.37 lbs.
Thorium Nitrate	10,864.06 lbs.
Thoriated Tungsten Wire	4.50 lbs.
Thorium Oxide	100.00 lbs.
Thorium Dioxide	12.75 lbs.

- -

* The thorium content of these mantles is estimated at 1,792 lbs. of ThO_2

1188981

Shipments of incandescent mantles were sent to 46 countries. Nearly all of the thorium nitrate exported was also destined for the manufacture of mantles; Canada and Egypt were the recipients. Thorium oxide was sent to Canada for the manufacture of refractories. Thoriated tungsten wire was sent to England and Brazil for the manufacture of vacuum tubes. All other exports were for medicinal, analytical, or educational purposes.

1188982