ISOTOPES 3 DISTRIBUTION & TRANSFER Vol. 1

Vol. 2 Correspondence beginning with 11-21-62 to 1-31-64
Vol. 3 Correspondence beginning with 2-1-64 to

Isotopes 3 Vol. 2

	Date	To	From	Class	Enc. No.	To	From	Class
1	2-15-64	AEC 994/16 Nuclear Science & Eng. Corp. Prod. & Dist. of Isotopes	vee					
2	3-6-64	Gamma Industries, Inc.	skr					
3	4-15-64	AEC 994/17 Nuclear Science & Eng	vee					
4	4-27-64	AEC 994/18 Process Radiation Electron Accelerators Isotope Process Radiation	vee					
5	5-11-64	Bell Laboratories Whitman College	skr					
6	6-23-64	AEC 994/19	et					

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

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Res. & Status Br. - GTH

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: June 30, 1964

FROM : W. B. McCool, Secretary

Original signed W. B. McCool

SUBJECT: W. F. LIBBY'S JUNE 22 LETTER RE ISOTOPE SEPARATION

SECY:JCH

At Information Meeting 393 on June 26, 1964, the Commissioners briefly discussed Dr. Libby's June 22 letter to the Chairman regarding isotope separation. The General Manager said he would refer the letter to Oak Ridge for review.

cc:
Chairman
General Manager
Deputy General Manager
Acting Asst. General Manager
Asst. Gen. Mgr. for P&P
Director, Production

Copy filed RD-12

6-30-64

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Isotope-3

4

c/I
DR 39.5

JUN 20 1964

Dear Mr. Buntaine:

I have received your letter of June 15, 1964 in which you express concern regarding the Commission's policy and procedures for withdrawing from the production and distribution of radioisotopes as they become available from commercial sources.

As you may know, the Commission has had under active study the whole question of AEC-industry participation in radioisotope production and distribution. This involves policies and practices for effecting increased private production, while, at the same time, insuring the supply of these materials to serve the needs of science and technology in the United States. In our deliberations to date we have received valuable guidance from industry, particularly from the Atomic Industrial Forum's ad hoc Committee on Isotope Production and Distribution.

So that we may have the full benefit of your thinking on the problems raised in your letter, I have asked Dr. S. G. English, Assistant General Manager for Research and Development, to meet with you and other interested officers of the Nuclear Consultants Corporation. If you agree that such a meeting will be of value, please get in touch with Dr. English to arrange a convenient meeting time.

Sincerely yours,

(Signed) Glenn T. Seaborg

Chairman.

Mr. R. R. Buntaine
Marketing Manager
Nuclear Consultants Corporation
9842 Manchester Road
St. Louis, Missouri 63119

bcc: Chairman (2)
General Manager (1)
AGMRD (1)
E. Tremmel (1)
Retyped in office of AGMRD: EDeRenzis:hk

DID:D Acting DIP AGMRD AGM DGM GM

EEFowler:bb

19-64-9

Isotopes 3

A. R. Luedecke, General Manager June 26, 1964

W. B. McCool, Secretary Signed W. B. McCool

AEC 994/19 - NUCLEAR SCIENCE AND ENGINEERING CORPORATION RADIOISOTOPE PRODUCTION REQUESTS

1. Chairman Seaborg and Commissioners Tape and Ramey have no problem with AEC withdrawal from Strontium-85 production and distribution as recommended in AEC 994/19. However, they feel the suggested course of action with respect to research and development is not sufficiently developed to permit adequate consideration in the light of the NSEC comments. Accordingly, it was requested that the recommendations be resubmitted as an action paper for Commission consideration.

2. It is our understanding the Division of Isotopes Development is currently in the final stages of drafting an action paper (previously requested by the Commission) on the over-all AEC policy on AEC-industry participation in radioisotope production and distribution activities and that this paper could be extended to be fully responsive to the above request.

cc:
Commissioners
Deputy General Manager
Actg. Asst. Gen. Mgr.
Asst. Gen. Mgr., R&D
Actg. Dir., Isotopes Development

64 S 05

OFFICE ▶	SECY					
SURNAME ▶	PTHobbs:mcq					
DATE ▶	6/26/64					

Form AEC-318 (Rev. 9-53) U. S. GOVERNMENT PRINTING OFFICE 16—62761-3

Date June 23, 1964

MEMORANDUM

TO : W. B. McCool, Secretary

FROM : James T. Ramey, Commissioner

Will be issued as Staff Paper

SUBJECT: AEC 994/19 - NUCLEAR SCIENCE AND ENGINEERING CORPORATION RADIOISOTOPE PRODUCTION REQUESTS

No comment _____

My comment (s) is (are): _____

Date June 23, 1964

MEMORANDUM

TO : W. B. McCool, Secretary

FROM : James T. Ramey, Commissioner

SUBJECT: AEC 994/19 - NUCLEAR SCIENCE AND ENGINEERING CORPORATION RADIOISOTOPE PRODUCTION REQUESTS

No comment _____

My comment (s) is (are): _____

Date June 23, 1964

MEMORANDUM

TO : W. B. McCool, Secretary

FROM : Gerald F. Tape, Commissioner

SUBJECT: AEC 994/19 - NUCLEAR SCIENCE AND ENGINEERING CORPORATION RADIOISOTOPE PRODUCTION REQUESTS

No comment _____

My comment (s) is (are):

Dr Tape understands the Chairman is advised to request an action (white) paper on this subject.

WB
6.26

Date June 23, 1964

MEMORANDUM

TO : W. B. McCool, Secretary

FROM : Mary I. Bunting, Commissioner

SUBJECT: AEC 994/19 - NUCLEAR SCIENCE AND ENGINEERING CORPORATION RADIOISOTOPE PRODUCTION REQUESTS

No comment ✓ 6/23

My comment (s) is (are): _____

Courtesy - 3

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GSA GEN. REG. NO. 27

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Res. & Status Br. - GTN

UNITED STATES GOVERNMENT

Memorandum

TO : Robert J. Hart, Acting Director
Division of Contracts

DATE: June 24, 1964

FROM : W. B. McCool, Secretary — Original signed W. B. McCool

SUBJECT: AEC 1143/11 - FISSION PRODUCTS PLANT - HANFORD and
AEC 1143/12 - APPENDIX "A" TO AEC 1143/11

SECY:ICB

1. As you will recall, during discussion of AEC 1143/11 and AEC 1143/12 at Meeting 2022 on June 22, 1964, the Commission requested several revisions in the proposed formal invitation.

2. Specifically, it was requested a somewhat more flexible approach be taken on the question of whether the FPCE plant should be designed to operate as a separate plant rather than integrated with the Hanford "B" Plant. It should be made clear both designs would be evaluated.

3. Also, the Commission requested Part IV.7. - Reasonableness of Fission Product Prices be revised to indicate AEC would not object to participation of third parties in the method of consultation for which the final contract would provide.

4. Finally, the Chairman requested use of the phrase "price control" be avoided in the formal invitation.

5. The General Manager has directed you to take the action required by the above requests. Copies of all pertinent correspondence should be provided the Office of the Secretary.

cc:
Chairman
Commissioner Ramey
General Manager
Deputy General Manager
Acting Asst. Gen. Mgr.
Asst. Gen. Mgr. for Operations
Asst. Gen. Mgr. for R&D
Asst. Gen. Mgr. for P&P
Director, Production
Director, Isotopes Development
Director, Reactor Development
Director, Industrial Participation
General Counsel
Controller

6-24-64

Copy files:
Pl. Bk. 2 - Hanford

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UNCLASSIFIED

June 23, 1964

AEC 994/19

COPY NO. 76

ATOMIC ENERGY COMMISSION

NUCLEAR SCIENCE AND ENGINEERING CORPORATION RADIOISOTOPE PRODUCTION REQUESTS

Note by the Secretary

The attached memorandum by the Director of Isotopes Development is circulated for review by the Commission. The General Manager has advised that he intends to approve the recommendation, subject to any comments by the Commission prior to the close of business on June 29, 1964. Comments may be submitted to the Secretary.

AEC 994/19

W. B. McCool

Secretary

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6-23-64

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OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

5010-107

UNITED STATES GOVERNMENT

Memorandum

TO : A. R. Luedecke, General Manager
THRU : S. G. English, Assistant General Manager for Research and Development

DATE: May 28, 1964

FROM : Paul D. Aebersold, Director
Division of Isotopes Development

SUBJECT: NUCLEAR SCIENCE AND ENGINEERING CORPORATION RADIOISOTOPE PRODUCTION REQUESTS

On March 11, 1964, we notified Nuclear Science & Engineering Corporation of actions approved by the Commission in its review of AEC Staff Paper 994/16 "NSEC Request for AEC Withdrawal from Production and Distribution of Seven Radioisotopes" dated February 15, 1964. In response to this notification the Nuclear Science & Engineering Corporation has submitted additional requests which require further action. Copies of the Nuclear Science and Engineering Corporation's letters are attached.

With your approval, we will notify Nuclear Science and Engineering Corporation of the following actions:

1. The Atomic Energy Commission will withdraw from the production and distribution of reactor-made Strontium-85 on the same general basis as outlined in AEC Staff Paper 994/16. We are recommending this action based on the following determinations:

   a. The criterion of reasonable price has been met.

   b. AEC could resume production of Strontium-85, if required, in a timely manner.

   c. Nuclear Science and Engineering Corporation's production of Strontium-85 does not appear to result in a conflict of interest with the AEC or other federal agencies.

   d. The criterion of effective competition is not met since there are no other private producers currently selling this radioisotope in the United States. However, the market for Strontium-85 is small enough presently to be served by a single supplier. Additionally, other private groups, such as the General Electric Company, Abbott Laboratories and Western New York Nuclear Research Center, Inc., have carried out Strontium-85 production experiments and have notified this Division of plans to commercially market the radioisotope.

We are in agreement with the request of Nuclear Science and Engineering Corporation that the Commission cease accepting orders for delivery of Strontium-85 30 days following the Commission's public announcement of withdrawal from its production. Accordingly, the Oak Ridge National Laboratory will be instructed to proceed in this manner.

2. Oak Ridge National Laboratory will be permitted to complete its Manganese-54 research and development effort and a topical report describing Manganese-54 production and process technology will be prepared and publicly distributed within a few months. At that time we will have sufficient information to make a determination as to whether the Commission should produce and market Manganese-54.

3. Oak Ridge National Laboratory has indicated that more Iodine-125 production research and development is necessary in order to reduce costs to a point where significant markets for the radioisotope can develop. ORNL will, therefore, be permitted to continue its Iodine-125 research and development effort. Topical reports describing Iodine-125 production and process technology will be prepared and publicly distributed as sufficient data is developed.

Approved: _____
General Manager

Date: _____

Attachments:
1. NSEC ltr. 3/25/64
2. " " 3/26/64
3. " " 3/26/64
4. " " 3/27/64
5. " " 4/13/64

UNCLASSIFIED

ATTACHMENT I

Nuclear Science & Engineering Corporation

P.O. Box 10901, Pittsburgh 36, Pennsylvania
Area Code 412
Phone: 462-4000 TWX 642-3192

R. A. Brightsen
President

March 25, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I wish to acknowledge your reporting to us, by your letter of March 11, 1964, that the Atomic Energy Commission has deferred action upon NSEC's request for AEC withdrawal from production and distribution of strontium-85.

As indicated by your letter, the basis for this action was twofold:

1. NSEC had not actually produced and distributed the reactor product described in its petition.

2. The price of NSEC's cyclotron product was approximately four times higher than the AEC reactor product.

We are pleased to advise you formally that we have now produced and are commercially distributing reactor-made strontium-85. This material is in all respects identical with the product which was described tentatively in previous correspondence. The price, $50.00 per millicurie, is the same as the Commission's and discounts are offered on the same basis as AEC has done.

Accordingly, we respectfully submit that:

1. NSEC has now "demonstrated private industry capability."

2. NSEC's product is available commercially at a reasonable price.

We have today publicly announced the availability of reactor-produced strontium-85 by means of the attached circular. This has been mailed to in-

formation media and the Oak Ridge isotopes customer list. You will observe that the announcement includes product specifications, prices, and delivery schedule.

On the basis of this action, we trust you will proceed to include in your forthcoming press release a statement of AEC withdrawal from strontium-85 production, effective 90 days from today.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

For

RAB:ljs

Enclosure

UNCLASSIFIED

ATTACHMENT II

Nuclear Science & Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania
Area Code 412
Phone: 462-4000 TWX 662-3192

R. A. Brightsen
President

March 26, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I wish to acknowledge your informing us, by your letter of March 11, 1964, that ORNL is performing developmental work on a reactor irradiation method for producing manganese-54.

For the reasons set forth below, NSEC hereby formally requests that

1. The AEC make a public announcement that manganese-54 is reasonably available from private industry and that AEC will not engage in its production and sale.

2. The Oak Ridge National Laboratory discontinue further developmental work on manganese-54 production.

The basis for our first request is that NSEC is already routinely producing, processing and distributing reactor-produced manganese-54. Our product is carrier-free and has high (> 99%) radiochemical purity characteristics.

Our first batch of reactor-produced manganese-54 was placed in stock in January, 1963. Since then, we have maintained an inventory of the material at all times. We will continue to make production irradiations, as required, to assure prompt delivery from stock.

Ever since our successful development of Mn-54 production technology, we have been advising our customers that our material is reactor-made. Let me say, parenthetically, that we are gratified by the high degree of customer acceptance which we have obtained.

The specifications submitted to you on May 24, 1963 relate to the reactor product. Further details are provided in the attached specification sheet, which

we have today mailed to information media and the Oak Ridge isotopes customer list. You will observe that the announcement includes product specifications, price, and delivery schedule.

For the reasons outlined above, I am sure you will agree that manganese-54 is reasonably available from private sources of supply. For the Commission to enter into competition would clearly be inconsistent with the policies of industrial participation which it has enunciated.

Our second request, dealing with developmental work at ORNL, is also based upon vital policy consideration. NSEC used its own funds in developing a method of reactor-irradiation to produce manganese-54. There is nothing to prevent another private firm from making a comparable investment if it is willing to accept the risk of failure.

We protest, however, when the Commission uses public monies to develop a technology for companies which are not willing to risk their own capital. If NSEC (or any other firm) is to have the incentive to do research and development, it must have confidence that the Commission will not destroy its competitive advantage by publicly supporting production research for companies who are unwilling to take risks.

The policy question is therefore quite easy to formulate: does the Commission desire to stimulate in private industry the capability and incentive to develop isotope production technology? If it does, then competitive developmental efforts by the national laboratories should be terminated.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

Ron

RAB:ljs

Enclosure

UNCLASSIFIED

ATTACHMENT III

Nuclear Science & Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania

Area Code 412

Phone: 682-4000 TWX 842-5168

R. A. Brightsen
President

March 27, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I am pleased to advise you that NSEC is actively engaged in the reactor production of the following radioisotopes: nickel-59, tin-119m, and tellurium-125m. We hereby formally request that

1. The AEC not engage in the production and sale of these isotopes; and

2. The AEC not conduct or support developmental work on the production of these isotopes.

Nickel-59. NSEC initiated research and development efforts on Ni-59 production and processing in September, 1962. After successful completion of these efforts, a batch of Ni-59 was produced and placed in stock in April, 1963. Public announcement of the availability of this isotope was made in the summer of 1963 by NSEC Technical Bulletin No. R3-6, a copy of which is attached. Further production runs will be scheduled, as appropriate, to assure continued delivery from inventory.

Tin-119m. NSEC developed Sn-119m production and processing techniques during 1962. After successful completion of test irradiations, a batch was produced and placed in stock in February, 1963. Public announcement of the availability of this radioisotope was made shortly thereafter by distribution of NSEC Technical Bulletin No. R3-3, a copy of which is attached. An inventory well in excess of demand has been maintained continuously since the initial availability of Sn-119m.

Tellurium-125m. The development of production and processing methods for Te-125m were conducted at NSEC in October, 1963. A batch was placed in

stock on March 6, 1964. Public announcement of the availability of Te-125m has been made in NSEC specification sheet R43-13, a copy of which is enclosed.

Inasmuch as none of these isotopes are current AEC products, the only action which we ask is that you take appropriate steps to ensure that the national laboratories do not become engaged in competitive activities of either a research and development or production character.

We are looking forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

ORIGINAL SIGNED BY
R. A. BRIGHTSEN

RAB:ljs

Enclosures

UNCLASSIFIED

ATTACHMENT IV

Nuclear Science & Engineering Corporation

P.O. Box 10901, Pittsburgh 36, Pennsylvania
Area Code 412
Phone: 462-4000 TWX 842-5188

R. A. Brighten
President

March 26, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I have mailed you today a letter dealing with ORNL's developmental work on manganese-54 production. In that letter, I question whether the national laboratories should use public funds to develop production methods for materials already available from industry. To destroy the advantage of a given firm by distributing valuable technical data to its competitors, without charge, must necessarily inhibit enterprise and discourage risk-taking and the application of ingenuity by industry.

You will recall that the Commission acted last fall to withdraw from the production of iodine-125. At that time, it indicated its intent to continue development of improved production techniques for this isotope.

We should now like to repeat our request, which has been made repeatedly in the past, that such developmental work be discontinued.

As an important supplier of iodine-125, we are in a position to evaluate the market potential for this isotope. As a normal part of our business, we would at some point determine whether or not we should risk our funds for developmental programs on new production methods. Our decision would be based upon normal commercial criteria, including probable cost of development, sales projections, and lead time over competitors.

We think the time might not be too remote before we could justify investing our own capital in continuous loop production or enriched xenon-124 production of iodine-125. We cannot proceed to explore either of these methods, however, so long as there is the prospect that others will obtain comparable data without any investment or risk.

We believe that the incentives and ingenuity of private enterprise would result in the most economical production and distribution of radioisotopes; we ask that ORNL activities which conflict with this goal be discontinued. We specifically petition once again that further research and development on iodine-125 production by the Oak Ridge National Laboratory be terminated without delay.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

RAB:ljs

UNCLASSIFIED

ATTACHMENT V

Nuclear Science & Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania
Area Code 412
Phone: 462-4000 TWX 842-2164

R. A. Brightsen
President

April 13, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

We wish to keep you informed regarding our isotope production plans in order that your schedules and programs may be coordinated with prospective Commission withdrawal actions.

To this end, please be advised that we are engaging in production technology development on the following isotopes: calcium-45, iron-59, zinc-65, selenium-75, tin-113, and antimony-125. It is our intention to offer each of these isotopes, with specifications and prices comparable to those of ORNL, commencing as follows:

Isotope	Anticipated Availability from NSEC
Calcium-45	August 24, 1964
Iron-59	July 20, 1964
Zinc-65	July 20, 1964
Selenium-75	July 20, 1964
Tin-113	June 15, 1964
Antimony-125	June 15, 1964

Tentative specifications and prices are enclosed.

Based upon the foregoing statement of our intent, it is formally requested:

1. That the Atomic Energy Commission withdraw from the production and sale of the isotopes listed above ninety days after announcement by NSEC of the availability of such isotope or isotopes at prices not substantially higher than those of ORNL; and

2. That the Oak Ridge National Laboratory be instructed not to reduce the current prices of any of these isotopes.

I am sure you will appreciate the very confidential nature of our production plans and will take appropriate steps to ensure that the information contained herein is not made known to our competitors.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

ORIGINAL SIGNED BY
R. A. BRIGHTSEN
President

RAB:ljs

Enclosures

Isotopes-3

NUCLEAR CONSULTANTS CORPORATION
9542 MANCHESTER ROAD • ST. LOUIS, MISSOURI 63119 • 314 WOodland 2-2162
LABORATORIES IN LOS ANGELES, CALIFORNIA, AND CLEVELAND, OHIO
OFFICES IN MAJOR CITIES

DR 401.12
c92
GMR-am

June 15, 1964

Glenn T. Seaborg, Chairman
United States Atomic Energy Commission
Isotopes Branch
Division of Licensing & Regulation
1717 "H" Street
Washington 25, D.C.

Dear Dr. Seaborg:

For some time now the AEC has pursued a policy of gradual withdrawal from the routine production and distribution of radioisotopes, taking the stand that suitable materials were currently available from private suppliers operating on a commercial basis. In many cases the withdrawal has been carried out in a remarkably inept manner. The public announcements have frequently listed, as suppliers, companies who were not prepared to provide the specified isotope, or could only provide it in an unsatisfactory form. Frequently, the isotope could only be obtained reasonably from a foreign source.

The announcement which was sent out by the Commission on April 30 regarding the withdrawal of five isotopes is a flagrant example of the problem mentioned above. It can only be described as based on either 1) monumental ignorance of the commercial producers of isotopes, or 2) a studied plan to favor one or more specific private interests. Either alternative is difficult to accept, particularly by those who have worked with the commission over a period of years and have learned to respect its integrity and judgement in most matters.

6-15-64

The above mentioned announcement provides a list of "firms currently offering the radioisotopes for sale or expected to begin offering them soon". At first reading we assumed that the list would include those companies who are prepared to replace the original "bulk" supply previously available from Oak Ridge National Laboratory. We were amazed to find this is not the case.

The companies are:

Abbott Laboratories, Oak Ridge, Tennessee

General Electric Co., Pleasonton, California

Iso/Serve, Inc., Cambridge, Massachusetts

New England Nuclear Corp., Boston, Massachusetts

Nuclear Science & Engineering Corp., Pittsburgh, Pennsylvania

Union Carbide Corp., Tuxedo, New York

Western New York Nuclear Research Center, Inc., Buffalo, New York

Of these companies, only General Electric Company and Union Carbide Corporation possess reactors capable of producing any of the listed isotopes. It is impossible to believe that the Commission is not aware of this fact.

If this is not the purpose of the list, then we must assume that the list is intended as a guide for doctors and investigators to use in purchasing smaller amounts of these isotopes, just as they buy many other radioisotopes and labelled compounds and drugs constantly. As a company which has been offering these materials for over ten years, Nuclear Consultants Corporation is most surprised to find that its name is omitted.

There are at least two other companies, not listed, who also offer these materials commercially. It is impossible to believe that the Commission is not aware of this fact.

If we accept the stated premises that 1) The Commission is aware of which companies own producing reactors, and 2) the Commission is aware of the companies who are offering radioisotope products commercially and are licensed by the Commission to do so, we must return to the original question. What motive has caused the withdrawal policy to be implemented in this way, and why was the announcement worded in this strange and confusing manner?

We should like to make the strongest possible protest against the procedure which the AEC is following on this matter, and would like to stress the following points:

1) The withdrawal policy is not realistic because it has not been carried out in a manner which provides a replacement source of supply. This matter was discussed, and complaints aired, at the recent Conference on Radioisotope Applications in Gatlinburg, as well as at other meetings.

2) The withdrawal policy is not realistic because it frequently forces large purchasers, such as this company, to seek foreign sources of supply.

3) The public announcements of such withdrawal invariably favor specific suppliers who stand to gain unfairly by such government announcements, receiving free and often exaggerated publicity for products they cannot supply, when other companies must pay to advertise their products truthfully.

4) Such announcements are in fact untrue. This company has attempted to locate a supply of some of these materials through the sources listed, and finds that not one offers these materials of the quality presently supplied by ORNL.

We request that the Commission take prompt action to correct its position in this very important matter, and if necessary to reconsider its decision on the withdrawal of these products. This is a matter which affects and interferes with the use of radioisotopes by private industry, as well as the program of increasing the commercial application of radioisotopes, a responsibility with which the Commission is charged by statute. It also raises questions as to the favored treatment of certain private interests, to the possible detriment and disadvantage of other producers and processors who should certainly expect equivalent treatment by the government agencies which are supported by their taxes.

We will look forward to your action, and a reply which may help us better understand the intent of the Commission in this matter.

Sincerely yours,

Nuclear Consultants Corp.

R. R. Buntaine
Marketing Manager

RRB/gjr

Appendix "C"

ATOMIC INDUSTRIAL FORUM INC.

850 THIRD AVENUE · NEW YORK N Y 10022 · PLAZA 4-1075

June 5, 1964

The Honorable Glenn T. Seaborg
Chairman
U.S. Atomic Energy Commission
Washington, D.C. 20545

Dear Dr. Seaborg:

Pursuant to our letter of April 23, we are forwarding to you as an enclosure to this letter a summary of comments offered by selected isotope users on the recommendations of the Forum's ad hoc Committee on Isotope Production and Distribution which we sent to you last December 31. This summary supplements the compilation of comments offered by selected processors and distributors of isotopes which was enclosed with our letter of April 23.

I wish to apologize for the delay in transmitting the enclosed summary to you. This has been occasioned by my absence from town for the past three weeks and the inability of the Forum staff to reach me during this period.

We trust that you will find the summary of user comments to be self-explanatory, and I shall not, therefore, undertake, with one exception, to summarize or allude to them here. The exception is offered as a personal qualification to the Committee's recommendation that the AEC should not conduct or support development work on radioisotope production technology where it has withdrawn from production, processing, and distribution of a particular isotope. Although at variance with the Committee recommendation, I personally see nothing wrong with the AEC's continuing to conduct such development work within its own facilities provided the information resulting from the development is promptly and fully reported.

As I have indicated in transmitting our earlier papers, we hope the enclosed summary will prove helpful in the Commission's

3125

further deliberations on the problems attending the isotopes program. We want to continue to offer our assistance to the Commission in this important program area.

Sincerely yours,

/s/ Lauchlin M. Currie

Lauchlin M. Currie, Chairman
Committee on Isotope Production & Distribution

LMC:ewd
Enclosure

cc Mr. James T. Ramey
Mr. John Palfrey
Dr. Gerald F. Tape
Mrs. Mary I. Bunting
Dr. Paul C. Aebersold
Mr. E. E. Fowler
Mr. Ernest B. Tremmel

Summary of Comments

Offered by Selected Isotope Users

on

Forum Committee Recommendations on Isotope Production and Distribution

On December 31, the Forum Ad Hoc Committee on Isotope Production and Distribution sent to the AEC its recommendations on "Policy Criteria for AEC Isotopes Program." A copy of the Committee's recommendations is attached.

Shortly thereafter, in response to an AEC request, the Forum Committee undertook to assess the views of a selected group of processors and distributors of isotopes other than those on the Committee. A summary of the processors' comments, as it was forwarded to the AEC on April 23, is also attached.

The Committee also agreed to obtain the views of a selected group of isotope users on the same policy matters. This summary reflects the results of that survey.

Each user invited to comment on the Forum Committee's recommendations was also provided with (1) a copy of a letter dated September 25, 1963 from Mr. E. E. Fowler, Acting Director of the AEC's Division of Isotopes Development, inviting the Forum Committee's views on the four policy matters: withdrawal criteria, withdrawal petition, isotope pricing, and support of research and development on isotope production technology; and (2) "Background Notes" on the AEC's isotope program prepared by the DID staff.

Isotope users selected by the AEC and AIF staffs to comment on the Forum Committee's recommendations were:

Medicine

Memorial Sloan-Kettering Cancer Center
Ohio State University Hospital - Dept. of Biophysics Research
University of California - Donner Medical Physics Laboratory
University of Pennsylvania Hospital - Dept. of Radiology

Industry

California Research Corp.*
Ethicon, Inc.*
General Motors Corp. - Research Laboratories*
Martin Company - Nuclear Division*

Education

Michigan State University - College of Agriculture - Dept. of Food Science*
Oak Ridge Institute of Nuclear Studies - Special Training Division*
University of California - Institute of Geophysics & Planetary Physics*

Agriculture & Food Production

Cornell University - Dept. of Physics Biology*
Swift & Co.*

Of the 9 responding institutions identified above by the insertion of an asterisk (*) after their names, 8 offered comments. One respondent declined to comment because of his former association with the AEC's isotope program. The 4 institutions from which no response was received are all medical users.

General Comments

All of the 8 respondents offering comments appeared to be in general agreement with the findings and recommendations of the Forum Committee. Where they took exception to, or qualified their concurrence with, the Committee's recommendations, or offered additional comments, these are noted below. Respondents who said they were in agreement with the Committee report have been assumed to also be in agreement with specific Committee recommendations even though they may have offered no further comments.

Specific Comments

Notwithstanding the smaller number of isotope users who elected to respond to the Forum's invitation, fewer comments were offered by the isotope users on

specific recommendations than were offered by the isotope processors and distributors. This suggests that they are not as familiar with, nor as directly concerned about, the policy matters under consideration.

AEC Withdrawal Criteria

Forum Committee Recommendations:

1. The AEC should voluntarily withdraw from the production, processing and distribution of a particular radioisotope whenever the particular radioisotope is "reasonably available from commercial sources." To expedite such action, the AEC should undertake a positive, vigorous and continuing assessment of private capability to produce, process and distribute isotopes.

2. As an integral part of its withdrawal policies and procedures, the AEC should withdraw upon the petition of a private organization, if:

   a. The petitioning organization, either by itself or in conjunction with other non-AEC sources of supply, can meet current domestic demands for a particular radioisotope; and

   b. AEC withdrawal will not unreasonably restrict competition.

3. In accordance with AEC staff recommendations, foreign producers should be "accepted in determining effective competition" in the U.S.

4. Reasonableness of price need not be considered as an additional criterion to AEC withdrawal if the above criteria are met.

5. When the AEC considers withdrawal in favor of a single source of supply, it may be appropriate to include reasonableness of price as a criterion if the uniqueness of the facilities or the patent advantages associated with the single source of supply presage the preclusion of competition.

6. A petition should be approved promptly unless the AEC has reason to question its contents or finds that approval would be inconsistent with the above criteria.

7. To assure an uninterrupted source of supply to users, the AEC should publish a prior notice of its decision to withdraw.

User Comments:

Of the 8 respondents, 2 offered the following qualifications to their concurrence. The other 6 offered no comments, and it is assumed that they agreed with the Committee.

One of the two respondents who offered comments and who identified himself as being "substantially in agreement" with the Committee said he had some concern about one point. It was his experience, he said, that even if a private firm may have assured the AEC that it was in a position to supply the need for a particular isotope, it might not be able or willing to supply it in the form desired by the user, either because of a particular chemical form or purity or because of a particular specific activity required. It was his suggestion that if the AEC should decide to discontinue supplying a particular isotope or irradiation service in response to the petition by a private supplier, the AEC should not dismantle its production facility for some reasonable period, e.g. a year, during which the adequacy of the private source could be assured.

The other respondent offered a number of comments on this section of the Committee's recommendations. He said he agreed that the AEC should voluntarily withdraw from the production, processing and distribution of a particular radioisotope whenever the particular radioisotope is reasonably available from commercial sources, provided such action "is subject to any defense needs and providing there exists a reasonable situation of availability, and providing the government production of a particular isotope would not be a by-product of some other operation and available at essentially little cost."

This same respondent said that if the AEC should withdraw from production upon the petition of a private supplier, he would "expect the non-AEC source of supply to be reasonably competitive with the AEC." He also said he thought it "very necessary" for the AEC to publish a prior notice of its decision to withdraw.

Filing a Withdrawal Petition

Forum Committee Recommendations:

1. A petition form of standardized scope and format should be designed to facilitate industry's filing and AEC's reviewing a

requested withdrawal action. The petition should include:

a. product specifications to show evidence of their comparability to AEC products or adequacy to meet user demands;

b. estimate of current demand;

c. the petitioning organization's production, processing and distribution capability;

d. price schedule (to be considered as a criterion to withdrawal only in the absence of a competitive source of supply);

e. delivery schedule;

f. proposed date of AEC withdrawal;

g. additional information on request concerning the petitioning organization's technical and financial resources if the above information is inadequate for the AEC to make a finding.

2. The AEC should not publish or otherwise release the contents of a petition (a) to the extent it includes company confidential information or (b) prior to publication of a notice of an AEC decision to withdraw.

3. If the AEC reaches a decision not to approve a petition, it should provide to the petitioning organization information on the reasons for its decision.

User Comments:

All 8 of the respondents appeared to agree with this section of the Committee's recommendations, if it can be assumed that those who remained silent were in agreement. Two respondents offered comments, both of which took the form of additional suggestions.

One respondent, in commenting on including an estimate of current demand in a petition, said he thought an estimate of future demand over the next three to five years was equally important but doubted that the petitioner could easily establish a reliable figure for either. He said some alternative way should be found for doing this through a survey, industry association information program, or some other technique.

The other respondent suggested that a public hearing would be a useful mechanism for the AEC to notify isotope customers that it was considering withdrawing from production of a particular isotope upon the petition of a private supplier. He suggested that such a mechanism should provide for the submission of written as well as oral comments and, in recognition of the need to protect proprietary information, he suggested that it might not be necessary for the AEC to reveal the identity of the petitioner.

Radioisotope Pricing

Forum Committee Recommendations:

1. Isotope prices should provide for full cost recovery on an isotope-by-isotope basis, taking into account all commercial cost factors. Once established on the basis of costs or reasonable commercial prices, whichever is higher, AEC prices should be changed only to reflect significant changes in production costs or to make them conform to the policy set forth in the AEC Manual.

2. The AEC should publish prior notice of proposed price changes, including in such notice the reasons for the proposed price changes.

3. The AEC price for a particular radioisotope should not be changed during the period when the AEC is reviewing a petition filed by a private organization requesting AEC withdrawal from production of the same isotope.

User Comments:

Two respondents commented on this section of the recommendations. One of the two offered a qualification on the Committee's first recommendation and the other took issue with the Committee's third recommendation. The other six respondents were silent and are assumed to be in agreement with the Committee.

The respondent who offered a qualification to the first recommendation said he was in "full agreement" with the recommendation that isotope prices be based on a full cost recovery, but he thought it should be noted that "industry does not expect to always recover full costs when they first bring out a new product. In this same sense, the AEC should not be expected to recover full

cost initially on a new product." He went on to explain: "If the AEC feels that it can see a demand during a two or three year period which will result in full cost recovery when this demand is satisfied, then I feel that the AEC's prices would be based on a realistic full cost recovery basis."

The respondent who took issue with the Committee's third recommendation stated his objection as follows: "I believe the requirement that a price for a particular radioisotope be maintained during the period when the AEC is reviewing a petition filed by a private organization, is too restrictive and not necessarily in the public interest. I am assuming that the AEC would make a price change only for a valid reason, and if this is the case it should be allowable."

AEC R&D Support

Forum Committee Recommendations:

1. The AEC should continue its support of basic research designed to lead to new radioisotope production and application concepts and techniques. Such support will assist in promoting wider utilization of radioisotopes and also encourage private firms to enter into radioisotope production.

2. The placement of AEC-supported research should be determined by the previously used criteria of "unique ideas, capabilities, and facilities," whether found in AEC, commercial, university, or non-profit industrial laboratories. When AEC-supported research relating to radioisotope production is placed in commercial facilities already engaged in the production of radioisotopes, it will tend to strengthen private production capabilities.

3. AEC-supported research should be reported promptly and fully.

4. The AEC should not conduct or support development work on radioisotope production technology where it has withdrawn from production, processing and distribution of a particular radioisotope.

User Comments:

Each of the three respondents who offered comments on this section took issue with the Committee's fourth recommendation. The other five respondents were silent and are assumed to be in agreement with the Committee

The views of the three respondents, who took issue with the Committee's recommendation that the AEC should not conduct or support development work on radioisotope production technology where it has withdrawn from producing the isotope, can be summed up by the opinion offered by one: "I am disturbed by the concept that an isotope is by itself a product... When one achieves an order of magnitude reduction in price or an order of magnitude increase in isotope availability, one has an entirely new product which can find many new uses. These order of magnitude breakthroughs may require considerable expenditures of research and development funds. Many isotope producers are not in a position to supply the necessary R&D. If the AEC thinks that it can achieve an order of magnitude breakthrough in quantity or price, then I feel that the AEC should be able to work on this new production technique even though it may be in competition with an existing supplier. It is up to the supplier to keep up with the AEC's R&D activities and incorporate their new techniques in their process..."

Another respondent said he thought it "essential for the national laboratories to continue development work where a limited number of commercial suppliers are involved." The third respondent said simply that the option involved here is a "basic freedom" that the AEC should retain.

Additional Comments

Two respondents offered additional comments outside the scope of the above recommendations.

One respondent, in commenting on the "discussion" section of the Committee report, said he concurred with the Committee's view that the acceptance of foreign producers in determining effective competition should not be qualified by the share of the domestic market captured by them.

The second respondent said he could foresee certain instances where disputes might arise between the AEC and a private company petitioning the AEC to withdraw from the production of a particular isotope. He suggested that some mechanism for arbitration of such disputes should be established.

Isotopes 3 -

JUN 4 1964

MEMORANDUM FOR CHAIRMAN SEABORG
COMMISSIONER PALFREY
COMMISSIONER RAMEY
COMMISSIONER TAPE

THROUGH GENERAL MANAGER Signed: John V. Vinciguerra

SUBJECT: INFORMATION MEETING ON RADIOISOTOPE PRODUCTION AND DISTRIBUTION

The Division of Isotopes Development is sponsoring an information meeting, June 11-12, 1964, on Radioisotope Production and Distribution. The purpose of the meeting is to provide industry with the technology associated with the AEC production processes and the methods of distribution. The presentation will also include statements of AEC policy and costing practices. Oak Ridge National Laboratory, Mound Laboratory, Brookhaven National Laboratory and Savannah River have prepared handbook-type reports on their work which will be available for attendees at the meeting.

Attached is a copy of the invitation, along with a preliminary copy of the agenda. It is anticipated that attendance will be in the 100-200 range, composed mainly of personnel from industrial concerns producing or selling radioisotopes.

We cordially invite you to attend.

E. E. Fowler, Acting Director
Division of Isotopes Development

Attachments:
1. Invitation
2. Agenda

bcc: Secy (2)

DID:PM	DID:PM	DID:DD
SURVERS:ls	BERMAN	EEFOWLER
6-2-64	6- -64	6- -64

6-4-64

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

INFORMATION MEETING ON RADIOISOTOPE
PRODUCTION AND DISTRIBUTION

May 22, 1964

Dear Sir:

The Atomic Energy Commission is sponsoring an industry information meeting at AEC Headquarters, Germantown, Maryland, June 11 and 12, 1964, on radioisotope production and distribution. Speakers are to be from AEC's isotopic production and distribution centers and will provide participants with the know-how of radioisotope production and processing.

The purpose of this letter is to inform you of the meeting and to invite you to attend. The meeting is open, at no charge, to interested industrial representatives. A preliminary agenda is enclosed.

The meeting will be held in the AEC Auditorium, Germantown, and registration will begin at 9 a.m. on Thursday, June 11. Sessions will start at 10 a.m. The meeting will conclude around 3 p.m. the following day.

Persons who wish to attend the meeting should complete the enclosed form and forward it to this office.

A message center will be provided for the convenience of the participants. Messages may be received in the center by dialing Area Code 301, 973-4165 (long-distance calls); 973-4165 (local calls, i.e., Washington, D. C.)

For transportation needs, it is suggested that participants utilize private conveyances or the AEC Shuttle Bus which leaves 18th and H Streets, N. W., Washington, D. C., at 7:45 a.m., and every hour thereafter, beginning at 9 a.m. The cost of this means of transportation is $.75.

Further information concerning the above meeting may be obtained by calling Rufus Shivers, Division of Isotopes Development--phone: 973-4323.

Sincerely yours,

Paul C. Aebersold

Paul C. Aebersold, Director
Division of Isotopes Development

Enclosures-2
Preliminary Agenda
Registration Form

INFORMATION MEETING ON

RADIOISOTOPE PRODUCTION AND DISTRIBUTION

JUNE 11-12, 1964

U. S. ATOMIC ENERGY COMMISSION

GERMANTOWN, MARYLAND

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C. 20545

Dear Dr. Aebersold:

I plan to attend the June 11-12 Radioisotopes Distribution Meeting.

I (do not) plan to use the AEC shuttle bus between Washington and Germantown.

Sincerely yours,

_____
NAME

_____
COMPANY

_____
ADDRESS

INFORMATION MEETING ON

RADIOISOTOPE PRODUCTION AND DISTRIBUTION

AUDITORIUM

U. S. ATOMIC ENERGY COMMISSION
GERMANTOWN, MD.

Thursday, June 11, 1964

9:00	Registration	
	Morning Session	
	Chairman - Dr. George Kavanagh, Deputy Assistant General Manager for Research & Development, AEC	
10:00	Introductory Remarks	
10:15	AEC Radioisotope Production Program and Policies	B. E. Fowler, Div. of Isotopes Development
10:45	BREAK	
11:00	AEC Costing and Pricing Practices	L. S. Lenderman E. A. Shepherd Office of Controller
	OAK RIDGE NATIONAL LABORATORY ACTIVITIES	
11:45	Radioisotope Production and Distribution	J. H. Gillette
12:30	LUNCH	
	Afternoon Session	
	OAK RIDGE NATIONAL LABORATORY ACTIVITIES (contd)	
1:45	Reactor Products and Services	E. E. Beauchamp
2:30	Short Half-Life Fission Products Separations and Radioactive Gas Handling	F. N. Case
3:15	BREAK	
3:30	Cyclotron Services	J. E. Beaver
4:30	ADJOURNMENT	

Friday, June 12, 1964

Morning Session

Chairman - E. E. Fowler, Deputy Director, Division of Isotopes Development

	MOUND LABORATORY ACTIVITIES	
9:15	Marketing and Sales	F. D. Lonadier
9:30	Polonium-210 Production & Processing	F. D. Lonadier
	SAVANNAH RIVER PLANT ACTIVITIES	
10:00	Cobalt-60 Production	H. F. Allen
10:30	BREAK	
	BROOKHAVEN NATIONAL LABORATORY ACTIVITIES	
10:45	Marketing and Sales General Product Information	Powell Richards
11:10	Irradiation Facilities	Jack Floyd
11:30	Cyclotron Production & Cockraft-Walton Neutron Generator	M. Hillman
11:45	Processing Facilities	Powell Richards
12:30	LUNCH	

Afternoon Session

	BROOKHAVEN NATIONAL LABORATORY ACTIVITIES (contd)	
1:45	Milking Systems	M. Hillman
2:15	Reactor-Induced Triton Reactions	M. Hillman
2:35	Fluorine-18 Process	Powell Richards
3:00	ADJOURNMENT	

CROSS-REFERENCE *(Name, number, or subject under which this form is filed)*		ISOTOPE 3-
IDENTIFICATION OF RECORD	DATE	* 6-3-64
	TO	AEC CHAIRMAN
	FROM	JOHN S.KELLY DEP.DIV, OD PEACEFUL NEUCLLEAR EXPLOSUVES
	BRIEF SUMMARY OF CONTENTS	LRL-L has identified a new Isotoce of Fermium belived to be Fm 257
FILED *(Name, number, or subject under which the document itself is filed)*		MATERALS - TRANSURANIC ELEMEN!

10-38-64

Carbon 3

COPY

Nuclear Science & Engineering Corporation

P.O. Box 10901, Pittsburgh, Pennsylvania 15236
Area Code 412
Phone: 462-4000 TWX 842-3192

R. A. Brightsen
President

May 21, 1964

Mr. E. E. Fowler, Deputy Director
Division of Isotopes Development
United States Atomic Energy Commission
Washington 25, D. C.

Dear Gene:

Confirming the understandings reached at our recent meeting here in Pittsburgh, we wish to submit additional information regarding the technical specifications and availability of NSEC reactor-produced strontium-85. We believe the Commission's criteria for withdrawal are fully met, and we therefore renew our request that AEC discontinue the production and distribution of this radioisotope.

During our conversation you expressed reservations regarding the desirability of complete withdrawal inasmuch as the published specifications for the NSEC product indicated that the material would have a lower specific activity (> 1000 mc/gm Sr) than that produced at Oak Ridge (≅10,000 mc/gm Sr). Following a review of our irradiation and processing procedures, we are pleased to report that we can and will make available material meeting the Oak Ridge specifications. A revised data sheet, a copy of which is enclosed, is being sent to magazines and other news media confirming this action. Our irradiation schedule will enable us to have the isotope with specific activity of ≅10,000 mc/gm approximately four weeks out of each ten weeks. The maximum potential delay in filling any customer requirement for high specific activity material would therefore be six weeks. Urgent research requirements could still be met on a special arrangement basis by using some carrier-free accelerator-produced material from our inventory. You will note that we have also revised the concentration specification to make it consistent with that of the Oak Ridge product.

Based upon this information, we ask that appropriate action be taken to have Oak Ridge (1) cease accepting orders 30 days following announcement of AEC withdrawal and (2) discontinue all shipments of the isotope no later

5-21-64

than 90 days following such announcement. You will recall that this course of action was considered reasonable by all the parties to our discussion.

Again, let me express our appreciation for the improved climate of Government-industry relations which you have been so instrumental in bringing about.

Sincerely,

(ORIGINAL SIGNED BY
R. A. BRIGHTSEN

RAB:ljs

Enclosure

NSEC

Nuclear Science & Engineering Corporation

P. O. Box 10901 • Pittsburgh, Pa. 15236 • 462-4000 • Area Code 412 • TWX 642-3192

RADIOISOTOPE SPECIFICATIONS

No. R45-5

STRONTIUM-85

Half Life		64 days
Radiation	Beta	None
	Gamma	0.514 Mev (100%)
	K X-ray	0.013 Mev (~100%)
Production Method		$Sr^{84}(n,\gamma)Sr^{85}$
Chemical Form and Acidity		Sr^{II} in 0.5N HCl
Concentration		>1.0 mc/ml
Specific Activity		*>2,000 mc/gm Sr
Radiochemical Purity		>98% (exclusive of Sr^{89}, <1%)
Heavy Metals (as Pb)		<10 ppm
Delivery		In Stock
Price	1-500 mc	$50.00/mc
	>500 mc	35.00/mc

*Material with specific activity ≅ 10,000 mc/gm Sr available approximately four weeks out of each ten week period.

Handling Charge - $20.00 per shipment

Byproduct material license is required.

Carbon-3

cc:-Dr. Glenn T. Seaborg, Chairman
Atomic Energy Commission

Mr. John Maddox
Division of Isotope Development

NUMEC

Nuclear Materials and Equipment Corporation — Apollo, Pennsylvania 15613 — Telephone GRover 2-8411 — Cable NUMEC

SL-419.3
e, Gm/9

May 26, 1964

Mr. Ernest Tremmel, Director
Division of Industrial Development
United States Atomic Energy Commission
Washington 25, D. C.

Dear Mr. Tremmel:

As you know, NUMEC has been actively engaged in the solicitation of business involving the design and sale of commercial irradiators utilizing Co^{60} for sterilization, pasteurization, and other purposes.

We have expended a great deal of money in making proposals and in following these up, but have been unsuccessful thus far in selling any units in the United States in spite of the fact that we have been told that our designs and prices exclusive of the Co^{60} are attractive.

Most recently, we have been dealing with a manufacturer of surgical products and have done a large amount of free irradiation work for this company to assist them in determining their requirements. While they have not yet obligated themselves to any supplier, we have been told that despite the fact that they would like to favor us, it will be impossible for us to compete unless we are able to deliver Co^{60} at prices equivalent to or lower than those of A.E.C.L.

More specifically, A.E.C.L. has offered the company in question a contract to design and construct a facility and to supply the initial encapsulated cobalt as well as replacement material for 5 years for just $.60/curie delivered to the site. No payment would be due for one year after the beginning of construction, i.e., A.E.C.L. would absorb all of the cost of financing the construction for 1 year. When NUMEC tried to purchase Co^{60} from A.E.C.L. as well as American Companies for resale, A.E.C.L. quoted us the lowest price, namely $.90/curie for encapsulated material.

Even the $.50/curie price quoted currently by the A.E.C. for large quantities of Co^{60} cannot compete with the A.E.C.L. price after addition of the costs for encapsulation and shipment. Considering all aspects, the A.E.C. would have to charge approximately $.30/curie to be competitive with A.E.C.L.

In view of the fact that no American company is now competing effectively with A.E.C.L. in price and service in the supply of Co^{60}, it is obvious that neither American would-be manufacturers of Co^{60} or designers and fabricators of large irradiators will ever get any business unless the price of Co^{60} is reduced. It seems to us that in view of the fact that Dupont has stated that Co^{60} can be supplied from Savannah at prices between $.25 and $.33/curie, that the A.E.C. undertake to supply industry at this price until the market has opened up sufficiently to create a demand large enough to enable private American Co^{60} manufacturers to produce Co^{60} in sufficient quantities to meet the A.E.C.L. prices. In view of the present depressed demand for American Co^{60} and the consequent lack of business, it would seem that no American company has anything to lose and all have much to gain if this policy were adopted.

I would greatly appreciate it if you would give this matter your urgent attention so that the present competitive situation vis-a-vis A.E.C.L. can be rectified.

Very truly yours,

Zalman M. Shapiro
President

ZMS/ir

cI
DLF 19.12

Copies 3

10

MAY 26 1964

Dear Senator Long:

I wish to thank you for your May 13 letter forwarding to me two letters which you have received from Mr. Harry Richardson of Baton Rouge, Louisiana.

With regard to Mr. Richardson's letter of April 30, I have invited him to meet with Dr. Spofford English, our Assistant General Manager for Research and Development, for personal discussion on the Commission's radioisotope production program and policies. We are waiting to hear from Mr. Richardson about a mutually convenient time for the meeting.

I am enclosing for your information a copy of my reply to Mr. Richardson's letter of May 1.

Sincerely yours,

[redacted]

Chairman

Honorable Russell Long
United States Senate

Enclosure:
May 1 letter

DID:RD	DID:D	Cong.Liaison	AGMRD	AGM/DCM	GM
FOWLER:cdm	ABERSOLD				
5/22/64	5/22/64	5/ /64	5/ /64	5/ /64	5/ /64

Participant 3

~~OFFICIAL USE ONLY~~ Res. & Status Br. - GTN

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: May 25, 1964

FROM : W. B. McCool, Secretary

SUBJECT: COMPLAINT REGISTERED BY MR. BRATTAIN, BELL LABORATORIES

SECY: JCH

1. At Regulatory Information Meeting 123 on May 21, 1964, Mr. Price said he would send the Chairman a memorandum on the matter of the complaint registered by Mr. Brattain, Bell Laboratories. (See also the Secretary's May 18 memorandum and item 14 of the Notes of Information Meeting 381 held on May 15.)

2. I telephoned Mr. Henderson's office on May 22, 1964 to confirm that the Director of Regulation was taking the required action.

5-25-64

~~OFFICIAL USE ONLY~~

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: May 25, 1964

FROM : W. B. McCool, Secretary

Original signed
W. B. McCool

SUBJECT: COMPLAINT REGISTERED BY MR. BRATTAIN, BELL LABORATORIES

SECY: JCH

1. At Regulatory Information Meeting 123 on May 21, 1964, Mr. Price said he would send the Chairman a memorandum on the matter of the complaint registered by Mr. Brattain, Bell Laboratories. (See also the Secretary's May 18 memorandum and item 14 of the Notes of Information Meeting 381 held on May 15.)

2. I telephoned Mr. Henderson's office on May 22, 1964 to confirm that the Director of Regulation was taking the required action.

Isotope-3

OFFICIAL USE ONLY

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

UNITED STATES GOVERNMENT

Res. & Status Br. - GTN

Memorandum

TO : File

DATE: May 18, 1964

FROM : W. B. McCool, Secretary

SUBJECT: COMPLAINT REGISTERED BY MR. BRATTAIN, BELL LABORATORIES

SECY:JCH

At Information Meeting 381 on May 15, 1964, the Commissioners noted Mr. E. E. Fowler's May 11, 1964 memorandum for the General Manager regarding investigation of a complaint registered by Mr. Brattain with the Chairman concerning the problems involved in the procurement of a polonium-210 source for Whitman College. The Chairman said he hoped procedures for responses to requests for procurement of such heat sources could be less time consuming.

cc:
Chairman
General Manager
Deputy General Manager
Acting Asst. General Manager
Asst. Gen. Mgr. for R&D
Director of Regulation
Deputy Director of Regulation
Asst. Director of Regulation
Asst. Dir. of Reg. for Admin.
Asst. Dir. of Reg. for Nuclear Safety
Director, Isotopes Development

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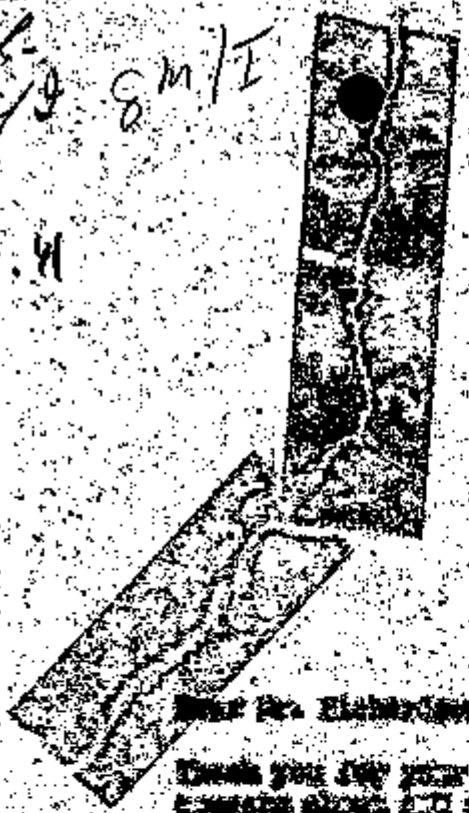

MAY 15 1964

Dear Mr. Richardson:

Thank you for your letter of April 30, 1964, expressing concern about AEC radioisotopes production and distribution policies.

I have asked Dr. R. C. English, Assistant General Manager for Research and Development, to work with you to further explore this concern. It would be appreciated if you would coordinate directly with Dr. English, suggesting dates for such a meeting.

Sincerely yours,

Chairman

Mr. Harry D. Richardson
President, Cenco Industries, Inc.
Baton Rouge, Louisiana

cc: Honorable Russell Long
United States Senate

DEC OFFICE
OFFICE OF THE SECRETARY
U.S. ATOMIC ENERGY COMMISSION

bcc: GM
DGM
AGM
AGMED
Secretariat
Director, ID (2)

ID:RD	ID:D		
Fowler	Fisherpola	AGMED	Secretariat
5- -64	5- -64		5- -64

RECEIVED 5/15/64

ID:PM											
Abernathy		AGMED		AGM		DGM		GM		CHAIRMAN	
5-12-64	5-	-64	5-	-64	5-	-64	5-	-64	5-	-64	

Jan tape-3

MAY 14 1964

MEMORANDUM FOR CHAIRMAN SEABORG
COMMISSIONER PALFREY
COMMISSIONER BAKER
COMMISSIONER TAPE

THROUGH GENERAL MANAGER s/ Kavanagh

SUBJECT: INDUSTRY INFORMATION MEETING ON ISOTOPIC POWER DEVELOPMENT AND APPLICATIONS PROGRAM

The Division of Isotopes Development in cooperation with the Atomic Industrial Forum is sponsoring a classified Industry Information Meeting May 13-15, 1964, on Isotopic Power Development and Applications.

Attached is a copy of the invitation, along with a preliminary copy of the agenda. It is anticipated that attendance is to be in the 300-400 range, composed mainly of technical and top management personnel.

On behalf of the Atomic Industrial Forum and the Division of Isotopes Development we cordially invite you to attend.

Paul C. Aebersold, Director
Division of Isotopes Development

Enclosures:
1. Invitation w/.
2. Agenda w/.

cc: Secretariat (2)

PGM:DID	PGM:DID	DD:DID	D:DID	AGMD
RHShivers (by)	PCAebersold	EEFowler	PCAebersold	
5/8/64	5/ /64	5/ /64	5/14/64	5/ /64

DL

Isotopes-3

414.9(a)

Nuclear Science & Engineering Corporation

P. O. Box 10901, Pittsburgh, Pennsylvania 15236

Area Code 412

Phone: 462-4000 TWX 642-5192

R. A. BRIGHTSEN
President

May 13, 1964

Mr. Ellison C. Shute, Manager
San Francisco Operations Office
U. S. Atomic Energy Commission
2111 Bancroft Way
Berkeley 4, California

Dear Mr. Shute:

I should like to express my appreciation for the courteous cooperation we received from you in connection with the recent procurement of 15 curies of iodine-125. The purchase of this material from the private sector is of course in keeping with the withdrawal of the AEC from the production and distribution of this isotope. It will encourage not only NSEC, but other companies as well, to expand as rapidly as possible in the production and distribution of radioisotopes.

I should like to suggest that as much advance notice as possible be given to commercial suppliers, should there be other planned requirements for substantial quantities of this isotope or others.

Sincerely,

RAB:ljs

cc: Dr. Glenn T. Seaborg
Dr. Mary I. Bunting
Dr. Gerald F. Tape
Mr. James T. Ramey
Mr. John G. Palfrey
Gen. A. R. Luedecke

Note: a, b + c herewith

575.6(1)

DL

414.9(8)

Nuclear Science & Engineering Corporation

P.O. Box 10901, Pittsburgh, Pennsylvania 15236

Area Code 412

Phone: 462-4000 TWX 642-3192

R. A. Brightsen
President

May 13, 1964

Mr. E. Eugene Fowler
Deputy Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington, D. C. 20025

Dear Gene:

I should like to express my appreciation for your helpfulness with regard to the recent procurement of 15 curies of iodine-125 by Livermore. I understand there were pressures to obtain the material from Oak Ridge rather than the lowest commercial bidder, and am delighted that you took such a clear position with regard to procurement from private industry in accordance with the Commission's withdrawal in October of 1963.

Your support will encourage not only NSEC but others to expand in the radioisotope business as quickly as possible.

With kindest personal regards.

Sincerely,

RAB:ljs

cc: Dr. Glenn T. Seaborg ✓
Dr. Mary I. Bunting
Dr. Gerald F. Tape
Mr. James T. Ramey
Mr. John G. Palfrey
Gen. A. R. Luedecke

12-575

Nuclear Science & Engineering Corporation

P.O. Box 10901, Pittsburgh, Pennsylvania 15236

Area Code 412

Phone: 462-4000 TWX 662-2192

R. A. Brightsen
President

May 13, 1964

Mr. Ernest B. Tremmel, Director
Division of Industrial Participation
U. S. Atomic Energy Commission
Washington, D. C. 20025

Dear Ernie:

I would like to express my thanks for the effective and courteous cooperation demonstrated by both you and Mr. Vincent D'Amico of your office, in connection with the iodine-125 procurement from Livermore.

Your continued efforts on behalf of industrial participation are deeply appreciated not only by NSEC, but by many other companies as well, and are entirely in keeping with the spirit of the Atomic Energy Act of 1954.

With kindest personal regards.

Sincerely,

Ron

RAB:ijs

cc: Dr. Glenn T. Seaborg
Dr. Mary I. Bunting
Dr. Gerald F. Tape
Mr. James T. Ramey
Mr. John G. Palfrey
Gen. A. R. Luedecke
Mr. Vincent D'Amico

RUSSELL B. LONG
LOUISIANA

OL-4137
GMK-am

United States Senate

WASHINGTON, D.C.

May 13, 1964

Dr. Glenn T. Seaborg
Chairman
Atomic Energy Commission
Washington 25, D. C.

Dear Dr. Seaborg:

Reference is made to your letter of March 21, concerning Mr. Harry D. Richardson, 2355 Kleinert Avenue, Baton Rouge, Louisiana, requesting information regarding AEC policies.

Attached is further correspondence I have received from Mr. Richardson which I am forwarding for your further consideration.

Please keep me advised in the matter.

With all good wishes, I am

Sincerely yours,

Russell Long

5-13-64

Serial No. - 3

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

~~OFFICIAL USE ONLY~~

Res. & Status Br. - GEN

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: May 12, 1964

FROM : W. B. McCool, Secretary

Original signed
W. B. McCool

SUBJECT: MAY 1 LETTER FROM T. C. RUNION, NUCLEAR FUEL SERVICES, INC. RE FISSION PRODUCT CONVERSION PLANT

SECY:McQ

1. At Information Meeting 376 on May 8, 1964, the Commissioners noted the May 1 letter from T. C. Runion, President, Nuclear Fuel Services, Inc., concerning the fission product conversion plant at Hanford. Commissioner Ramey suggested discussions be held with Mr. Runion and Oliver Townsend, Director, Office of Atomic Development, State of New York.

2. It is our understanding that the Division of Production is taking the required action.

cc:
Chairman
Commissioner Ramey
General Manager
Deputy General Manager
Acting Asst. General Manager
Asst. Gen. Mgr. for P&P
Director, Production
Director, Industrial Participation
General Counsel

Copy filed:
RL 8 & L - 7 Hanford

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Antitrust - 3

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

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Res. & Status Br. - GTN

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: May 12, 1964

FROM : W. B. McCool, Secretary

SUBJECT: APRIL 30 LETTER FROM HARRY D. RICHARDSON, GAMMA INDUSTRIES, INC.

SECY:McQ

1. At Information Meeting 376 on May 8, 1964, Chairman Seaborg requested preparation of a response to the April 30 letter from Harry D. Richardson, President, Gamma Industries, Inc., which would suggest that discussions be held with Dr. Spofford G. English.

2. It is our understanding that the Division of Isotopes Development is taking the required action.

cc:
Chairman
General Manager
Deputy General Manager
Acting Asst. General Manager
Asst. Gen. Mgr. for R&D
Director, Isotopes Development
General Counsel

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Isotopes - 3

GT FILE

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

MAY 11 1964

TO : A. R. Luedecke, General Manager

FROM : S. E. Fowler, Acting Director
Division of Isotopes Development

noted ARE 5/11

SUBJECT: INVESTIGATION OF COMPLAINT REGISTERED BY DR. BRATTAIN, BELL LABORATORIES, WITH CHAIRMAN SEABORG

Reference is made to your telephone call of May 4, 1964, requesting that we check into a complaint registered by Dr. Brattain with the Chairman, concerning the problems involved in the procurement of a Polonium-210 source for Whitman College.

We contacted Dr. Brattain in order to better understand the problem. Apparently it had nothing to do with the fabrication and delivery of a source, but rather with the substantial delay concerned with transfer and licensing. Dr. Brattain summarized the incident as follows: he is an alumnus and part-time visiting scientist of Whitman College. Some time ago, he had recommended that an honor student undertake as his project, conductivity changes of Germanium as a result of alpha particle damage. The project required the temporary use of a millicurie size Polonium-210 source.

Dr. Brattain first investigated the loan of such a source by Hanford Laboratories to Whitman College. At the same time, Bell Laboratories indicated a willingness to buy the source for Whitman College should a loan arrangement be impractical. Hanford Laboratories was perfectly willing to lend an appropriate Polonium-210 source, and requested permission from AEC Headquarters to make the necessary arrangements. It was brought out at that time that Whitman College was not licensed to handle the polonium source. Bell Laboratories then proceeded to have its license amended so that Dr. Brattain could use the Polonium-210 source at Whitman College. Apparently all of this required a large number of telephone calls, personal contacts, and, as Dr. Brattain put it, "the personal prestige of Bell Laboratories," in order to get the honor student's project moving in a timely manner.

To sum up, he felt that the AEC should have some mechanism to avoid the lengthy negotiations necessary in situations of this type.

cc: S. G. English

69-1/5

May 1, 1964

Dr. Glen T. Seaborg, Chairman
U.S. Atomic Energy Commission
Washington, D.C.

Dear Dr. Seaborg:

Mr. Doyle Berry of Berry Brothers Construction Company, a company serving the Louisiana offshore petroleum drilling operations, has proposed uses of SNAP generators in the Gulf of Mexico. Mr. Berry, and others, have made several visits to Washington on behalf of this project. In discussions with AEC personnel there appear to be favorable considerations but for some undetermined reason there are difficulties in attaining decisive actions.

Mr. Berry, in discussions with Louisiana's Lieutenant Governor Aycock, Chairman of the Louisiana Nuclear Energy Board, was referred to me for assistance in determining the status of this project. Since I have not personally been present during all of the discussions, I am appealing to you for information concerning the status of the Commissions' decisions relative to Mr. Berry's proposed application of SNAP generators.

One major consideration that will prevent private enterprise action is the unsettled price of strontium-90 required as the heat source. Since this represents the major cost of the generator system, there can be no meaningful cost studies made.

Prior contacts have been made by Mr. Berry with Senator Russel Long concerning this project so I am taking the liberty to send a copy of this letter to his office for information purposes.

Your assistance will be most appreciated.

Sincerely yours,

Harry D. Richardson

Harry D. Richardson, Director
Nuclear Science Center

HDR:db

Copy filed:
Contracts -9

69-A-6

Gamma Industries, Inc.

RADIOSOTOPE EQUIPMENT AND SUPPLIES FOR RADIOGRAPHY

POST OFFICE BOX 2543 2255 TED DUNHAM BATON ROUGE, LOUISIANA

TELEPHONE DICKENS 2-3021

May 1, 1964

Honorable Russell Long
Senate Office Building
Washington, D. C.

Dear Senator Long:

Thank you for the assistance in contacting Dr. Glen T. Seaborg on behalf of Gamma Industries.

My reply to Dr. Seaborg is attached and is self-explanatory.

A second industrial venture in the nuclear field is being planned in the State of Louisiana. Mr. Doyle Berry, whom you know, is planning use of SNAP nuclear power sources in off-shore drilling areas. Mr. Berry contacted Lieutenant Governor Aycock, Chairman of the Louisiana Nuclear Energy Board. He was referred to me for assistance in making studies relative to this nuclear application. A copy of my letter to the Atomic Energy Commission is attached. Since Mr. Berry has previously discussed this SNAP project with you, it is believed advisable to keep you informed of all correspondence.

Sincerely yours,

Harry D. Richardson

Harry D. Richardson
President

HDR:lg

Attachments

57-64

Lantzau - 3

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ISOTOPES DEVELOPMENT PROGRAM

Long Range Plan

GOAL AND OBJECTIVES

Goal: To extend and accelerate the development of new and improved technology for widespread use of radioisotopes and radiation in the national interest.

Objectives:

1. To develop and produce isotopic power and heat sources for current and future compact power and thermal uses.

2. To develop new technology for isotope applications in the general fields of chemical and physical analysis, measurement and control systems, and tracer techniques when these developments are in the public interest or are of benefit to the national economy.

3. To develop new and improved radioisotope production and separation technology and to assure the availability of radioisotopes and radiation sources to meet the changing needs of science and technology until such time as these needs can be provided for by private industry.

4. To develop technology and demonstrate economic and technical feasibility to applying ionizing radiation energy from radioisotope sources to industrial, agricultural and research operations.

5. To establish the technical and economic feasibility of radiation pasteurization of foods.

6. To provide a basis for insuring the safety of radioisotope and radiation sources, devices, and systems by the pursuit of a safety testing and evaluation program.

PROGRAM PLAN FY-1966-69

The rapidly growing interest in isotope devices for space and other applications will require the ready availability of a wide range of power sources, resulting in a considerable expansion of the development of isotopic power and heat source applications. A new effort designated POODLE involves the application of radioisotopes to propulsion of an upper-stage space vehicle. The technical aspects of the food irradiation program are scheduled for completion by FY-1969. Termination of support of the neutron activation analysis program will occur by FY-1968.

~~OFFICIAL USE ONLY~~

4-64

1. Isotopic Power and Heat Sources Development - Development and processing of isotopic power materials will be carried out on a broad front to satisfy the growing needs of SNAP and related auxiliary power projects. The major current effort is on development of strontium-90, Plutonium-238, Polonium-210, and Curium-242 fuel sources, but a number of other fuels and fuel combinations will be developed in the future.

   Work will also go forward on the development of a variety of radioisotope thermal propulsion devices for space use, including a proposed upper stage thruster called POODLE, in which the energy from decay of a radioisotope is used to heat hydrogen as the propellant. Other concepts utilizing the heat from radioisotopes will also be studied.

2. Radioisotope Technology Development - Current programs to develop radioisotope devices for oceanographic and space use will be pursued to the point of fabrication and testing of operational devices. These include DWICA I and II and a radioisotope-powered undersea hydroacoustic beacon. Other methods and apparatus now in the development phase may reach the operational testing stage also. Study of the applications of tracers in hydrology, meteorology, chemical processing, and natural product handling will be continued. Neutron activation analysis is expected to have reached the point by FY 1968 where it is an accepted technique in science and industry and will no longer require AEC development support. Specific problem areas remain in the analytical field and new analytical techniques, such as charged particle activation analysis and submillimeter microwave spectroscopic analysis of isotopes, will be investigated.

   The current program for safety evaluation of sealed radiation sources produced by both government and industry will be continued. Standard criteria for sealed source design will have been established and a large-scale safety testing program initiated to extend for the duration of the planning period. The latter program covers shipping containers and devices which employ radioisotopes such as thickness gauges, radiography cameras, etc., and will lead to the establishment of performance standards. The safety program is carried out with the guidance and cooperation of the Division of Licensing and Regulation.

3. Radioisotope Production and Separation Technology - The AEC as the chief domestic supplier of radioisotopes and radiation sources will require a uniform level of R&D effort to insure that appropriate radioisotope products continue to be made available to satisfy changing needs or until private capabilities can provide for these needs. With the planned construction of the Hanford Isotopes Plant, the Fission Products Development Laboratory at ORNL will revert to its intended purpose - that of an R&D facility. Technology in neutron products development will be enhanced by the coming availability of the High Flux Isotopes Reactor at Oak Ridge, which will provide unique radioisotope production opportunities.

4. Process Radiation Development - Continuing exploratory research on radiation processing systems will serve to identify additional key areas of development requiring increased support to translate laboratory feasibility into demonstrated practicality. Increased availability of major beta and gamma emitting radiation sources will permit needed further emphasis on the radiation engineering aspects of the program, including both large radiation source physics and radiation facility design parameters. Based upon the research and development data derived from the foregoing, it can be expected that private involvement in commercial radiation processing applications, already underway, will show a significant increase.

5. Radiation Pasteurization of Foods - This effort will be highlighted in FY 1965-66 with the construction of the Marine Products Development Irradiator and a transportable fruit irradiator. These irradiators plus supporting R&D are expected to advance the technology of food irradiation to the point where technical economic feasibility is established. It is expected that this development effort will be completed by FY-1969.

April 1964

Gen Corp - 3

908.2

Gamma Industries, Inc.

RADIOSOTOPE EQUIPMENT AND SUPPLIES FOR RADIOGRAPHY

POST OFFICE BOX 2543 2255 TED DUNHAM BATON ROUGE, LOUISIANA

TELEPHONE DICKENS 2-3031

April 30, 1964

Dr. Glen T. Seaborg
U. S. Atomic Energy Commission
Washington, D. C.

Dear Dr. Seaborg:

Please refer to your letter dated March 31, 1964.

Your letter was a keen disappointment. My reactions to the letter follow:

1. It would be interesting to know why a tax payer should look to an intercessor -- namely the Atomic Industrial Forum -- for information to or from a tax supported agency. Gamma Industries is a very small business carrying its assessed tax burden and it feels no obligation to or from the Atomic Industrial Forum, or any other entity, in its relations to a tax supported agency.

2. I sincerely believe in the Commission's integrity and that it "is exerting its best efforts to withdraw..." It is your opinion that this has been good. Those of us affected by the "withdrawals" do not always feel that private industry has, and possibly cannot up until this time, provided the services proposed and desired. Proof of this is that Gamma Industries has been forced to rely on Canadian reactors for services.

3. Your letter primarily restates policies which have been widely publicized. I concur that these policies are generally sound and should be continued. It was my request, not to receive a reiteration of policy, but to determine information on AEC forecasts of radioisotope pricing. This information is needed for market studies relative to capital facilities expansion. General policy statements have no value in this regard.

   Commission employees at lower echelons are aware of the interests and desires of the "encapsulating industry". For some reason unknown to me they will not or cannot express these interests. Your letter seems to avoid facing a fact that in the present and proposed Gamma Industries activities only one private enterprise is involved in "the main interest of the radioisotopes and radiation industry has been in seeing that the AEC's prices for products and services are not less than what private enterprise would charge..." Apparently it becomes necessary to stoop to name-calling. That enterprise is General Electric. The information available to me indicates that

Copy filed: Contracts -9

4-30-64

foreign competition continues to sell Cobalt-60 within the United States at an increasing rate. It is my opinion this could happen only under the circumstance that prices are lower from foreign sources. The second paragraph of your letter recognizes that the Commission must not "undersell" private enterprise. Your letter avoids recognition of foreign "underselling".

4. Unless I am misinformed, there is no private enterprise within the United States that can produce the quantity of Cobalt-60 required by industry today or if the irradiation facilities expand as anticipated.

5. Your last paragraph refers to the fact that "...you advised Senator Russell Long..." There are two reasons for advising Senator Long:

   a. First - Senator Long is most interested in nuclear industrial development, particularly in Louisiana.

   b. Second - My personal experience has been that correspondence referred to Congress gets more prompt and better attention than if not referred to Congress.

After seeing the tenor of your letter, I do not believe it will be possible to determine the desired information by correspondence. A personal visit with you will probably give an opportunity to exchange views and reach conclusions more quickly. It will be most appreciated if this can be arranged.

Thank you for your letter and deliberation of the Commission on behalf of private enterprise.

Sincerely yours,

Henry D. Richardson

Harry D. Richardson
President

HDR:lg
cc: Senator Russell Long

AEC

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

B-425

No. G-96
Tel. 973-3335 or
973-3446

FOR IMMEDIATE RELEASE
(Thursday, April 30, 1964)

AEC TO WITHDRAW FROM PRODUCTION AND SALE OF FIVE RADIOISOTOPES

The Atomic Energy Commission will withdraw from the routine production and distribution of five radioisotopes effective June 23, 1964. This is in accordance with the Commission's general policy to discontinue providing materials or services which are reasonably available from commercial sources.

The five radioisotopes, chromium-51, iron-55, cobalt-58, cesium-134, and cerium-141, currently are being produced and distributed through the Commission's Oak Ridge (Tenn.) National Laboratory. These radioisotopes are used principally for biological research and for medical research, diagnosis, and treatment. Industrial use is limited at this time.

The radioisotopes are being produced in sufficient quantities to meet ordinary demands through commercial firms, with additional ones expected to begin providing some of the isotopes about the time of AEC's withdrawal. Prices which have been published for the five radioisotopes by the commercial firms are believed to be reasonable.

The radioisotopes have been produced by ORNL for a number of years. Sales within the two-year period ending June 30, 1963, amounted to about $99,000.

Firms currently offering the radioisotopes for sale, or expected to begin offering them soon, are:

Abbott Laboratories, Oak Ridge, Tennessee

General Electric Co., Pleasanton, California

Iso/Serve, Inc., Cambridge, Massachusetts

New England Nuclear Corp., Boston, Massachusetts

4-30-64

(more)

Nuclear Science and Engineering Corp., Pittsburgh, Pa.

Union Carbide Corp., Tuxedo, New York

Western New York Nuclear Research Center, Inc., Buffalo

Additional information on the availability of these radioisotopes may be obtained from the commercial suppliers listed above.

- 30 -

(NOTE TO EDITORS AND CORRESPONDENTS: This announcement is being issued simultaneously by the Commission's Oak Ridge Operations Office, Oak Ridge, Tennessee.)

4/30/64

Isotopes 3

UNCLASSIFIED

April 27, 1964

AEC 994/18

COPY NO. 74

ATOMIC ENERGY COMMISSION

CONFERENCE WITH PROCESS RADIATION ACCELERATOR MANUFACTURERS

Note by the Secretary

AEC 994/18

The Assistant General Manager for Research and Development has requested that the attached summary of the meeting with manufacturers of process radiation electron accelerators be circulated for the information of the Commission.

W. B. McCool

Secretary

DISTRIBUTION	COPY NO.	DISTRIBUTION	COPY NO.
Secretary	1,71-78	Construction	32 - 34
Commissioners	2-6,79	Isotope Development	35 - 40
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X-O.M-6

4-64

UNCLASSIFIED

INFORMAL CONFERENCE WITH THE MANUFACTURERS

OF

PROCESS RADIATION ELECTRON ACCELERATORS - APRIL 10, 1964

An informal meeting was held at Headquarters by the staff of the Division of Isotopes Development with manufacturers of electron accelerator irradiation equipment on April 10, 1964, to discuss mutual problems within the process radiation industry. A list of attendees is attached.

The Radiation Development Branch Programs were described in some detail to bring the accelerator manufacturers up-to-date on the latest advances in process radiation technology resulting from DID research. A detailed description of the Process Radiation Development Program was presented by Martin H. Stein, the Radiation Processed Foods Program by Major George R. Dietz, and AEC isotope pricing policy by Edward A. Shepherd, Office of the Controller.

The following points were discussed in some detail:

1. Radiation Dynamics Inc., and High Voltage Engineering Corp. took issue with the DID policy of publicizing the entire field of process radiation when, in fact, its primary purpose is to develop uses of isotopic process radiation. They claim that this dual role was damaging their position since most people within the "User" industry feel that the AEC is the "expert" on all matters dealing with radiation. In short, they were requesting that the AEC give them "equal time" in the publicizing of process radiation by allowing them to insert papers in our various publications such as "Isotopes and Radiation Quarterly". It was brought to their attention that this was already being done with the intended publication of Dr. Morganstern's (Radiation Dynamics, Inc.) article on X-ray production. The AEC representatives indicated a willingness to receive similar publications in the future. A. Burrill, High Voltage Engineering Corp., added that publication for the "promotion" of accelerator process radiation was being retarded by the commercial publications (mentioned in particular Jerry Luntz of Nucleonics) in the nuclear field since the editors of these publications felt that the papers submitted by the accelerator manufacturers were advertisements. Publication in Government documents would enable them to offset this difficulty. Dr. Aebersold then suggested he submit an article to Nucleonics and inform them that if they did not accept it, DID would consider publishing it.

2. AEC pricing policy was discussed in some detail. The accelerator manufacturers seemed somewhat surprised when the cobalt-60 production costs of $0.33 per curie was announced. After considerable discussion a general agreement

was reached by almost all present that the AEC price of $0.50 per curie (100,000 curie lots - under 30 curies per gram) was in line with the world market price. Dr. Morganstern of Radiation Dynamics, Inc., however, felt that any pricing policy based on a Government study using Government reactors was not realistic in that they did not reflect the true cost involved in the production of cobalt-60 by private interest utilizing private reactors. The other machine manufacturers appeared to agree with this point of view.

3. Both High Voltage Engineering Corp., and Radiation Dynamics, Inc., indicated that X-ray producing machines could be developed which with the exception of extreme cases, could easily compete with cobalt-60 gamma radiation. Mr. Bernard Manowitz of Brookhaven National Laboratory asked A. Burrill, HVEC, if the X-ray flux could be controlled in complex heterogeneous systems. He replied in the affirmative. Mr. Manowitz then stated that he would very much like to have the information since research at Brookhaven had not yet been able to solve this problem for gamma radiation. Mr. Stein pointed out that the problem of prediction and control of X-ray flux was more difficult than that of gamma ray flux due to the spectrum "smearing" resulting from conversion from electrons to X-rays (note: To date we are aware of no research that has been published that solves the problem of distribution of flux, X-ray or gamma radiation, in heterogeneous targets). Dr. Morganstern of Radiation Dynamics, Inc., was asked if he had an X-ray machine on the commercial market today. His answer was negative. Later in the discussion, Dr. Morganstern indicated that he would like very much to have the AEC support studies to solve the problem of dosimetry and dose distribution, and heterogeneous targets from X-ray sources. Dr. Morganstern announced his plans to submit an application "in the next few days" to FDA for clearance of food treated with X-rays.

A great number of technical details were also discussed at this meeting relating to the relative capabilities of isotope and accelerator sources of radiation. At the close of the meeting it was evident that many of the misunderstandings had been resolved and that conferences of a similar nature should be held in the future. It was obvious that machine manufacturers had not been following DID sponsored work very closely and a number of their recent public statements were based on misunderstandings.

ATTENDEES

NAME	COMPANY
A. L. Pace	General-Electric Co., X-Ray Division
E. Alfred Burrill	High Voltage Engineering Co.
D. A. Trageser	High Voltage Engineering Co.
S. L. Rhoad	Hughes Aircraft Co.
Leo W. Wilson	Hughes Aircraft Co.
K. H. Morganstern	Radiation Dynamics, Inc.
Russell Schonberg	Varian Associates
M. Simon	U. S. Army Natick Laboratories
R. D. Cooper	U. S. Army Natick Laboratories
E. H. Eisenhower	National Bureau of Standards
H. W. Koch	National Bureau of Standards
J. W. Motz	National Bureau of Standards
R. L. Stern	National Bureau of Standards
B. Manowitz	Brookhaven National Laboratory

AEC

P. C. Aebersold, DID
J. Bloom, DID
G. R. Dietz, DID
J. E. Machurek, DID
J. N. Maddox, DID
E. Shepherd, OC
M. H. Stein, DID

Isotopes-3

6

SM/A
DR 404-1

ATOMIC INDUSTRIAL FORUM INC.

850 THIRD AVENUE • NEW YORK 22, N.Y. • PLAZA 4-1075

April 23, 1964

The Honorable Glenn T. Seaborg
Chairman
U.S. Atomic Energy Commission
Washington, D. C. 20545

Dear Dr. Seaborg:

On December 31 of last year, as Chairman of the Forum's ad hoc Committee on Isotope Production and Distribution, I forwarded to you the Committee's recommendations on four policy matters related to the AEC's isotope program: criteria for AEC withdrawal from isotope production; the scope and form of the withdrawal petition; pricing of isotopes by the AEC; and AEC support of research and development in radioisotope production technology.

In a covering letter, I indicated that the Forum Committee, in response to an AEC staff request, had initiated steps to solicit the views of additional processors and distributors of isotopes and the views of a representative cross section of isotope users on the Committee's recommendations.

The purpose of this letter is to report that we have completed our survey of the additional processors and distributors of isotopes. A copy of our survey summary is enclosed.

We hope to be able, within the next few weeks, to send you a comparable compilation of the views of isotope users on the same policy matters. Initial responses from isotope users have, however, been disappointing, and it is not now clear how substantive or helpful this second compilation of comments will prove to be. We are, incidentally, keeping the staff of the Division of Isotopes Development advised on the progress of this second survey.

We hope the enclosed summary will prove helpful in the Commission's further deliberations of the problems attending the isotopes program. We have informally advised the DID staff that we would be pleased to provide them with copies of the letters of comment upon which the enclosed summary is based, except in those instances where a particular correspondent has requested that we not do so.

4-23-64

The Committee wishes to record its continuing offer of assistance to the Commission and to the AEC staff in its efforts to promote the wider utilization of isotopes and radiation.

Sincerely,

Lauchlin M. Currie, Chairman
Committee on Isotope Production & Distribution

LMC:ewd
Enclosure

cc Mr. James T. Ramey
Mr. John Palfrey
Dr. Gerald F. Tape
Mrs. Mary I. Bunting
Dr. Paul C. Aebersold
Mr. E. E. Fowler
Mr. Ernest B. Tremmel

Summary of Comments

Offered by Selected Isotope Processors and/or Distributors

on

Forum Committee Recommendations on Isotope Production and Distribution

On December 31, the Forum Ad Hoc Committee on Isotope Production and Distribution sent to the AEC its recommendations on "Policy Criteria for AEC Isotopes Program." A copy of the Committee's recommendations is attached.

Shortly thereafter in response to an AEC request, the Forum Committee undertook to assess the views of a selected group of processors and distributors of isotopes other than those on the Committee. This summary reflects the results of that survey.

The Committee also agreed to obtain the views of a selected group of isotope users on the same policy matters. These will be compiled in a separate summary in the near future.

Each processor invited to comment on the Forum Committee's recommendations was also provided with: (1) a copy of a letter dated September 25, 1963, from Mr. E. E. Fowler, Acting Director of the AEC's Division of Isotopes Development, inviting the Forum Committee's views on the four policy matters: withdrawal criteria, withdrawal petition, isotope pricing, and support of research and development on isotope production technology; and (2) "Background Notes" on the AEC's isotope program prepared by the DID staff.

Processors and/or distributors of isotopes selected by the AEC and AIF staffs to comment on the Forum Committee's recommendations were:

Associated Nucleonics, Inc.*
Gamma Industries, Inc.
Hazelton Nuclear Science Corp.
Monsanto Research Corp.*
New England Nuclear Corp.*
Nuclear-Chicago Corp.*
Nuclear Consultants Corp.*
Nuclear Fuel Services, Inc.*
Nuclear Materials & Equipment Corp.*
Nuclear Research Chemicals, Inc.*
Picker X-Ray Corp.*
Schwartz Bio Research, Inc.
E. R. Squibb & Sons*
Technical Operations, Inc.*
Tracerlab*

The 12 companies whose names are followed by an asterisk (*) responded to the invitation and their comments are summarized below. Since it was the intent of this survey to determine the extent to which the above listed processors agreed or disagreed with the Forum Committee's recommendations, special care has been taken in preparing this summary to focus attention on questions raised and counter-recommendations offered in the responses. Conversely, respondents who said they were in agreement with the Committee report have been assumed to also be in agreement with specific Committee recommendations even though they may have offered no further comments.

General Comments

Of the 12 respondents, 10 said they agreed in principle with the findings and recommendations of the Forum Committee. The 10 affirmative responses were received from 5 respondents who gave unqualified endorsement to the recommendations in their entirety and 5 respondents who cited reservations on one or two points.

Of the other two respondents, one said that although he agreed with some of the Forum Committee's recommendations, he found himself in disagreement with others. In his view, the Forum Committee had looked at the AEC's policy "largely from the point of view of the isotope producers without adequate consideration of the effects of these actions on the user industries."

The other respondent, who described his company as currently purchasing 1/2 of the carbon-14 and 1/5 of the tritium sold by the AEC, was the only respondent to take issue with the idea of the Forum Committee's focusing attention on the question of AEC withdrawal from isotope production. In summing up his comments, he said: "The past performance of the AEC in withdrawing from competition with industry, without detailed policy procedures is reassuring. We do not see the need for a 'white paper' on the withdrawal question at this

time. Any group that wants to compete with the AEC in the sale of radioisotopes can do so under the present setup, as several companies are currently demonstrating."

Specific Comments

Many of the respondents, as suggested above, offered specific comments on one or more sections of the Forum Committee's recommendations. In some instances, comments were offered in supplement to Committee recommendations; in others, they were offered as qualifications. In a few specific instances, comments were offered in opposition to Committee recommendations. Each type of comment is noted below.

AEC Withdrawal Criteria

Forum Committee Recommendations:

1. The AEC should voluntarily withdraw from the production, processing and distribution of a particular radioisotope whenever the particular radioisotope is "reasonably available from commercial sources." To expedite such action, the AEC should undertake a positive, vigorous and continuing assessment of private capability to produce, process and distribute radioisotopes.

2. As an integral part of its withdrawal policies and procedures, the AEC should withdraw upon the petition of a private organization if:

   a. The petitioning organization, either by itself or in conjunction with other non-AEC sources of supply, can meet current domestic demands for a particular radioisotope; and

   b. AEC withdrawal will not unreasonably restrict competition.

3. In accordance with AEC staff recommendations, foreign producers should be "accepted in determining effective competition" in the U.S.

4. Reasonableness of price need not be considered as an additional criterion to AEC withdrawal if the above criteria are met.

5. When the AEC considers withdrawal in favor of a single source of supply, it may be appropriate to include reasonableness of price as a criterion if the uniqueness of the facilities or the patent advantages associated with the single source of supply presage the preclusion of competition.

6. A petition should be approved promptly unless the AEC has reason to question its contents or finds that approval would be inconsistent with the above criteria.

7. To assure an uninterrupted source of supply to users, the AEC should publish a prior notice of its decision to withdraw.

Processor Comments:

Of the 12 respondents, 5 appeared to be in agreement with the above criteria as stated.

Of the remaining 7 respondents, 5 took issue with the Committee's recommendation that the AEC should withdraw from production in favor of a single supplier. Of these five, two were apparently willing for the AEC to withdraw so long as one other source of supply was available in addition to the petitioning organization. The other three urged that the second supplier should also be a domestic organization. Two of these three processors said they were primarily interested in cobalt-60 and both cited past difficulties in competing with AECL of Canada which they characterized as a quasi-government operation where "questions of pricing, guarantees, etc. are subject to considerations relating to government policy, rather than to solely commercial considerations." Although the Forum Committee attempted to formulate withdrawal criteria which would be applicable to the AEC's total isotope program, it is recognized that the production and distribution of cobalt-60 may raise problems different from those associated with other isotopes produced by neutron irradiation.

Two of the same five respondents also expressed concern about the meaning of the AEC term, "reasonably available from commercial sources" as used in the Committee's first recommendation. As one of them expressed it: "If the price is considerably higher, the product of lower quality, or the

scheduling of availability poorer, then I feel this is not reasonably available." These two respondents said they were not in agreement with the Committee's recommendation that reasonableness of price should not be considered as an additional criterion to AEC withdrawal.

Another respondent within the same group of five observed that "it is probably unreasonable to expect the AEC and its isotope producing contractors to undertake a vigorous program to put themselves out of the isotope business" but that the AEC "can create conditions where private enterprise will do this for the AEC." It might be noted here that the primary intent of the Forum Committee's suggested criteria was to establish such conditions.

Of the two respondents identified under "General Comments" (page 2) as not being in agreement with the Forum Committee's findings and recommendations, one said he favored voluntary AEC withdrawal but that he did "not concur with the idea that this should be done radioisotope by radioisotope, that the efficiently operating ORNL organization be stripped, one by one, of its 'profitable' products, leading to an increasingly uneconomic operation, whereby ORNL is left with the 'lemons.'" The other said "the AEC ought not to decide unilaterally to withdraw from a given field of isotope production." He advocated, as a prerequisite to such a decision, the filing of a public notice in the Federal Register and the scheduling of a public hearing.

Two respondents, identified at the outset as being in agreement with the criteria recommended by the Forum Committee, suggested two additions to the recommendations. One said that "any procedure for AEC withdrawal which is established should be sufficiently well defined to reduce the expense to the petitioner and the delays on the part of the AEC to an absolute minimum, otherwise many petitioners or potential petitioners might understandably become discouraged." The other suggested that the Committee's recommendations should have included a provision requiring the AEC to refer to commercial

suppliers any requests it receives for isotopes after it has withdrawn from the production of these particular isotopes.

Filing a Withdrawal Petition

Forum Committee Recommendations:

1. A petition form of standardized scope and format should be designed to facilitate industry's filing and AEC's reviewing a requested withdrawal action. The petition should include;

   a. product specifications to show evidence of their comparability to AEC products or adequacy to meet user demands;

   b. estimate of current demand;

   c. the petitioning organization's production, processing and distribution capability;

   d. price schedule (to be considered as a criterion to withdrawal only in the absence of a competitive source of supply);

   e. delivery schedule;

   f. proposed date of AEC withdrawal;

   g. additional information on request concerning the petitioning organization's technical and financial resources if the above information is inadequate for the AEC to make a finding.

2. The AEC should not publish or otherwise release the contents of a petition (a) to the extent it includes company confidential information or (b) prior to publication of a notice of an AEC decision to withdraw.

3. If the AEC reaches a decision not to approve a petition, it should provide to the petitioning organization information on the reasons for its decision.

Processor Comments:

Of the 12 respondents, 9 concurred in this section of the Forum Committee's recommendations. Of the five respondents who offered comments, three were in agreement and two were not.

One of the three respondents who said he was in agreement expressed the opinion that the petition form should require no information "beyond that necessary to accomplish the legal obligations of the AEC under the Atomic

Energy Act." He said he was concerned with company confidential information which "should either not be required or else should be very zealously and positively protected." This, he said, should be applied to data on "(i) estimates of the market and market potential, (ii) plant capacities, (iii) production costs, and (iv) proprietary technical information." Another of the three expressed concern about "the hazards of public announcement by the government that a commercial organization proposes to produce a certain isotope." The third said simply that the format of the recommended petition and the information required seemed reasonable to him.

Of the three respondents who might be said to have taken some issue with this particular section of the Forum Committee's recommendations, two addressed their comments to what they believe should be an AEC obligation to release at least some of the information contained in a petition. Both advocated AEC protection of company confidential information, but both also advocated AEC's inviting public comment on its reasons for planning to withdraw from production of a particular isotope before reaching a final decision to do so. The third respondent offered no comments other than to say that he opposed the concept of a petition procedure.

Radioisotope Pricing

Forum Committee Recommendations:

1. Isotope prices should provide for full cost recovery on an isotope-by-isotope basis, taking into account all commercial cost factors. Once established on the basis of costs or reasonable commercial prices, whichever is higher, AEC prices should only be changed to appropriately reflect significant changes in production costs or to make them conform to the policy set forth in the AEC Manual.

2. The AEC should publish prior notice of proposed price changes, including in such notice the reasons for the proposed price changes.

3. The AEC price for a particular radioisotope should not be changed during the period when the AEC is reviewing a petition filed by a private organization requesting AEC withdrawal from production of the same isotope.

Processor Comments:

Only three respondents commented on this section of the Forum Committee's recommendations. It is assumed that the remaining nine responding processors agreed with the Committee.

Two of the three processors who did comment expressed concern about possible increases in the prices of isotopes which the AEC continues to produce after it has withdrawn from the production of others. Both respondents appear to have missed the salient feature of the Forum Committee's recommendations, namely that AEC isotope prices should be based on full cost recovery on an isotope-by-isotope basis, not on an overall program basis where the sales revenue from one isotope is used to off-set sales deficits from another. Interestingly, one of these same respondents seemed to agree in part with the Committee's first and third recommendations by noting that if the AEC and industry are offering the same isotopes, the AEC should not lower prices below the existing market level.

The third respondent said he felt the Committee had failed to give adequate attention to the special problem of pricing cobalt-60 and to the associated "complicating factor of subsidized foreign competition." In commenting on how the AEC should handle the problem, he recommended that the AEC:

"a. Furnish grades and forms of cobalt-60 which are not available from domestic commercial sources. Specifically, the AEC should furnish material of over 100 curies/gram until such time as it is available from domestic sources. If the AEC finds it cannot do this on a full cost recovery basis and still remain competitive with foreign suppliers, then tariffs or import restrictions seem to be the only answer. Artificially low prices from the AEC would only discourage domestic producers.

"b. AEC should discontinue the practice of publishing retail prices. Normal competition between distributors and between producers will keep retail prices in line. The AEC is not in a position to determine what prices are 'reasonable' or what prices will result in the maximum public use of isotopes. Artificially low prices will not stimulate investment by industry or consumers because of the fear that the supply may be cut off or that the costs may go up.

"c. AEC cannot accept foreign producers or distributors in determining effective competition when these producers and distributors are subsidized by their governments. Much of the American market has already been lost in this way."

AEC R&D Support

Forum Committee Recommendations:

1. The AEC should continue its support of basic research designed to lead to new radioisotope production and application concepts and techniques. Such support will assist in promoting wider utilization of radioisotopes and also encourage private firms to enter into radioisotope production.

2. The placement of AEC-supported research should be determined by the previously used criteria of "unique ideas, capabilities and facilities," whether found in AEC, commercial, university, or non-profit industrial laboratories. When AEC-supported research relating to radioisotope production is placed in commercial facilities already engaged in the production of radioisotopes, it will tend to strengthen private production capabilities.

3. AEC-supported research should be reported promptly and fully.

4. The AEC should not conduct or support development work on radioisotope production technology where it has withdrawn from production, processing and distribution of a particular radioisotope.

Processor Comments:

Here again, only three respondents offered specific comments. Two of the three made it plain that they were in agreement with the Forum Committee recommendations. It was concluded that 11 of the 12 respondents concurred with the Committee.

One of the respondents said he thought it was important for the AEC to provide more information on its R&D plans in order to avoid the possibility of industry's duplicating particular avenues of development. Another respondent said he thought the placement of AEC-supported research in private facilities should be identified as a "desirable goal."

The third respondent to comment did not take issue with the Committee's recommendations as much as he questioned whether they were consistent with the Committee's earlier recommendations on withdrawal. He expressed his concern in this manner: "I'm not sure how far we in industry can push our principles, and on the one hand say government and the AEC should get out of this area and on the other hand say they should finance our R&D for new techniques and markets."

Additional Comments

A second section of the Forum Committee's paper dealt with several points which were related in part to its recommendations and in part to certain recommendations of the AEC-DID staff as detailed in its "Background Notes" referred to earlier.

Additional comments offered by the isotope processors and/or distributors refer to some of these discussion items. Since, with the exception of the specific points itemized below, respondents were silent on this section of the paper, it is assumed that they were in agreement with the Committee's observations.

In the following summary, reference is made only to those specific observations of the Committee which prompted processor comments. For a more complete accounting of the points covered by the Committee, attention is called to the attached paper.

Continuance of Commercial Operations

Among the guidelines suggested by the AEC staff as a prerequisite to AEC withdrawal from isotope production was a provision that the AEC should be assured that a commercial producer would not discontinue his operations in a manner which would "adversely affect public interest to the extent resumption of production by AEC would involve a significant delay." The Forum Committee did not include this in its recommended withdrawal criteria but did refer to the point in the discussion section of its paper by saying that it "assumes that the AEC will find sufficient evidence to obviate this concern in the technical and financial qualifications outlined in the withdrawal petition."

One processor apparently felt that the Committee had not adequately answered the question raised by the AEC. He accordingly expressed the following opinion: "Following a decision to withdraw from a given field of activity, the AEC has a continuing obligation to ensure that the situation does not become non-competitive. While the Federal Trade Commission may be empowered to deal with such practices, it cannot 'break up' a reactor or force the AEC to re-enter the field, the one action that can relieve such a situation."

Conflict of Interest

Another prerequisite to AEC withdrawal suggested by the AEC staff was that an organization's participation in private radioisotope production should not create a conflict of interest with other contractual obligations it may have to the AEC or to other Federal agencies. The Forum Committee said it did not understand the intent or relevance of the criterion and that if a conflict of interest did appear to exist, "it would suggest a need to review the contractual relationship, but not the private operation."

The Committee's statement on this point prompted comments from two respondents. One said he was pleased to note that the Committee had taken "a realistic opposite position from the AEC." The other said he thought the Committee had missed the significance of the AEC's concern, and offered the following explanation: "Present contracts between the AEC and test reactor operators involve almost all of the available reactor time and it is unrealistic to suggest that contract terms can be influenced in any major way by the requirements of isotope production. Irradiated isotopes is simply not a large business, and it is obvious that any reactor operator will drop the production of isotopes rather than jeopardize his AEC contract."

Use of AEC Facilities

The Forum Committee, independent of any specific reference by the AEC staff, placed itself on record as recognizing the desirability of industrial producers, processors, distributors, and users of isotopes using private facilities rather than those of the AEC for irradiation, processing, encapsulation, packaging and distribution whenever possible. One of the respondents, who directed his remarks to the availability of fission product isotopes rather than neutron irradiated isotopes, observed that the use of certain AEC facilities, which may be justified by AEC waste management requirements, may constitute competition to industry. He suggested that a possible answer to the problem "lies in registering support for AEC's waste management program while looking for assurance that /AEC/ raw material isotopes and /AEC/ facilities, if utilized commercially, would be realistically priced so as not to restrict the emergence of competitive private efforts while encouraging broad utilization of recovered isotopes."

Price-Use Relationship

In the withdrawal guidelines suggested by the AEC staff, the first listed prerequisite was that private radioisotope prices should be reasonable and consistent with encouragement of research and development and use. The Forum Committee inferred from this statement, and subsequently confirmed through discussions, that the AEC staff believes certain radioisotope applications to be extremely sensitive to price. Although the members of the Forum Committee did not attach the same significance to the price-use relationship, it was clear that the "full cost recovery" price of certain isotopes might tend to restrict their use. For this reason, the Committee suggested that where this situation exists and the AEC believes a proposed application merits support, AEC assistance should be offered in some form other than an artificially low price for the isotope, e.g. through the granting of research contracts.

This Committee suggestion prompted one respondent to endorse the idea of "applying research grants as an effective temporary price modifier [as] a good and controllable one" and to further comment that in his opinion "price is not as large a factor in the market expansion of isotope applications as the AEC has always felt." According to his analysis, "the cost of raw isotopes in most instances is a very small portion of the total cost of the application except in those few cases where extremely large sources for brute force radiation are employed."

Attachment

Comments and Recommendations of

Forum Ad Hoc Committee on Isotope Production and Distribution

on

POLICY CRITERIA FOR AEC ISOTOPES PROGRAM

On April 24, 1963, the Atomic Industrial Forum convened representatives of 15 companies known to have an interest in radioisotope production, processing and distribution to discuss the opportunities and problems relating to these activities. The seminar participants reached two principal conclusions. The first was that U.S. industry has a real and substantial interest in radioisotope production, processing and distribution as evidenced by programs under way and planned. These programs are backed up by specialized facilities and experienced personnel. The second conclusion was that industry is apprehensive over whether future AEC policies will prove conducive to industry's expanding its commercial activities in this area of atomic energy development.

Subsequently, members of the seminar group were invited to meet with members and staff representatives of the Atomic Energy Commission to respond to the following policy questions:

1. What should be the criteria for AEC withdrawal from the production, processing and distribution of particular radioisotopes in favor of a demonstrated private industry capability?

2. What should be the nature and content of formal petitions submitted to the AEC by private firms requesting AEC withdrawal from production of particular radioisotopes?

3. What should be the criteria for AEC pricing of radioisotopes?

4. Should the AEC contract with private firms for research and development on radioisotope production technology?

The Forum Ad Hoc Committee on Isotope Production and Distribution has carefully considered these policy questions and has established for each a number of recommendations. In its deliberations, the Forum Committee has kept foremost the dual objectives of the AEC's isotope development program: (1) to encourage radioisotope applications, including their use in research and development and (2) to promote the development of private sources of supply of radioisotopes. The Committee believes that acceptance of its recommendations will provide maximum opportunity for realizing these objectives and will thereby increase the benefits that can be anticipated from a continuing and expanding use of radioisotopes.

The recommendations which follow are intended to confirm the views which the Forum Committee endeavored to express in its October 17 meeting with the AEC. Names and company affiliations of the Committee members who participated in the preparatio of these recommendations appear in the attached list. All of them subscribe to the views expressed herein.

Recommendations

AEC Withdrawal Criteria

The Forum Committee endorses the Commission's general policy "to discontinue providing material or services which are reasonably available from commercial sources." The Committee also subscribes to the AEC staff recommendation that "the AEC can initiate withdrawal actions upon determining that such action is appropriate." In accordance with these broad policy guides, the Committee recommends:

1. The AEC should voluntarily withdraw from the production, processing and distribution of a particular radioisotope whenever the particular radioisotope is "reasonably available from commercial sources." To expedite such action, the AEC should undertake a positive, vigorous and continuing assessment of private capability to produce, process and distribute radioisotopes.

2. As an integral part of its withdrawal policies and procedures, the AEC should withdraw upon the petition of a private organization if:

   a. The petitioning organization, either by itself or in conjunction with other non-AEC sources of supply, can meet current domestic demands for a particular radioisotope; and

   b. AEC withdrawal will not unreasonably restrict competition.

3. In accordance with AEC staff recommendations, foreign producers should be "accepted in determining effective competition" in the U.S.

4. Reasonableness of price need not be considered as an additional criterion to AEC withdrawal if the above criteria are met.

5. When the AEC considers withdrawal in favor of a single source of supply, it may be appropriate to include reasonableness of price as a criterion if the uniqueness of the facilities or the patent advantages associated with the single source of supply presage the preclusion of competition.

6. A petition should be approved promptly unless the AEC has reason to question its contents or finds that approval would be inconsistent with the above criteria.

7. To assure an uninterrupted source of supply to users, the AEC should publish a prior notice of its decision to withdraw.

Filing a Withdrawal Petition

The Forum Committee concurs in the AEC staff recommendation that a private organization requesting the AEC to withdraw from the production, processing and distribution of a particular radioisotope should be required to submit a formal petition. The Committee further agrees that such a petition "should contain sufficient evidence to demonstrate adequate technical, financial and managerial resources, as well as seriousness of intent." Accordingly, the Committee recommends:

1. A petition form of standardized scope and format should be designed to facilitate industry's filing and AEC's reviewing a requested withdrawal action. The petition should include:

   a. product specifications to show evidence of their comparability to AEC products or adequacy to meet user demands;

   b. estimate of current demand;

   c. the petitioning organization's production, processing and distribution capability;

   d. price schedule (to be considered as a criterion to withdrawal only in the absence of a competitive source of supply);

   e. delivery schedule;

   f. proposed date of AEC withdrawal;

   g. additional information on request concerning the petitioning organization's technical and financial resources if the above information is inadequate for the AEC to make a finding.

2. The AEC should not publish or otherwise release the contents of a petition (a) to the extent it includes company confidential information or (b) prior to publication of a notice of an AEC decision to withdraw.

3. If the AEC reaches a decision not to approve a petition, it should provide to the petitioning organization information on the reasons for its decision.

Radioisotope Pricing

The Forum Committee is cognizant of the obligations imposed on the AEC by Section 81 of the Atomic Energy Act in the pricing of radioisotopes which it produces, processes and distributes. The Forum Committee endorses the policy set forth in Chapter 1701 of the AEC Manual "that materials and services furnished to others /by AEC/ shall be priced at the higher of full cost recovery or current commercial prices." In view of the above, the Committee recommends:

1. Isotope prices should provide for full cost recovery on an isotope-by-isotope basis, taking into account all commercial cost factors. Once established on the basis of costs or reasonable commercial prices, whichever is higher, AEC prices should only be changed to appropriately reflect significant changes in production costs or to make them conform to the policy set forth in the AEC Manual.

2. The AEC should publish prior notice of proposed price changes, including in such notice the reasons for the proposed price changes.

3. The AEC price for a particular radioisotope should not be changed during the period when the AEC is reviewing a petition filed by a private organization requesting AEC withdrawal from production of the same isotope.

AEC R&D Support

The Forum Committee recognizes the value of AEC-supported research on new concepts and techniques for the production and utilization of radioisotopes. In this context, the Committee recommends:

1. The AEC should continue its support of basic research designed to lead to new radioisotope production and application concepts and techniques. Such support will assist in promoting wider utilization of radioisotopes and also encourage private firms to enter into radioisotope production.

2. The placement of AEC-supported research should be determined by the previously used criteria of "unique ideas, capabilities and facilities," whether found in AEC, commercial, university or non-profit industrial laboratories. When AEC-supported research relating to radioisotope production is placed in commercial facilities already engaged in the production of radioisotopes, it will tend to strengthen private production capabilities.

3. AEC-supported research should be reported promptly and fully.

4. The AEC should not conduct or support development work on radioisotope production technology where it has withdrawn from production, processing and distribution of a particular radioisotope.

Discussion

Although the above recommendations are believed to be self-explanatory, the following discussion should prove useful in clarifying and/or elaborating on the Forum Committee's views on certain points, particularly in light of a number of AEC staff recommendations contained in the document, "AEC-AIF Meeting, October 17, 1963, Background Notes."

AEC Withdrawal Criteria

With regard to the acceptance of foreign producers in determining effective competition in the U.S., the Forum Committee believes this criterion should be adopted without qualification as to how much of the domestic market may have been captured by foreign producers at any particular time. Such qualification could only be justified if the guarantee of a certain domestic radioisotope production capability were a matter of national policy. The Committee is not aware of the existence of, or the need for, such a national policy. Nor is the Committee aware of available information which would permit one to determine that foreign producers had captured a particular portion of the market.

In describing reasonableness of price as a generally unnecessary criterion of AEC withdrawal, the Forum Committee expressed the opinion that the price of a particular radioisotope will automatically assume a reasonable level if supply is sufficient to meet demand and if there is free competition among suppliers. Only in the absence of adequate supply and/or opportunity for free competition should reasonableness of price be considered a possible criterion. The Committee believes that in such instances consideration should be given to cost factors that are not generally considered in establishing government prices, e.g. research and development costs, taxes, advertising, financial risks, etc.

The Forum Committee recognizes the concern of the AEC staff regarding the intent of private producers not to discontinue their operations and assumes that the AEC will find sufficient evidence to obviate this concern in the technical and financial qualifications outlined in the withdrawal petition. The Committee

suggests that it would be appropriate for the AEC to require a petitioning organization to give reasonable prior notice of any intent to cease production, processing and distribution of a particular radioisotope.

The Forum Committee does not understand the intent or relevance of the criterion proposed by the AEC staff that an organization's participation in radioisotope production should not create a conflict of interest with other contractual obligations it may have to the AEC, or to the Federal Government. If private radioisotope production appeared to involve a conflict of interest with a contractual obligation of this type, it would suggest a need to review the contractual relationship, but not the private operation.

The duration of prior notice of AEC withdrawal from production or processing of a particular radioisotope may vary depending on production and processing procedures, whether the private supplier has the radioisotope in stock, etc. The notice period should be sufficiently long to assure an uninterrupted source of supply to the user.

The Forum Committee recognizes the desirability of industrial producers, processors, distributors, and users using private facilities rather than those of the AEC for irradiation, processing, encapsulation, packaging and distribution whenever possible. Commercial suppliers and users should have access to AEC facilities only if they can certify that adequate facilities to meet a particular need are not available commercially.

Consistent with existing directives of the Bureau of the Budget, the AEC should, in the opinion of the Forum Committee, refrain from producing or processing a particular radioisotope for use by government agencies once it has withdrawn from distributing the same isotope to non-government users.

Filing a Withdrawal Petition

The Forum Committee's recommendations provide for a petition form which is very comprehensive. Consequently, the completed form will often contain proprietary information which the petitioning firm for competitive reasons must safeguard. AEC review of a petition should be materially assisted if such proprietary information can be submitted unhesitatingly by the petitioning organization. This can be done only if the petitioning organization can be assured that such proprietary information will not be released by the AEC.

Radioisotope Pricing

In those instances where the "full cost recovery" price or reasonable commercial price might tend to restrict an isotope application which the AEC believes merits support, the Forum Committee suggests that AEC assistance should be offered in some form other than an artificially low price for the isotope, e.g., through the granting of research contracts.

AEC R&D Support

In the placement of AEC-supported research in commercial laboratories, the Forum Committee recognizes that it would be necessary for the AEC to establish criteria to guarantee a broad and equitable distribution of such support. The Forum Committee also believes that new production technology developed through AEC-supported research should be published promptly and communicated promptly to private producers and processors.

Atomic Industrial Forum, Inc.

AD HOC COMMITTEE ON ISOTOPE PRODUCTION AND DISTRIBUTION

Members participating in and subscribing to the
Committee Report of December 12, 1963

Chairman: Lauchlin M. Currie, Director of Development,
The Research Triangle of North Carolina

Secretary: Edwin A. Wiggin, Technical Projects Manager,
Atomic Industrial Forum, Inc.

Brantley, J.C., Director of Research - Nuclear Division,
Union Carbide Corporation

Buck, J. H., Instruments Division, The Budd Company

Colestock, R. O., Nuclear Products Department,
Minnesota Mining & Manufacturing Company

Fitzgerald, Joseph J., President, Iso/Serve, Inc.

Goldstein, Allen, M., President, U.S. Nuclear Corporation

Landis, John W., Manager, Atomic Energy Division,
The Babcock & Wilcox Company

Matson, Edward J., Director of Commercial Development, Abbott Laboratories

O'Rorke, E. W., General Manager, Irradiation Services & Products Section,
Vallecitos Atomic Laboratory, General Electric Company

Vandegrift, R. A., Metals Department, The Dow Chemical Company

Wolf, James R., Nuclear Science & Engineering Corporation

Isotopes-3

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

OFFICIAL USE ONLY

...ence Section

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: April 20, 1964

FROM : W. B. McCool, Secretary

SUBJECT: APRIL 13 LETTER FROM R. A. BRIGHTSEN, PRESIDENT, NUCLEAR SCIENCE & ENGINEERING CORPORATION

SECY:McQ

1. At Information Meeting 369 on April 17, 1964, the Commissioners requested staff review of the April 13 letter from R. A. Brightsen, President, Nuclear Science and Engineering Corporation.

2. It is our understanding that the Division of Isotopes Development is taking the required action.

cc:
Chairman
General Manager
Deputy General Manager
Asst. General Manager
Asst. Gen. Mgr. for R&D
Director, Isotopes Development
General Counsel

4-24-64

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Enclosure 3

MEMO ROUTE SLIP
Form AEC-93 (Rev. May 14, 1947)

See me about this.	For concurrence.	For action.
Note and return.	For signature.	For information.

TO (Name and unit)	INITIALS	REMARKS
~~[illegible]~~		
	DATE	

TO (Name and unit)	INITIALS	REMARKS
Bill Lynch		The attached is the enclosure for:
	DATE	Memorandum for Commissioners from Paul C. Aebersold, Director Division of Isotopes Development through General Manager - May 14, 1964 Subject: INDUSTRY INFORMATION MEETING ON ISOTOPIC POWER DEVELOPMENT AND APPLICATION PROGRAM

TO (Name and unit)	INITIALS	REMARKS
	DATE	

FROM (Name and unit)	REMARKS
RUFUS W. SHIVERS TECHNICAL SPECIALIST DIVISION OF ISOTOPES DEVELOPMENT USAEC-WASHINGTON, D. C. 20545	per your request

PHONE NO.	DATE

USE OTHER SIDE FOR ADDITIONAL REMARKS

U. S. GOVERNMENT PRINTING OFFICE : 1951—O-422007

ATOMIC INDUSTRIAL FORUM INC.

850 THIRD AVENUE • NEW YORK 22, N.Y. • PLAZA 4-1075

INDUSTRY INFORMATION MEETING MAY 18-19 ON
ISOTOPIC POWER DEVELOPMENT AND APPLICATIONS

Dear Sir: April 17, 1964

The Atomic Industrial Forum, in cooperation with the AEC, will sponsor a classified industry information meeting in Washington, D.C. May 18 and 19 on isotopic power development and applications. Speakers drawn from AEC's isotopic fuels production, fabrication and safety test sites, together with principal AEC industry contractors, will provide participants with a status report on Commission-sponsored research on isotopic power sources. Representatives of user agencies will also make brief presentations on potential applications. (See attached agenda).

The purpose of this letter is to inform you of the meeting and to invite you to attend. The meeting is open, at no charge, to all individuals with a "Q" or "QX" clearance, and to those appropriately certified by NASA and the Department of Defense.

The meeting will be held in the Auditorium of the Interior Department, which should be entered on "C" Street between 18th and 19th Streets. Registration will begin at 9 a.m. on May 18 and sessions will start at 10 a.m. The meeting will conclude at about 4:30 p.m. the following day.

Persons wishing to attend the meeting should take special note of the security requirements, as described in the enclosed instruction sheet, to ensure their admittance at the time of the meeting. Clearance certifications should be processed through the Director of the AEC's Division of Isotope Development in Washington before May 12.

A message center will be provided for the convenience of the participants. Messages may be transmitted to the center by dialing Code 202, 343-6636 on the days of the meeting. For transportation needs, it is suggested that participants utilize public conveyances rather than private cars in view of the absence of parking facilities.

Further information on the meeting may be obtained from Ted Brown of the Forum staff or from Rufus Shivers of the AEC's Isotopes Development Division.

Sincerely,

Charles Robbins
Executive Manager

CR:gebm

4/17/64

U.S. Atomic Energy Commission

SECURITY INFORMATION

JOINT AEC-ATOMIC INDUSTRIAL FORUM MEETING ON
ISOTOPIC POWER FUELS, WASHINGTON, D.C.
MAY 18 - 19, 1964

This meeting will disseminate information classified Secret and containing Restricted Data (as defined in the Atomic Energy Act of 1954). Attendance is, therefore, limited to those persons holding U.S. Government security clearances, or access authorizations, at the level of Secret or higher, and which are valid for access to Restricted Data.

Printed material will be distributed at the meeting which is variously classified to Secret, some of which also contains Restricted Data. It is intended that this distributed material, together with notes taken, will be mailed back to attendees following the conference.

Clearance information and visit request forms are to be addressed to:

Director
Division of Isotopes Development
Atomic Energy Commission
Washington, D.C. 20545

and routed as shown below:

a. Personnel (other than Access Permittees) having Atomic Energy Commission class "Q" security clearances (or access authorizations):

1. Clearance information will be forwarded on Form AEC-277.

2. To be eligible for mail-back of classified notes taken and the classified material distributed, "Q" cleared attendees must show on the 277 a mailing address which has been granted facility approval by the AEC for Secret.

b. Access Permittees and their employees:

1. Must hold "QX" access authorization and execute Form AEC-403. Form AEC-403 may be obtained from the AEC office administering the permit.

2. To be eligible for mail-back of classified notes taken and the classified material distributed, access permittees must have facility approval (10CFR Part 95) for Secret and be authorized information categories C-44, nuclear technology, and C-92a, Systems for Nuclear Auxiliary Power (SNAP) Isotopic, (10CFR Part 25) by the Access Permit.

If you hold a Secret Permit which does not provide for such access (both) you may request amendment of your Secret Access Permit by contacting the AEC office that administers your permit.

c. Personnel of the Armed Forces, personnel of the Department of Defense, and employees of Department of Defense contractors and sub-contractors:

1. Clearances must be certified [1/] by a Department of Defense activity as provided by the appropriate Departmental regulation, i.e.:

Department of Defense - DOD Directive 5210.2 VI B 5. Department of the Army, Army regulation 380-150, Section IV, paragraph 11. Department of the Navy - OPNAV 5510.3 F 8, b (6). Depart- of the Air Force - Air Force regulation 205-1, Chapter 8, Section C.

2. To be eligible for mail-back of classified notes taken and the classified material distributed, "DOD" certified attendees must show on the certification form a mailing address which has been granted facility approval by the DOD for Secret.

d. Personnel of the National Aeronautics and Space Administration and employees of NASA contractors and sub-contractors:

1. Clearances must be certified [2/] on NASA Form 405 and processed as directed by NASA Manual Issuance 2A-1-2. NASA Form 405 may be obtained from any NASA Field Installation.

2. To be eligible for mail-back of classified notes and the classified material distributed, NASA-certified attendees must show on the certification form a mailing address which has been granted facility approval by the DOD or NASA for Secret.

No facilities will be available at the meeting for processing clearance forms. Completed forms must be received by the Director, Division of Isotopes Development, not later than May 12, 1964. Questions involving security matters may be directed to Visitor Control, Atomic Energy Commission, Headquarters, Code 301-973-4031.

1/ The term "Certification" means a formal written request from the DOD to the AEC that an employee of the DOD, its agencies, or its contractors be granted access to Restricted Data in the possession of the AEC or its contractors. The certification must be signed by

or executed in the name of a titled official authorized to so certify by the DOD on the Branch of Services concerned. The use of AEC Form 277 for such certification is encouraged, but certification may be made on any form which conveys the elements of data required by the regulations cited.

2/ Personnel of NASA and employees of NASA contractors may be certified for access to Restricted Data from the AEC and its contractors in the same manner as in 1/above except NASA Form 405 will be used.

INDUSTRY INFORMATION MEETING ON ISOTOPIC
POWER DEVELOPMENT AND APPLICATIONS

MONDAY, MAY 18

9:00 REGISTRATION

Morning Session

10:00 INTRODUCTORY REMARKS

R. E. Fowler, Division of Isotopes Development, AEC

ISOTOPIC POWER - MATERIALS PRODUCTION PROGRAM

Neutron Products
C. W. Shoemaker, Production Division, AEC

Fission Products
C. A. Rohrman, Hanford Laboratories

SNAP ISOTOPES PROGRAM

R. T. Carpenter, Division of Reactor Development, AEC

THERMAL APPLICATIONS PROGRAM

A. Berman, Division of Isotopes Development, AEC

NUCLEAR SAFETY - STANDARDS AND EVALUATION

J. A. Lieberman, Division of Reactor Development, AEC

12:45 Lunch

Afternoon Session

2:00 ISOTOPIC POWER FUEL DEVELOPMENT PROGRAM

Cerium 144, Cesium 137, Strontium 90
R. McHenry, Oak Ridge National Laboratory

Promethium 147
R. L. Moore, Hanford Laboratories

Strontium 90 for Space Applications
R. Wischow, Martin Company

Polonium 210
C. J. Kershner, Mound Laboratories

Monday, May 18 (cont.)

Plutonium 238
J. A. Powers, Mound Laboratories

Encapsulation
D. L. Prosser, Mound Laboratories

4:30 Adjournment

TUESDAY, MAY 19

Morning Session

9:00 ISOTOPIC POWER FUEL DEVELOPMENT PROGRAM (Cont.)

Curium 242 and 244
E. E. Lamb, Oak Ridge National Laboratory

SHIELDING FOR SPACE SYSTEMS

E. D. Arnold, Oak Ridge National Laboratory

SNAP DEVELOPMENT

SNAP 9A
(Martin Company Representative)

Terrestrial and Marine Power
S. J. Seiken, Division of Reactor Development, AEC

SNAP 19
(Martin Company Representative)

SNAP 15A
L. W. Perry, General Atomic

SNAP 15C
R. Dahlen, Minnesota Mining and Manufacturing Co.

RADIOISOTOPE SPACE PROPULSION SYSTEMS

J. S. Martinez, Space Technology Laboratories

12:30 Lunch

Tuesday, May 19 (cont.)

Afternoon Session

2:00 ISOTOPE SYSTEMS - CURRENT AND FUTURE OPPORTUNITIES

Presentations by representatives of:
Air Force
NASA
Navy
Coast Guard
Weather Bureau

Panel Discussion and Questions
E. E. Fowler, Chairman

4:30 Adjournment

Isotopes

UNCLASSIFIED

April 15, 1964

AEC 994/17

COPY NO. 76

ATOMIC ENERGY COMMISSION

PROPOSED COMMISSION ACTIONS BASED ON CORRESPONDENCE FROM NUCLEAR SCIENCE & ENGINEERING CORPORATION

AEC 994/17

Note by the Secretary

1. The Assistant General Manager for Research and Development has requested that the attached recent correspondence from Nuclear Science & Engineering Corporation be circulated for the information of the Commission.

2. The Director of Isotopes Development has advised that the matters discussed in the correspondence are currently under review.

W. B. McCool
Secretary

DISTRIBUTION	COPY NO.
Secretary	1,73-80
Commissioners	2-6,81
General Manager	7-8
Dir. of Regulation	9-11
Deputy Dir. of Regulation	12
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4-15-64

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ATTACHMENT 1

Nuclear Science & Engineering Corporation

P. O. BOX 10901. PITTSBURGH 36. PENNSYLVANIA
AREA CODE 412
PHONE 442-4000 TWX 842-3102

R. A. BRIGHTSEN
PRESIDENT

March 27, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I am pleased to advise you that NSEC is actively engaged in the reactor production of the following radioisotopes: nickel-59, tin-119m, and tellurium-125m. We hereby formally request that

1. The AEC not engage in the production and sale of these isotopes; and

2. The AEC not conduct or support developmental work on the production of these isotopes.

Nickel-59. NSEC initiated research and development efforts on Ni-59 production and processing in September, 1962. After successful completion of these efforts, a batch of Ni-59 was produced and placed in stock in April, 1963. Public announcement of the availability of this isotope was made in the summer of 1963 by NSEC Technical Bulletin No. R3-6, a copy of which is attached. Further production runs will be scheduled, as appropriate, to assure continued delivery from inventory.

Tin-119m. NSEC developed Sn-119m production and processing techniques during 1962. After successful completion of test irradiations, a batch was produced and placed in stock in February, 1963. Public announcement of the availability of this radioisotope was made shortly thereafter by distribution of NSEC Technical Bulletin No. R3-3, a copy of which is attached. An inventory well in excess of demand has been maintained continuously since the initial availability of Sn-119m.

Tellurium-125m. The development of production and processing methods for Te-125m were conducted at NSEC in October, 1963. A batch was placed in

stock on March 6, 1964. Public announcement of the availability of Te-125m has been made in NSEC specification sheet R43-13, a copy of which is enclosed.

Inasmuch as none of these isotopes are current AEC products, the only action which we ask is that you take appropriate steps to ensure that the national laboratories do not become engaged in competitive activities of either a research and development or production character.

We are looking forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

RAB:ljs

Enclosures

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NUCLEE

Nuclear Science and Engineering Corporation

P. O. Box 10901 • Pittsburgh 36, Pa. • HOmestead 2-4000 • Area Code 412 • TWX PG-940

TECHNICAL BULLETIN

No. R3-3

AVAILABLE FROM STOCK

High Specific Activity TIN-119m

Half-life	-	250 days	
Radiations	-	Gamma	- 0.024 Mev
			0.065 Mev
		K_α X-ray	- 25.3 Kev
Purity	-	>96%. Contains	<1% Sn-117m (14 day - 0.16 Mev)
			<3% Sn-113 (118 day - 0.39 Mev)
Specific Activity			- 10 to 30 millicuries/gram of tin
Forms			- $SnCl_2$ in HCl; Sn metal

Tin-119m has been widely used as a Mössbauer effect source. It is available now in unprecedented high specific activity, either in solution or as tin metal. This isotope has been produced by irradiation of highly enriched Tin-118 in the highest neutron flux available.

PRICE - $300.00 per millicurie

AEC license is required.

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NSEC

Nuclear Science and Engineering Corporation

P. O. Box 10901 • Pittsburgh 36, Pa. • HOmestead 2-4000 • Area Code 412 • TWX PG-940

TECHNICAL BULLETIN

No. R3-6

AVAILABLE FROM STOCK

NICKEL-59

Half-life	-	$\sim 10^5$ years	
Radiations	-	K_α X-ray	- 7.5 Kev
Purity	-	99+%	
Specific Activity			- 0.3 to 0.8 μc/mg nickel
Form			- $NiCl_2$ in HCl solution

Ni-59 is a pure X-ray emitter. It is now available from NSEC. Ni-59 has never been offered for sale previously.

PRICE	-	$125.00 per microcurie
MINIMUM ORDER	-	0.5 microcuries
DISCOUNTS	-	on amounts in excess of 5 microcuries

AEC license is required.

Attachment 1

Nuclear Science & Engineering Corporation

P. O. Box 10901 • Pittsburgh, Pa. 15236 • 462-4000 • Area Code 412 • TWX 642-3192

RADIOISOTOPE SPECIFICATIONS

No. R43-9

NICKEL-59

Half Life		$\sim 10^5$ years
Radiations	Electron Capture	(100%)
	*K X-ray	~6.9 Kev (39%)
Production Method		$Ni^{58}(n,\gamma)Ni^{59}$
Chemical Form and Acidity		Ni^{II} in 0.5 N HCl
Concentration		>1 μc/ml
Specific Activity		≅ 1 mc/gm Ni
Radiochemical Purity		>99% (exclusive of Ni^{63}, <10%)
Delivery		In Stock
Price	0-5 μc	$125.00/μc
	>5 μc	On Request

Minimum Order - 0.5 μc

Handling Charge - $20.00 per shipment

Byproduct material license is required for quantities exceeding 1.0 μc.

*Assay is based on ω_K=0.39

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P. O. Box 10901 • Pittsburgh, Pa. 15236 • 462-4000 • Area Code 412 • TWX 642-3192

RADIOISOTOPE SPECIFICATIONS

No. R43-11

TIN-119m

Half Life		250 days
Radiations	Beta	None
	Gamma	24 Kev (13%)
		65 Kev (small)
	K X-ray	24.7 Kev (28%)
Production Method		$Sn^{118}(n,\gamma)Sn^{119m}$
Chemical Form and Acidity		Sn^{II} in 0.5 N HCl*
Concentration		>0.5 mc/ml
Specific Activity		10-30 mc/gm Sn
Radiochemical Purity		>98% (exclusive of Sn^{117m}, <5%; and Sn^{113}, <5%)
Delivery		In Stock
Price		$300.00/mc

Minimum Order - 0.2 mc

Handling Charge - $20.00 per shipment

Byproduct material license is required.

*Also available as SnO_2, Mg_2Sn, and in other forms; prices on request.

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RADIOISOTOPE SPECIFICATIONS

No. R43-13

TELLURIUM-125m

Half Life		58 days
Radiations	Beta	None
	Gamma	35.3 Kev (6.8%)
		109.6 Kev (0.4%)
	K_α X-ray	~27.2 Kev (114%)
Production Method		$Te^{124}(n,\gamma)Te^{125m}$
Chemical Form and Acidity		Te^{IV} in 0.5 N HCl
Concentration		>0.1 mc/ml
Specific Activity		>100 mc/gm
Radiochemical Purity		>98% (exclusive of Te^{123}, <10%)
Delivery		In Stock
Price		On Request

Handling Charge - $20.00 per shipment

Byproduct material license is required.

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ATTACHMENT II

Nuclear Science & Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania

Area Code 412

Phone: 682-4000 TWX 642-3182

R. A. Brighteen
President

March 26, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I have mailed you today a letter dealing with ORNL's developmental work on manganese-54 production. In that letter, I question whether the national laboratories should use public funds to develop production methods for materials already available from industry. To destroy the advantage of a given firm by distributing valuable technical data to its competitors, without charge, must necessarily inhibit enterprise and discourage risk-taking and the application of ingenuity by industry.

You will recall that the Commission acted last fall to withdraw from the production of iodine-125. At that time, it indicated its intent to continue development of improved production techniques for this isotope.

We should now like to repeat our request, which has been made repeatedly in the past, that such developmental work be discontinued.

As an important supplier of iodine-125, we are in a position to evaluate the market potential for this isotope. As a normal part of our business, we would at some point determine whether or not we should risk our funds for developmental programs on new production methods. Our decision would be based upon normal commercial criteria, including probable cost of development, sales projections, and lead time over competitors.

We think the time might not be too remote before we could justify investing our own capital in continuous loop production or enriched xenon-124 production of iodine-125. We cannot proceed to explore either of these methods, however, so long as there is the prospect that others will obtain comparable data without any investment or risk.

We believe that the incentives and ingenuity of private enterprise would result in the most economical production and distribution of radioisotopes; we ask that ORNL activities which conflict with this goal be discontinued. We specifically petition once again that further research and development on iodine-125 production by the Oak Ridge National Laboratory be terminated without delay.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

RAB:ljs

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ATTACHMENT III

Nuclear Science & Engineering Corporation

P.O. Box 10901, Pittsburgh 36, Pennsylvania
Area Code 412
Phone: 462-4000 TWX 642-3182

R. A. Brightsen
President

March 25, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I wish to thank you for reporting to us, by your letter of March 11, 1964, the decision of the Atomic Energy Commission to withdraw from the production and distribution of chromium-51, iron-55, cobalt-58, cesium-134, and cerium-141.

We have today, once again, publicly announced the availability of these products by means of the attached circulars. These have been mailed to information media and the Oak Ridge Isotopes customer list. You will observe that the announcement for each product includes product specifications, prices, and delivery schedules.

On the basis of this action, we understand that a press release will promptly be issued, which will announce AEC withdrawal, effective 90 days from today.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

Per

RAB:ljs

Enclosures

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Nuclear Science & Engineering Corporation

P. O. Box 10901 • Pittsburgh, Pa. 15236 • 462-4000 • Area Code 412 • TWX 642-3192

RADIOISOTOPE SPECIFICATIONS

No. R43-1

CHROMIUM-51

Half Life		27.8 days
Radiations	Beta	None
	Gamma	0.325 Mev (9%)
	K X-ray	~4.9 Kev (100%)
Production Method		$Cr^{50}(n,\gamma)Cr^{51}$
Chemical Form and Acidity		Cr^{III} in 0.5 N HCl
Concentration		>1 mc/ml
Specific Activity		>100,000 mc/gm Cr
Radiochemical Purity		>99%
Delivery		In Stock
Price	1-500 mc	$2.40/mc
	>500 mc	1.50/mc

Handling Charge - $20.00 per shipment

Byproduct material license is required.

Nuclear Science & Engineering Corporation

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RADIOISOTOPE SPECIFICATIONS

No. R43-3

IRON-55

Half Life		2.7 years
Radiations	Beta	None
	Gamma	None
	*K X-ray	~5.9 Kev
Production Method		Mn^{55} (p, n) Fe^{55}
Chemical Form and Acidity		Fe^{III} in 0.5 N HCl
Concentration		>0.5 mc/ml
Specific Activity		Carrier-free
Radiochemical Purity		>99% (Fe^{59} <0.0001%)
Delivery		In Stock
Price	1-49 mc	$50.00/mc
	50-99 mc	40.00/mc
	100-199 mc	35.00/mc

Handling Charge - $20.00 per shipment

*Assay is based on NBS standard. L/K capture ratio: 0.108 and ω_K=0.308 are used.

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RADIOISOTOPE SPECIFICATIONS

No. R43-4

COBALT-58

Half Life		72 days
Radiations	Beta	None
	Positron	0.485 Mev (~15%)
	Gamma	0.805 Mev (~100%)
	K_α X-ray	6.4 Kev (~85%)
Production Method		Ni^{58} (n, p) Co^{58}
Chemical Form and Acidity		Co^{II} in 0.5 N HCl
Concentration		>1 mc/ml
Specific Activity		Carrier-free
Total Solids		<0.1 mg/mc
Radiochemical Purity		>99% (exclusive of Co^{60}, <3%)
Delivery		In Stock
Price	1-100 mc	$20.00/mc
	>100 mc	15.00/mc

Handling Charge - $20.00 per shipment

Byproduct material license is required.

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RADIOISOTOPE SPECIFICATIONS

No. R43-6

CESIUM-134

Half Life		2.07 years
Radiations	Beta	0.086 Mev (27%) 0.410 Mev (9%) 0.658 Mev (61%) Others (~3%)
	Gamma	0.475 Mev (4%) 0.563 Mev (14%) 0.569 Mev (11.5%) 0.605 Mev (98%) 0.797 Mev (72.5%) 0.802 Mev (10.5%) 1.038 Mev (5%) 1.365 Mev (5%)
Production Method		$Cs^{133}(n,\gamma)Cs^{134}$
Chemical Form and Acidity		Cs^{I} in 0.5 N HCl
Concentration		>1 mc/ml
Specific Activity		>25,000 mc/gm Cs
Radiochemical Purity		>98%
Heavy Metals (as Pb)		<10 μg/mc
Delivery		In Stock
Price	1-1000 mc	$1.50/mc
	>1000 mc	1.00/mc

Handling Charge - $20.00 per shipment

Byproduct material license is required.

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RADIOISOTOPE SPECIFICATIONS

No. R43-7

CERIUM-141

Half Life		32.5 days
Radiations	Beta	0.435 Mev (70%)
		0.580 Mev (30%)
	Gamma	0.145 Mev (50%)
	K_α X-ray	~0.0356 Mev (~20%)
Production Methods		$Ce^{140}(n,\gamma)Ce^{141}$
Chemical Form and Acidity		Ce^{III} in 0.5 N HCl
Concentration		>1 mc/ml
Specific Activity		>1000 mc/gm Ce
Radiochemical Purity		>99% (exclusive of Ce^{139}, <2%; Ce^{144}-Pr^{144}, <0.01%)
Heavy Metals (as Pb)		<10 μg/mc
Delivery		In Stock
Price	1-100 mc	$5.00/mc
	>100 mc	4.00/mc

Handling Charge - $20.00 per shipment

Byproduct material license is required.

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ATTACHMENT IV

Nuclear Science & Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania
Area Code 412
Phone: 462-4000 TWX 642-3192

R. A. Brightsen
President

March 26, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I wish to acknowledge your informing us, by your letter of March 11, 1964, that ORNL is performing developmental work on a reactor irradiation method for producing manganese-54.

For the reasons set forth below, NSEC hereby formally requests that

1. The AEC make a public announcement that manganese-54 is reasonably available from private industry and that AEC will not engage in its production and sale.

2. The Oak Ridge National Laboratory discontinue further developmental work on manganese-54 production.

The basis for our first request is that NSEC is already routinely producing, processing and distributing reactor-produced manganese-54. Our product is carrier-free and has high (> 99%) radiochemical purity characteristics.

Our first batch of reactor-produced manganese-54 was placed in stock in January, 1963. Since then, we have maintained an inventory of the material at all times. We will continue to make production irradiations, as required, to assure prompt delivery from stock.

Ever since our successful development of Mn-54 production technology, we have been advising our customers that our material is reactor-made. Let me say, parenthetically, that we are gratified by the high degree of customer acceptance which we have obtained.

The specifications submitted to you on May 24, 1963 relate to the reactor product. Further details are provided in the attached specification sheet, which

we have today mailed to information media and the Oak Ridge isotopes customer list. You will observe that the announcement includes product specifications, price, and delivery schedule.

For the reasons outlined above, I am sure you will agree that manganese-54 is reasonably available from private sources of supply. For the Commission to enter into competition would clearly be inconsistent with the policies of industrial participation which it has enunciated.

Our second request, dealing with developmental work at ORNL, is also based upon vital policy consideration. NSEC used its own funds in developing a method of reactor-irradiation to produce manganese-54. There is nothing to prevent another private firm from making a comparable investment if it is willing to accept the risk of failure.

We protest, however, when the Commission uses public monies to develop a technology for companies which are not willing to risk their own capital. If NSEC (or any other firm) is to have the incentive to do research and development, it must have confidence that the Commission will not destroy its competitive advantage by publicly supporting production research for companies who are unwilling to take risks.

The policy question is therefore quite easy to formulate: does the Commission desire to stimulate in private industry the capability and incentive to develop isotope production technology? If it does, then competitive developmental efforts by the national laboratories should be terminated.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

Ron

RAB:ljs

Enclosure

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Nuclear Science & Engineering Corporation

P. O. Box 10901 • Pittsburgh, Pa. 15236 • 462-4000 • Area Code 412 • TWX 642-3192

RADIOISOTOPE SPECIFICATIONS

No. R43-2

MANGANESE-54

Half Life		313.5 days
Radiations	Beta	None
	Gamma	0.834 Mev (100%)
	K X-ray	~5.4 Kev (100%)
Production Method		Fe^{54} (n, p) Mn^{54}
Chemical Form and Acidity		Mn^{II} in 0.5 N HCl
Concentration		>1 mc/ml
Specific Activity		Carrier-free
Radiochemical Purity		>99%
Delivery		In Stock
Price	0-4 mc	$200.00/mc
	>4 mc	Prices quoted on request

Minimum Order - 0.2 mc

Handling Charge - $20.00 per shipment

Byproduct material license is required.

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ATTACHMENT V

Nuclear Science & Engineering Corporation

P.O. Box 10901, Pittsburgh 36, Pennsylvania

Area Code 412

Phone: 462-4000 TWX 842-3182

R. A. Brightsen
President

March 25, 1964

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

I wish to acknowledge your reporting to us, by your letter of March 11, 1964, that the Atomic Energy Commission has deferred action upon NSEC's request for AEC withdrawal from production and distribution of strontium-85.

As indicated by your letter, the basis for this action was twofold:

1. NSEC had not actually produced and distributed the reactor product described in its petition.

2. The price of NSEC's cyclotron product was approximately four times higher than the AEC reactor product.

We are pleased to advise you formally that we have now produced and are commercially distributing reactor-made strontium-85. This material is in all respects identical with the product which was described tentatively in previous correspondence. The price, $50.00 per millicurie, is the same as the Commission's and discounts are offered on the same basis as AEC has done.

Accordingly, we respectfully submit that:

1. NSEC has now "demonstrated private industry capability."

2. NSEC's product is available commercially at a reasonable price.

We have today publicly announced the availability of reactor-produced strontium-85 by means of the attached circular. This has been mailed to in-

formation media and the Oak Ridge isotopes customer list. You will observe that the announcement includes product specifications, prices, and delivery schedule.

On the basis of this action, we trust you will proceed to include in your forthcoming press release a statement of AEC withdrawal from strontium-85 production, effective 90 days from today.

We look forward to working more closely with your Division on matters of radioisotope production.

Sincerely,

RAB:ljs

Enclosure

UNCLASSIFIED

Nuclear Science & Engineering Corporation

P. O. Box 10901 • Pittsburgh, Pa. 15236 • 462-4000 • Area Code 412 • TWX 642-3192

RADIOISOTOPE SPECIFICATIONS

No. R43-5

STRONTIUM-85

Half Life		64 days
Radiation	Beta	None
	Gamma	0.514 Mev (100%)
	K X-ray	0.013 Mev (~100%)
Production Method		$Sr^{84}(n,\gamma)Sr^{85}$
Chemical Form and Acidity		Sr^{II} in 0.5 N HCl
Concentration		>0.2 mc/ml
Specific Activity		>1,000 mc/gm Sr
Radiochemical Purity		>98% (exclusive of Sr^{89}, <1%)
Heavy Metals (as Pb)		<10 ppm
Delivery		In Stock
Price	1-500 mc	$50.00/mc
	>500 mc	35.00/mc

Handling Charge - $20.00 per shipment

Byproduct material license is required.

WL-399.2
C/J
2 m/a

Isotope-3

10

Nuclear Science & Engineering Corporation

P. O. BOX 10201, PITTSBURGH 36, PENNSYLVANIA
AREA CODE 412
PHONE: 462-4000 TWX 642-2192

R. A. BRIGHTSEN
PRESIDENT

April 13, 1964

Hon. Glenn T. Seaborg
Chairman
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Glenn:

We at NSEC are, of course, gratified by the recent action of the Commission in response to our isotope withdrawal petitions. This expression of AEC policy will provide the basis for accelerated activity in isotope production technology by private enterprise; we believe it will also ultimately stimulate wider uses of radioisotopes as well.

As a result of your withdrawal action, we have made a thorough review of our isotope production plans and have addressed several specific requests to the Division of Isotopes Development. These requests, copies of which are attached, relate to the following:

1.	Chromium-51 Iron-55 Cobalt-58 Cesium-134 Cerium-141	Evidence of public announcement is enclosed and withdrawal, effective June 25, is requested.
2.	Strontium-85	Reactor-produced Sr-85 is now in stock and public announcement is enclosed. Withdrawal, effective June 25, is requested.
3.	Manganese-54	Reactor-produced Mn-54, not presently distributed by ORNL, is a standard NSEC product. Immediate discontinuance of ORNL development is requested.

4/15-64

4.	Iodine-125	NSEC is considering development, at its own expense, of bulk I-125 production methods. Immediate discontinuance of ORNL development is requested.
5.	Nickel-59 Tin-119m Tellurium-125m	NSEC is currently producing these isotopes, which are not available from ORNL. It is requested that ORNL refrain from technology development or production of these items.
6.	Calcium-45 Iron-59 Zinc-65 Selenium-75 Tin-113 Antimony-125	NSEC plans to produce these isotopes, which are currently ORNL products. It is requested that ORNL prices not be reduced and that AEC withdraw from production ninety days after NSEC announcement of availability.

Although each of the enclosures deals with a somewhat different fact situation, certain policy issues are common to them. We respectfully suggest, as matters of policy for your consideration, that:

1. The AEC should not conduct production technology development on radioisotopes which are available only from private enterprise. AEC cannot encourage industry to develop a production capability with its own funds if competitors will obtain equivalent or improved technology without having taken any risks. (See letters 3, 4, and 5.)

2. The AEC should refrain from initiating production and distribution of isotopes which are already available from private enterprise. (See letters 3 and 5.)

3. The AEC should not lower the price of any isotope which it is producing when it has reason to believe that a company is, or has a serious intent to become, engaged in production of the isotope. Decisions to invest private capital in isotope production technology are based upon an analysis of the price structure of the market; if the price structure is subject to unpredictable change by AEC action after private funds are spent, then the risks of such investment are greatly increased, and the incentive for such investment is correspondingly reduced. (See letter 6.)

NSEC appreciates the Commission's continued interest and concern with matters of industrial participation in radioisotope production. We look forward

to increasing cooperation between AEC and private enterprise as the pace of industrial progress in this field is accelerated.

I wish to add my thanks for the personal attention which you have already devoted to these issues and for the evident desire on your part that they be resolved in line with the spirit, as well as the letter, of the Atomic Energy Act of 1954.

With best regards.

Sincerely,

President

RAB:ljs

Enclosures

AEC

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

Isotopes-3

No. IN-486
Tel. 973-3335 or
973-3446

FOR IMMEDIATE RELEASE
(Thursday, April 9, 1964)

AEC TO HOLD MEETING ON RADIOISOTOPE PRODUCTION-DISTRIBUTION FOR INDUSTRY

The Atomic Energy Commission will hold a meeting for interested industrial representatives on the know-how of radioisotope production and processing. The meeting will be held June 11 and 12 in the Commission's auditorium adjacent to the AEC Headquarters Building at Germantown, Maryland.

The purpose of the two-day meeting is to stimulate increased industrial interest in the production and distribution of both reactor and cyclotron produced radioisotopes.

AEC's production and distribution activities will be discussed by speakers from the Commission's principal radioisotope production sites -- Oak Ridge National Laboratory, Oak Ridge, Tennessee; Brookhaven National Laboratory, Upton, Long Island, New York; and Mound Laboratory, Miamisburg, Ohio.

Additional information concerning the meeting may be obtained by writing the Director, Division of Isotopes Development, Atomic Energy Commission, Washington, D.C. 20545.

- 30 -

4/9/64

4-9-64

AEC

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

Jacques B. Beets

No. G-77
Tel. 973-3335 or
973-3446

FOR IMMEDIATE RELEASE
(Wednesday, April 8, 1964)

JOINT AEC-ATOMIC INDUSTRIAL FORUM MEETING ON ISOTOPIC POWER FUELS

A meeting for the information of industry on the development and use of radioisotopes as sources of thermal power and other energy forms will be jointly sponsored by the Atomic Energy Commission and the Atomic Industrial Forum.

The meeting will be held May 18 and 19, in the Interior Department Auditorium, Washington, D.C.

The conference will provide industrial representatives with a status report on Commission-sponsored research on radioisotopic power sources. These are devices in which the heat produced by decay of certain isotopes may be converted into electric power, sound, force or thrust.

The AEC program for providing radioisotopes to fuel these devices will be discussed in detail -- from production of isotopic fuels through fuel research and development fabrication and application. The potential for space, military, maritime, or other uses of these devices will be explored. Some actual uses are found in remote automatic weather stations, weather or navigational buoys, and other SNAP (Systems for Nuclear Auxiliary Power) generator applications. Another application envisaged is for small or medium-sized thrusters in space propulsion.

Speakers will be drawn from the AEC's principal isotopic fuels production, fabrication, and safety-test sites such as Oak Ridge National Laboratory (Tenn.), Mound Laboratory (Ohio), the Savannah River (S.C.) and Hanford (Wash.) Plants, and the Sandia (N.Mex.) Laboratory, as well as principal AEC contractors involved in this work.

The conference will be open to industrial concerns and their representatives holding AEC access permits, or those

(more)

4-8-64

whose security clearance has been certified by the Department of Defense or the National Aeronautics and Space Administration. Clearance certifications should be processed through the Division of Isotopes Development, Atomic Energy Commission, Washington, D.C. 20545, before May 12. Further information on the meeting may be obtained from that source, or from the Atomic Industrial Forum, 850 Third Avenue, New York.

- 30 -

4/8/64

OPTIONAL FORM NO. 10
5010-104

UNITED STATES GOVERNMENT

Memorandum

Isotopes-3

OFFICIAL USE ONLY

Reference Section

TO : File

DATE: April 3, 1964

FROM : Gordon Fowler, Asst. Rec. Sec.,
Meeting Br., Off. of the Secretary

SUBJECT: CHARTS USED AT MEETING 1995

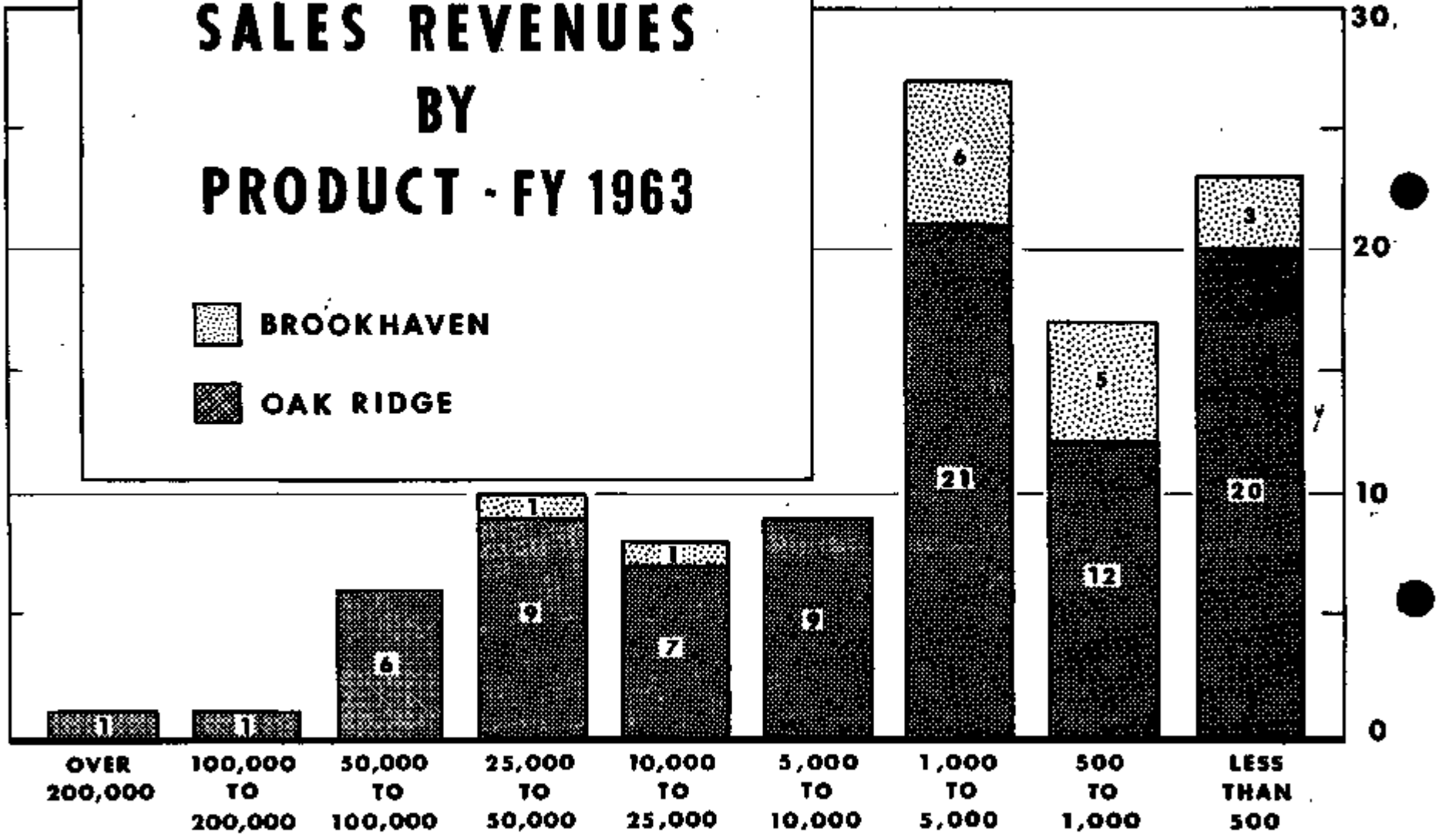
At Meeting 1995 held on February 24, 1964, Mr. Aebersold used the attached charts in discussion of AEC 994/16, NSEC Request for AEC Withdrawal from Production and Distribution of Seven Radioisotopes.

Attachment:
As noted above

OFFICIAL USE ONLY

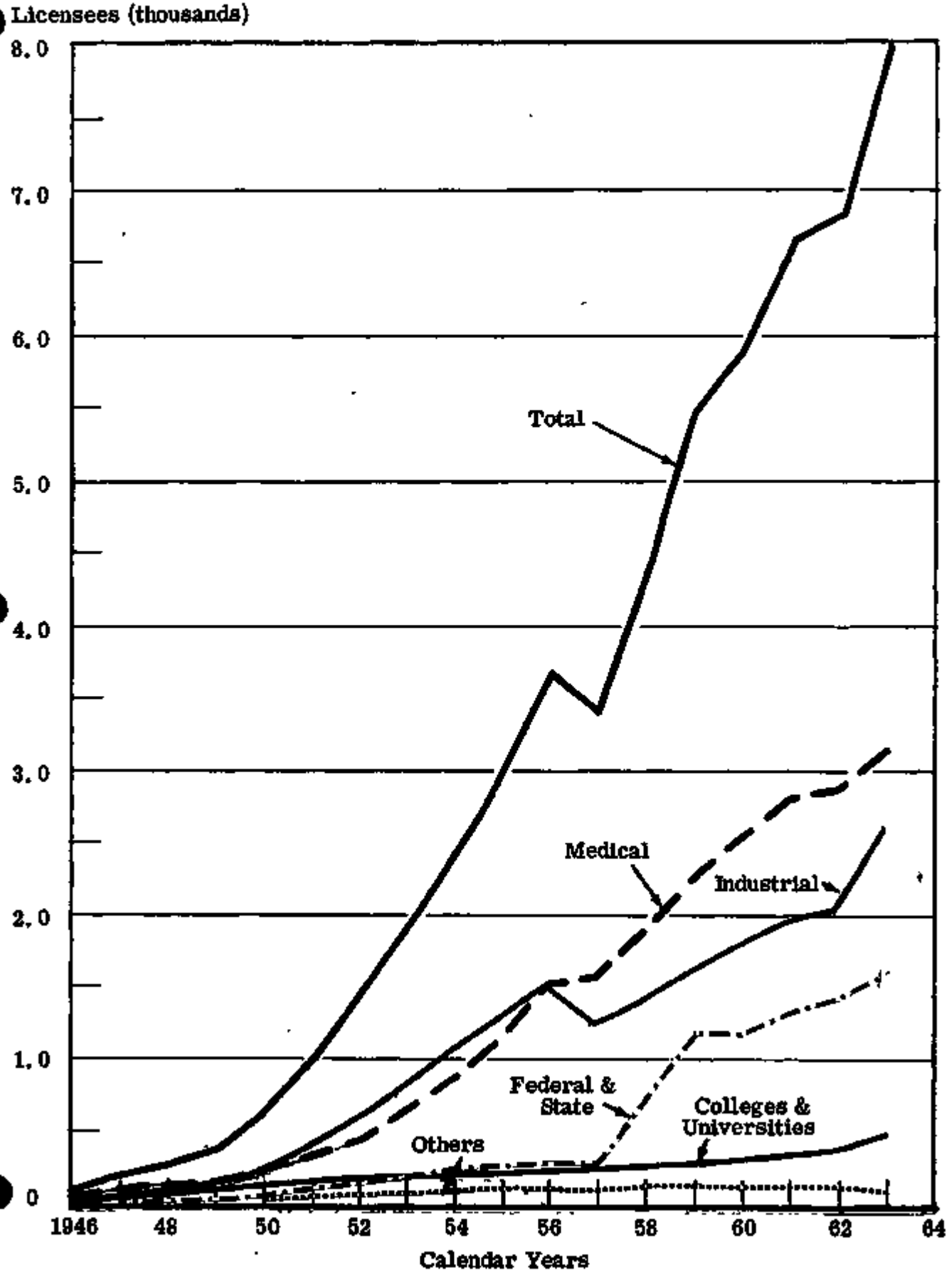
4-3-64

SALES REVENUES BY PRODUCT - FY 1963

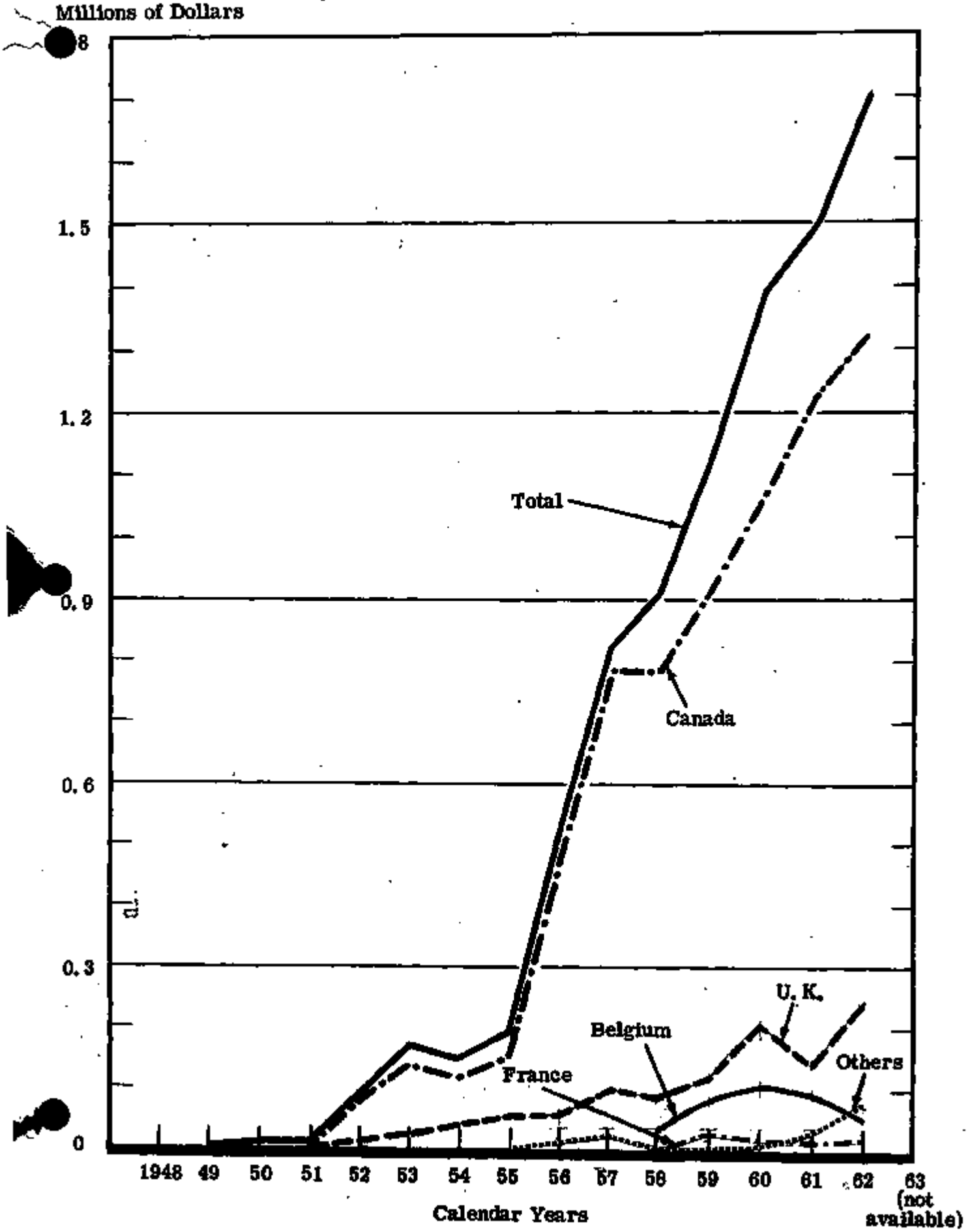


TOTAL PRODUCTS - 102

NUMBER OF RADIOISOTOPE LICENSEES IN THE U. S.



DOLLAR IMPORTS OF ISOTOPES INTO THE U. S.



DX 394.18

Letter 3.

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D.C.

MAR 31 1964

Dear Mr. Morrison:

Reference is made to your letter of March 10, 1964, requesting information which might be of assistance to Mr. Harry D. Richardson, Baton Rouge, Louisiana. As you are aware, Mr. Richardson has also written directly to me concerning this matter. A copy of my reply is enclosed.

It may be of some help to you if I briefly review current AEC policy concerning radioisotopes production and distribution. The Atomic Energy Act of 1954 authorizes the AEC to produce and distribute radioactive materials at a price which would (1) encourage research and development, (2) not discourage development of sources of supply independent of the Commission, and (3) stimulate increased utilization of radioactive materials. Our Division of Finance has interpreted this section of the Act to require the Commission to charge, for the radioisotopes it produces, the higher of full-cost recovery or current commercial price. The latter applies, of course, only in the event the material is available from a private producer. In computing full-cost recovery, the Atomic Energy Commission includes all operating and materials costs, overhead, depreciation of facilities and equipment, and an additional factor to cover such items as process development costs and similar expenses. Production cost analyses are conducted on an annual basis.

Additionally, the Atomic Energy Commission continues to be most interested in stimulating private industrial participation in radioisotopes production and distribution activities. It is, therefore, current Commission policy to withdraw, upon appropriate request, from the production and distribution of radioactive materials and/or related services when private industry has demonstrated a capability for making these materials and services available in adequate quantities and at a reasonable price.

I have been informed that Mr. Richardson's interests are concerned primarily with the radioisotopes, Cobalt-60 and Iridium-192. The Atomic Energy Commission withdrew from the routine production and distribution of Cobalt-60 in 1960, at the request of General Electric Company and Westinghouse Electric Corporation. The Commission, however, announced

3-31-64

at that time it would continue to make available for single order purchases, quantities of Cobalt-60 greater than 100,000 curies, at a price of $1.00 per curie. In 1963, the Commission, after annual review of the latest cost-price data related to Cobalt-60 production, reduced the price to $.50 per curie. The Commission has also withdrawn from the production and distribution of Iridium-192 on the basis of its availability from private domestic producers. However, we will continue to supply special grades of Iridium-192 not routinely available from private producers.

I trust this information will be of assistance to you.

Sincerely yours,

Chairman

Honorable James Morrison
House of Representatives

Enclosure 3

MAR 30 1964

Mr. R. W. O'Rorke, General Manager
Irradiation Services and Products
Atomic Products Division
General Electric Company
P. O. Box 846
Pleasanton, California

Dear Mr. O'Rorke:

With reference to your letter of January 17, 1964, this is to confirm my telephone notification to Mr. R. J. Slocum on February 28, 1964. As stated by Chairman Seaborg on February 26 during testimony before the Joint Congressional Committee on Atomic Energy, the Commission has completed its review of a request from Nuclear Science and Engineering Corporation (NSEC) that the AEC withdraw from the production and distribution of seven radioisotopes - Manganese-54, Chromium-51, Iron-55, Cobalt-58, Strontium-85, Cesium-134 and Cerium-141. The Commission made the following determinations:

1. The AEC will withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141, with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices and delivery schedules.

2. Resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or do not continue to meet other withdrawal conditions.

3. A public announcement of AEC intent to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141 will be issued, but only after the public announcement of commercial availability noted above. Therefore, please send us copies of any announcement you may issue.

4. The NSEC request that the AEC withdraw from the production and distribution of Strontium-85 has been deferred. The Commission criterion of "demonstrated private industry capability" in determining withdrawal actions has not been met since NSEC is not producing and distributing a reactor product although

3-30-64

they did state their intent to do so upon AEC withdrawal. The price of their cyclotron product is approximately four times higher than the AEC reactor product. Accordingly it was concluded that on the basis of their cyclotron product, the withdrawal criterion of reasonable price was not met.

5. Since AEC does not currently distribute Manganese-54, no action will be taken on the NRDC request at this time. ORNL is now completing developmental work leading to a reactor irradiation method for producing Manganese-54 through an Fe-54 (n,p) Mn-54 reaction. Based on experimental reactor production runs to date, it appears that the cost of the reactor-produced product will be considerably lower than the current price of the cyclotron-produced material. Upon the establishment of a reactor production method for Manganese-54, consideration will be given to its production and sale as a routine product from ORNL. At that time industrial capability and interest in the reactor production of Mn-54 will be determined. If a suitable private capability exists, then the product will not be made available from ORNL. The AEC will, of course, make available to interested private firms the developed production technology for Mn-54.

We sincerely appreciate your continuing interest in the radioisotope program and wish to thank you for your courtesy and cooperation during this review.

Sincerely yours,

John W. Maddox, Chief
Commercial Isotopes Section
Division of Isotopes Development

bcc: John C. Hoyle - SECY (2)

DIDPM

MADDOX:ls
3-30-64

MAR 30 1964

Dr. Edward J. Watson
Director of Commercial Development
Abbott Laboratories
14th & Sheridan Road
North Chicago, Illinois

Dear Ed:

With reference to Mr. G. T. Gleason's letter of January 7, 1964, this is to confirm my telephone notification to him of February 28, 1964. As stated by Chairman Seaborg on February 26 during testimony before the Joint Congressional Committee on Atomic Energy, the Commission has completed its review of a request from Nuclear Science and Engineering Corporation (NSEC) that the AEC withdraw from the production and distribution of seven radioisotopes - Manganese-54, Chromium-51, Iron-55, Cobalt-58, Strontium-85, Cesium-134 and Cerium-141. The Commission made the following determinations:

1. The AEC will withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141, with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices and delivery schedules.

2. Resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or do not continue to meet other withdrawal conditions.

3. A public announcement of AEC intent to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141 will be issued, but only after the public announcement of commercial availability noted above. Therefore, please send us copies of any announcement you may issue.

4. The NSEC request that the AEC withdraw from the production and distribution of Strontium-85 has been deferred. The Commission criterion of "demonstrated private industry capability" in determining withdrawal actions has not been met since NSEC is not producing and distributing a reactor product; although, they did state their intent to do so upon AEC withdrawal. The price of their cyclotron product is approximately four times

3-3044

higher than the ANC reactor product. Accordingly, it was concluded that on the basis of their cyclotron product, the withdrawal criterion of reasonable price was not met.

3. Since ANC does not currently distribute Manganese-54, no action will be taken on the NERC request at this time. ORNL is now completing developmental work leading to a reactor irradiation method for producing Manganese-54 through an Fe-54 (n,p) Mn-54 reaction. Based on experimental reactor production runs to date, it appears that the cost of the reactor-produced product will be considerably lower than the current price of the cyclotron-produced material. Upon the establishment of a reactor production method for Manganese-54, consideration will be given to its production and sale as a routine product from ORNL. At that time industrial capability and interest in the reactor production of Mn-54 will be determined. If a suitable private capability exists, then the product will not be made available from ORNL. The AEC will, of course, make available to interested private firms the developed production technology for Mn-54.

We sincerely appreciate your continuing interest in the radioisotope program and wish to thank you for your courtesy and cooperation during this review.

Sincerely yours,

John M. Maddox, Chief
Commercial Isotopes Section
Division of Isotopes Development

cc: Richard C. Leitner

bcc: John Hoyle - SECY (2)

DID:PM

MADDOX:ls
3-30-64

Attachment -5

MAR 30 1964

Mr. J. C. Brantley
Director of Research
Nuclear Division
Union Carbide Corporation
P. O. Box 324
Tuxedo, New York

Dear Mr. Brantley:

With reference to your letter of January 10, 1964, this is to confirm my telephone notification to you on February 28, 1964. As stated by Chairman Seaborg on February 26 during testimony before the Joint Congressional Committee on Atomic Energy, the Commission has completed its review of a request from Nuclear Science and Engineering Corporation (NSEC) that the AEC withdraw from the production and distribution of seven radioisotopes - Manganese-54, Chromium-51, Iron-55, Cobalt-58, Strontium-85, Cesium-134 and Cerium-141. The Commission made the following determinations:

1. The AEC will withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141, with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices and delivery schedules.

2. Resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or do not continue to meet other withdrawal conditions.

3. A public announcement of AEC intent to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141 will be issued, but only after the public announcement of commercial availability noted above. Therefore, please send us copies of any announcement you may issue.

4. The NSEC request that the AEC withdraw from the production and distribution of Strontium-85 has been deferred. The Commission criterion of "demonstrated private industry capability" in determining withdrawal actions has not been met since NSEC is not producing and distributing a reactor product; although, they did state their intent to do so upon AEC withdrawal. The price of their cyclotron product is approximately four times

3-30-64

higher than the ANC reactor product. Accordingly, it was concluded that on the basis of their cyclotron product, the withdrawal criterion of reasonable price was not met.

5. Since ANC does not currently distribute Manganese-54, no action will be taken on the NRDC request at this time. ORNL is now completing developmental work leading to a reactor irradiation method for producing Manganese-54 through an Fe-54 (n,p) Mn-54 reaction. Based on experimental reactor production runs to date, it appears that the cost of the reactor-produced product will be considerably lower than the current price of the cyclotron-produced material. Upon the establishment of a reactor production method for Manganese-54, consideration will be given to its production and sale as a routine product from ORNL. At that time industrial capability and interest in the routine production of Mn-54 will be determined. If a suitable private capability exists, then the product will not be made available from ORNL. The ANC will, of course, make available to interested private firms the developed production technology for Mn-54.

We sincerely appreciate your continuing interest in the radioisotope program and wish to thank you for your courtesy and cooperation during this review.

Sincerely yours,

John M. Madden, Chief
Commercial Isotopes Section
Division of Isotopes Development

bcc: John Boyle (SECY) 2

DID:FM

MADDOX:lm

3-30-64

Enclosure 3

MAR 30 1964

Mr. C. Q. Thomas, Jr.
Research Manager
Western New York Nuclear Research
Center, Inc.
4 Ferry Drive
Buffalo, New York

Dear Charlie:

With reference to your letter of February 4, 1964, this is to confirm my telephone notification to you on February 28, 1964. As stated by Chairman Seaborg on February 26 during testimony before the Joint Congressional Committee on Atomic Energy, the Commission has completed its review of a request from Nuclear Science and Engineering Corporation (NSEC) that the AEC withdraw from the production and distribution of seven radioisotopes - Manganese-54, Chromium-51, Iron-55, Cobalt-58, Strontium-85, Cesium-134 and Cerium-141. The Commission made the following determinations.

1. The AEC will withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141, with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices and delivery schedules.

2. Resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or do not continue to meet other withdrawal conditions.

3. A public announcement of AEC intent to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141 will be issued, but only after the public announcement of commercial availability noted above. Therefore, please send us copies of any announcement you may issue.

4. The NSEC request that the AEC withdraw from the production and distribution of Strontium-85 has been deferred. The Commission criterion of "demonstrated private industry capability" in determining withdrawal actions has not been met since NSEC is not producing and distributing a reactor product, although they did state their intent to do so upon AEC withdrawal. The price of their cyclotron product is approximately

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Division of Development
U.S. Atomic Energy Commission
MAR 30 1964
AM 7,8,9,10,11,12,1,2,3,4,5,6 PM

AEC-326

MAR 30 1964

higher than the ANC reactor product. Accordingly, it was concluded that on the basis of their cyclotron product, the withdrawal criterion of reasonable price was met.

3. Since ANC does not currently distribute Manganese-54, no action will be taken on the NERO request at this time. ORNL is now completing developmental work leading to a reactor irradiation method for producing Manganese-54 through an Fe-54 (n,p) Mn-54 reaction. Based on experimental reactor production runs to date, it appears that the cost of the reactor-produced product will be considerably lower than the current price of the cyclotron-produced material. Upon the establishment of a reactor production method for Manganese-54, consideration will be given to its production and sale as a routine product from ORNL. At that time industrial capability and interest in the reactor production of Mn-54 will be determined. If a suitable private capability exists, then the product will not be made available from ORNL. The ANC will, of course, make available to interested private firms the developed production technology for Mn-54.

We sincerely appreciate your continuing interest in the radioisotope program and wish to thank you for your courtesy and cooperation during this review.

Sincerely yours,

John H. Madden, Chief
Commercial Isotopes Section
Division of Isotopes Development

bcc: John C. Boyle AEC (2)

DIDPM

Madden:lw

3-27-64

Enclosure 5

MAR 27 1964

Dr. Joseph J. Fitzgerald
President and Director
ISO/NUCO, Inc.
131 Portland Street
Cambridge 39, Massachusetts

Dear Joe:

With reference to your letter of March 24, 1964, this is to confirm my telephone notification to you of February 25, 1964. As stated by Chairman Seaborg on February 26 during testimony before the Joint Congressional Committee on Atomic Energy, the Commission has completed its review of a request from Nuclear Science and Engineering Corporation (NSEC) that the AEC withdraw from the production and distribution of seven radioisotopes - Manganese-54, Chromium-51, Iron-55, Cobalt-58, Strontium-85, Cesium-134 and Cerium-141. The Commission made the following determinations:

1. The AEC will withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141, with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices and delivery schedules.

2. Resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or do not continue to meet other withdrawal conditions.

3. A public announcement of AEC intent to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141 will be issued, but only after the public announcement of commercial availability noted above. Therefore, please send us copies of any announcement you may issue.

4. The NSEC request that the AEC withdraw from the production and distribution of Strontium-85 has been deferred. The Commission criterion of "demonstrated private industry capability" in determining withdrawal actions has not been met since NSEC is not producing and distributing reactor product; although, they did state their intent to do so upon AEC withdrawal. The price of their cyclotron product is approximately four times

3-27-64

higher than the ARC reactor product. Accordingly, it was concluded that on the basis of their cyclotron product, the withdrawal criterion of reasonable price was not met.

3. Since ARC does not currently distribute Manganese-54, no action will be taken on the NRDC request at this time. ORNL is now completing developmental work leading to a reactor irradiation method for producing Manganese-54 through an Fe-54 (n,p) Mn-54 reaction. Based on experimental reactor production runs to date, it appears that the cost of the reactor-produced product will be considerably lower than the current price of the cyclotron-produced material. Upon the establishment of a reactor production method for Manganese-54, consideration will be given to its production and sale as a routine product from ORNL. At that time industrial capability and interest in the reactor production of Mn-54 will be determined. If a suitable private capability exists, then the product will not be made available from ORNL. The AEC will, of course, make available to interested private firms the developed production technology for Mn-54.

We sincerely appreciate your continuing interest in the radioisotope program and wish to thank you for your courtesy and cooperation during this review.

Sincerely yours,

John B. Madden, Chief
Commercial Isotopes Section
Division of Isotopes Development

bcc: John C. Royle - NRCT (2)

e/E
DL-389.15.1.

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

MAR 21 1964

Dear Senator Long:

Reference is made to your letter of March 6, 1964, requesting information which might be of assistance to Mr. Harry D. Richardson, Baton Rouge, Louisiana. As you are aware, Mr. Richardson has also written directly to me concerning this matter. A copy of my reply is enclosed.

It may be of some help to you if I briefly review current AEC policy concerning radioisotopes production and distribution. The Atomic Energy Act of 1954 authorizes the AEC to produce and distribute radioactive materials at a price which would (1) encourage research and development, (2) not discourage development of sources of supply independent of the Commission, and (3) stimulate increased utilization of radioactive materials. This has been interpreted to require the Commission to charge, for the radioisotopes it produces, the higher of full-cost recovery or current commercial price. The latter applies, of course, only in the event the material is available from a private producer. In computing full-cost recovery, the Atomic Energy Commission includes all operating and materials costs, overhead, depreciation of facilities and equipment, and an additional factor to cover such items as process development costs and similar expenses. Production cost analyses are conducted on an annual basis.

Additionally, the Atomic Energy Commission continues to be most interested in stimulating private industrial participation in radioisotopes production and distribution activities. It is, therefore, current Commission policy to withdraw, upon appropriate request, from the production and distribution of radioactive materials and/or related services when private industry has demonstrated a capability for making these materials and services available in adequate quantities and at a reasonable price.

I have been informed that Mr. Richardson's interests are concerned primarily with the radioisotope, Cobalt-60. The Atomic Energy Commission withdrew from the routine production and distribution of Cobalt-60 in 1960, at the request of General Electric Company and Westinghouse Electric Corporation. The Commission, however, announced at that time it would

3-21-64

continue to make available for single order purchases, quantities of Cobalt-60 greater than 100,000 curies, at a price of $1.00 per curie. In 1963, the Commission, after annual review of the latest cost-price data related to Cobalt-60 production, reduced the price to $.50 per curie.

I trust this information will be of assistance to you.

Sincerely yours,

(Signed) Glenn T. Seaborg

Chairman

Honorable Russell Long
United States Senate

Enclosure
Cy ltr Chairman Seaborg
to H. D. Richardson

bcc: Chairman-2
DCM
AGMRD
GC
GH
ACH
OIP
OCC
Congressional Liaison-2
Secretariat-2
Director-10

ED:PH	ED:D	AGMRD	ACH	DCM	GH	CONG. LIAISON
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Letter-3-Private.

MAR 21 1964

Dear Mr. Richardson:

We are pleased to learn from your letter of February 22, 1964, that you are considering an expansion of your operations in the nuclear field. You can rest assured that the Atomic Energy Commission is exerting its best efforts to withdraw from providing any product or service to the public when it is available from private industry under reasonable conditions. Our past record in this respect has been good and we are working closely with representatives of the nuclear industry - principally the Atomic Industrial Forum - to insure that the transition from AEC to private responsibility of certain of the former's functions occurs even more rapidly and smoothly.

The main interest of the radioisotopes and radiation industry has been in seeing that the AEC's prices for products or services are not less than what private enterprise would charge for these services. On this basis, the pricing policy of the AEC does not appear to be a factor in determining whether foreign competition affects private enterprise in this country. Stated another way, if the AEC were to attempt to sell below or meet foreign prices for its products, we would find the private domestic nuclear industry objecting strenuously, because any lowering of prices is considered to make the transition from government operation to private production less economically attractive to private enterprise in this country.

It is possible that we may have misconstrued the intent of your letter in that we have replied in rather general terms. If you wish to call specific matters of policy to our attention, please do so and we shall attempt to answer in kind.

5-21-64

Since you have advised Senator Russell Long of your interest in AEC policies, we are taking the liberty of sending him a copy of this letter for his information.

Sincerely yours,

(Signed) Glenn T. Seaborg

Chairman

Mr. Harry D. Richardson, President
Gamma Industries, Incorporated
P. O. Box 2543
2255 Ted Dunham
Baton Rouge, Louisiana

cc: Honorable Russell Long
United States Senate

bcc: Chairman (2)
Cong. Liaison (2)
Secretariat (2)
GM
DGM
AGM
AGMRD
OC
OGC
DIP
Dir, DID (2)

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OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

~~OFFICIAL USE ONLY~~

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: March 20, 1964

FROM : W. B. McCool, Secretary

SUBJECT: REACTIVATION OF THE NIAGARA FALLS FACILITY TO PRODUCE BORON-10

SECY:McQ

1. At Information Meeting 360 on March 18, 1964, the Commissioners accepted the General Manager's recommendation to proceed with reactivation of the Niagara Falls facility for the production of boron-10.

2. Attached is a copy of the Director of Contracts' February 14 memorandum to the General Manager on meeting long-range requirements for boron-10 which was the basis of the General Manager's discussion.

Attachment:
As noted above

cc:
Chairman w/o attachment
General Manager w/o attachment
Deputy General Manager w/o attachment
Asst. General Manager w/o attachment
Asst. Gen. Mgr. for Operations w/o attachment
Director, Contracts w/o attachment
General Counsel w/o attachment
Controller w/o attachment

3-2049

Copy 3 more file: Contract -9

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Retn to Files

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

5010-107

UNITED STATES GOVERNMENT

Memorandum

TO : A. R. Luedecke, General Manager
THRU: E. J. Bloch, AGMO

DATE: FEB 14 1964

FROM : John V. Vinciguerra, Director
Division of Contracts

SUBJECT: MEETING LONG RANGE REQUIREMENTS FOR BORON-10

The Manager, ORO, has recommended, based on the results of a study prepared by an ORO Boron-10 Board, that the Government-owned Niagara Falls plant be reactivated for the production of boron-10 to meet requirements for the next three years.

On the basis of answers to inquiries submitted to industry in August 1963, it has been concluded that there are no commercial facilities capable of producing boron-10 in the quantity and of the purity required by AEC. Although several firms indicated interest in operating the Niagara Falls plant, none indicated that they had in existence or were planning facilities for the production of either KBF_4 or elemental boron-10 to AEC specifications.

An analysis was made of the two possibilities for use of Government-owned plant for this production program -- reactivation of Niagara Falls and use of a facility to be built at Oak Ridge, operated by Carbide. Although the Oak Ridge facility would have a higher capacity than Niagara Falls, necessary capital costs required to put the facility into operation would make the unit cost higher at Oak Ridge over the three-year term of foreseeable requirements. Comparative figures are \$.96/g KBF_4 for Niagara Falls and \$1.10/g KBF_4 at Oak Ridge, both producing 1875 kgs of KBF_4 over the next three years. The unit cost figures above do not include a factor for conversion to elemental boron, but it is expected the Oak Ridge conversion costs would be somewhat higher because of additional capital required and because the Commission's license in the patent for the electrolytic boron conversion process is limited to use at the Niagara Falls plant. Estimated total costs for both separation and conversion at Niagara Falls are \$2.6 million. It is concluded, therefore, that reactivation of Niagara Falls is more attractive

economically than the completion of the Oak Ridge facility.

An analysis has also been made as to the desirability of operating Niagara Falls on a CPFF versus a fixed unit price basis. After consideration of the following points, it was concluded that a CPFF contract for both reactivation and operation of the plant would be more desirable:

a. B-10 purity requirements are higher now than when the plant was shut down. In the absence of definite knowledge as to the capability of the plant to produce the higher purity product, a large contingency factor would have to be built into a unit price in anticipation of a possible requirement for process improvement.

b. The end product of the plant probably will vary considerably with respect to particle size, certain impurities, recovery efficiency, etc. With such variations in end product it would be especially difficult to pin down a fixed unit cost.

c. A CPFF contract would provide needed flexibility regarding quality of product, process and plant improvements, and scheduling of requirements. Also, with the elimination of contingency factors inherent in a fixed unit price bid, costs probably would be lower under a CPFF operation.

In accordance with the Commission decision at Information Meeting 334 on December 16, 1963, contract negotiations are underway with Hooker Electrochemical Corporation for reactivating and operating the electrolytic cell portion of the plant for the conversion of 250 kgs of KBF_4 to elemental boron, a job expected to be completed by approximately June 1964. Although Hooker has a strong position in boron-10 technology, several of the firms that indicated interest in operating the Niagara Falls plant have capabilities sufficiently close to the boron operation that they probably could do a good job on both the separation and the conversion operations.

I recommend, therefore, that you approve completing the reactivation of the Niagara Falls facility for the production of the foreseen requirements of boron-10 for the next three years. Upon such approval, Oak Ridge will be authorized to issue invitations for proposals for reactivation and operation of the plant on a CPFF basis.

The Division of Production concurs in the above recommendation.

APPROVED:

G. R. Luedecke 3/18/64

General Manager Date

Daily Tape - 3

MAR 20 1964

Mr. John T. Conway
Executive Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Conway:

As stated by Chairman Seaborg on February 26 during testimony before the Joint Congressional Committee on Atomic Energy, the Commission has completed its review of a request from Nuclear Science and Engineering Corporation (NSEC) that the AEC withdraw from the production and distribution of seven radioisotopes - Manganese-54, Chromium-51, Iron-55, Cobalt-58, Strontium-85, Cesium-134 and Cerium-141. The Commission made the following determinations:

1. The AEC will withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141, with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices and delivery schedules.

2. Resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or do not continue to meet other withdrawal conditions.

3. A public announcement of AEC intent to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141 will be issued, but only after the public announcement of commercial availability noted above. NSEC and other interested commercial companies have been requested to send us copies of appropriate announcements they may issue.

4. The NSEC request that the AEC withdraw from the production and distribution of Strontium-85 has been deferred. The Commission criterion of "demonstrated private industry capability" in determining withdrawal actions has not been met since NSEC is not producing and distributing a reactor product; although, they did state their intent to do so upon AEC withdrawal. The price of their cyclotron product

3-20-64

is approximately four times higher than the ANL reactor product. Accordingly, it was concluded that on the basis of their cyclotron product, the withdrawal criterion of reasonable price was not met.

5. Since ANL does not currently distribute Manganese-54, no action will be taken on the NASA request at this time. ORNL is now completing developmental work leading to a reactor irradiation method for producing Manganese-54 through an Fe-54 (n,p) Mn-54 reaction. Based on experimental reactor production runs to date, it appears that the cost of the reactor-produced product will be considerably lower than the current price of the cyclotron-produced material. Upon the establishment of a reactor production method for Manganese-54, consideration will be given to its production and sale as a routine product from ORNL. At that time industrial capability and interest in the reactor production of Mn-54 will be determined. If a suitable private capability exists, on completion of ORNL's development effort, then the product will not be made available from ORNL. The AEC will, of course, make available to interested private firms the developed production technology for Mn-54.

Sincerely yours,

SIGNED, A. R. LUEDECKE

General Manager

bcc:
General Manager
ACRRD
DCM
Secretariat (2)
Director-ID
F. Tobey-FI

Letter #3

MAR 11 1964

Mr. R. A. Brighton, President
Nuclear Science & Engineering Corporation
P. O. Box 12985
Pittsburgh 34, Pennsylvania

Dear Mr. Brighton:

This is to confirm the information discussed by Mr. R. E. Fowler during his telephone conversation with Mr. James R. Wolf on February 17, 1964. As stated by Chairman Seaborg on February 26 during testimony before the Joint Congressional Committee on Atomic Energy, the Commission has completed its review of NSEC's request that the AEC withdraw from the production and distribution of seven radioisotopes. The following determinations have been made:

1. The AEC will withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141, with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices and delivery schedules.

2. A public announcement of AEC intent to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134 and Cerium-141 will be issued, but only after the public announcement of commercial availability above. Therefore, please send us copies of any announcements you may issue.

3. The NSEC request that AEC withdraw from the production and distribution of Strontium-89 is deferred. The Commission criterion of "demonstrated private industry capability" in determining withdrawal actions has not been met since NSEC is not producing and distributing a reactor product; although, you did state your intent to do so upon AEC withdrawal. The price of your cyclotron product is approximately four times higher than the AEC reactor product. Accordingly, it was concluded

3/11/64

that on the basis of your cyclotron product, the withdrawal criterion of reasonable price was not met. At such time as an adequate private capability exists, by either NUMEC or other commercial groups, which meets the general withdrawal criteria, reconsideration will be given to AEC withdrawal from the production and distribution of reactor produced Strontium-85 upon receipt of a petition.

4. Since AEC does not currently distribute Manganese-54, no action will be taken on the NUMEC request at this time. ORNL is now completing developmental work leading to a reactor irradiation method for producing Manganese-54 through an Fe-54 (n,p) Mn-54 reaction. Based on experimental reactor production runs to date, it appears that the cost of the reactor-produced product will be considerably lower than the current price of the cyclotron-produced material. Upon the establishment of a reactor production method for Manganese-54, consideration will be given to its production and sale as a routine product from ORNL. At that time industrial capability and interest in the reactor production of Mn-54 will be determined. If a suitable private capability exists, upon completion of ORNL's development effort, then the product will not be made available from ORNL. The Division of Isotopes Development will, at certain, make available to interested private firms the developed production technology for Mn-54.

We sincerely appreciate your continuing interest in the radioisotopes program and wish to thank you for your courtesy and cooperation during this review.

Sincerely yours,

Paul C. Aebersold, Director
Division of Isotopes Development

cc: Dr. George H. Kennagh - GE
John G. Boyle - Secy (2)

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HADDOX:ic	BERMAN	FOWLER	AEBERSOLD		
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JAMES H. MORRISON
6TH DISTRICT, LOUISIANA

HOME ADDRESS:
HAMMOND, LOUISIANA

WASHINGTON ADDRESS:
202 HOUSE OFFICE BUILDING

TELEPHONES:
CAPITOL 4-3121, EXTENSION 3301-3302-3303
NATIONAL 8-3600

FLORENCE H. COOLEY
ADMINISTRATIVE ASSISTANT

DL-384.4
Isotopes 3

10

Congress of the United States
House of Representatives
Washington, D. C.

COMMITTEES:
POST OFFICE AND CIVIL SERVICE
AGRICULTURE

SUBCOMMITTEES:
CHAIRMAN, CIVIL SERVICE
FORESTRY
COTTON
DAIRY
POULTRY
FAMILY FARMS

March 10, 1964

Honorable Glenn T. Seaborg, Chairman
The United States Atomic Energy Commission
Washington, D. C. 20545

Dear Dr. Seaborg:

I am enclosing a self-explanatory letter and attachment received from Mr. Harry D. Richardson, President, Gamma Industries, Inc., Post Office Box 2543, Baton Rouge, Louisiana, for your careful attention and consideration.

I am most anxious to encourage the development of industries within my District, and am hopeful the policies of the Atomic Energy Commission will permit the expansion of this company. I would appreciate a report on this matter at your earliest convenience.

With kindest regards and best wishes, I am

Sincerely,

Jimmy Morrison

James H. Morrison, M.C.

JHM:hct

cc: Mr. Harry D. Richardson

3-10-64

HARRY D. RICHARDSON
2355 Kleinert Avenue
BATON ROUGE, LOUISIANA 70806

Feb. 26, 1964

The Honorable James Morrison
House of Representatives
Washington 25, D. C.

Dear Mr. Morrison:

Gamma Industries, Inc. is a Louisiana company and, while it is a very small operation at this time, it processes a larger volume of radioactive materials than any operation east of Los Angeles and south of Philadelphia (of course excepting AEC operations). There are good indications that the company should be expanded but the existing AEC policies do not permit a reasonable market analysis to be made to assure that ventures within our borders can be competitive with foreign suppliers. It is a fact that certain atomic materials can be produced in reactors owned by foreign governments, processed, shipped, and installed within the United States at prices that cannot be met by domestic companies.

It is difficult to believe that prices set by the AEC are on a true cost recovery basis and are so high to prevent local competition.

A copy of my letter to Dr. Seaborg is attached which requests information on AEC policies. You may recall that several years ago your office rendered invaluable service on a similar matter. Any assistance you can give on this present policy matter will be most appreciated.

Sincerely yours,

Harry D. Richardson

Gamma Industries, Inc.

RADIOSOTOPE EQUIPMENT AND SUPPLIES FOR RADIOGRAPHY

POST OFFICE BOX 2543 2255 TED DUNHAM BATON ROUGE, LOUISIANA

TELEPHONE DICKENS 2-3011

February 22, 1964

Dr. Glenn T. Seaborg
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Dr. Seaborg:

Gamma Industries is now considering personnel and facilities expansion. A portion of our studies must be concerned with the following items:

1. Withdrawal criteria of AEC activities having commercial potential.
2. Commercial fabrication of devices now being produced in AEC facilities.
3. Isotope pricing.

You are certainly aware that foreign countries at this time are able, in some instances, to design and fabricate equipment and produce some radioisotopes and ship these units for installation in the United States at more favorable costs than can be accomplished within the United States.

While our present operation is quite small, it is a sound business venture and enjoys the opportunity to make a reasonable profit on the investment and efforts expended. Our future expansion is very closely related to the Atomic Energy Commission policies, both short range and long range, and your guidance will be most valuable in formulating our decisions to expand in the nuclear field. If the AEC policies cannot be changed so that United States companies can be competitive with foreign operations then we must look toward non-nuclear ventures.

Your assistance will be most appreciated.

Sincerely yours,

Harry D. Richardson
President

HDR:sm

cc: Senator Russell Long
Representative James Morrison

FORM AEC-864
(8-47)

DATE:

INDEX: ISOTOPES -3

[redacted]

TO: Chairman Seaborg

FROM: Senior Managing Director, Japan Atomic Industrial Forum

SUMMARY: Letter re the Annual Japan Atomic Industril Forum Conference on Radioisotopes which will be held for four days starting Nov. 16,1964. The Japan Atomic Industrial Forum is asking for AEC's participation.

FILED:

INDEXER: IA-12-3-Inter. Conferences

REMARKS: date of ltr. 3-10-64

U. S. ATOMIC ENERGY COMMISSION

CORRESPONDENCE REFERENCE FORM

RUSSELL B. LONG
LOUISIANA

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United States Senate

WASHINGTON, D.C.

March 6, 1964

Dr. Glenn T. Seaborg
Chairman
Atomic Energy Commission
Washington 25, D. C.

Dear Dr. Seaborg:

Enclosed herewith is copy of a letter received from Mr. Harry D. Richardson of Baton Rouge, La. which has reference to certain policies of the AEC.

It would be appreciated if you would furnish me information on this matter which would be of assistance to Mr. Richardson.

Thanking you for this courtesy, I am

Sincerely yours,

Russell Long

49-2-8

HARRY D. RICHARDSON
2355 Elysian Avenue
BATON ROUGE, LOUISIANA 70806

Feb. 26, 1964

The Honorable Senator Russell Long
Senate Office Building
Washington 25, D. C.

Dear Senator Long:

Gamma Industries, Inc. is a Louisiana company and it processes more radioactive material than any company east of Los Angeles and south of Philadelphia. While it is a very small operation at this time there is good reason to believe expansion is imminent and can be the beginning of more atomic energy industry in Louisiana.

A difficulty in planning the expansion is that certain AEC policies, as expressed in my attached letter to Dr. Seaborg, allow reactors owned by foreign governments to produce certain atomic materials, process them, and shipand install them in the United States at prices that are not competitive for domestic private ventures. It is difficult to believe that AEC prices are based on a true cost recovery basis since they are so high the prices permit foreign intervention.

It is my opinion that some review of AEC policies are in order to encourage U. S. private capital to expand atomic energy applications for industrial uses. Any comments you feel are pertinent will be most appreciated.

Sincerely yours,

Harry D. Richardson

POST OFFICE BOX 2[illegible] [illegible] BATON ROUGE, LOUISIANA
TELEPHONE DICKENS 3-[illegible]

February 22, 1964

Dr. Glenn T. Seaborg
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Dr. Seaborg:

Gamma Industries is now considering personnel and facilities expansion. A portion of our studies must be concerned with the following items:

1. Withdrawal criteria of AEC activities having commercial potential.
2. Commercial fabrication of devices now being produced in AEC facilities.
3. Isotope pricing.

You are certainly aware that foreign countries at this time are able, in some instances, to design and fabricate equipment and produce some radioisotopes and ship these units for installation in the United States at more favorable costs than can be accomplished within the United States.

While our present operation is quite small, it is a sound business venture and enjoys the opportunity to make a reasonable profit on the investment and efforts expended. Our future expansion is very closely related to the Atomic Energy Commission policies, both short range and long range, and your guidance will be most valuable in formulating our decisions to expand in the nuclear field. If the AEC policies cannot be changed so that United States companies can be competitive with foreign operations then we must look toward non-nuclear ventures.

Your assistance will be most appreciated.

Sincerely yours,

Harry D. Richardson
President

HDR:am

cc: Senator Russell Long
Representative James Morrison

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C/I
SM/a

Santayana - 3 - Ltr + 10

St. Louis, Missouri
March 5, 1964

Edwin A. Wiggin
Technical Projects Manager
Atomic Industrial Forum Inc.
850 Third Avenue
New York 22, New York

Dear Mr. Wiggin:

May I thank you for your letters of January 9th and February 6th of this year and your invitation to express my opinion regarding the Forum's ad hoc Committee report on Radioisotope Production and Distribution. As I told you, during our telephone conversation the other day, the press of new and increased business plus the starting of a new laboratory facility has kept me so busy I had not had an opportunity to answer these letters. Please accept my apologies for the very long delay.

Yes, I do have some comments I should like to make. First, let me make the basic statement that I feel the Federal, State, or Local Governments should not engage in commercial activities or enter into competition with private individuals or industry, at least as a general rule. A Government should, in my opinion, be a group of elected (and/or appointed) persons who represent those who elected them in such matters as the individual himself cannot handle. These are National Defense, Civil Laws, etc. The basic political difference among people, parties and even "isms" is, I guess, how many things are the individuals themselves unable to handle and hence should be handled by "the Government": I'm afraid I would personally cut it much shorter than is the present policy in our Country today. I do not mean to write a political thesis here; however, some of my statements may sound as though I would invite more general Government participation in commercial activities than I mean to convey.

Cont'd.

3-5-64

Because of its original basic national defense aspect, I feel the Government had a right and, indeed, an obligation to put the full force of its manpower and national resources into the development of the A & H bombs and the AEC program in general. Many side benefits were derived from this huge effort. One of the most important to date, I feel, has been the production of radionuclides at a reasonable price. The Government has put billions into its reactor and isotope program so that we, in this country are privileged to have the benefits which can be derived from the use of these products. It was, indeed, your money and mine, as well as all of industry's tax dollars, which paid for this privilege we have. I am not now in favor of chucking this and again making the taxpayer pay all over again for this work through higher prices, or even worse, to have the dollars sent out of the country to purchase materials we spent billions learning and getting up to produce!

With that I shall get off my soap box and answer your specific questions. Let me take each point of the Committee's recommendations and comment.

1. I agree with the basic premise that the AEC should withdraw from production and distribution of radioisotopes when they "are reasonably available from commercial sources." The major catch here is whose definition of "reasonably available" will be used! If the price is considerably higher, the product of lower quality, or the scheduling of availability poorer, then I feel this is not "reasonably available".

2. (a) If the petitioning organization either by itself or in conjunction with other non-AEC sources of supply can meet demands, then the AEC should withdraw. Fine, so long as the other non-AEC source is not a foreign supplier.

(b) Will AEC withdrawal unreasonably restrict competition? Perhaps not, but what does "unreasonably restrict" mean? Certainly to me, a small operator, it means if one of my large competitors is my only source of supply, I no longer have an equal opportunity to compete. This possibility has looked dangerously close at times!

Cont'd.

3. Should foreign producers be accepted in determining effective competition in the U. S.? I do not feel they should be excluded from sales in this country, nor should protective tariffs be set up against them, but I am certainly against building up an isotope business on tax monies and then turning it over to a foreign supplier. I do not believe this is what Congress had in mind in any of their AEC legislation either!

4. Reasonableness of price I feel, should be considered. If the material is made available by another non-AEC source, but the price is considerably higher, I do not feel the AEC should then discontinue its production.

5. To withdraw when only a single source of supply is available could be dangerous. Circumstances could dictate that this is the best move; however, I feel the AEC should stand ready to resume production in case of failure or in case of a large price increase.

6. Yes, I agree the AEC should act promptly on all petitions and either accept or reject, with reason, as soon as possible.

7. Yes, I feel the AEC should publish prior notice of its decision to withdraw.

The format and information required of a petition would appear to be reasonable.

The problem of AEC pricing policy is indeed a difficult one. It is recommended that isotope prices should provide for a full cost recovery for the AEC. This can lead to many problems as the AEC withdraws from the production of certain isotopes and continues with others. Any business man knows that the more products and sales you have, the more you can spread your costs; and the lower per unit is your cost. If the AEC backs out of some of the larger volume products and holds to the policy of full cost recovery, the cost of the remaining isotopes could well go out of sight. I feel this would also defeat the purpose of trying to get the most out of the tax payers investment and to not only keep the isotope industry alive and healthy, but also provide these materials to the medical profession and industry at a reasonable price.

Cont'd.

March 5, 1964

Edwin A. Wiggin
Page four

R & D support on new concepts and techniques for the production and utilization of radioisotopes is fine. I'm not sure, however, how far we in industry can push our principles, and on the one hand say Government and the AEC should get out of this area and on the other hand say they should finance our R & D for new techniques and markets!

Under the section "Discussion" - "AEC withdrawal Criteria" - the statement is made that the Committee is not aware of available information which would permit one to determine that foreign producers have captured a particular portion of the market. From all the figures I read, the Canadians have done a pretty good job of it, especially in Cobalt!

To sum up my feelings - I do feel the AEC should encourage private industry, in every way possible, to take over the techniques developed by them, and produce and distribute radioisotopes to the domestic market. I do not feel their withdrawal should

(1) Result in a monopoly
(2) Result in substantially higher prices, especially for raw materials.
(3) Channel sales and dollars out of the country.
(4) Reduce the availability of any materials.
(5) Or in any way have a detrimental effect on the young and growing "isotope industry" or on the general use of these materials by individual institutions and industry in this country.

Thank you for the opportunity to express my opinion on this subject.

Very truly yours,

NUCLEAR CONSULTANTS CORPORATION

W. R. Konneker, Ph.D.
President

WRK:gg

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

UNITED STATES GOVERNMENT

Memorandum

TO : Paul C. Aebersold, Director
Division of Isotopes Development

DATE: February 26, 1964

FROM : W. B. McCool, Secretary (Original signed by W. B. McCool)

SUBJECT: AEC 994/16 - NSEC REQUEST FOR AEC WITHDRAWAL FROM PRODUCTION AND DISTRIBUTION OF SEVEN RADIOISOTOPES

SECY:GF

1. At Meeting 1995 on February 24, 1964 the Commission:

a. Approved AEC withdrawal from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134, and Cerium-141 with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices, and delivery schedules;

b. Noted that resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or not continue to meet other withdrawal conditions;

c. Noted that a public announcement of AEC intention to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134, and Cerium-141 will be prepared and issued following Commission approval of AEC 994/16, but only after the public announcement of commercial availability required in a above;

d. Disapproved at this time, the NSEC request that AEC withdraw from the production and distribution of Strontium-85;

e. Noted that since AEC does not currently distribute Manganese-54 no action will be taken on the NSEC request at this time;

f. Noted that NSEC will be notified of Commission action on its request by an appropriate letter; and

g. Noted that the JCAE will be informed by an appropriate letter.

2. The General Manager has directed you to take the action required by the above decision. It is our understanding that your office will prepare the correspondence to NSEC and the JCAE. Copies of these letters together with other pertinent correspondence should be provided the Office of the Secretary.

cc:
Chairman
General Manager
Deputy General Manager
Asst. General Manager
Asst. Gen. Mgr. for R&D
General Counsel
Controller
Director, Public Information
Director, Industrial Participation
Congressional Liaison

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C/E
SM/A

DL 376.1

Gamma Industries, Inc.

RADIOSOTOPE EQUIPMENT AND SUPPLIES FOR RADIOGRAPHY

POST OFFICE BOX 2543 2255 TED DUNHAM BATON ROUGE, LOUISIANA

TELEPHONE DICKENS 2-3031

February 22, 1964

Dr. Glenn T. Seaborg
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Dr. Seaborg:

Gamma Industries is now considering personnel and facilities expansion. A portion of our studies must be concerned with the following items:

1. Withdrawal criteria of AEC activities having commercial potential.
2. Commercial fabrication of devices now being produced in AEC facilities.
3. Isotope pricing.

You are certainly aware that foreign countries at this time are able, in some instances, to design and fabricate equipment and produce some radioisotopes and ship these units for installation in the United States at more favorable costs than can be accomplished within the United States.

While our present operation is quite small, it is a sound business venture and enjoys the opportunity to make a reasonable profit on the investment and efforts expended. Our future expansion is very closely related to the Atomic Energy Commission policies, both short range and long range, and your guidance will be most valuable in formulating our decisions to expand in the nuclear field. If the AEC policies cannot be changed so that United States companies can be competitive with foreign operations then we must look toward non-nuclear ventures.

Your assistance will be most appreciated.

Sincerely yours,

Harry D. Richardson

Harry D. Richardson
President

HDR:sm

cc: Senator Russell Long
Representative James Morrison

C-1344

for topic - 3 -

C/E GM/A DL 374.4

Nuclear Science & Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania

Area Code 412

Phone: 462-4000 TWX 642-2188

February 18, 1964

The Honorable Glenn T. Seaborg
Chairman
United States Atomic Energy Commission
Washington, D. C. 20025

Dear Dr. Seaborg:

Last month Colonel Gore, Mr. Brightsen and I had the pleasure of meeting with Commissioners Palfrey, Ramey, and Tape to review matters related to NSEC's pending application for AEC withdrawal from the production and distribution of several radioisotopes. Mr. Brightsen, who is presently out of town, has asked me to express our appreciation to all the Commissioners for the courtesy and interest which were extended to us.

Within the past few days we have received a communication from Mr. Fowler which suggests a desire to work closely with industry. This letter, which is attached with related background information, makes us hopeful that a more cooperative spirit may be developing between the AEC and our firm.

Sincerely,

James R. Wolf
Secretary

JRW:ljs

2 copies

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D.C.

February 3, 1964

Mr. R. A. Brightsen, President
Nuclear Science and Engineering Corp.
P. O. Box 10901
Pittsburgh 36, Pennsylvania

Dear Ron:

I certainly appreciate receiving your letter of January 31, 1964 and your detailed comments on the draft policy discussion paper on AEC production and distribution of cyclotron produced radioisotopes. We are now in the process of fully reviewing all of the comments which have been received on this subject. At the point in time when this is completed it may be desirable to sit down with you personally for further discussions. I will be in contact with you later on about such a meeting.

Sincerely yours,

E. E. Fowler, Deputy Director
Division of Isotopes Development

Nuclear Science and Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania

HOmestead 2-4000

January 31, 1964

Mr. E. E. Fowler, Acting Director
Division of Isotopes Development
United States Atomic Energy Commission
Washington 25, D. C.

Dear Gene:

We appreciate your invitation to comment upon the AEC staff proposal that responsibility for initial processing of cyclotron targets be transferred from private enterprise to the Oak Ridge National Laboratory.

We believe such action would be contrary to the fundamental industrial participation policies of the Commission and would not stimulate the increased utilization of radioisotopes. It would be particularly prejudicial to NSEC, which has invested heavily in the development of private capability on the basis of the AEC's 1955 withdrawal action.

However, while we dissent vigorously from the draft staff paper, we stand ready to cooperate with you in alternative steps which can improve efficiency of cyclotron utilization. After you have reviewed our comments, as detailed in the attached supplemental memorandum, I hope we can proceed to develop a constructive program jointly.

Sincerely,

RAB:cmv

Enclosure

cc: Dr. G. T. Seaborg
Mr. J. G. Palfrey
Mr. J. T. Ramey
Dr. G. F. Tape

Supplemental Memorandum

This memorandum reviews a document captioned "Discussion of AEC Production and Distribution of Cyclotron Produced Radioisotopes", which was circulated to Nuclear Science & Engineering Corporation for comment. In summary, the referenced "Discussion" advocates that Oak Ridge National Laboratory resume the initial processing of cyclotron targets, a function which it had discontinued in 1955.

I. The Proposal Is Contrary to the Fundamental Industrial Participation Policies of the Commission

It is widely understood that AEC desires to encourage active industrial participation in atomic energy activities. This is so not only because of legislative directions, but also because the initiatives and incentives of private enterprise provide the greatest assurance of economic production and market development.

The Commission's reactor development program and its 1955 withdrawal from cyclotron isotope processing were both consistent with these goals. In both cases, the AEC was stimulating commercial atomic energy activities; in effect, AEC said to industry that if private enterprise invested its own funds to establish a capability, Government would support it.

In response to Commission action industry (not only NSEC, but others as well) have made substantial investments in radioisotope production technology. This investment has taken several forms: (1) the recruitment and training of staffs of highly skilled technical personnel; (2) the development, at private expense, of improved proprietary methods of isotope processing; (3) the development of new products and the building of markets for them; and (4) the construction of specialized facilities.

All this is to the good and is precisely the sort of industrial participation which the Atomic Energy Act of 1954 and the policies of the Commission appear to be designed to encourage.

The AEC staff proposal presently being reviewed completely fails to recognize either the extent of private investment or the undesirability of taking action which would make it unproductive.

Thus, the proposal expresses concern that "Industrial groups interested in distribution of cyclotron isotopes often are reluctant to do so because of lack of facilities to process irradiated targets..." The remedy it proposes, namely resumption of processing at Oak Ridge, would subsidize those companies which have been unwilling to invest by enabling them to compete effectively with firms such as NSEC, which have invested heavily! While "competition" might be increased, it would only be at the expense of a more basic objective of the Commission--in general, to encourage broad industrial capability in nuclear technology and, in particular, to foster the development of sources of supply of radioisotopes independent of the Commission. There is attached a letter from R. A. Brightsen to Dr. Paul Aebersold, dated November 1, 1962, which discusses in further detail the view that AEC ought certainly to encourage competition which rewards industry primarily for resourcefulness in research and excellence of production rather than for expertise in advertising and sales promotion.

Still another part of the proposal objects to the existing procedures on the ground that an "experimenter" who deals with ORNL may be required to accept more radioactive product than he requires. The implication of this is that if target stripping is performed at Oak Ridge, then the experimenter could obtain just what he wanted from the national laboratory without using the services of a private supplier at all. This can hardly be said to encourage private enterprise.

II. Initial Processing of Cyclotron Targets Can Be Achieved More Efficiently and Economically by Industry than by the National Laboratories

During the past year ORNL has actually performed some initial processing operations on an experimental basis. NSEC has compared the yields obtained after ORNL target stripping with those achieved when NSEC processed the entire target itself. The ORNL yields have been widely erratic and consistently lower than those of NSEC.

NSEC is firmly convinced that its consistently superior yields result in part from its proprietary radiochemical processing techniques.

Moreover, the target stripping operation may affect the technical characteristics of the end product, particularly with respect to specific activity and purity. NSEC technical specifications are published and guaranteed to users. The proposal is highly objectionable in that it would cause NSEC to lose control over one of the steps which is critical to maintaining the quality of the radioisotope product.

III. Demand for Cyclotron Time Can Be Met Without Resumption of Target Processing at ORNL

The AEC discussion paper calls attention to the fact that some processors obtain targets having lower yields than are optimum and that this results in lost time for cyclotron bake-out, target removal, and target fabrication. To alleviate this situation, the paper proposes to combine orders and make longer irradiations.

The proposal has technical merit with respect to small irradiations, but this is of limited significance. What the paper fails to make clear is that many commercial orders are already placed for optimum production quantities and that longer irradiations may often increase rather than decrease the unit cost of the activity that is produced.

To the limited extent that remedial action is desired, several courses of action seem to be open to the Commission.

The first alternative, of course, is to raise prices for cyclotron time so as to make its use economically less attractive, and consequently decrease demand. Since the AEC staff discussion paper was written, charges have in fact been increased from $70 to $90 per hour without any advance notice to users. This regrettable action may force suppliers, such as NSEC, to increase isotope prices to the consumers. While NSEC would not expect changes in demand for this reason to be significant, the AEC staff may forecast a greater impact.

A different approach would be to provide economic incentives which would tend to eliminate the most inefficient uses of the cyclotron. By charging each user a substantial service charge independent of length of irradiation (and in addition to the hourly irradiation charge), the customer would be encouraged to order in larger lots. A price structure of this type could cause NSEC to increase the length of certain irradiations, to produce strontium-85, for example, for it would be more

economical to accept higher decay losses than it would be to place recurrent orders and pay repeated service charges.

IV. Utilizing the ORNL Cyclotron Can Be Continued as a Joint Effort of ORNL and Industry

The discussion paper refers to a need for increased research and development in the areas of obtaining yield data, optimizing target technology, and producing new isotopes.

First, with respect to yield data, it has been NSEC's consistent policy to provide reports of yield data to ORNL. This has contributed to a generally frank and close working relationship between NSEC and the cyclotron group which it is desirable to maintain.

Second, target technology research is being conducted with minimal public investment within the framework of the existing cyclotron operation schedules. This is accomplished on the basis of technical discussions between ORNL and NSEC personnel which frequently result in the ordering of speculative runs by NSEC on a purchase order basis. Then, irrespective of the yield, NSEC is billed for cyclotron time and target preparation under its purchase order. The technology so developed is available to all users of the cyclotron even though the costs of the research were supported, at least in substantial part, by a single company.

If the level of R&D effort under this arrangement leaves something to be desired, this results from the fact that the purchaser of the materials so produced is asked to take all of the financial risk involved. This situation could be remedied if ORNL would quote, in advance, firm prices per unit of activity in the experimental target.

Finally, the need for additional research on important cyclotron isotopes not now available is very limited. The discussion cites the following:

1. Chromium-51. This is available from NSEC on an irradiation unit basis. The only reason that it is not a stock item is that it costs more to make than does reactor-produced chromium-51 and almost all customer requirements can be satisfied with the latter product.

2. Palladium-103. NSEC does not know of user requests for this isotope. If it has important applications, these should be communicated by the AEC to isotope producers, who will be willing to purchase irradiations if cost and market predictions so warrant.

3. Cesium-132. NSEC has attempted to produce this isotope, but the irradiations which it has financed have not been successful. In this case, NSEC cannot justify further expenditures and appropriate public support may be desirable. Even here, however, the research should be done in cooperation with industry in order that any useful material actually produced can be distributed through commercial channels to customers. This could be done, for example, by charging on a yield basis--i.e., a fixed price for each unit of activity delivered--until the technology is better understood.

V. The Discussion Paper's Projection of Isotope Costs to Users Is Misleading

The discussion includes a tabulation which suggests that in the case of cobalt-57, the total raw material cost to a commercial supplier for a one-hour irradiation yielding 20 mc would be over $18.00 per mc as compared with $5.40 per mc for an 800 mc, thirty-seven hour bombardment. One may accept these figures for the moment, but they are misleading.

Using the data prepared by the AEC staff, one can calculate that a purchaser of a five-hour bombardment (100 mc) can produce cobalt-57 for about $6.50 per mc, only about 20% more than the cost to the 800 mc purchaser. These figures suggest that the assumed 20 mc order is commercially unrealistic--i.e., any company seriously interested in investing in cyclotron isotope production can readily lower raw material costs to a reasonable level.

Other data may be misleading as well--as for example the statement that estimated sales of processed cyclotron radioisotopes and associated products amount to $600,000 annually. This seems to NSEC to be an inflated figure--unless it includes very remotely associated products or counts the same material repetitively as a result of intra-industry transactions followed by resale.

Isotopes - 3

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February 15, 1964

AEC 994/16

COPY NO. 75

AEC 994/16

ATOMIC ENERGY COMMISSION

NSEC REQUEST FOR AEC WITHDRAWAL FROM PRODUCTION AND DISTRIBUTION OF SEVEN RADIOISOTOPES

Note by the Secretary

The General Manager has requested that the attached report by the Director, Division of Isotopes Development, be circulated for consideration by the Commission at an early date.

W. B. McCool
Secretary

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ATOMIC ENERGY COMMISSION

REVIEW OF NUCLEAR SCIENCE AND ENGINEERING CORPORATION REQUEST FOR AEC WITHDRAWAL FROM PRODUCTION AND DISTRIBUTION OF SEVEN RADIOISOTOPES

Report to the General Manager by the
Director of Division of Isotopes Development

THE PROBLEM

1. To consider the request of Nuclear Science & Engineering Corporation that the AEC withdraw from the production and distribution of the radioisotopes Manganese-54, Chromium-51, Iron-55, Cobalt-58, Strontium-85, Cesium-134 and Cerium-141.

BACKGROUND AND SUMMARY

2. On April 30, 1963, Nuclear Science & Engineering Corporation (NSEC) requested the AEC to withdraw from the production of Cobalt-58. On May 24, 1963, NSEC requested additionally that the AEC also withdraw from the production and distribution of Manganese-54, Chromium-51, Iron-55, Strontium-85, Cesium-134, and Cerium-141. Pertinent correspondence between NSEC and AEC is contained in Appendix "A". Data related to the radioisotopes being reviewed are contained in Appendices "B" through "I". These requests have been held in abeyance pending Commission establishment of policy on future AEC-industry relationships in the production and distribution of radioisotopes, as discussed in AEC 994/11 and Addendum AEC 994/13.

3. During a review of AEC 994/11 and AEC 994/13 at Meeting 1963 on September 10, 1963, the Commission requested that the Atomic Industrial Forum (AIF) be advised of the action taken at the meeting and agreed that policy matters on radioisotope production and distribution will be discussed with AIF prior to Commission action on them. The Commission requested also that

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industry be provided general withdrawal criteria for comment following the discussion with AIF. On October 17, 1963, the Commission met with representatives of the AIF to discuss these policy questions with the background notes, contained in AEC 994/12 and AEC 994/14. A statement (AEC 994/15) from the Forum was received in a letter of December 31, 1963, to Chairman Seaborg from Dr. Lauchlin M. Currie, Chairman, AIF Ad Hoc Committee on Isotope Production and Distribution. Dr. Currie noted that the Forum would be obtaining and subsequently submitting to the Commission at a later date additional comments from other distributors and users of radioisotopes.

4. The further actions required to complete Commission consideration of AEC 994/11 will, therefore, require some additional period of time. However, NSEC has repeatedly requested AEC action on its request. It is recommended, therefore, that the NSEC request be reviewed on an ad hoc basis using the suggested withdrawal criteria contained in AEC 994/11 and the Commission's revisions in Addendum AEC 994/13, which are as follows:

> "AEC withdrawal from production and distribution of particular radioisotopes in favor of a demonstrated private industry capability shall encompass the following, but recognizes that all the factors need not be completely satisfied.
>
> "a. Private radioisotope prices should be reasonable and consistent with encouragement of research and development and use.
>
> "b. There should be effective competition in the production and distribution of the radioisotope in question, but a single source of supply under certain conditions may be acceptable. Foreign producers are accepted in determining effective competition except when they have captured 70% or more of the domestic market.

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"c. Assurance should be had that the private producers will not discontinue the venture in a manner that would adversely affect public interest to the extent resumption of production by AEC would involve a significant delay.

"d. An organization's participation in private radioisotope production should not create a conflict of interest with other contractual obligations it may have to the AEC or to other Federal agencies."

5. A number of the radioisotopes being reviewed in this paper are produced by NSEC through cyclotron bombardments using the ORNL 86-inch cyclotron; whereas, the ORNL products are produced in nuclear reactors. Legal considerations are not directly involved in the question of AEC's withdrawal from the distribution of reactor produced radioisotopes in favor of cyclotron produced radioisotopes, however, there are technical and economic factors which must be specifically evaluated. In general, cyclotron-produced materials have higher radiochemical purity; however, costs of producing cyclotron materials are generally considerably higher than reactor-produced materials. Many applications do not require the high radiochemical purity associated with cyclotron radioisotopes. The question, therefore, arises as to whether users should be required to pay the economic penalty of utilizing materials with characteristics in excess of their actual requirements. It should also be noted that the ORNL 86-inch cyclotron, which is now 15 years old, is the only machine in the United States available for commercial production of radioisotopes and, therefore, represents a sole source for all commercial interests. Over the past 18 months the "on line" factor of the machine was 24 percent. Approximately 50 percent of the operating cyclotron time is obligated to research activities supporting direct AEC program interests. Therefore, 12 percent of the total time is available for all non-AEC

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irradiation services. Based upon experience to date this amount of time has been adequate to support non-AEC service irradiation requests. Placement of increased requirements on the ORNL cyclotron either for commercial purpose or to support AEC program interests would require major improvements in the existing machine to provide for increased operation and reliability or construction of a new machine.

6. One of the criteria suggested in AEC 994/11 and AEC 994/13 noted AEC should consider withdrawal only upon a "demonstrated private industry capability". As a minimum, this means the satisfactory conduct of test production runs and product analysis. It further means that the company has publicly announced the routine availability of the product with product specifications, price schedules and delivery schedules.

Manganese-54

7. Manganese-54 has been produced routinely through cyclotron bombardments and is the method used by NSEC. The AEC withdrew from the distribution of processed cyclotron-produced radioisotopes in 1955 (AEC 195/4), but continues to provide irradiation service as well as target fabrication. Oak Ridge National Laboratory is now completing development work leading to the production of Manganese-54 through an Fe^{54} (n,p) Mn^{54} reaction. Based upon experimental reactor production runs to date it appears that the cost of the reactor-produced product will be on the order of 1/8 the price of the NSEC cyclotron-produced material. NSEC is also studying the production of this isotope via reactor irradiations and has made one experimental test run in the ETR. Additionally Abbott Laboratories (See Appendix "G") has carried out several test

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irradiations in the GETR to develop a production method for this material. G. E. (See Appendix "I") has indicated plans to have this material available beginning approximately September 15, 1964.

8. Since ORNL is not distributing the radioisotope, nor is it listed in the AEC catalog of routinely available products no withdrawal action is required or will be taken at this time. However, upon the establishment of the reactor production method for Manganese-54, consideration will be given to its production and sales as a routine product from ORNL. Concurrently with this, industrial capability and interest in the reactor production of Manganese-54 will be determined. If a suitable private capability exists then the product will not be made available from ORNL. The Division of Isotopes Development will make available to interested private firms the developed production technology for Mn^{54}.

Chromium-51

9. Chromium-51 is a radioisotope with widespread medical application that can be produced with either a cyclotron or nuclear reactor. During the two-year period, FY 1962-63, ORNL distributed 30,354 millicuries of reactor-produced product in 567 shipments with associated revenues totaling $69,402. During the same period, NSEC distributed 474 millicuries of reactor-produced Chromium-51 (about 1.5% of ORNL distribution) and 3,020 millicuries of cyclotron-produced material (less than 10% of ORNL distribution of reactor product). For quantities less than 500 millicuries, ORNL charges $2.00 per millicurie, while NSEC charges $2.40 per millicurie. Abbott Laboratories (See Appendix "G") is also producing Chromium-51 using the GETR. To date their production level has been scaled to meet only

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immediate customer requirements for pharmaceutical grade material. However, their production-processing capability is such that substantially increased quantities of product can be prepared. An appropriate lead time would be required for Abbott to schedule reactor irradiations to be provided for the increased requirements for Chromium-51 resulting from ORNL withdrawal. Since Abbott Laboratories does not currently market chemical grade Chromium-51, they do not have a publically announced price schedule at this time. Additionally Atomic Energy of Canada Limited (See Appendix "E") is marketing Chromium-51 in the U. S. at prices lower than NSEC. Union Carbide Corporation (See Appendix "H") has work going on to develop a cheaper process for producing Chromium-51, but this work will probably not be finished for several months. G. E. (See Appendix "I") is currently completing their development efforts and plan to have Chromium-51 available for distribution beginning approximately July 1, 1964.

Iron-55

10. During the two-year period, FY 1962-63, ORNL distributed a total of 455 millicuries of reactor-produced Iron-55 in 135 shipments with revenues totaling $21,193. During the same period, NSEC sold 1,864 millicuries of cyclotron-produced material. Specifications and prices for the NSEC and ORNL products are identified in Appendix "A". There is currently no private, domestic production of reactor-produced Iron-55, nor any known foreign sales in the U. S. G. E. (See Appendix "I") has indicated plans to have Iron-55 available beginning approximately September 15, 1964.

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Cobalt-58

11. During the two-year period, FY 1962-63, ORNL distributed a total of 288 millicuries of reactor-produced Cobalt-58 in 84 shipments with revenues totaling $5,744. NSEC has made one test production run of 424 mc of Cobalt-58 in the ETR. NSEC prices for this radioisotope would be the same as ORNL for quantities less than 100 mc, but 50% higher for purchases greater than 100 mc. According to NSEC's last communication to the Commission they had not sold any material. The comparative quality of the product produced by NSEC in their test irradiation to the routinely available ORNL product is essentially the same. Reference is made to Appendix "A". Abbott Laboratories (See Appendix "G") has carried out an experimental production run for Cobalt-58 in the GETR and can produce substantial amounts of the material if a market develops. G. E. (See Appendix "I") is currently completing their development efforts and plans to have Cobalt-58 available for distribution beginning approximately July 1, 1964. To the best of our knowledge, no known foreign sales of this radioisotope are being made in the U. S.

Strontium-85

12. During the two-year period, FY 1962-63, ORNL distributed 1,444 millicuries of reactor-produced Strontium-85 in 529 shipments with associated revenues totaling $72,195. NSEC has neither produced nor sold any reactor-produced material, but has stated in the correspondence contained in Appendix "A" that it would begin production after AEC withdrawal. NSEC has, however, sold during the two-year period, 94 millicuries of cyclotron-produced Strontium-85 at prices four times greater than those of ORNL, $200/mc vs. $50/mc. Abbott Laboratories (See Appendix "G") has recently initiated

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experimental irradiations in the GETR to produce this isotope with the objective of meeting only their immediate customer requirements. However, they indicate that irradiations could be carried out to produce approximately one curie of Strontium-85 every seventy days. This production capability is substantially in excess of ORNL's sales. G. E. (See Appendix "I") is currently completing their development efforts and plans to have Strontium-85 available for distribution beginning approximately July 1, 1964. To the best of our knowledge, there are no known foreign sales of this radioisotope being made in the U. S.

Cesium-134

13. During the two-year period, FY 1962-63, ORNL distributed 1,738 millicuries of Cesium-134 in 104 shipments with revenues totaling $1,797. NSEC has made one 100 mc test production run of Cesium-134, but did not sell any of the material. NSEC stated that they would begin routine preparation and commercial distribution after AEC withdrawal at prices 20% to 33% higher than those of ORNL. The comparative quality of the product produced by NSEC in their test irradiation to the routinely available ORNL product is essentially the same. Reference is made to Appendix "A". G. E. (See Appendix "I") has indicated plans to have Cesium-134 available beginning approximately September 15, 1964. There is no other private domestic production of the material, nor are there any known foreign sales in the U. S.

Cerium-141

14. ORNL produces Cerium-141 as a fission product, while NSEC produces Cerium-141 through reactor bombardment. During the two-year period, FY 1962-63, ORNL distributed 488

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millicuries of Cerium-141 in 87 shipments with associated revenues totaling $1,008. During FY 63, the revenue was $520 with an associated loss of $3,885. During the FY 1962-63 period, NSEC sold a total of 122 millicuries at prices 67% to 167% higher than those of ORNL. The comparative quality of the product produced by NSEC and ORNL is set forth in Appendix "A". G. E. (See Appendix "I") is currently completing their development efforts and plan to have Cerium-141 available for distribution beginning approximately July 1, 1964. There is no other private production of the material, nor are there any known foreign sales in the U. S.

CONCLUSION

15. AEC withdrawal from the production and distribution of reactor products in favor of cyclotron-produced radioisotopes should be considered favorably only where the price for the cyclotron product is reasonable in comparison to the AEC reactor product irrespective of the consideration that cyclotron products are generally of a higher quality. Further, since the ORNL 86-inch cyclotron is currently the single machine available in the United States for commercial production of radioisotopes, a positive determination must be made in each instance that the operational availability of the ORNL cyclotron is such as to provide a reasonable expectation of being able to satisfy all outstanding requirements for its use, including the production of the radioisotope being considered for withdrawal.

16. The AEC does not currently distribute Manganese-54, and hence, no formal action is yet required. As noted in paragraph 8, a final determination of whether ORNL should market reactor-produced Manganese-54 will be made upon completion of production technology development and the existence of a private production capability.

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17. Effective competition exists in the sale of Chromium-51 produced through reactor irradiations. This is contributed to, both by U. S. and foreign producers. The existing market price is considered reasonable. Satisfactory compliance with the withdrawal criteria (4c) is assumed due to current production activities involving both U. S. and foreign producers, as well as the ability of the AEC to resume production of Chromium-51 on a timely basis.

18. With respect to Iron-55 NSEC produces a cyclotron product compared to the AEC reactor product. They do not indicate plans to produce and distribute a reactor product. The NSEC cyclotron product is of a higher quality than the AEC reactor product and their stated prices are considered to be reasonable. Commercial competition does not exist currently. However, the current and foreseen market is small; therefore, the criterion of commercial competition is waived. In the event it is necessary, the AEC can resume production on a timely basis. In this regard it is to be noted that G. E. has indicated plans to produce this material within the next 8 months.

19. With respect to Strontium-85, NSEC is not producing and distributing a reactor product although they have stated their intent to do so upon AEC withdrawal. Accordingly, no withdrawal action can be taken on their request until NSEC has demonstrated their production capability for reactor-produced Strontium-85 as defined in 6 above. NSEC is producing and distributing cyclotron-produced Strontium-85. However, the price of the NSEC cyclotron product is approximately four times higher than the AEC reactor product. Accordingly, it is concluded that on the basis of their cyclotron product they do

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not meet the withdrawal criterion of reasonable price. It is to be noted that both G. E. and Abbott Laboratories have indicated plans to produce and distribute Strontium-85 during the next 6 months. At such time as a private capability exists which meets the withdrawal criteria, reconsideration will be given to AEC withdrawal from the production and distribution of this radioisotope.

20. With respect to Cesium-134, NSEC has carried out one test production irradiation yielding a product of comparable quality but has not announced publically the price, product specification and delivery schedule for this material. The stated NSEC price is 20% to 30% higher than the current AEC price. It is concluded, therefore, that the criterion of "demonstrated private industry capability" is met, except with respect to the public announcement of product availability, etc. While the stated NSEC price is higher it is not considered to be unreasonable; therefore, the criterion related to price is satisfied. Since the current and foreseen market is small, the criterion of commercial competition is waived. In the event it is necessary, the AEC can resume production on a timely basis. In this regard it is to be noted that G. E. has indicated plans to produce this material within the next 8 months.

21. NSEC can currently satisfy existing requirements for Cobalt-58 and Cerium-141. The criteria of effective competition is not met since there are no other private producers selling these products in the U. S. However, the market for these radioisotopes is small enough currently to be served by a single supplier. In this regard it is to be noted that G. E. has indicated plans to produce these materials. In the event

it is necessary, the AEC can resume production on a timely basis. A strict interpretation of the withdrawal criteria would indicate that the price differentials between the NSEC and AEC product do not appear reasonable. However, because of the extremely limited use, it is difficult to establish that these differentials would have a substantial negative effect on research and development.

STAFF JUDGMENTS

22. The Office of the Controller and the Division of Industrial Participation agree with the recommendation in this paper. The General Counsel has no legal objection. The Division of Public Information concurs in recommendation 23.c.

RECOMMENDATION

23. The General Manager recommends that the Atomic Energy Commission:

a. Approve AEC withdrawal from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134, and Cerium-141 with the provision that such withdrawal will become effective 90 days after NSEC or other commercial producers publicly announce the availability of these products, product specifications, prices, and delivery schedules.

b. Note that resumption of production by AEC would not involve a significant delay in the event private producers discontinue production and distribution or not continue to meet other withdrawal conditions.

c. Note that a public announcement of AEC intention to withdraw from the production and distribution of Chromium-51, Iron-55, Cobalt-58, Cesium-134, and Cerium-141 will be prepared and issued following Commission approval of this paper, but only after the public announcement of commercial availability required in 23.a. above.

d. Disapprove, at this time, the NSEC request that AEC withdraw from the production and distribution of Strontium-85.

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e. Note that since AEC does not currently distribute Manganese-54 no action will be taken on the NSEC request at this time.

f. Note that NSEC will be notified of Commission action on its request by an appropriate letter.

g. Note that the JCAE will be informed by an appropriate letter.

- -

LIST OF ENCLOSURES

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APPENDIX "A"

NUCLEAR SCIENCE AND ENGINEERING CORPORATION
P. O. BOX 10901
PITTSBURGH 36, PENNSYLVANIA

April 30, 1963

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Paul:

We are very pleased to report to you the availability from Nuclear Science & Engineering Corporation of high specific activity cobalt-58. For the first time, this material is being sold with radioactive purity in excess of 99% and with cobalt-60 impurity of less than 1%. We anticipate that the improved technical specifications will result in increasing utilization of the isotope in research.

The price for this product has been set at $20.00 per millicurie, with discounts available for quantities of 50 millicuries or more.

NSEC has produced over 500 millicuries of cobalt-58 and plans to keep the item in stock at all times. As we will thereby be able to meet the market demand, at the Commission's present price, and with a product superior to that which has previously been available, we hereby formally request that the Commission withdraw from the production of this isotope.

We look forward to your favorable consideration of this request.

Sincerely,

/s/ R. A. Brightsen

R. A. BRIGHTSEN
President

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

May 16, 1963

Mr. R. A. Brightsen, President
Nuclear Science & Engineering Corporation
P. O. Box 10901
Pittsburgh 36, Pennsylvania

Dear Mr. Brightsen:

Reference is made to your letter of April 30, 1963, requesting the AEC to withdraw from the production and distribution of cobalt-58. The Commission presently has under consideration the establishment of appropriate procedures and guidelines for considering withdrawal from the production of individual radioisotopes in favor of commercial organizations. I am sure you will appreciate that until such time as the Commission completes its deliberations, we must hold all requests for withdrawal in abeyance.

Sincerely yours,

/s/ Paul C. Aebersold

Paul C. Aebersold, Director
Division of Isotopes Development

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NUCLEAR SCIENCE AND ENGINEERING CORPORATION
P. O. BOX 10901
PITTSBURGH 36, PENNSYLVANIA

May 24, 1963

Dr. Paul C. Aebersold, Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Dr. Aebersold:

This letter will formally delineate for you certain isotope production operations in which Nuclear Science & Engineering Corporation is already engaged, or in which we are prepared to engage immediately.

In accordance with the policy that the Commission will reduce to the greatest extent practicable its capacity to provide products and services "as adequate and reasonably priced outside sources become available for both private and Governmental needs", NSEC formally requests that the AEC effect the prompt withdrawal of the national laboratories from these activities.

The activities to which I refer are the production and distribution of the following radioisotopes:

Chromium-51	Strontium-85
Manganese-54	Cesium-134
Iron-55	Cerium-141

In addition, we wish to repeat our requests of August 3, 1962 and April 30, 1963, that the Commission withdraw from production and distribution of iodine-125 and cobalt-58, respectively. Basic information on each of these isotopes is summarized in the attached table.

As you will note, the NSEC prices are in some cases no higher than those of ORNL. In cases where our prices are higher, the quality of the product that we offer is superior to that offered by ORNL, and I should, of course, bring your attention to the observation by Mr. Fowler that some isotopes are sold by ORNL at less than cost. On the whole, we are confident you will agree that our prices are reasonable and consistent with the encouragement of research and development.

The competence and ability of NSEC to produce and distribute radioisotopes has been amply demonstrated over a period of more than eight years. We have during this time produced more than fifty different isotopes using both accelerators and reactors, and have sold a continually increasing volume of such isotopes to private and public institutions in the United States and abroad. We are, of course, proud of the reputation for quality which our products have achieved. Our skills and facilities, as well as our

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demonstrated performance, should constitute sufficient assurance to the AEC that NSEC can supply the above isotopes with the continuity necessary to protect the public needs.

With respect to NSEC's ability to compete effectively with foreign radioisotope producers in the U. S. market, I believe that an examination of comparative prices will lead you to the conclusion that we will be able to compete very effectively indeed. In addition to the favorable price comparison, please keep in mind that we have many hundreds of satisfied customers all over the United States.

There is, of course, a high probability that private domestic competition with NSEC, which already exists to some extent, will increase rapidly following AEC withdrawal from the production and distribution of these isotopes. The irradiation facilities which we use to produce isotopes are available to any other company that has the initiative and willingness to compete with NSEC.

The directives of the Atomic Energy Act and the policies of the AEC make it clear that prompt action, rather than further delay, by the AEC is in order to effect withdrawal of ORNL from the production and distribution of these isotopes.

Sincerely,

/s/ R. A. Brightsen

R. A. BRIGHTSEN
President

Enclosure

Nuclear Science & Engineering Corporation

Technical Data and Price Information for Selected Radioisotopes Available from NSEC

May 1963

	Specific Activity	Purity	Delivery	Base Price	Discounts
Chromium-51					
NSEC	~1000 c/g	> 99%	In stock	$ 2.40/mc	> 500 mc $1.50/mc
ORNL	> 15 c/g	> 99%	In stock	$ 2.00/mc	> 500 mc $1.50/mc
UKAEA	>10 c/g	(1)	(1)	$ 5.60/mc	(1)
CEA	10-20 c/g	(1)	(1)	$ 3.00/mc	(1)
AECL	(2)	(2)	(2)	(2)	(2)
Manganese-54					
NSEC	Carrier-free	> 99%	In stock	$200.00/mc	Sliding scale from $190/mc (5-9 mc) to $170/mc(>15 mc)
ORNL	(3)	(3)	(3)	(3)	(3)
UKAEA	>10 mc/g	(1)	(1)	$280.00/mc	(1)
CEA	(2)	(2)	(2)	(2)	(2)
AECL	(2)	(2)	(2)	(2)	(2)
Iron-55					
NSEC	Carrier-free	<.0001% Fe-59	In stock	$ 75.00/mc	Sliding scale from $70/mc (10 mc) to $11/mc (2000 mc)
ORNL	> 500 mc/g	<10% Fe-59	In stock	$ 50.00/mc	> 10 mc $25/mc
UKAEA	> 50 mc/g	(1)	(1)	$ .70/μc	(1)
CEA	>1000 mc/g	(1)	(1)	$ 50.00/mc	(1)
AECL	(2)	(2)	(2)	(2)	(2)
Strontium-85					
NSEC					
1.	Carrier-free	>99%(<1% Sr-89)	In stock	$200.00/mc	Sliding scale from $190/mc (5-9 mc) to $170/mc (> 15 mc)
2.	>1000 mc/g	>98%(excl. <1% Sr-89)	To be kept in stock	$ 50.00/mc	> 500 mc $35/mc
ORNL	> 500 mc/g	>98%(excl. <1% Sr-89)	In stock	$ 50.00/mc	> 500 mc $35/mc
UKAEA	500-1000 mc/g	(1)	(1)	$ 84.00/mc	(1)
CEA	1-5 mc/g	(1)	(1)	$ 2.00/mc	(1)
AECL	(2)	(2)	(2)	(2)	(2)

	Specific Activity	Purity	Delivery	Base Price	Discounts
Cesium-134					
NSEC	>50000 mc/g	> 98%	In stock	$ 1.50/mc	> 1c $1/mc
ORNL	> 3000 mc/g	> 98%	In stock	$ 1.25/mc	> 1c $0.75/mc
UKAEA	> 50 mc/g	(1)	(1)	$ .70/mc	(1)
CEA	>500 mc/g	(1)	(1)	$ 1.00/mc	(1)
AECL	(2)	(2)	(2)	(2)	(2)
Cerium-141					
NSEC	>1000 mc/g	< 01% Ce-144 - Pr-144	In stock	$ 20.00/mc	> 1 mc $5 each additional mc.
ORNL	Carrier-free	<30% Ce-144 - Pr-144	<4 mos.	$ 3.00/mc	> 100 mc $1.50/mc
UKAEA	> 5 mc/g	(1)	(1)	$ 42.00/5mc	> 5 mc $3 each additional mc
CEA	(2)	(2)	(2)	(2)	(2)
AECL	(2)	(2)	(2)	(2)	(2)
Cobalt-58					
NSEC	Carrier-free	<1% Co-60	In stock	$ 20.00/mc	> 100 mc $15/mc
ORNL	Carrier-free	<5% Co-60	< 3 mos.	$ 20.00/mc	> 100 mc $10/mc
UKAEA	Carrier-free	(1)	(1)	$ 28.00/mc	> 1 mc $14 each additional mc
CEA	Carrier-free	<5% Co-60	(1)	$ 53.00/mc	> 1 mc $2 each additional mc
AECL	(2)	(2)	(2)	(2)	(2)
Iodine-125					
NSEC	Carrier-free	<1% I-126	In stock	$ 12.00/mc	Sliding scale from $10/mc (6-24 mc) to $3/mc(> 500 mc)
ORNL (4)	Carrier-free	<2% I-126	In stock	$ 15.00/mc	Available to some users without charge, on "loan".
UKAEA	(1)	(1)	(1)	(1)	Experimental quantities available; price "on request".
CEA	(2)	(2)	(2)	(2)	(2)
AECL (4)	Carrier-free	<2% I-126	Not known	$ 5.00/mc	Sliding scale down to $3/mc

(1) Referenced information not contained in "The Isotope Index - 1962".
(2) Not known to be a supplier of the processed isotope.
(3) Manganese-54 is not listed in ORNL catalog. Only information available is in a letter from Mr. J. H. Gillette, ORNL, dated May 9, 1963, advising that 11 mc had been sold during fiscal year 1962.
(4) Information based on personal communications.

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

June 20, 1963

Mr. R. A. Brightsen, President
Nuclear Science & Engineering Corp.
P. O. Box 10901
Pittsburgh 36, Pennsylvania

Dear Mr. Brightsen:

In Dr. Aebersold's absence I am taking the liberty of answering your letter of May 24, 1963, requesting the AEC to withdraw from the production and distribution of a number of radioisotopes based on their present and planned availability from commercial sources of supply. The Commission presently has under detailed consideration the entire question of future AEC-industry relationships in radioisotopes production and distribution. Your request, therefore, cannot be considered until such time as the Commission has provided us with appropriate policy guidance.

Sincerely yours,

/s/ E. Eugene Fowler

E. Eugene Fowler, Deputy Director
Division of Isotopes Development

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

September 20, 1963

Mr. R. A. Brightsen, President
Nuclear Science and Engineering Corporation
Post Office Box 10901
Pittsburgh 36, Pennsylvania

Dear Mr. Brightsen:

As you are aware, the Commission has approved AEC withdrawal from the routine production and distribution of Iodine-125 effective October 1, 1963. For your convenience, I am enclosing a copy of the press release on AEC's withdrawal.

In regard to your April 30, 1963 and May 24, 1963 requests for AEC withdrawal from production and distribution of Cobalt-58, Chromium-51, Manganese-54, Iron-55, Strontium-85, Cesium-134 and Cerium-141, we would appreciate receiving the following additional information concerning your plans:

1. To what extent is NSEC now producing and commercially distributing these radioisotopes? If such functions have not been initiated pending the outcome of your request to the Commission, how soon could they be undertaken?

2. Please indicate in greater detail the chemical, radiochemical, isotopic composition and over-all quality of the radioisotopes in question.

3. Do you plan to use private irradiation facilities for production of the radioisotopes under consideration or will you require use of AEC facilities? In this regard, we would appreciate knowing what reactors or cyclotrons you would plan to use and arrangements made or planned with respect to continuing availability of required irradiation space and time. Do you plan back-up irradiation facility commitments in the event of unscheduled availability of facilities normally planned for use by you?

4. What is your maximum production capability for each radioisotope taking into account the production technology, facilities available to you and regulatory requirements? What percentage of the domestic market for these radioisotopes will you be able to meet currently and as demand for them might reasonably be expected to grow in the future?

5. We would also benefit from any information you may have obtained through market studies or other considerations on the effect of your pricing plans on current and projected market for the radioisotopes in question. Your views on the

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question of price would be particularly helpful since the price schedules you have established for the seven radioisotopes are in each case higher than present Commission prices.

As soon as we receive the above information, we will proceed as promptly as possible toward the necessary determinations.

As you know, about a year ago, this Division through the Isotopes Division at ORNL, assumed responsibility from the Division of Research for the operation of the 86-inch cyclotron. Since that time, we have been making a management review of technical and economic means for improving our operations. One of the procedures we have under consideration is that ORNL undertake the distribution of aliquotted cyclotron target sources. The concept is essentially the same as is currently being followed in the case of Cobalt-57 and Rubidium-84. This would have the advantage of more efficient operation of the machine, economy of production, reduce shipping costs and greater availability of the machine for research and development on target technology and yields. I am enclosing, for your information, a paper which discusses this matter. We would be interested in any comments you may have.

We would be pleased to meet with you or members of your staff here in Washington if you find it desirable to discuss personally any of the above matters.

Sincerely yours,

/s/ E. E. Fowler

E. E. Fowler, Acting Director
Division of Isotopes Development

Enclosures:
As stated

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

September 27, 1963

Mr. R. A. Brightsen, President
Nuclear Science and Engineering Corp.
Post Office Box 10901
Pittsburgh 36, Pennsylvania

Dear Mr. Brightsen:

Subsequent to your telephone call on September 24, 1963, we once again have reviewed the information presented in your letter of May 24, 1963. Our first question was prompted by the statement in your opening paragraph " . . certain isotope production operations--- in which we are prepared to engage immediately." The reference in your table to "in stock" was thus interpreted here to mean that when production was initiated the particular isotopes so designated would be stockpiled. Since you indicated on the phone that those items designated "in stock" are actually being produced and stockpiled, we would appreciate receiving information on your sales experience. I am sending you a chart showing ORNL sales in dollars and millicuries for these materials during the period 1956-1963.

Information requested by question two is still needed. We had hoped to obtain from you information in addition to that already given. Specifically we wish to receive from you the production method, chemical form, acidity or pH, concentration, total solids and heavy metals similar to that given in the ORNL catalog.

In response to your specific question about quality of the products distributed by ORNL, we have compiled a comparison table showing the information presented in your letter vs. the May 1960 and April 1963 ORNL catalogs. For your information we have also tabulated their current actual product specifications. Please note in particular that information contained in your letter regarding the ORNL product was indeed based on their old 1960 catalog. In each instance the specifications of the product they are now selling is far superior to that listed in their old 1960 catalog.

In reexamining the prices which you propose they vary from 20% to 567% higher than those from ORNL. This was the basis for our fifth question.

Sincerely yours,

/s/ E. E. Fowler

E. E. Fowler, Acting Director
Division of Isotopes Development

Enclosures:
1. Table
2. 1963 Catalog
3. Charts

ORNL Radioisotopes Which NSEC Has Asked be Withdrawn
(Comparison of Technical Data and Price Information)

RADIOISOTOPE	SPECIFIC ACTIVITY	PURITY	DELIVERY	PRICE PER MC
Chromium-51				NSEC / ORNL / Difference
NSEC - 5/24/63	approx. 1000 c/g	over 99%	In stock	0-500 mc: $ 2.40 / $ 2.00 / NSEC 20% higher over 500 mc: 1.50 / 1.50 / Same
ORNL (NSEC letter)	over 15 c/g	" "	" "	
ORNL - 5/60 catalog	" " "	" "	" "	
ORNL - 4/63 catalog	~100 c/g	" "	" "	
ORNL - 9/63 actual	700-1000 c/g	" "	" "	
Manganese-54				NSEC / ORNL
NSEC - 5/24/63	carrier free	over 99%	In stock	0-4 mc: $200.00 / none 5-9 mc: 190.00 10-15 mc: ? over 15 mc: 170.00
ORNL (NSEC letter)	not listed in catalog but Gillette advised 11 mc sold FY-1962			
Comment -	Not a standard ORNL product and should be excluded from table.			
Iron-55				NSEC / ORNL / Difference
NSEC - 5/24/63	carrier free	less than .0001% Fe-59	In stock	0-10 mc: $ 75.00 / $ 50.00 / NSEC 50% higher 11- ?: 70.00 / 25.00 / NSEC 200% higher over 2,000 mc: 11.00
ORNL (NSEC letter)	over 500 mc/g	less than 10% Fe-59	" "	
ORNL - 5/60 catalog	" " "	" " " "	" "	NSEC Reduced 10/15/63
ORNL - 4/63 catalog	approx. 5,000 mc/g	less than 5% Fe-59	" "	0-10 mc: $ 50.00 50-99 mc: 40.00 100-199 mc: 35.00
Comment -	Is NSEC comparing their Cyclotron-produced product with ORNL's routine reactor-produced product?			

Appendix "A"

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RADIOISOTOPE	SPECIFIC ACTIVITY	PURITY	DELIVERY	PRICE PER MC
Strontium-85				
NSEC - 5/24/63 I	carrier-free	over 99% (less than 1% Sr-89)	In stock	
II	over 1,000 mc/g	over 98% (less than 1% Sr-89)	To be kept in stock	
ORNL (NSEC letter)	over 500 mc/g	over 98% (less than 1% Sr-89)	In stock	
ORNL - 5/60 catalog	" " "	" " " "	" "	
ORNL - 4/63 catalog	approx. 10,000 mc/g	" " " "	" "	
ORNL - 9/63 actual	about 20,000 mc/g	" " " "	" "	
Comment - Note NSEC has not yet started producing product II				

	NSEC I	ORNL	Difference
0-4 mc	$200.00	$50.00 0-500 mc	NSEC 300% higher
5-9 mc	190.00		
10-15 mc	?		
over 15 mc	170.00	35.00 over 500mc	NSEC 386% higher

NSEC II (not in production)

0-500 mc	$50.00
over 500 mc	35.00

RADIOISOTOPE	SPECIFIC ACTIVITY	PURITY	DELIVERY	PRICE PER MC
Cesium-134				
NSEC - 5/24/63	over 50,000 mc/g	over 98%	In stock	
ORNL (NSEC letter)	over 3,000 mc/g	" "	" "	
ORNL - 5/60 catalog	" " "	" "	" "	
ORNL - 4/63 catalog	approx. 25,000 mc/g	" "	" "	
ORNL - 9/63 actual	50,000-100,000 mc/g	" "	" "	

	NSEC	ORNL	Difference
0-1,000 mc	$ 1.50	$ 1.25	NSEC 20% higher
over 1,000mc	1.00	.75	NSEC 33-1/3% higher

RADIOISOTOPE	SPECIFIC ACTIVITY	PURITY	DELIVERY	PRICE PER MC
Cerium-141				
NSEC - 5/24/63	over 1,000 mc/g	less than .01% Ce-144 - Pr-144	In stock	
ORNL (NSEC letter)	carrier-free	less than 30% Ce-144 - Pr-144	less than 4 mos.	
ORNL - 5/60 catalog	" "	" " "	" " "	
ORNL - 4/63 catalog	" "	" " "	less than 3 mos.	

	NSEC		ORNL
first mc	$20.00	0-100 mc.	$3.00
ea. add. mc	5.00	over 100 mc	1.50

Difference	NSEC Reduced 10/15/63
NSEC 567% higher	$5.00
NSEC 233% higher	4.00

RADIOISOTOPE	SPECIFIC ACTIVITY	PURITY	DELIVERY	PRICE PER MC
Cerium-141 (continued)				
Comment - No attempted comparison should be made since ORNL product is produced by fission. Enriched Ce-140 could be used to produce a material of very high specific activity.				
Cobalt-58				
NSEC - 5/24/63	carrier-free	less than 1% Co-60	in stock	0-100 mc: NSEC $ 20.00, ORNL $ 20.00, Difference Same over 100 mc: NSEC 15.00, ORNL 10.00, Difference NSEC 50% higher
ORNL (NSEC letter)	" "	less than 5% Co-60	less than 3 mos.	
ORNL - 5/60 catalog	" "	" " " "	" " " "	
ORNL - 4/63 catalog	" "	" " " "	in stock	
ORNL - 9/63 actual	" "	less than 1% Co-60 and in many cases cannot be detected	" "	

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Nuclear Science and Engineering Corporation

P. O. Box 10901, Pittsburgh 36, Pennsylvania

Homestead 2-4000

R. A. BRIGHTSEN
PRESIDENT

October 15, 1963

Mr. E. E. Fowler, Acting Director
Division of Isotopes Development,
United States Atomic Energy Commission
Washington 25, D. C.

Dear Gene:

Please find enclosed revised data sheets for the isotopes covered by NSEC's withdrawal petitions of April 30, 1963 and May 24, 1963. With respect to the questions raised by your letters of September 20 and 27, we have the following comments.

1. NSEC is now routinely preparing and commercially distributing cobalt-58, chromium-51, iron-55, strontium-85 (cyclotron-produced), and cerium-141. Routine preparation and commercial distribution of cesium-134 and reactor-produced strontium-85 will be undertaken by NSEC as soon as the Commission's withdrawal is announced.

2. Chemical and radiochemical properties and other technical specifications are set forth in detail in the enclosures.

3. We plan to use private irradiation facilities for production of the radioisotopes under consideration, but we will also require use of AEC facilities. Since the products are generally required to be furnished with high specific activity, it is often essential that either thermal, epithermal, or fast neutron flux be maximized. This consideration, together with the occasional unavailability of private facilities, will sometimes necessitate our use of AEC reactors.

   Among the private facilities which we have used and plan to continue to use for irradiations are:

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Battelle Memorial Institute
General Electric Testing Reactor
M.I.T.
Western New York Nuclear
Research Center

Orders for services are placed both under blanket contract arrangements and on an individual irradiation basis. We plan suitable back-up commitments to enable continuity of production in the event of unscheduled availability of facilities normally planned for use.

4. As indicated in the enclosures, NSEC is able to meet all the requirements of the domestic market, both currently and in the forseeable future. Production technology has been developed and facilities available to us are adequate to achieve this output in accordance with applicable regulatory requirements.

5. It is our opinion that the proposed production operations are likely to increase the total market for the isotopes in question. Although in some cases NSEC's prices would be slightly higher than those of Oak Ridge, our products would also have superior specifications, in terms of higher purity or specific activity. The isotopes under consideration are generally ordered in lots valued at $200 or less; in view of the fact that the isotope costs would ordinarily be such a small portion of total research project costs, it is inconceivable that the slight price differential would discourage research and development to any significant degree. Please note that each of the isotopes is being produced abroad, thereby necessitating our following reasonable and competitive pricing practices.

Our letter of May 24 also included a request that the AEC discontinue manganese-54 production. We understand that this action has already been taken and that there is, accordingly, no need to pursue our petition with respect to this item.

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I appreciate your soliciting our comments on proposals relating to improved operation of the 86-inch cyclotron. We are studying your draft paper carefully and will send you the results of our analysis as soon as possible.

Although I know you will proceed expeditiously to take action on our requests, let me urge upon you once again the need for a prompt decision. As long as the Commission remains in competition with us, we shall continue to incur excessive decay losses on the inventory which we have already prepared for commercial distribution. We must be able to sell to the domestic market without ORNL price competition in order to justify our continued production operations.

NSEC is pleased by the Commission's withdrawal from iodine-125 production and is hopeful, with this as a precedent, that action on our petitions will be favorable.

Sincerely,

President

Enclosures

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CHROMIUM - 51

	NSEC		ORNL
Production method	V^{51} (p, n) Cr^{51}	Cr^{50} (n, γ) Cr^{51}	Cr^{50} (n, γ) Cr^{51}
Chemical form and acidity	Cr^{III} in 0.5 N HCl	Cr^{III} in 0.5 N HCl	$CrCl_3$ in 1.0 N (± 50%) HCl sol.
Concentration	> 1 mc/ml	> 1 mc/ml	> 10 mc/ml
Specific activity	CF	> 100,000 mc/g Cr	100,000 mc/g Cr
Purity	> 99%	> 99%	> 99%
Price			
0-500 mc	($2.40/mc)*	$2.40/mc	$2.00/mc
> 500 mc		$1.50/mc	$1.50/mc
Irr. unit (~ 100 mc)	$715		
Delivery	(Irr. Unit) 4-6 weeks	In stock	In stock
Production			
FY 1962-63	4627 mc	3025 mc	Unknown
Annual capability		> 40,000 mc	Unknown
Sales (mc)			
FY 1962-63	3020 mc	474 mc	~ 30,300 mc

* Sale of cyclotron-produced Cr^{51} discontinued except on irradiation unit basis.

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IRON - 55

	NSEC	ORNL
Production method	Mn^{55} (p, n) Fe^{55}	Fe^{54} (n, γ) Fe^{55}
Chemical form and acidity	Fe^{III} in 0.5 N HCl	$FeCl_3$ in 1.0 N (± 50%) HCl sol.
Concentration	> 0.5 mc/ml	> 1 mc Fe^{55}/ml
Specific activity	CF	≡ 5000 mc Fe^{55}/ml
Purity	> 99%	> 99% (excl. Fe^{59})
Fe^{59}	< .0001%	< 5%
Price		
1-10 mc	$50/mc	$50/mc
> 10 mc	$40/mc (50-99 mc); $35/mc (100-199 mc)	$25/mc
Delivery	In stock	In stock
Production		
FY 1962-63	1900 mc	Unknown
Annual capability	> 2000 mc	Unknown
Sales (mc)		
FY 1962-63	1864 mc	~ 400 mc

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COBALT - 58

	NSEC	ORNL
Production method	Ni^{58} (n, p) Co^{58}	Ni^{58} (n, p) Co^{58}
Chemical form and acidity	Co^{II} in 0.5 N HCl	$CoCl_2$ in 1.0 N (± 50%) HCl sol.
Concentration	> 1 mc/ml	> 1 mc/ml
Total solids	< 0.1 mg/mc	< 10 mg/mc
Specific activity	CF	CF
Purity	> 99%	> 98%
Co^{60}	< 3%	< 5%
Price		
0-100 mc	$20/mc	$20/mc
> 100 mc	$15/mc	$10/mc
Delivery	In stock	In stock
Production		
FY 1962-63	424 mc	Unknown
Annual capability	> 2500 mc	Unknown
Sales (mc)		
FY 1962-63	None	~ 200 mc

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STRONTIUM - 85

	NSEC		ORNL
Production method	Rb^{85} (p, n) Sr^{85}	Sr^{84} (n, γ) Sr^{85}*	Sr^{84} (n, γ) Sr^{85}
Chemical form and acidity	Sr^{II} in 0.5 N HCl	Sr^{II} in 0.5 N HCl	$Sr(NO_3)_2$ in 1.0 N (± 50%) HNO_3 sol.
Concentration	> 0.2 mc/ml	> 0.2 mc/ml	> 1 mc/ml
Specific activity	CF	> 1000 mc/g	≅ 10,000 mc/g
Purity	> 99%	> 98% (excl. < 1% Sr^{89})	> 98% (excl. < 1% Sr^{89})
Heavy metals	< 10 ppm	< 10 ppm	< 10 ppm
Price			
0-500 mc > 500 mc	Sliding scale from $200 (1 mc) to $170/mc (15 mc)	$50/mc $35/mc	$50/mc $35/mc
Delivery	In stock	To be kept in stock	In stock
Production			
FY 1962-63	210 mc	None	Unknown
Annual capability	> 400 mc	> 3000 mc	Unknown
Sales (mc)			
FY 1962-63	94 mc	None	~ 1350 mc

* Specifications for reactor-produced Sr^{85} are tentative.

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CESIUM - 134

	NSEC	ORNL
Production method	Cs^{133} (n, γ) Cs^{134}	Cs^{133} (n, γ) Cs^{134}
Chemical form and acidity	Cs^{I} in 0.5 N HCl	CsCl in 1.0 N (± 50%) HCl sol.
Concentration	> 1 mc/ml	> 10 mc/ml
Heavy metals (as Pb)	< 10 μg/mc	< 10 μg/mc
Specific activity	> 25,000 mc/g Cs	≈ 25,000 mc/g Cs
Purity	> 98%	> 98%
Price		
0-1000 mc	$1.50/mc	$1.25/mc
> 1000 mc	$1.00/mc	$0.75/mc
Delivery	In stock	In stock
Production		
FY 1962-63	100 mc	Unknown
Annual capability	> 2000 mc	Unknown
Sales (mc)		
FY 1962-63	None	~ 1750 mc

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CERIUM - 141

	NSEC	ORNL
Production method	Ce^{140} (n, γ) Ce^{141}	Fission
Chemical form and acidity	Ce^{III} in 0.5 N HCl	$CeCl_3$ in 1.0 N (± 50%) HCl sol.
Concentration	> 1 mc/ml	> 1 mc/ml
Total solids	Not applicable	< 2 mg/mc
Heavy metals (as Pb)	< 10 μg/mc of total activity	< 10 μg/mc of total activity
Specific activity	> 1000 mc/g	CF
Purity	< .01% Ce^{144}-Pr^{144}	< 30% Ce^{144}-Pr^{144}
Price		
0-100 mc	$5.00/mc	$3.00/mc
> 100 mc	$4.00/mc	$1.50/mc
Delivery	In stock	< 3 months
Production		
FY 1962-63	145 mc	Unknown
Annual capability	> 1000 mc	Unknown
Sales (mc)		
FY 1962-63	122 mc	~ 400 mc

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

October 21, 1963

Mr. R. A. Brightsen, President
Nuclear Science and Engineering
Corporation
P. O. Box 10901
Pittsburgh 36, Pennsylvania

Dear Mr. Brightsen:

I would like to acknowledge receipt of your letter of October 15, 1963, enclosing revised data sheets for the radioisotopes covered by NSEC's withdrawal requests. We will be communicating with you as quickly as a decision can be reached on your request.

Sincerely yours,

/s/ E. E. Fowler

E. E. Fowler, Acting Director
Division of Isotopes Development

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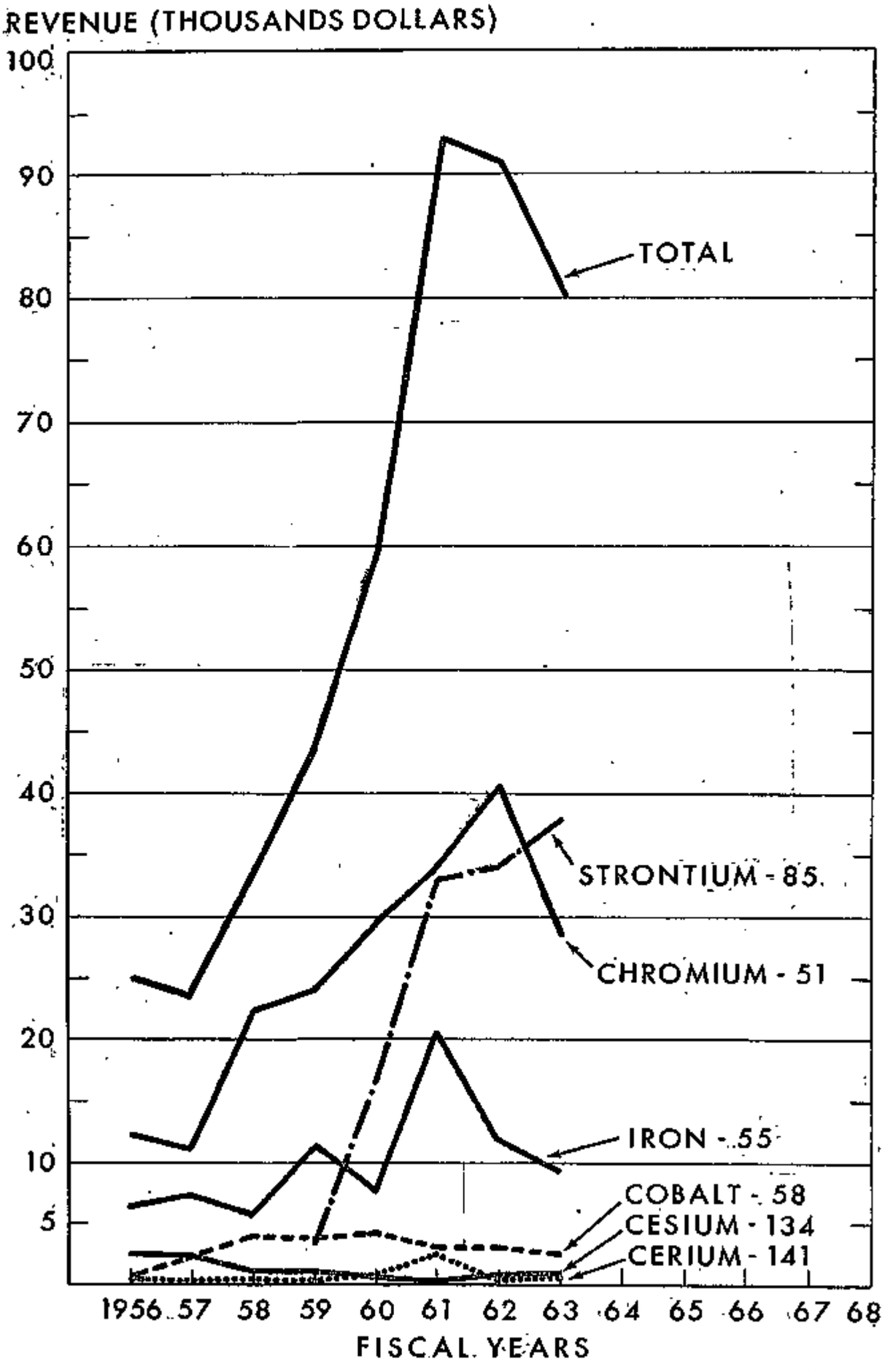
APPENDIX "B"

SIX ORNL RADIOISOTOPES
(which NSEC asked to be withdrawn)



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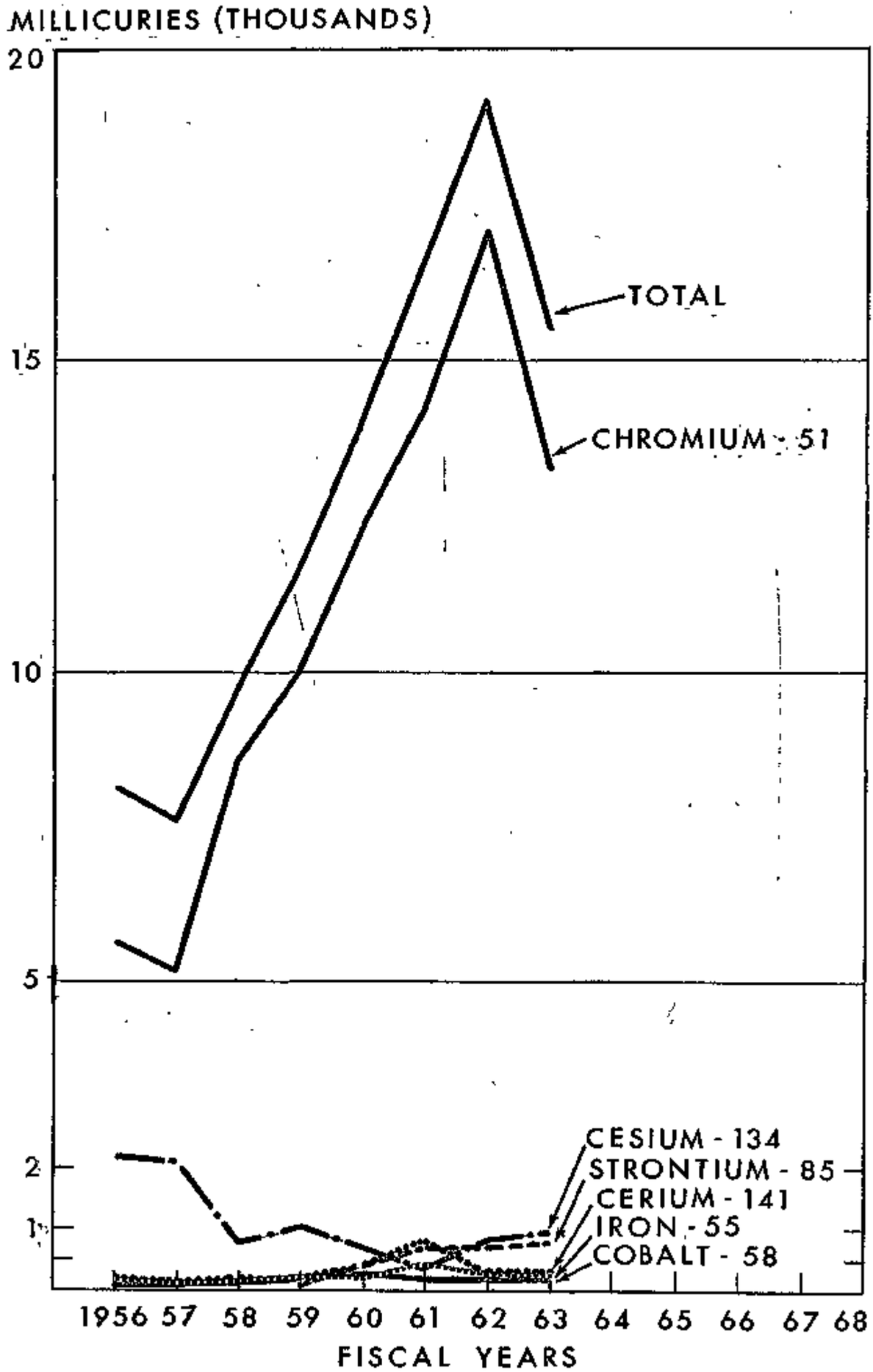
APPENDIX "C"

SIX ORNL RADIOISOTOPES
(which NSEC asked to be withdrawn)



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APPENDIX "D"

ORNL Radioisotopes Which NSEC Has Asked Be Withdrawn
(Comparison of ORNL vs. NSEC Sales in mc)

Radioisotope	ORNL (mc) FY-1962	ORNL (mc) FY-1963	ORNL (mc) Sum	NSEC (mc) FY-1962-63
Chromium-51	17,078	13,276	30,354	a) 3,020 - Cyclotron produced (discontinued except on irradiation unit basis) b) 474 - Reactor produced
Iron-55	237	218	455	a) 1,864 - cyclotron produced b) Reactor produced - None, and no indication of any plans
Cobalt-58	157	131	288	None
Strontium-85	682	762	1,444	a) 94 - Cyclotron produced b) None - reactor produced
Cesium-134	798	940	1,738	None
Cerium-141	245	243	488 (Fission Product)	122 - Reactor produced
Total	19,197	15,570	34,767	a) 4,978 - Cyclotron produced in ORNL 86" b) 596 - Reactor Produced 5,574

John N. Maddox
October 29, 1963

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Appendix "E"

ORNL RADIOISOTOPES WHICH NSEC HAS ASKED BE WITHDRAWN
(Comparison of World-Wide Price Information)

Isotope	NSEC	ORNL	AECL	United Kingdom	Australian A.E.C.	France Belgium Italy	Norway	Russia
Cr-51	0-500 $2.40/mc Over 500 mc 1.50/mc $20 handling charge per shipment	$2.00/mc (NSEC 20% higher 1.50/mc (Same) $20 handling charge	Same as ORNL's 48 hrs' decay excess shipped $20 handling charge (Waived for shipments over $300)	First mc -$564 Then - $564/mc (135% higher than NSEC) No handling charge	$0.784/10 mc (NSEC 2,900% higher) $26.88 preparation charge	$8.00+$2.00/mc (NSEC 20% higher) (Same as ORNL)	Up to 1 mc $4.22 Each add. mc $4.22 (NSEC 76% lower) No handling charge	1 mc-$12.00 Ea. add. mc $2.80 (NSEC 17% lower) No handling charge
Fe-55	1-10 mc $50/mc 11-49 mc ? 50-99 $40/mc 100-199mc $35/mc Cyclotron produced $20 handling charge per shipment	0-10 mc $50/mc (Same) Over 10 mc $25/mc (NSEC 60% higher) NSEC not producing in reactor $20 handling charge	Irradiation Unit Only	50 uc - $14.10 Then - $112.80/mc (126% higher than NSEC) No handling charge	$4.48/mc (NSEC 1,016% higher) $20.16 preparation charge	$30.00+$5.00/0.1 mc (Same as NSEC)	Irradiation Unit Only	0.5 mc-$175.00 (NSEC 600% lower) No handling charge
Co-58	0-100 mc $20/mc Over 100 mc $15/mc $20 handling charge per shipment	$20/mc (Same) $10/mc (NSEC 50% higher) $20 handling charge	Irradiation Unit Only	1 mc - $28.20 Then $14.10/mc (30% lower than NSEC) No handling charge	$13.44/mc (33% lower than NSEC) $26.88 preparation charge	$50.00+$2.00/mc (NSEC 900% higher)	Vitamin B-12 only	Not listed in 1961 price list
Sr-85	0-500 mc $50/mc Over 500 mc $35/mc (Not yet producing in Reactor) Cyclotron produced Sliding scale from $200(mc) - $170/mc (15mc) - $20 handling charge	$50/mc (Same) $35/mc (Same) But NSEC not yet produced in reactor $20 handling charge	Not listed in 1963 catalog	500 uc - $56.40 Then $84.60/mc (69% higher than NSEC) 200 uc-$56.40 500 uc-$112.80 Cyc. Then $197.40/mc No handling charge	$22.40/mc (55% lower than NSEC) preparation charge - $26.88	Not listed in 1961 catalog	Not listed in 1963 catalog	Not listed in 1961 price list
Cs-134	0-1,000 mc $1.50/mc Over 1,000 mc $1.00/mc $20 handling charge per shipment	$1.25/mc (NSEC 20% higher) $ .75/mc (NSEC 33-1/3% higher) $20 handling charge	Irradiation Unit Only	1 mc - $14.10 Then $.71/mc (53% lower than NSEC) No handling charge	$0.448/mc (70% lower than NSEC) preparation charge - $20.16	$24.00+$1.00/mc (NSEC 50% higher)	Irradiation Unit Only	10 mc-$14.00 Ea. add. mc-$1.00 (NSEC 50% higher) No handling charge

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(continued)

Appendix "B"

	NSEC	ORNL	AECL	United Kingdom	Australian A.E.C.	France Belgium Italy	Norway	Russia
Ce-141	0-100 mc $5.00/mc Over 100 mc $4.00/mc Neutron Produced $20 handling charge per shipment	$3.00/mc (NSEC 67% higher) $1.50/mc (NSEC 167% higher) Fission Product $20 handling charge	Irradiation Unit Only	5 mc -$42.30 Then $2.82/mc (44% lower than NSEC) No handling charge	$0.14/mc (97% lower than NSEC) $22.48 handling charge	$50.00+$2.00/mc (NSEC 150% higher)	Irradiation Unit Only	10 mc-$18.00 Ea. add. mc $1.00 (NSEC 400% higher) No handling charge

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APPENDIX "F"

Table I: SUMMARY OF COSTS OF PRODUCING 7 RADIOISOTOPES

	Cs^{134}	Co^{58}	Fe^{55}	Sr^{85}	Cr^{51}	Ce^{141}	I^{125}	Total	Estimated Cost to Other Isotopes	Estimated Cost Not To Be Incurred
Labor	$ 138	$ 138	$ 69	$ 319	$ 2483	$ 904	$ 220	$ 4271	$	$ 4271
Material	40	40	20		975	160	770	2005		2005
Overhead	98	98	49	220	1719	624	153	2961		2961
Utilities	8	8	4	17	145	52	10	244	244	
Analytical Chemistry	214	214	107	592	1049	1068	462	3706		3706
Production Department	116	116	58	4126	5398	284	77	10175	10175	
ORR	200	200	100	7060	6813		5089	19462	19462	
LITR	12	12	6	1949	2998			4977	4977	
Equipment Decontamination	28	28	14			172	18	260	260	
Sub-total ORNL Fund Cost	854	854	427	14283	21580	3264	6799	48061	35118	12943
GE Irradiation Costs	1416		1077					2493		2493 (1)
Total Fund Cost	$2270	$ 854	$1504	$14283	$21580	$3264	$6799	$50554	$35118	$15436
Sales Dept. Fund & Non-Fund Cost	134	350	1253	5113	3853	70	1975	12748	1614	11134
GE Non-Fund Cost	751		965					1716		1716 (1)
ORNL Depreciation	116	116	58	2036	3065	496	952	6839	6839	
ORNL Fuel Costs	38	38	19	1382	1753			3230	3230	
	$3309	$1358	$3799	$22814	$30251	$3830	$9726	$75087	$46801	$28286
Estimated reduction-Pack. & Ship. Cost including depreciation								$11876	$ 1412	$10476
Estimated loss in revenue from packing & shipping								$(25660)		
Net loss --revenue to fund cost and depreciation - Packing & Shipping								$(13784)		

(1) Costs presumably would be absorbed by AEC under GE Contract.

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Table II

SPECIAL COST - PRICE STUDY ON 7 RADIOISOTOPES
FY 1963

	No. of Shipments	Units Produced (mc)	Units Sold (mc)	FY 1963 Fund Cost	FY 1963 Added Factor(1)	AEC Added Factor	Total Full Cost FY 1963	Unit Cost of Production	Unit Cost of Sales	FY 1963 Revenue	FY 1963 Profit (Loss)	FY 1963 Average Unit Price Realized(3)
Cs^{134}	55	4,502	940	$ 2,270	$ 1,039(a)	$ 496	$ 3,805(2)	$ .85	$ 4.05	$ 1,000	$(2,805)	$ 1.06
Co^{58}	38	818	131	854	504	204	1,562(2)	1.91	11.92	2,612	1,050	19.94
Fe^{55}	479	2,181	218	1,504	2,295(b)	570	4,369(2)	2.00	20.04	9,339	4,970	42.84
Sr^{85}	265	860	762	14,283	8,531	3,422	26,236	30.51	34.43	38,110	11,874	50.00
Cr^{51}	266	72,812	13,276	21,580	8,671	4,537	34,788	.48	2.62	28,713	(6,075)	2.16
Ce^{141}	42	12,395	243	3,264	566	575	4,405(2)	.36	18.13	520	(3,885)	2.14
I^{125}	138	12,467	2,027	6,799	2,927	1,459	11,185(2)	.90	5.52	14,728	3,543	7.27
				$50,554	$24,533	$11,263	$86,350			$95,022	$8,672	

(1) Includes depreciation, fuel cost and sales department costs. Sales department costs applied at rate of 13.416% of revenue per AEC instruction for CP Study.
(2) Represents calculated costs.
(3) Catalog prices are as follows:

Cs^{134}	0-1000 mc	$1.25/mc
	> 1000 mc	.75/mc
Co^{58}	0-100 mc	$20.00/mc
	> 100 mc	10.00/mc
Fe^{55}	0-10 mc	$50.00/mc
	> 10 mc	25.00/mc
Sr^{85}	0-500 mc	$50.00/mc
	> 500 mc	35.00/mc
Cr^{51}	0-500 mc	$2.00/mc
	> 500 mc	1.50/mc
Ce^{141}	0-100 mc	$3.00/mc
	> 100 mc	1.50/mc
I^{125}		

(a) Includes $751 non-fund cost from GE, Hanford
(b) Includes $965 non-fund cost from GE, Hanford

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Appendix "F"

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APPENDIX "G"

ABBOTT LABORATORIES

RADIO-PHARMACEUTICALS OAK RIDGE, TENNESSEE

January 7, 1964

Mr. Eugene Fowler
Division of Civilian Application
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Gene:

The following information is provided concerning several radioisotopes which Abbott Laboratories has the capability to produce.

Chromium-51: This is provided as an aqueous solution of chromic chloride in dilute hydrochloric acid in the concentration range of 10 to 100 mc/ml. The radiochemical purity exceeds 99%. The initial specific activity ranges around 300 mc/mg and we have a minimum specification of 50 mc/mg.

We have been preparing Chromium-51 by neutron bombardment of enriched Chromium-50 at GETR for well over one year. The present level of production is about 5,000 mc per target and we receive about five targets per year which suffices for our captive requirements. This capability could be increased by a factor of 20 with no additional cost except that of the stable isotope required for the target material. Our costing data already indicates that we will be able to market this at a price substantially below the current AEC level.

Manganese-54: This radioisotope is virtually a byproduct of irradiations designed to produce Chromium-51, Fe-59, and others. We can supply Mg-54 as a solution of manganous nitrate in dilute nitric acid in an activity range of 1 to 5 mc/ml. The radiochemical purity exceeds 98%. The specific activity is ultra high, although the product may be contaminated slightly from Manganese impurities in the Iron target material.

Although we are not in actual production, several irradiations have been made, and we have the capability of providing 100 mc quantities. Our costing shows that we can market this at a mere fraction of the $200.00 per millicurie price currently prevailing.

Strontium-85: We have only recently begun irradiations designed to produce this isotope, with an objective of only fulfilling our captive requirements. Again, by increasing the size of the targets to be irradiated, this capability could be boosted by a factor of at least 10. This would mean approximately 1,000 mc of Strontium-85 available to us every seventy days.

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We are not at present preparing any of the other radioactive isotopes mentioned in our telephone conversation of January 6, 1964. We do know from an experimental run that we have great capability to produce Cobalt-58 because of the very high fast flux available to us at GETR. However, to our knowledge, there is no significant market for Co-58.

If, for example, the Commission should decide to delete Chromium-51 from the ORNL catalog, we would require a lead time of approximately ninety days in order to gear our production for increased demands. We trust that the above information will be of use to you in your considerations.

Very truly yours,

Jeff

G. I. Gleason
Nuclear Scientist
Oak Ridge Division

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APPENDIX "H"

UNION CARBIDE CORPORATION
NUCLEAR DIVISION
P.O. BOX 324, TUXEDO, NEW YORK 10987

RESEARCH CENTER

January 10, 1964

Mr. E. E. Fowler
U.S. Atomic Energy Commission
Office of Isotopes Development
Washington 25, D.C.

Dear Mr. Fowler:

In answer to your telegram of January 8, 1964, we have no present interest in producing any of the isotopes on your list, except possibly chromium-51. We have work going on to develop a cheaper process for producing chromium-51, but this work will probably not be finished for several months. I cannot even at the moment give you a potential production capacity for chromium-51 since our work is not far enough along to know. Of the other isotopes we do not feel that there is a big enough market to justify the development work that would have to be done for us to produce the isotopes.

I am sorry that I cannot give you more information that will be of help to you.

Very truly yours,

UNION CARBIDE CORPORATION
NUCLEAR DIVISION

J. C. Brantley
Director of Research

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APPENDIX "I"

GENERAL ELECTRIC COMPANY

P. O. BOX 846, PLEASANTON, CALIFORNIA . . . . TELEPHONE 862-2211

ATOMIC PRODUCTS DIVISION

ATOMIC POWER EQUIPMENT DEPARTMENT

VALLECITOS ATOMIC LABORATORY

January 17, 1964

cc: E. B. Tremmel, USAEC-Washington
J. Barnard, GE-Washington

Mr. E. E. Fowler
Deputy Director
Division of Isotopes Development
U. S. Atomic Energy Commission
Washington 25, D. C.

Dear Mr. Fowler:

Reference is made to your wire of January 8, 1964 on the subject of General Electric's plans for production and distribution of the following isotopes: chromium-51, manganese-54, iron-55, cobalt-58, strontium-85, cesium-134, and cerium-141. We are currently completing our development efforts on some of these materials and plan to have chromium-51, cobalt-58, strontium-85 and cerium-141 available for distribution beginning approximately July 1, 1964. Manganese-54, iron-55, and cesium-134 will be available from General Electric beginning approximately September 15, 1964.

General Electric's capability for production of each of the isotopes noted above is several orders of magnitude greater than current estimated market requirements. Production levels will, therefore, be limited only by market demands assuming that, where required, suitable enriched target materials are available. Production capability figures are tabulated in the attached product specification summary sheet. Following the introduction of these isotopes, it is anticipated that stock inventories will be maintained to permit prompt distribution to customers. Inventory levels will vary from one isotope to the next, but will be adequate to meet normal domestic demands. Our price schedules for these isotopes will be competitive with domestic and foreign sources of supply. As a general guide, it is anticipated that competitive price levels will tend to parallel those established USAEC prices for these materials which are listed in the ORNL radioisotope catalog.

Detailed product specifications are tabulated in an attachment to this letter. We welcome the opportunity to provide the Commission with the detailed plans described herein, and look forward with enthusiasm to our participation in this business activity.

Very truly yours,

E. W. O'Rorke

E. W. O'Rorke
General Manager
Irradiation Services and Products

:lku

ACCENT ON VALUE

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General Electric Product Specifications and Production Capabilities:

Isotope	Chemical Form	Specific Activity	Concentration	Radiochemical Purity	Production Capabilities Curies
Cr-51	$CrCl_3$	~ 100 c/gm	> 10 mc/ml	> 99%	>1,000
Mn-54	$MnCl_2$	C.F.	> 0.1 mc/ml	> 99%	> 100
Fe-55	$FeCl_3$	~ 5 c/gm	> 1 mc/ml	> 99% (exclusive of Fe-59)	> 100
Co-58	$CoCl_2$	C.F.	> 1 mc/ml	> 98% (exclusive of Co-60)	> 100
Sr-85	$Sr(NO_3)_2$	~ 5 c/gm	> 1 mc/ml	> 98% (exclusive of Sr-89)	> 100
Cs-134	CsCl	~ 25 c/gm	> 10 mc/ml	> 98%	> 100
Ce-141	$CeCl_3$	~ 5 c/gm	> 1 mc/ml	> 99%	> 100

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APPENDIX "J"

WESTERN NEW YORK NUCLEAR RESEARCH CENTER, INC.
A SUBSIDIARY OF STATE UNIVERSITY OF NEW YORK

Research Manager

POWER DRIVE
BUFFALO 14, NEW YORK

February 4, 1964

John N. Maddox, Chief
Commercial Isotopes Section
Division of Isotopes Development
United States Atomic Energy Commission
Washington 25, D.C.

Dear John:

SUBJECT: Request for Information on Isotopes

In response to your telephone request of January 24, 1964, I can supply you with some of the information you requested. To date, we are not producing on a routine basis, any of the isotopes you listed. However, we have talked to and quoted some of the various suppliers on bulk production of these and other isotopes. We cannot give you the prices we quoted, but we can supply information on quantities, specific activities and possible production rates (see attached table). These figures are all based on a two shift, 5 day operation and no appreciable change in handling techniques. For these reasons the estimated production figures are based on keeping exposure limits at a minimum value. It would be possible to increase production rates with procedure modifications. As you will see from the table, we are not interested in Fe-55 production.

At the present time we do not produce isotopes for a stock level system, but produce them on order. With this type of operation it is not possible to fill small quantity orders at prices comparable to the Oak Ridge catalogue price. A copy of our present price list is enclosed. We will fill small quantity orders for Cr-51, Sr-85 and Cs-134 at prices comparable to those given in the above mentioned catalogue. As always, we will consider requests for other isotopes.

The summary of our isotope activity for the year (presently being prepared), will bring you up-to-date on our present level of activity. For now it is sufficient to indicate that we are supplying yttrium pellets (5 mc per pellet) fluorine-18, bromine-82 and gold-199 in fair quantities. In the yttrium case we definitely would like to get the national labs out of the business. The Fe-18 is, of course, limited as to shipping distances by half-life considerations. We have just recently started supplying Au-199 in an

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industrial firm using it in tracer work. The material is carrier free with low Au-198 content.

If there are any questions concerning this information, please contact me. The 1963 isotope production data will be forthcoming in the near future.

Very truly yours,

C.C. Thomas, Jr.

Enclosures

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BELOW INFORMATION EXCERPTED FROM TABLES SUBMITTED WITH LETTER OF FEBRUARY 4, 1964, FROM MR. C. C. THOMAS, JR.

Isotope Production Capabilities[a]

Isotope	Batch Size	Shipping Schedule	Specific[b] Activity	Chemcial Form
Co-58	50 mc	monthly	CF	$Co(Cl_2)$ in HNO_3
Mn-54	5 mc	monthly	CF	$MnCl_2$ in HCl
Cr-51[c]	800 mc	monthly	8800 mc/g	Cr_2O_3 in quartz capsule
Sr-85[c]	20 mc	monthly	200 mc/g	$Sr(NO_3)_2$ in quartz capsule
Cs-134	500 mc	monthly	800 mc/g	CsCl in quartz capsule

a. Isotopes not listed on present price list or in bulk quantities.
b. At time of shipment
c. Enriched target

Dr. 372.11
E/2
SM/R-and y/1r

ATOMIC INDUSTRIAL FORUM INC.

850 THIRD AVENUE · NEW YORK 22, N.Y. · PLAZA 4-1075

February 14, 1964

The Honorable Glenn T. Seaborg
Chairman
U.S. Atomic Energy Commission
Washington 25, D.C.

Dear Dr. Seaborg:

I am sorry to have been delayed in acknowledging your letter of January 15.*

We, of course, appreciate your assurance that the Commission will give careful consideration to the recommendations of our Committee on Radioisotope Production and Distribution. We realize the additional value that the comments of other distributors and users should contribute to an understanding of the issues involved. Response to an initial invitation to 12 additional distributors has been somewhat spotty, but within the past week we reminded those from whom we had not heard that their views are very much needed. As soon as additional responses from this group have been received, we will extend a similar invitation to a representative group of users who have been selected in consultation with your staff.

We appreciate your desire to clarify pending policy questions in this area at the earliest possible date and will make every effort to complete our assignment as quickly as possible.

With all best wishes,

Sincerely,

Lauchlin M. Currie, Chairman
Committee on Isotope
Production and Distribution

* See AEC 994/15

LMC:ewd

2-14-64

The Chemists' Club
FIFTY TWO EAST FORTY-FIRST STREET
NEW YORK 17, N.Y.

February 15

Dear Dr. Seaborg:

Last week three of us (from the Advisory Com. for the Division of Isotopes Development) met with Paul Aebersold and Gene Dowler, to lay plans for a future meeting of this Advisory Committee.

It would prove very helpful to us if you could indicate along what lines the Commission would prefer to receive advice, or where any studies or discussions by us might prove of maximum service. We would appreciate your suggestions.

Sincerely yours,

Lauchlin M. Currie.

574 Alda Road,
Mamaroneck,
New York.

OPTIONAL FORM NO. 10
MAY 1962 EDITION
GSA GEN. REG. NO. 27

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Santiago Proj-3
Brid

UNITED STATES GOVERNMENT

Memorandum

TO : File

DATE: February 3, 1964

FROM : W. B. McCool, Secretary

SUBJECT: COMMISSIONERS' MEETING WITH R. A. BRIGHTSEN, JANUARY 24

SECY:McQ

1. At Information Meeting 345 on January 28, 1964, Commissioner Tape reported briefly on the meeting January 24 with R. A. Brightsen, President, Nuclear Science and Engineering Corporation, which he and Commissioners Ramey and Palfrey attended. The Commissioners requested consideration of the possibility of AEC withdrawal from the production and distribution of certain radioisotopes requested by Mr. Brightsen. Commissioner Ramey mentioned Mr. Brightsen's comments that prices on cyclotron service had been recently raised without notice to the public.

2. It is our understanding that the Division of Isotopes Development has submitted to the Assistant General Manager for Research and Development a proposed staff paper concerning AEC withdrawal from the production and distribution of seven radioisotopes.

cc:
Commissioners
General Manager
Deputy General Manager
Asst. General Manager
Asst. Gen. Mgr. for R&D
General Counsel
Controller
Director, Isotopes Development

2-3-64

copy filed:
Oak. 6 - Comm. Mtg. - Comm.

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