Vol. 1

MATERIALS-9-Accountability &
Control

TITLE

MATERIALS-9

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8	Top Secret Charts LXXIII-855-1B LXXIII-856-1B LXXIII-853-1B LXXIII-852-1B LXXIII-851-1B LXXIII-850-1B LXXIII-849-1B										

Mail 9

UNCLASSIFIED

March 8, 1960

AEC 213/101

COPY NO. 37

ATOMIC ENERGY COMMISSION

AEC SYSTEM OF ACCOUNTABILITY FOR SOURCE AND SPECIAL NUCLEAR MATERIAL

Note by the Secretary

Attached for the information of the Commission is the statement on "The AEC System of Accountability for Source and Special Nuclear Material" which was presented to the Commission by Mr. Douglas E. George, Acting Director, Division of Nuclear Materials Management, at Meeting 1595 on February 25, 1960.

W. B. McCool

Secretary

AEC 213/101

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UNCLASSIFIED

ATOMIC ENERGY COMMISSION

AEC SYSTEM OF ACCOUNTABILITY FOR SOURCE AND SPECIAL NUCLEAR MATERIAL

The AEC system of accountability for its source and special nuclear materials is based on the same principles and general techniques as those in effect by private industry to control highly valuable materials.[1/] However, in terms of complexities, there is nothing comparable in private industry to the plutonium separation processes and the diffusion cascades. In brief, this system is designed to demonstrate, through measuring and recording transfers, how much SS material should be on hand at any location, and through inventorying, how much is on hand. The system is designed to detect losses and point out to those responsible for SS material where the losses are occurring, permitting necessary action to minimize future losses.

Included in the accountability system are source materials (thorium and normal and depleted uranium), special nuclear materials (plutonium, uranium enriched in the isotope U-235 and uranium enriched in the isotope U-233), and, as directed by the General Manager, certain other high value materials unique to AEC programs. Collectively, materials under the accountability system are referred to as SS materials. A material is placed under the SS material accountability system if it meets the following criteria: (a) is capable of sustaining a chain reaction or is a source material for a chain-reacting material, (b) is of a high monetary value, and/or (c) quantity control and data are requested and used by AEC management.

1/ The AEC system of accountability discussed herein pertains only to SS materials in the possession of and in use by its contractors established as SS Stations. Separate systems are in effect for material distributed to licensees and foreign entities pursuant to Secs. 53 and 54 of the Act, respectively.

During the first few years after the AEC was formed, the emphasis of the accountability system was on the detection of possible diversion of even small quantities of SS material because of its high strategic importance. In 1949, the AEC employed Lybrand, Ross Bros., and Montgomery, a firm of certified public accountants, to review the accounting and auditing procedures used in implementing the accountability system.[2] In 1950, Hydrocarbon Research, Inc., a firm of technical consultants, was employed to review the measurement and inventory procedures.[3] The purposes of these reviews were to ensure that the aims, objectives, and principles of the AEC accountability system were in consonance with what private industry might do if industry were controlling material of such high intrinsic value and to recommend detailed procedures to be followed by the AEC Operations Offices in making surveys of the contractors' accountability practices. Both firms found that the basic system was sound and consonant with industrial practices. Their recommendations for survey procedures were incorporated in the "Manual of Procedure Standards for SF Material Accounting Surveys," approved by the General Manager as of January 1, 1951.[4]

Also in 1950, the AEC made a comprehensive comparison of the detailed material accounting practices of the AEC with those of certain companies which processed valuable materials for a profit.[5] This comparison indicated that because there was little or no difference between the needs and requirements of either, when dealing with highly valuable materials, there should be little

2/ "Report Upon Review of SF Material Accounting System and Auditing Procedures" January 20, 1950 (on file in the Division of Nuclear Materials Management)

3/ "Review of SF Materials Accounting System & Measurement Methods" October 31, 1950 (on file in the Division of Nuclear Materials Management)

4/ On file in the Division of Nuclear Materials Management

5/ "Accounting for SF Materials " - October 11, 1950 (on file in the Division of Nuclear Materials Management)

difference in the practices. There is a significant difference between the incentive of private industry and that of most AEC contractors to account for valuable materials. The desire to increase profits through reduction of material losses is a principal consideration which impels a private company to account for and control its own expensive materials. This profit motive does not exist at most AEC contractors, therefore, it is necessary for the AEC to keep its contractors constantly alert to the necessity for proper accountability for the SS material.

In 1953 (AEC 213/71), the Commission formally noted with approval that the dollar cost of the SS materials would be used as a criterion for accountability effort, recognizing that such effort as is applied because of the dollar cost ordinarily would be appropriate for the strategic value of the materials.

In 1955, the Division of Inspection was directed by the General Manager to make a management review of the SS material accountability program. The review was conducted by a committee of experts chaired by Dr. Marvin M. Mann. This Committee was composed primarily of technical personnel representing major integrated contractors; Dr. Mann was the only AEC employee assigned to the Committee.[6/] The purpose of this review was to determine whether the basic premises, organization, regulations and procedures were sound, reasonable, and responsive to the needs of the AEC in the light of the change in the Atomic Energy Act. The report of that review concluded that the basic system was sound and generally appropriate to the materials controlled, that major problems were predominantly technical in nature, and that

6/ K. W. Millett, Supt. Raw Materials, Dept., du Pont; Andres de la Carza, Senior Statistician, K-25 Plant, Union Carbide; L. M. Knight, Laboratory Director, General Electric Co., Hanford; Dr. Jane Hall, Assistant Director, LASL; and John T. Bobbitt, Assistant Laboratory Director, Argonne.

solutions to problems could and should be made within the existing organizational structure.7/

Because of the highly technical problems associated with the determination and evaluation of SS material quantities, the responsibility for the AEC accountability system was assigned originally to a Branch in the Division of Production. After the passage of the AE Act of 1954, it became apparent that the scope of the accountability program would expand and that the technical problems which had existed largely at the SS Stations under the Division of Production, would now be found also at other contractors involved in peaceful aspects of the atom. It was also recognized that the Division of Production was in the undesirable position of reviewing its own activities. Therefore, the accountability function and personnel were transferred from the Division of Production and assigned to the newly-formed Source and Special Nuclear Materials Accountability Division,8/ now the Division of Nuclear Materials Management.9/

That Division develops the policy, general procedures, standards, and requirements for the accountability system; and reviews, evaluates, and reports on its effectiveness to the cognizant Headquarters Division Director and the Assistant General Manager. Managers of Operations are responsible for implementing the system, that is, they institute detailed procedures, establish SS Stations, conduct surveys of SS Stations, correct deficiencies concerning SS material control, and report on the status of SS material control. To assure that the system is implemented properly by the Managers of Operations, the Headquarters Division of Nuclear Materials Management has been assigned to the responsi-

7/ "Review of Accountability Program" - January 31, 1956 (on file in the Division of Nuclear Materials Management)

8/ October 1, 1954

9/ December 5, 1955

bility to review and determine, at least annually, the effectiveness with which the Managers have discharged their responsibilities to control SS material.

As an adjunct to the accountability system and as a consequence of the knowledge compiled through that system, the Division of Nuclear Materials Management compiles forecasts which are made of the quantities of special nuclear material to be used in research, development and power programs of the AEC, domestic licensees, and foreign governments. These forecasts are included in the annual Presidential production directive, which is the basis of Commission and Presidential approval of annual production and use of special nuclear material. These forecasts also provide data to Divisions of Production and Military Application for production and weapon scheduling which are subsequently used in the "November and May Planning Estimates."

The AEC system to control SS material in the possession of its contractors is based upon the concept that responsibility for SS material rests wherever SS material is located physically. Thus, when a physical transfer of SS material occurs, there is a concomitant transfer of responsibility for that material; conversely, unless there is a physical transfer of SS material, responsibility for it may not be transferred. All AEC contractors who possess SS materials are required by the AEC to know and report what they receive, ship, and have on hand, using measurement methods appropriate for the dollar value of the material. Such AEC contractors are referred to as "SS Stations."

The Headquarters Division of Nuclear Materials Management (DNMM) prepares AEC regulations in the form of AEC manual chapters containing general instructions which cover the essentials of the material control system.[10/] Included are requirements for measuring receipts, removals, and inventory of SS material in accordance

10/ AEC Manual Chapters 7401, 7402, 7403

with methods approved by the cognizant Manager of Operations; evaluating the reliability of the measurement data by statistical analyses; recording and reporting measurement data by means of appropriate records and reports; using standard shipping forms for each transfer of SS material; and reporting material balance and inventory data monthly to Operations Offices and DNMM. The variety of materials, the complexity of the processes, the dissimilarity of operations conducted by the different SS Stations necessitate that within the framework of the above policies the details of appropriate record and measurement procedures be left largely to the SS Station, subject to the approval of the cognizant Manager of Operations.

When available and applicable, quantity information is obtained by using those data which are generated routinely for process control, criticality, and health and safety. The precision and accuracy of measurements required for these purposes usually are adequate for SS material control purposes. The use of statistical methods is the accepted technique to determine the precision and accuracy of the measurement, and to ascertain that the desired precision and accuracy are being maintained.

Quantity data so-generated are available, not only for the accountability system, but also for all other uses, such as for cost and fiscal accounting, production control, allotment control, contractual payments, and research. Such data are obtainable through the SS material accountability records at each SS Station. While the records for many plants and for many processes, necessarily must be concerned only with "bulk" quantity data, yet, where discrete items such as weapons components or fuel elements are handled, accountability is on the basis of unit control in addition to quantity control.

At all SS Stations, physical inventories are required to ascertain whether the SS material purported to be on hand is, in

fact, on hand. A physical inventory is not limited to a container or an item count, but includes sampling and analysis to determine the actual weight of the element being conducted for.

Physical inventories are required at reasonable, recurrent intervals appropriate for material quantity, value, and importance, and commensurate with practical operating requirements. The frequency of a complete inventory may vary from bi-weekly to annually. Managers of Operations have the latitude to prescribe the frequency of physical inventories provided that in no case may the interval between inventories be greater than twelve months. At such times the quantity records are compared to the inventory data and the records adjusted when necessary. The result of this comparison provides one measure of SS material control efficiency and provides verification of the results of the records system and the day-to-day measurements of receipts and removals. Whenever practicable, samples are taken for determination of the SS material quantities; however, for fabricated, identifiable items, reliance may be placed on non-destructive test techniques since sampling a piece for subsequent chemical analysis often destroys its utility.

To assure that the material control procedures established by the SS Stations are effective, the cognizant Managers of Operations are responsible for making surveys of each of their SS Stations and AEC weapons sites. Unless insignificant quantities are involved, surveys must be made not less often than once each year. The assurance obtained through such surveys is supplemented by day-to-day contacts and frequent visits to the plants.

The objectives of SS surveys are to determine, record, and report on the effectiveness and appropriateness of the SS material management procedures and practices of the SS Station; to ascertain whether the SS Station's material balance report presents

fairly the SS material inventories and results of operations; and to establish the degree of adherence by the SS Station to AEC policies and procedures concerning SS material management. In order to achieve these objectives, a comprehensive examination is made of the measurement, statistical, inventory, and SS material accounting procedures. An audit of the SS material records and an independent test of the inventory also are made at each SS Station by the staff of the cognizant Manager of Operations.

Because of the highly technical nature of the operations at SS Stations, a survey is performed by an integrated team of technical and auditing personnel. The diversity and complexity of the Commission's atomic energy activities demand a unique background in these professions since surveys encompass such operations as reactor sites, production sites, and fabrication operations; and therefore require the use of reactor technologists, engineers, statisticians, physicists, chemists, and auditors.

The size of the survey team, the scope and the details of the various measurement, audit, and statistical tests will vary with the size, type, complexity, and the number and type of transactions of the SS Stations. An SS survey encompasses a review and evaluation of the following aspects of an SS Station's over-all operation:

MEASUREMENTS SYSTEM - The measurements system is reviewed to ascertain the appropriateness of the various measurements which provide the bases of the data supplied to the SS Station's material accountants. It includes an examination and evaluation of techniques of weighing, sampling, chemical and isotopic analysis, and calculation of reactor production and nuclear loss.

INVENTORY PROCEDURES - The inventory procedures utilized by the SS Station are reviewed and evaluated to determine whether they are capable of routinely providing inventory data with an accuracy appropriate for the value of the SS materials.

INDEPENDENT TEST OF INVENTORY - The inventory of SS material is tested to the extent necessary to permit an independent opinion by survey personnel as to the validity of the reported inventory quantities, and therefore, to attest to the element and isotopic content of the materials, as distinct from merely ascertaining that containers, items, and gross weight are present. A variety of testing techniques are used depending upon the quantity and condition of the SS materials.

STATISTICS - A statistical review is made to determine the appropriateness of the application of statistical principles by the SS Station, the precision and accuracy of the SS Station's measurements, and, whether additional areas exist where the application of statistics would be of value. Further, the statistical reliability of the material balance report quantities is determined.

INTERNAL CONTROL - The system of internal control is reviewed to assure that the SS Station has installed a system of checks and balances in the division of duties, so designed that the work of one person serves to verify the work of another and that the system is being implemented properly, without unnecessary duplication of effort.

AUDIT OF MATERIAL RECORDS AND REPORTS - The audit is made to determine the integrity and accuracy of the material accounting records and the correctness of the material balance reports prepared therefrom.

The findings and recommendations resulting from an SS survey are presented to the Manager of Operations in a written survey report.

To determine the degree of adherence by each Operations Office to the policy and procedures concerning the accountability system, the Headquarters Division of Nuclear Materials Management performs an annual review at each Operations Office. This review consists of an evaluation of the Operations Offices' SS material control surveys performed and an audit of each Operations Office's SS material records, reports, and procedures. In addition, a review is performed of the SS material forecasting and distribution procedures, and other matters that may affect the adequacy of control (e.g., adequacy and sufficiency in size of the staff assigned to SS material control responsibilities.) The broad scope of such a review demands the integrated professional talents of qualified technical and auditing personnel. A report on each review is submitted to the Assistant General Manager, the cognizant Headquarters Division Director and the Manager of Operations.

Two "indicators" as to whether the accountability procedure at an SS Station have been effective are the "Book-Physical Inventory Difference" (BPID) and the "Shipper-Receiver Difference" (S/R). "Book-Physical Inventory Difference" is defined as that amount by which the material on hand differs from that which the records show should be on hand. "Shipper-Receiver Difference" is defined as that amount by which the quantity of material as measured by a shipping SS Station differs from the quantity of material as measured by a receiving SS Station. BPID's and S/R's can occur in varying magnitudes, because of the following: (a) measurement uncertainties, (b) process losses, (c) gross errors, and (d) diversions or thefts. Examples where measurement

uncertainties contribute significantly to the BPID are in measuring the inventories of the several plutonium-producing reactors, the plutonium separations processes, and the cascades. These uncertainties also arise in attempting to ascertain the quantities of SS material associated with plant hold-up, such as material in process piping, extraction and ion exchange columns, and dissolution tanks. Further, the quantities of plutonium produced in reactors are subject to significant uncertainties. Also, when equipment failures, or system leaks result in unintentional, and frequently unrecognized, losses of SS material, these losses are a part of the BPID. Gross errors are those commonly referred to as "human errors" where, for example, numbers are transposed, burets, scales, and balances are read incorrectly, or segments of inventory are duplicated or omitted. There have been several proven cases of theft of SS material, with court convictions resulting.[11/] In those cases, the quantities have been small and the material recovered.

While the loss of an identifiable piece will probably always warrant an investigation, for those BPID's or S/R's occurring from any other cause, a decision must be made as to whether their magnitude warrants an investigation. The use of statistical control charts for BPID's and S/R's is an aid to management in judging whether investigative action is warranted and whether the SS Station is exercising adequate control.

Shortages of SS material are reflected as either a BPID or an S/R and fall into either of two categories; those involving individual and identifiable items and those involving inventories in bulk quantities. For the most part the actions taken when shortages occur are about the same in either case. Usually a recheck of inventory records and analytical data is made to try to

11/ Cases on file in the Division of Security

determine whether a gross error had been made. Should this prove not to be the case and the difference is significant, a complete physical re-inventory may be made covering an entire plant or only the localized area in which the apparent loss is thought to have occurred. If the difference is not resolved in this fashion, and if the Manager of Operations suspects a possible violation of law, he is required to report the incident to the Federal Bureau of Investigation for such investigation as may be warranted. (Even small losses where the material is classified or where the circumstances are such as to have aroused suspicion may result in reporting to the FBI.) Coincident with the report to the FBI, the Headquarters Divisions of Security and Nuclear Materials Management and the appropriate program divisions are notified. A decision as to whether the loss should be reported to the General Manager is made usually at the discretion of the program Division Director. Subsequent reporting to the Commission and the JCAE is handled by the General Manager usually upon the recommendation of the program Division Director.

To improve the store of knowledge concerning SS material and to provide the Government and industry with firm chemical and isotopic reference standards, the Division of Nuclear Materials Management was assigned the responsibility of initiating and directing a program to meet these objectives. An Advisory Committee known as the Uranium Isotopic Standards Committee was established by the General Manager in January 1956, with the Director, Division of Nuclear Materials Management as Chairman. This Committee was to provide technical advice for a program for development and distribution of standard reference materials. Collaborating in this program are the New Brunswick Laboratory, several AEC contractors, and the National Bureau of Standards. It soon became apparent that transfers of SS material between the Commission and private

industry or foreign Governments would result in the need for precise measurement methods of recognized stature to assure a sound basis upon which an exchange of dollars could be effected. In 1957 (AEC 920/3), the Commission recognized the need for broadening of the scope of the Committee and as a result it was superseded and reconstituted as the Advisory Committee for Standard Reference Materials and Methods of Measurement. The Division of Nuclear Materials Management with the advice of the above-mentioned advisory committee and the assistance of recognized authorities in the various fields of measurement, is reviewing and evaluating existing measurement methods to achieve these objectives.12/

12/ The current status of standards and measurement methods program is set forth in an information staff paper now in process.

UNITED STATES GOVERNMENT

Memorandum

~~OFFICIAL USE ONLY~~

TO : Files

DATE: March 1, 1960

FROM : W. B. McCool
Secretary

SUBJECT: OUTSIDE REVIEW OF MATERIALS ACCOUNTABILITY PROGRAM

SYMBOL : SECY:AHE

This will confirm for Commission records that at Meeting 1595 on Thursday, February 25, 1960, Mr. Luedecke said he would submit recommendations to the Commission regarding an outside review of the AEC materials accountability program.

cc:
General Manager

~~OFFICIAL USE ONLY~~

Minutes 8-9

February 25, 1960

MEMORANDUM FOR THE COMMISSIONERS AND GENERAL MANAGER

Subject: BRIEFING ON AEC ACCOUNTABILITY SYSTEM

By memorandum to the General Manager dated January 26, 1960, a copy of which was sent to each Commissioner, the Chairman requested a review of the AEC's systems of accountability for source and special nuclear materials and weapons. As a result of this request, Thursday afternoon, February 25, 1960, Mr. Douglas E. George, Acting Director, Division of Nuclear Materials Management, will present a briefing on the AEC's system of accountability for source and special nuclear materials in the possession of and in use by its contractors, and Colonel Goldenberg, DMA, will present a briefing on AEC and DOD weapons accountability systems.

Each briefing will last twenty minutes and they will follow Commission consideration of AEC 719/31, Food Irradiation Program, at 2:30 P.M.

W. B. McCool
Secretary

Copy filed: O&M-6 Briefings — See Chairman's Memo - 1-28-60

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SURNAME ▶	Secretariat 2/25/60					
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2-25-60

Materials - 9 - Acc. + Control

1595th AEC Meeting
2-25-60
~~DVC~~

4. Briefing on Material Accountability

Mr. Luedecke said that in response to a request by the Chairman contained in memorandum dated January 28, 1960, Mr. George of the Division of Nuclear Materials Management would present a briefing on the special nuclear materials accountability program.* The briefings requested on accountability for weapons in the custody of the AEC as well as the Department of Defense will be given at the next AEC-MLC Conference.

Mr. George presented a briefing on the AEC program and procedures for materials accountability.** He spoke with the aid of charts and graphs.*** Mr. George reported that the established procedures had been reviewed in 1950 by two consultant firms; Lybrand, Ross Bros., and Montgomery Certified Public Accounts reviewed auditing procedures and a team from Hydro Carbon Research Inc., headed by Mr. Manson Benedict verified the technical validity of the program. An internal review was conducted by the Division of Inspection in 1955. Mr. Graham inquired if it might not be advisable to contract for an outside firm to again review materials accountability. The Chairman noted the importance of this program and suggested that consideration be given to its periodic re-examination by an outside consultant. The General Manager said he would submit recommendations to the Commission on this matter.

In response to a question by Mr. Graham, Mr. George outlined the accountability program as it related to the budget responsibilities of the Controller and said that the General Accounting Office was not involved.

2-25-60

Mat 9

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Principal Staff, Headquarters
Managers of Operations

DATE: February 20, 1960

FROM : A. R. Luedecke *for* *R L Hollingsworth*
General Manager

SUBJECT: AEC Relationships with Licensee-Contractor Organizations

We have recently received comments from licensee-contractors, i.e., those who are processing and fabricating nuclear materials both for the AEC and for others, which suggest the existence of overlapping inspections and different standards for accountability, physical security, health and safety, etc. associated with the possession, processing and shipment of such materials.

I consider it essential that insofar as appropriate, we attempt to develop reasonably consistent requirements on private industry with respect to possession, processing and shipment of such material, regardless of whether it is material acquired under a license or for the account of the AEC.

I have, therefore, appointed the following task group to make an intensive study of this problem and report to me with appropriate recommendations:

W. H. Slaton, Office of the General Manager; Chairman
Marvin Mann, Division of Inspection
Lyall Johnson, Division of Licensing and Regulation
Douglas George, Division of Nuclear Materials Management

In addition to their contacts with licensees, the task group will be calling upon various staff Divisions and Operations Offices for assistance in the conduct of this study. You are requested to cooperate fully with the group.

Copies filed Contracts 1-Policy
Sec-6-Reg. Materials
R&D&S-7-Process Devel.
R&D&S-7-Chemical Processing

Malina 6-9

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

January 28, 1960

OFFICE OF THE CHAIRMAN

MEMORANDUM FOR: THE GENERAL MANAGER

At an early date I would appreciate a report and briefing on our system for the accountability of fissionable material and the effectiveness of the system. The Commission has been informed from time to time concerning the system; however, it has been some time since we have had a detailed briefing of the operation of the system, the allocation of responsibilities, the method of reporting and the actions taken when shortages become apparent.

Also, I believe it would be constructive to have a report on the accountability of weapons themselves both under our cognizance and those which are dispersed. I am particularly interested in our procedures for inventory control and accountability of every single weapon of all sizes both large and small. This report to the Commission should, as mentioned above, include all dispersed weapons.

If you feel it appropriate, the above subjects could be presented and discussed at a meeting of the Commission and the Military Liaison Committee. This might be effective inasmuch as the Commission will be examining the accountability of dispersed weapons.

Will you please arrange for these meetings as early as convenient.

John A. McCone

cc: Commissioner Graham
Commissioner Floberg
Commissioner Williams

Copies filed: AEC-C-Briefing
AEC-7-Mtg

Materials-9 B-421

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Managers of Operations
Heads of Headquarters Divisions and Offices

DATE: November 19, 1959

FROM : J. A. Waters, Director
Division of Security, Washington

SUBJECT: AEC RESEARCH AND DEVELOPMENT REPORT AND WEAPON DATA REPORT INVENTORY REQUIREMENTS

SYMBOL: SD:AER

The requirements for the annual inventory of AEC Research and Development Reports and Weapon Data Reports are being reviewed by this division.

To assist in the review of the inventory requirements it is requested that each operations office submit the following information to this division:

1. The requirements for inventory of these reports were established in part on the basis that they contain comprehensive and highly sensitive information relating to the Commission's technical and scientific programs. In your view is this assumption still valid as to the reports currently being originated in your operations office?

2. Is the retention of existing inventory requirements for Research and Development Reports and Weapon Data Reports desirable or should the requirements be modified? Please give reasons or supporting data for recommended changes.

3. If modification of inventory requirements is believed desirable, state any suggested alternatives.

4. How would your recommended modification of the existing requirements affect the classified document inventory practices of AEC and AEC contractor offices under your jurisdiction?

5. Do AEC offices and contractors under your jurisdiction inventory all classified documents? If not, what categories are inventoried? How frequently?

6. Is the inventory conducted at one given period, or do Transfer-Accountability Stations extend the inventory over the course of the entire year?

7. What savings in personnel would be accomplished if the present requirements were eliminated? What monetary savings would be achieved?

11-19-59

Managers of Operations may wish to obtain the views of their principal contractors in regard to these questions. When such views are obtained, we would appreciate a copy of the contractors' comments.

Your comments by January 29, 1960 would be appreciated.

Material 9

JUN 22 1959

Mr. James T. Ramey
Executive Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Ramey:

You were advised on May 6, 1959 that an enriched fuel element billet was reported missing by the Aircraft Nuclear Propulsion Department of the General Electric Company. This missing billet was recovered on May 25, 1959 by a GE Task Group conducting a manual search of the unclassified dump area by bulldozing, raking and sifting. It was buried too deep to be susceptible of detection by monitoring. The Cincinnati Office of the F. B. I. was advised on May 29, 1959 of the recovery of the missing billet by Q cleared ANPD employees, and that their files would be closed on this incident.

The Committee, established by the Lockland Aircraft Reactors Operations Office to work with the contractor in searching for the missing billet, will review the contractor's internal procedures and include in their findings any corrective measures considered appropriate to prevent a reoccurrence of this incident. Required corrective measures will be promptly enforced with the contractor.

Sincerely yours,

SIGNED, A. R. LUEDECKE

General Manager

DIST:
Addressee
Chairman
Gen.Mgr
AGM-aID
Cong. Liai. (2)
M & R Rdg
DRD Rdg
RD:AIR Rdg
RD:AIR/AP sub
~~McCall~~

RD:AIR:AP
GWWicker/ht
LWoodruff
6/15/59

D:AIR:AP	RD:AIR	RD:WIA.OPS	CONG.LIAISON	AGM-AID	AGMA	DGM	GM
DWitmer	JLArmstrong						
AIesch	DJKeirn						
6/ /59	6/ /59	6/ /59	6/ /59	6/ /59	6/ /59	6/ /59	6/ /59

65-689

Mat 9-

S E C R E T
May 20, 1959

AEC 213/99
COPY NO. 27

AEC 213/99

ATOMIC ENERGY COMMISSION

MISSING FUEL ELEMENT BILLET AT GE ANP DEPARTMENT

Note by the Secretary

The General Manager has requested that the attached memorandum from the Director of Reactor Development be circulated for the information of the Commission.

W. B. McCool
Secretary

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5-20-59

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SECRET

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D. C.

May 8, 1959

MEMORANDUM

TO : Alvin R. Luedecke, General Manager

THRU : A. Tammaro, Assistant Gen. Mgr. RID

FROM : Frank K. Pittman, Director
Division of Reactor Development

SUBJECT: MISSING FUEL ELEMENT BILLET AT GENERAL ELECTRIC AIRCRAFT NUCLEAR PROPULSION DEPARTMENT

SYMBOL : RD:AIR:AP:WAT

The purpose of this memorandum is to advise that the General Electric Aircraft Nuclear Propulsion Department has reported as missing an enriched fuel element billet. The billet in question was approximately 2-1/2 inches wide by 5 inches long and 1/4 inch thick. It is composed of a chromium-titanium-uranium dioxide core clad with iron-chromium-yttrium. The element contains approximately 31 grams of highly enriched uranium. The billet is not dangerously radioactive and can be routinely handled without hazard to health.

The billet was first missed on the morning of April 29 and was last accounted for shortly after noon on April 28. There is a possibility that the billet was inadvertently put in unclassified trash that is routinely burned. However, checks of the burning area have not disclosed it. Since all details of the billet are classified, a possibility exists that it may have been surreptitiously removed from the premises. The Cincinnati Office of the Federal Bureau of Investigation was notified on April 30 and is beginning an active investigation on May 6.

To acquaint you briefly with the circumstances under which this piece was discovered missing, and GE's initial search steps, there is attached a copy of a letter from the Security Branch Chief of LAROO to the local FBI dated May 1st, which constitutes the initial written report to the Bureau. Copies of this letter have been directed to both the Divisions of Security and Inspection of this Headquarters by LAROO.

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This document contains restricted data as defined in the Atomic Energy Act of 1954. Its transmittal or the disclosure of its contents in any manner to an unauthorized person is prohibited.

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20-1359-2-15

S E C R E T

The initial action as described in the attached letter included both a physical inventory of something like 1200 similar pieces in the Materials Testing Laboratory and also an examination of all individual control cards on pieces which had gone into further processing, to ascertain whether the piece in question could have been mistakenly routed into another batch in the processing line. In addition, the ashes at the unclassified paper waste dump, where the paper trash from the lab had been burned, was monitored twice with detection instruments on the hypothesis that the missing piece may have fallen into the waste basket as did the others described. All initial search steps to date have proven negative.

In addition to the above actions a three-man committee has been appointed by the Manager of LAROO to maintain continuing liaison with the contractor's search effort and to inquire into the procedural or operating deficiencies, if such exist, which may have contributed to this incident. You will, of course, be kept fully advised as to the results of the various actions taken to explore this matter and the status of investigation from time to time.

It is suggested that consideration be given to the desirability of notifying the Commissioners and the Joint Committee on Atomic Energy.

Enclosure
Letter dtd 5/1/59

SECRET

S E C R E T

ENCLOSURE

May 1, 1959

Mr. E. D. Mason
Security Agent-in-Charge
Federal Bureau of Investigation
U. S. Department of Justice
P. O. Box 1277
Cincinnati 1, Ohio

Subject: REPORT OF MISSING BILLET AT GENRAL ELECTRIC COMPANY, ANP DEPARTMENT, CONTAINING ENRICHED URANIUM

Dear Mr. Mason:

This will confirm our telephonic report of yesterday afternoon April 30th, to Special Agent Ralph House of your office, in which we advised our contractor, GE-ANPD, is missing a small billet of metal, the composition of which is classified Secret - Restricted Data, containing as an ingredient enriched uranium.

The loss of the metal was discovered by GE-ANPD the morning of April 29th. The Lockland Aircraft Reactors Operations Office was advised of the loss on the morning of April 30th by a telephone call to our Deputy Manager, J. L. Wilson, from Dr. Miles C. Leverett, Manager of Development Laboratories. The facts, as indicated by our initial inquiry, was essentially as follows: The billet in question was approximately 2-1/2" wide by 5" long and 1/4" thick. It was fabricated by GE-ANPD as a part of their fuel element development program. For accountability purposes, the billet was stamped with the number 42-206-01 and was one of a batch of nine (9) pieces routinely X-rayed shortly after noon on Tuesday April 28th, in the L-5 area of our Building D. The pieces were then placed on a table in an adjoining room, L-5-2, with other batches where they would be reconciled with their individual control cards prior to moving into the next processing step. At approximately 4:00 p.m. according toJohn Draghic, Supervisor - Materials Testing Laboratory, one of this employees, Joseph Woeste, accidentally bumped against the table in this room causing a stack of billets which were on the edge of the table to fall. Mr. Woeste retrived two (2) billets from a waste basket into which they had dropped and another one from the floor. He then counted the billets finding eight (8), and also counted the stack of control cards on which they had been resting. Finding that there were also eight (8) cards in the stack.Mr. Woeste, apparently satisfied that he had retrieved the billets knocked from the table, reportedly then wrapped the stack of billets together with adhesive tape, and placed them in the repository where such billets were routinely stored overnight.

S E C R E T

The next morning April 29th upon reconciling cards and billets the loss of one billet was discovered when the properly numbered billet could not be found to match with one of the control cards. It was then discovered that only eight (8) of the billets X-rayed the day before in the batch of nine (9) could be accounted for. Because it was considered highly probable that the missing billet had also dropped into the waste basket and been disposed of with the unclassified paper waste from the day before, action was immediately initiated to monitor with radiation detection instruments the waste dump where such trash was routinely burned. This action was still in progress at the time the incident was reported to this office on the morning of April 30th. Further action was taken on the afternoon and evening of April 30th to accomplish a complete physical inventory of all similar pieces in the laboratory. Also, a record check of control cards was initiated to assure that this piece had not mistakenly been misrouted into the wrong batch for further processing.

The above incident is being reported to your office for your information and whatever action is considered necessary. We wish to emphasize that while this piece contains some enriched uranium, no dangerous radiation is present and the piece can be routinely handled without hazard to health. As of today the actions described above have been completed to no avail. The piece has not yet been found, but a continuing search is being pressed. You will be notified in several days of the results of further inquiry and, of course, will be advised immediately should the missing piece be found.

Very truly yours,

/s/

Walter P. McAdam
Chief, Security Branch

Materials-9

~~SECRET~~

This document consists of 1 pages
No. 11 of 11 Copies, Series A

MAY 19 1959

Mr. James T. Ramey
Executive Director
Joint Committee on Atomic Energy
Congress of the United States

Dear Mr. Ramey:

The purpose of this letter is to advise that the General Electric Aircraft Nuclear Propulsion Department, Cincinnati, Ohio has reported an enriched fuel element billet as missing. The billet in question was approximately 2½ inches wide by 5 inches long and 1/4 inch thick. It is composed of chromium-titanium-uranium dioxide core clad with iron-chromium-yttrium. The element contains approximately 31 grams of highly enriched uranium. The billet is not dangerously radioactive and can be routinely handled without hazard to health.

The billet was first missed on the morning of April 29 and was last accounted for shortly after noon on April 28. There is a possibility that the billet was inadvertently put in unclassified trash that is routinely burned. However, checks of the burning area have been negative. Since details of the billet are classified, a possibility exists that it may have been surreptitiously removed from the premises. The Cincinnati Office of the Federal Bureau of Investigation was notified on April 30 and began an active investigation on May 6.

In addition to the investigations by the FBI and the contractor, the Manager of the Lockland Aircraft Reactors Operations Office has appointed a three-man committee to maintain continuing liaison and cooperation with the contractor's search and further to inquire into the procedures or operating deficiencies which may have contributed to this incident.

Sincerely yours,

SIGNED, A. R. LUEDECKE

General Manager

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By

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW
1ST REVIEW-DATE: 2/5/91 DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: DADC 1. CLASSIFICATION RETAINED
NAME: 2. CLASSIFICATION CHANGED TO:
2ND REVIEW-DATE: 2/5/91 3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: ADD 4. COORDINATE WITH:
NAME: 5. CLASSIFICATION CANCELLED
6. CLASSIFIED INFO BRACKETED
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Chairman - 2 A
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AGM-RID - 4 A
Cong. Lias. 5 A & 6 A
M & R Rdr - 7 A
DRD Rdr - 8 A
RD:AIR Rdr 9 A
RD:AIR Sub 10 A
McCool 11 A

RD:AIR:AP
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20-1359-2-16

DATE:

INDEX: Materials-9-Accountability & Control

TO:

FROM:

SUMMARY: AEC 344/52: MISSING FULE ELEMENT PLATE AT ORNL. Memo to the GM from Prod. re a report on the missing fuel element plate which was reported to the Commission on Feb. 11,1959. The missing plate contaims 11.3 grams of top product U-235. Eighteen of such plates are baricated into a single fuel element for the OR reactor. It is believed that a complete plate may have been accidentally discarded byt investigations are continuing to determine the location of the material.

FILED:

INDEXER: PLB&L-9

REMARKS: date of papee:2-13-59
date of memo: 2-12-59

U. S. ATOMIC ENERGY COMMISSION

CORRESPONDENCE REFERENCE FORM

2/13/59