

5-26-94

NOTE

DOE 5660.1B, MANAGEMENT OF NUCLEAR MATERIALS, reflects a revision to DOE 5660.1A that was coordinated prior to the recent moratoriums on Directives and implementation of the new Directives System. All major issues have been resolved and the originating office has requested that the revised Order be issued without recoordination with the understanding that the Order will be reviewed under the Departmental initiative to reduce regulations.

U.S. Department of Energy

Washington, D.C.

ORDER

DOE 5660.1B

5-26-94

SUBJECT: MANAGEMENT OF NUCLEAR MATERIALS

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1. PURPOSE. To establish requirements and procedures for the management of nuclear materials within the Department of Energy (DOE).
 2. CANCELLATION. DOE 5660.1A, MANAGEMENT OF NUCLEAR MATERIALS, of 7-8-92.
 3. SCOPE. This Order applies to all Departmental Elements involved with DOE-owned nuclear materials (Figure VIII-2) and contractors performing work for DOE, as provided by law and/or contract and as implemented by the appropriate contracting officers.
 4. EXCLUSIONS. This Order does not apply to spent nuclear fuel from the civil sector under the cognizance of the Office of Civilian Radioactive Waste Management and subject to Nuclear Regulatory Commission licensing, or to DOE waste nuclear materials.
 5. REFERENCES.
 - a. DOE 5633.2A, CONTROL AND ACCOUNTABILITY OF NUCLEAR MATERIALS: RESPONSIBILITIES AND AUTHORITIES, of 9-23-92, which establishes the responsibilities and authorities for nuclear materials control and accountability.
 - b. DOE 5633.3A, CONTROL AND ACCOUNTABILITY OF NUCLEAR MATERIALS, of 2-12-93, which contains the basic principles and requirements for the control and accountability of nuclear materials.
 - c. DOE 5633.4, NUCLEAR MATERIAL TRANSACTIONS: DOCUMENTATION AND REPORTING, of 2-9-88, which provides for maintaining the Nuclear Materials Management and Safeguards System data base.
 - d. DOE 5633.5 NUCLEAR MATERIALS REPORTING AND DATA SUBMISSIONS, of 5-22-87, which establishes procedures for reporting nuclear materials information and submitting data to Nuclear Materials Management and Safeguards System.
 - e. DOE 5635.1A, CONTROL OF CLASSIFIED DOCUMENTS AND INFORMATION, of 2-12-88, which provides guidance on protection of classified information.
 - f. DOE 5820.2A, RADIOACTIVE WASTE MANAGEMENT, of 9-26-88, which establishes policies and guidelines for the management of radioactive waste and waste byproducts.

DISTRIBUTION:
All Departmental Elements

INITIATED BY:
Office of Defense Programs

- g. American National Standards Institute Reports ANSI N15.1-1970 Classification of Unirradiated Uranium Scrap and ANSI N15.10-1987 Unirradiated Plutonium Scrap - Classification.
 - h. Executive Order 12344, 1982, entitled "Naval Nuclear Propulsion Program", which establishes the structure, policies, and practices of the Naval Nuclear Propulsion Program.
6. DEFINITIONS. see Attachment 1.
7. OBJECTIVE. The objective of this Order is to implement a comprehensive nuclear materials management program to:
- a. Conserve valuable nuclear material resources;
 - b. Distribute nuclear materials needed for DOE and other programs for research, development, and other purposes;
 - c. Optimize nuclear materials production, processing, and inventory management operations; and
 - d. Conduct studies and prepare plans for the future use and disposition of nuclear materials including operation of DOE nuclear materials production, processing, and storage facilities.
8. RESPONSIBILITIES AND AUTHORITIES.
- a. Director of the Office of Nuclear Weapons Management, Office of Defense Programs.
 - (1) Develops policies, procedures, and standards for the management of nuclear materials.
 - (2) Conducts DOE-wide planning and analyses of nuclear materials production, processing, storage, use, or disposition, in coordination with the applicable Headquarters program organizations, other Headquarters offices, and the field offices.
 - (3) Reviews and analyzes the nuclear material resources requested by the programs and determines if the requests are consistent with program needs, budgets, and schedules.
 - (4) Prepares the annual DOE Materials Management Plan.
 - (5) Maintains management control of nuclear materials held by operating programs that are excess to the resources required for currently approved activities.

- (6) Reviews schedules and programs for processing nuclear material scrap.
- (7) Administers the DOE-wide nuclear materials allotment system.
- (8) Conducts periodic reviews of field office nuclear materials management programs and activities.
- b. Director of the Office of Facilities, Office of Defense Programs provides nuclear materials to meet defense and other requirements by managing the DOE'S nuclear materials production and processing facilities and assuring that their operation and maintenance are being conducted in a safe manner to achieve production requirements. The Office of Facilities also administers and funds the operations of the Central Scrap Management Offices, including their scrap/residues processing activities.
- c. Assistant Secretary for Environmental Restoration and Waste Management is responsible for managing "I" project nuclear materials and other nuclear materials designated for their program management.
- d. Director of Naval Nuclear Propulsion Program, Office of Nuclear Energy shall, in accordance with the responsibilities and authorities assigned by Executive Order 12344 (statutorily prescribed by 42 U.S.C. 7158) and to ensure consistency throughout the joint Navy/DOE organization of the Naval Nuclear Propulsion Program, implement and oversee all policy and practices pertaining to this DOE Order for activities under the Director's cognizance.
- e. Director of Isotope Production and Distribution Program, Office of Nuclear Energy is responsible for managing the inventories and distribution of certain special isotopes (Americium-241, Americium-243, Berkelium-249, Californium-252 and Curium) which also are subject to some provisions of this Order.
- f. Director of the Office of Security Affairs, Office of Intelligence and National Security
 - (1) Develops policies, procedures, and standards for the control and accountability of nuclear materials.
 - (2) Manages the development and maintenance of the Nuclear Materials Management and Safeguards System for the purposes of:
 - (a) Collecting and processing data on nuclear materials in which the United States has safeguards or management interests.

- (b) Maintaining records of nuclear materials transactions and inventories in support of safeguards and management programs and issuing reports thereof.
- g. Chief Financial Officer is responsible for Departmental policies applicable to the financial accounting for nuclear materials.
- h. Directors of Headquarters Program Organizations.
 - (1) Provide program guidance to field offices for the preparation of realistic nuclear material forecasts.
 - (2) Participate, as necessary, with the Office of Nuclear Weapons Management in developing DOE-wide nuclear materials planning and analyses.
 - (3) Budget sufficient funds to properly manage nuclear materials for their programs, including costs for sorting, stabilizing, packaging, storing, shipping, and processing nuclear materials, if appropriate.
 - (4) Analyze nuclear material inventories associated with their programs to ensure that such inventories are justified and optimized and recommend the disposition of materials found excess to program needs.
 - (5) Ensure that nuclear material forecasts are compatible with program budgets and plans.
 - (6) Implement a nuclear materials management program for all activities under their jurisdiction that conforms to the policies, procedures, and standards set forth in this Order and as otherwise agreed to. (The Director of the Naval Nuclear Propulsion Program has cognizance over all materials management activities at the Pittsburgh and Schenectady Naval Reactors Offices.)
- i. Heads of Field Organizations.
 - (1) Implement nuclear materials management programs for all activities under their jurisdiction that conform with the policies, procedures, and standards in this Order and supplementary instructions and guidance including that related to minimizing of environment, safety and health impacts.
 - (2) Provide the Headquarters programs and the Office of Nuclear Weapons Management with an accurate and complete assessment of the nuclear materials for which the field office has programmatic responsibility.

- (3) Ensure that contracts and subcontracts issued for their programs contain adequate materials management provisions, if appropriate.
- (4) Ensure that contractors know the objectives of the materials management program and are provided with the criteria, guidance, and instructions needed to achieve the objectives.
- (5) Verify that contractor-prepared nuclear materials inventory assessment reports are accurate and valid.
- (6) Provide the Headquarters program organizations and the Office of Nuclear Weapons Management with responsive, realistic nuclear material forecasts and related assumptions for programs for which they have responsibility.
- (7) Develop and implement a formal program to manage nuclear materials at contractor operations for which the field office has responsibility, to include providing appropriate guidance and budget support for nuclear materials management.
- (8) Develop, implement, and provide the Office of Nuclear Weapons Management with an annual materials management plan for field office programs, as applicable.
- (9) Periodically review materials management activities at contractor operations for which the field office has responsibility.
- (10) Maintain an allotment control system to ensure that nuclear materials transactions are consistent with quantities allotted to their programs.
- (11) If necessary, perform specific analytical studies to ensure optimum materials planning and utilization.
- (12) Ensure that inactive nuclear materials are identified properly and handled promptly according to the requirements of this Order and supplementary instructions and guidance.
- (13) Ensure that scrap nuclear materials are stored, processed or disposed consistent with DOE policy and procedures.
- (14) Approve contractor discard limits for disposal of nuclear materials based on the Office of Nuclear Weapons Management guidance. (For DOE licensee contractors, the approval of discard limits is the responsibility of the Nuclear Regulatory Commission.)
- (15) Ensure that nuclear materials are acquired for their programs only in the amounts needed to meet Headquarters program objectives consistent with funding availability.

- (16) Operate the Central Scrap Management Office, when assigned, to develop, integrate, and coordinate disposition of designated nuclear materials scrap from facilities that do not have the capability for processing such materials.
 - (17) Operate nuclear materials loan and lease programs, when assigned.
 - (18) Ensure that nuclear materials management requirements and financial management requirements are appropriately interfaced so that nuclear materials management transactions are accurately reflected in financial management information at all appropriate levels.
9. ASSISTANCE. Questions concerning this Order should be directed to John W. Newton, Office of Nuclear Weapons Management, Office of Defense Programs, 301-903-2975.

BY ORDER OF THE SECRETARY OF ENERGY:



ARCHER L. DURHAM
Assistant Secretary for Human
Resources and Administration

DEFINITIONS

1. ALLOTMENT. The annual quantity of nuclear material allocated to a field office for a user project for which the field office has been assigned program management responsibility by a Headquarters program.
2. CENTRAL SCRAP MANAGEMENT OFFICE. A field office designated to develop, integrate, and coordinate disposition of designated nuclear material scrap and residues from facilities that do not have the capability for processing that material. Current Central Scrap Management Offices are the Savannah River Operations Office for plutonium, plutonium-238, tritium, neptunium and heavy water and the Oak Ridge Operations Office for enriched, normal and depleted uranium, uranium-233 and thorium. Central Scrap Management Office operations are controlled by the DOE Office of Facilities.
3. "E" PROJECT MATERIAL. Unusable inactive nuclear material (scrap/residues and spent fuel/targets), not identified with "I" project numbers, designated in accordance with the provisions of this Order. (See Chapter VI for details.)
4. FIELD OFFICE. As used in this Order, includes all of the DOE designated operations offices and other offices such as the Pittsburgh and Schenectady Naval Reactors Offices, and the Rocky Flats Office.
5. FORECASTS. Projections of nuclear material inventories, requirements, returns and transactions for existing and planned user projects.
6. "I" PROJECT MATERIAL. Unusable nuclear materials, under the program management of the Office of Environmental Restoration and Waste Management, for which no recovery processing is planned (except that which is incidental to stabilization). (Does not include material categorized as waste that has been removed from the DOE accountability system in accordance with DOE 5633.3A, 5633.4 and 5633.5.)
7. INACTIVE NUCLEAR MATERIAL. Nuclear material that is not currently being used.
8. IRRADIATED NUCLEAR MATERIAL. Nuclear material that, in its existing form, has been subjected to irradiation in a nuclear reactor or accelerator and that consequently delivers an external radiation dose requiring special containment and handling.
9. "M" PROJECT MATERIAL. Inactive nuclear material, usable in its present form for direct introduction into user project processes, that is managed by the Office of Nuclear Weapons Management.

10. MATERIALS MANAGEMENT PLAN. A planning document prepared annually that provides analyses of nuclear materials supply and demand requirements and related materials management issues for the current fiscal year plus the following n-year planning period to support DOE, Department of Defense, and other nuclear programs.
11. MATERIALS MANAGEMENT REVIEW OR APPRAISAL. Activities to evaluate the effectiveness of the materials management program, including established policies, procedures, and performance of nuclear materials management functions, and the identification of actions necessary to improve the program.
12. MATERIALS TRANSACTIONS.
 - a. Withdrawal. Receipt of nuclear material by a user project from a supply project.
 - b. Return. Removal of nuclear material from a user project to a supply project.
 - c. Transfer In. Receipt of nuclear material by a user project from any source other than a supply project.
 - d. Transfer Out. Removal of nuclear material from a user project to any destination other than a supply project.
13. NUCLEAR MATERIAL. A collective term for materials subject to the provisions of this Order. (See Figure VIII-2.)
14. NUCLEAR MATERIALS MANAGEMENT AND SAFEGUARDS SYSTEM. The national data base and information support system for nuclear materials controlled by the U.S. Government, created to support national safeguards and management objectives in the domestic and foreign utilization of nuclear resources. The system stores data on nuclear material transactions and inventories, and produces a wide range of reports.
15. NUCLEAR MATERIAL VALUE. The current dollar value of a nuclear material asset.
16. PROJECT NUMBER. A 10-character alphanumeric description that identifies nuclear materials for tasks or phases of work assigned to a field office by Headquarters programs. Project numbers generally are derived from the DOE Budget and Reporting Classification System.
17. REPORTING IDENTIFICATION SYMBOLS. Unique combinations of three or four letters that are assigned to each reporting facility for the purpose of identification in the Nuclear Materials Management and Safeguards System

data base. Information relating to the construction and interpretation of these symbols is contained in the "Directory of Reporting Identification Symbols" available from the Nuclear Materials Management and Safeguards System.

18. RESERVE. A quantity of nuclear material set aside for a specific reason, such as a strategic reserve for defense applications or a programmatic reserve for identified program use.
- 190 SCRAP NUCLEAR MATERIAL. Unirradiated nuclear material, not usable in its existing form, that requires treatment to render it useful and which can be recovered safely and economically. Excluded are nuclear materials that are a process feed or require treatment only to remove decay products prior to programmatic use. Scrap nuclear materials are commonly referred to as residues. (Does not include material categorized as waste that has been removed from the DOE accountability system in accordance with DOE 5633.3A, 5633.4 and 5633.5.)
20. SPECIAL PROJECTS. Projects that identify nuclear materials under the program management control of the Office of Environmental Restoration and Waste Management, but does not include user project materials. Special project materials are identified with "1" project numbers or other project numbers established by the Office of Nuclear Weapons Management.
21. SPENT NUCLEAR FUEL. Fuel that has been permanently withdrawn from a nuclear reactor following irradiation, but has not been processed to remove its constituent elements. (Does not include material categorized as waste that has been removed from the DOE accountability system in accordance with DOE 5633.3A, 5633.4 and 5633.5.)
22. SUPPLY PROJECTS. Nonuser projects that produce, process, or store nuclear materials ("E" and "M" projects are considered supply projects.) Supply project materials may be available for distribution to user projects.
23. UNIRRADIATED MATERIAL. Material that, in its existing form, has not been irradiated in a nuclear reactor or accelerator, or if it has been irradiated, the surface dose does not exceed 10 millirem per hour. (Includes nuclear material that previously was irradiated, chemically processed, and separated.)
24. UNUSABLE INACTIVE NUCLEAR MATERIAL. Inactive nuclear material that has no programmatic use in its existing form. This is a general term used to include materials such as spent fuel and scrap. (This material may be designated "E" or "I" project material.)
25. USABLE INACTIVE NUCLEAR MATERIAL. Inactive nuclear material that can be reused in its present form. It consists of material in standard product form and/or specially prepared forms. (This material may be designated

with an "M" prefix project number or other special project numbers to designate material in supply or reserve projects.)

26. USER PROJECTS. Projects that use nuclear materials for research and development, production and nonproduction reactors, and weapon production activities.

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CHAPTER I

FORECASTING NUCLEAR MATERIAL REQUIREMENTS

1. GENERAL. The production, processing, procurement, storage, and disposal of nuclear materials usually involve the expenditure of large sums of money and long lead times. Advance information that affects these activities can be used to plan the future complex configuration, obtain required authorization and funding, optimize facility operations, and minimize costs. The objective of the nuclear materials forecasting system is to develop information that will be used to accomplish these objectives. Forecasts identify and quantify: the need for new nuclear material for program use; the return of unneeded usable and unusable nuclear materials (such as scrap and spent fuel) for processing, storage, disposition as waste or discard for future disposition as waste; the transfers of nuclear materials between projects; nuclear material losses that result from processing, irradiation, decay, testing, and discards; and projected inventories. The field offices are responsible for preparation of the nuclear material forecasts.
2. PREPARATION AND TIMING OF FORECASTS.
 - a. Field Offices annually, by 2-15, shall provide Headquarters program organizations and the Office of Nuclear Weapons Management with a forecast prepared in accordance with Attachment 1-1 for each existing, authorized, and contemplated user project having or needing nuclear materials during the current and next 11 fiscal years. Forecasts are applicable to weapon and nonweapon research and development projects, and production and nonproduction reactor user projects. Forecasts should be based on Headquarters guidance and reflect program requirements that are firm or highly probable. The Oak Ridge Operations Office forecasts shall include enriched uranium that will be provided by DOE to foreign and domestic customers during the next two fiscal years.
 - b. Headquarters Programs.
 - (1) Headquarters programs annually, by 11-1, shall provide guidance to the field offices for nuclear material requirements forecast preparation. Guidance should consider planned operations, deployment, or testing activities involving nuclear materials.
 - (2) Headquarters programs shall review and evaluate the forecasts for their respective programs that have been prepared by field offices and annually, by 3-1, provide the Office of Nuclear Weapons Management with a consolidated copy of their approved forecast with appropriate comments.

- c. Office of Nuclear Weapons Management will consolidate DOE-wide nuclear material forecasts and annually, by 4-1, provide the applicable field offices with summaries of forecast withdrawals and returns for use in preparing their materials management plans (Chapter II). In addition, the Office of Nuclear Weapons Management will use the approved forecasts for issuing applicable nuclear material allotments (Chapter IV), and for preparing the DOE Materials Management Plan.

PROCEDURES FOR PREPARING FORECASTS

1. GENERAL.

- a. Forecasts shall be submitted on DOE F 5660.1, "Forecast of Nuclear Material Requirements," (see page 10) for specified nuclear materials. Computer-generated facsimiles of this form are acceptable. Nuclear materials to be forecast and the reporting units to be used are as follows:

<u>Material Type</u>	<u>Material To Be Forecast</u>	<u>Reporting Units</u> ¹
Enriched Uranium	U-235 isotope	kilogram
Plutonium	Total Pu	kilogram
Uranium-233	U-233 isotope	kilogram
Heavy Water (D ₂ O)	D ₂ O equivalent	kilogram
Plutonium-238	Pu-238 isotope	gram
Tritium	Tritium	gram
Normal Uranium	Total U	metric ton
Depleted Uranium	Total U	metric ton
Plutonium-242	Pu-242 isotope	gram
Americium-243	Am-243 isotope	gram
Curium	Curium	gram
Neptunium-237	Np-237 isotope	kilogram

- b. Projects with entries (blocks 25-74) less than the following threshold quantities shown below may be omitted from the forecast:

Threshold Quantities

<u>Material</u>	<u>Unit</u>
Enriched Uranium	2 kg U-235
Plutonium	2 kg Pu
Uranium-233	1 kg U-233
Heavy Water (D ₂ O)	500 kg D ₂ O (equivalent)

¹Rounding procedure: Fractions of 0.5 or greater shall be rounded up and fractions of less than 0.5 shall be rounded down. Abbreviations used throughout the Order are: metric ton (MT), kilogram (kg), and gram (g).

²Deuterium quantities should be converted to heavy water equivalent quantities by multiplying the deuterium quantities by 4.98.

Threshold Quantities (Continued)

<u>Material</u>	<u>Unit</u>
Plutonium-238	100 gm Pu-238
Tritium	10 gm Tritium
Normal Uranium	10 MT U
Depleted Uranium	10 MT U
Plutonium-242	100 gm Pu-242
Americium-243	1 gm Am-243
Curium	1 gm Cm
Neptunium-237	1 kg Np-237

- c. Forecasts shall be accompanied by relevant assumptions upon which entries are based.

2. INSTRUCTIONS FOR COMPLETING DOE F 5660.1 The specific instructions shown below correspond to the item numbers on DOE F 5660.1.

- a. Blocks 1-10. Enter the 10-character alphanumeric project number. Material in projects prefixed with "M", "I", and "E" designators should not be included in the forecasts.
- b. Project Title. Enter the title of the project number noted in blocks (1-10). The project title should agree with the project number contained in the official DOE Project Number-Title Index (Nuclear Materials Management and Safeguards System T-141 report).
- c. Block 11. Enter the appropriate material type code applicable to all of the items on the page. List only one material type on each DOE F 5660.1. If more space is required, continue on another DOE F 5660.1, repeating material type, project number, and title.

<u>Material Type</u>	<u>Code</u>
U-235	1
Pu	2
U-233	3
Pu-238	4
D ₂ O	5
Tritium	6
Other (specify)	7

Forecasts for Pu-242, Am-243, Np-237, curium, normal and depleted uranium should use Code 7 "Other" with the material noted, as appropriate. If forecasts are required for nuclear materials not listed above, the materials should be identified under Code 7, "Other".

- d. Entry Type and Block 12. Enter the appropriate entry type and entry type code shown below for all entries applicable to a line. Entry type codes should be arranged in numerical order. Several lines may have the same entry type because of different material assays. Multiple entries for the same entry type code should be listed in decreasing materials assay.

Entry Type	Code
Beginning Inventory	1
Withdrawal	2
Unirradiated Return	3
Irradiated Return	4
Transfer In	5
Transfer Out	6
Burnup, Losses, and Expended in Nuclear Tests	7
Formation	8
Launch	9
Ending Inventory	10

- e. Definitions of Entry Types.

- (1) Beginning Inventory. The actual inventory at the beginning of the current fiscal year of the forecast period reported by project number. All quantities assigned to the project should be included in this inventory without regard to physical location.
- (2) Withdrawal. Receipt of nuclear material by a user project from a supply project. (The receipt of nuclear material from an "E" or "M" project by a user project is considered a withdrawal.)
- (3) Return. Removal of nuclear material from a user project to a supply project. The removal of material from any user project to an "E" or "M" project number (see Chapter VI) is also considered a return. Returns are further described as either unirradiated or irradiated material.
- (4) Transfer In. A receipt of nuclear material by a user project from any source other than a supply project. Includes material obtained from other user projects, Federal agencies, foreign countries, or private ownership. Footnote the project number and

location from which the material is to be obtained. Material obtained from another contractor or location without a change in project number is not considered a transfer in.

- (5) Transfer Out. A removal of nuclear material from a user project to any destination other than a supply project. Includes material provided to other user projects, other Federal agencies, foreign countries, domestic companies for private use, and "I" projects. Footnote the project number and location to which the material will be transferred. Material sent to another contractor or location without a change in project number is not a transfer out.
- (6) Burnup, Losses, and Expended in Nuclear Tests. Removals from inventory as a result of processing, fabrication, irradiation, decay, weapon tests, operational losses, and discards.
- (7) Information. Material produced as a result of irradiation of other materials, e.g., U-233 or Pu produced in reactors. Tritium produced in D₂O reactor moderator is excluded.
- (8) Launch. Material removed from inventory as a result of rocket launch into space, e.g., Pu-238 for electrical generation.
- (9) Ending Inventory. Inventory for a project at the end of each fiscal year (regardless of location or assay) calculated by adding receipts to the beginning inventory and subtracting all removals.

f. Blocks 13-15 and 16-18

- (1) Enter assay for materials under each entry type, as required. Assays are not required for Entry Type 0 "Ending Inventory". Assays shall be entered for materials as follows:

<u>Material</u>	<u>Assay Data</u>
U-235	Wt % U-235 to nearest 0.1%
Pu	Wt % Pu-240 to nearest 0.1%
U-233	Ppm U-232 in uranium
D ₂ O	Do not enter assay data
Pu-238	Wt % Pu-238 to nearest 0.1%
Tritium	Do not enter assay data
Normal U	Do not enter assay data
Depleted U	Do not enter assay data
Pu-242	Wt % Pu-242 to nearest 0.1%
Am-243	Wt % Am-243 to nearest 0.1%
Curium	Do not enter assay data
Np-237	Do not enter assay data

- (2) Single assays shall be shown in blocks 16-18. Ranges of assays may be shown by using blocks 13-15 for the lower assay and blocks 16-18 for the upper assay. Ranges of assays should be used for withdrawals only when absolutely necessary (i.e., only where specific assays cannot be identified). Assay ranges for withdrawals will be interpreted as meaning that any material within the indicated assay range is acceptable. Materials with only slight differences in assay (e.g., one percent U-235, Pu-240, or Pu-238) may be combined and reported as a single quantity with a single weighted average or major assay. Small quantities of materials that individually are less than a reportable quantity may be combined as a single quantity with a single weighted average assay. Weight percent should be shown for entries identified as burnup, losses, and expended in nuclear tests (entry type code 7). For material consumed in a reactor, enter the weight percent of the material loaded into the reactor before irradiation. Assays should be "right adjusted", i.e., entries start at right and work left. A range of 5 to 50 ppm U-232, for example, would be shown as:

5	50
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For weight percent, the right-hand column is used for tenths of a percent,

- g. Block 19. For withdrawals, enter a code representing the chemical form of the material required from nuclear materials supply projects as follows (generally, only standard form material will be provided):

<u>Code</u>	<u>Form</u>
1	Hexafluoride
2	Nitrate
3	Metal
4	Oxide
5	Other

- h. Blocks 20-21 Special assay codes should be entered for irradiated U-235 return; and D₂O withdrawals and returns, as follows:

Irradiated U-235

Code	<u>% U-236</u>
01	< 1
02	1 < 2
03	2 < 3
04	3 < 4
05	4 < 5
06	5 < 6
07	6 < 7
08	7 < 8
09	8 < 9
10	9 < 10
11	10 < 11
12	11 < 12
13	12 < 13
14	13 < 14
15	> 14

D₂O Withdrawals and Returns

Code	<u>Microcuries Tritium/Milliliter</u>
50	< 0.00005
51	0.00005-30
52	> 30

- i. Blocks 22-24 Enter the three-character classification code established by American National Standards Institute in ANSI N15.1-1970, Classification of Unirradiated Uranium Scrap, to identify returns of unirradiated and irradiated enriched uranium (U-235), normal uranium, depleted uranium, and U-233; for returns of unirradiated and irradiated plutonium, Pu-238, and Pu-242, enter the three-character classification code in ANSI N15.10-1987, Unirradiated Plutonium Scrap-Classification. Although the American National Standards Institute codes were established for unirradiated scrap, in this instance, they should also be applied to irradiated materials. Care should be taken to select the most appropriate American National Standards Institute Code to describe the material. (Although ANSI N15.1-1970 has expired, it should continue to be used until it is updated. Copies of ANSI N15.1-1970 can be obtained from the Office of Nuclear Weapons Management.

- j. Blocks 25-29 On the line reflecting beginning inventory (Entry Code 1), enter the actual beginning inventory for the project, regardless of location, as of the first day of the current fiscal year to which the forecast applies. Entries should be right adjusted.
- k. Blocks 30-34 Enter actual quantities for each entry type (except beginning inventories that are entered in blocks 25-29) for the first quarter of the fiscal year in which the forecast is prepared.
- l. Blocks 35-39 Enter appropriate quantities for each entry type (except beginning inventories) for the remainder of the current fiscal year (totals for the second, third, and fourth quarters).
- m. Blocks 40-74 Enter quantities for each entry type (except beginning inventories) for each of the fiscal years. In the blank "FY" insert the two-character number reflecting the appropriate fiscal year, e.g., 95, 96. Eleven entries should be made to reflect consecutive fiscal years of the forecast period.

U.S. DEPARTMENT OF ENERGY
FORECAST OF NUCLEAR MATERIAL REQUIREMENTS

1 2 3 4 5 6 7 8 9 10
PROJECT NO.:

C	K	C	0	2	0	4	0	1	A
---	---	---	---	---	---	---	---	---	---

PAGE _____

DATE _____

11
MATERIAL TYPE:

1

 1. U-235 2. Pu 3. U-233 4. Pu-238 5. D₂O 6. Tritium 7. _____
(Other)

PROJECT TITLE: BNL High Flux Beam Reactor

REPORTING ORGANIZATION: Brookhaven National Laboratory (CZD)

U-235 in Kg

ENTRY TYPE		WT% OR PPM RANGE						WITHDRAWALS FORM CODE	SPEC. ASSY CODE	RE- TURNS FORM CODE	CURRENT FY <u>94</u>			FY 95	FY 96	FY 97	FY 98	FY 99	FY 00	FY 01
TYPE	C O D E	LOWER			UPPER OR SINGLE						ACTUAL BEGINNING INVENTORY	1ST QTR. ACTUAL	2,3,4 QTRS. (TOTAL) FORECAST							
		12	13	14	15	16	17							18	(25-28)	(30-34)	(35-38)	(40-44)	(45-48)	(50-54)
Beginning Inventory (1)	1				93		2					6								
Beginning Inventory (2)	1				93		2					121								
Beginning Inventory (3)	1				88		8					8								
Beginning Inventory (4)	1				80		8					180								
Unirradiated Returns (5)	3				93		2			B10		0	1	1	1	1	1	1	1	1
Irradiated Returns (6)	4	76		6	81		0		10	B10		0	0	30	30	30	30	30	30	30
Transfers In (7)	5				93		2					0	25	25	25	25	25	25	25	25
Burnup & Losses (8)	7				93		2					2	9	11	11	11	11	11	11	11
Ending Inventory	0											313	328	311	294	277	260	243	226	209
() See notes on attached page.																				

ENTRY TYPE		WT% OR PPM RANGE						WITHDRAWALS FORM CODE	SPEC. ASSY CODE	RE- TURNS FORM CODE	FY	FY	FY	FY	FY	FY	FY	FY						
TYPE	C O D E	LOWER				UPPER OR SINGLE					02	03	04	05										
		12	13	14	15	16	17				18	19	20	21	22	23	24	(25-28)	(30-34)	(35-38)	(40-44)	(45-48)	(50-54)	(55-58)
Unirradiated Returns	3					93	2				B10			1	1	1	1							
Irradiated Returns	4	76		6	81	0			10		B10			30	30	30	30							
Transfers In	5					93	2							25	25	25	25							
Burnup & Losses	7					93	2							11	11	11	11							
Ending Inventory	0													192	175	158	141							

DOE 5660.1B
5-26-94

FORECAST OF NUCLEAR MATERIAL REQUIREMENTS

Attachment 1-1
Page 1-10

CHAPTER II

MATERIALS MANAGEMENT PLANS

1. PURPOSE. To provide guidelines for the uniform preparation of the field office Materials Management Plans which are used by the Office of Nuclear Weapons Management for the preparation of the DOE-wide Materials Management Plan and strategic management plans for specific nuclear materials.
2. GENERAL. A key component of any management system is the planning function. Planning in nuclear materials management is particularly important because of the strategic value of the materials and the high costs of producing, processing, storing or disposing of the materials. Within DOE, the plans for managing nuclear materials are formalized annually in the DOE Materials Management Plan and other strategic management plans. The DOE Materials Management Plan provides an analysis of the nuclear materials available and the projected requirements over the n-year planning period (beyond the current fiscal year). It presents plans for the management of nuclear material reserves and other inactive materials, and addresses issues requiring management attention by identifying risks and options that could affect nuclear materials management. The DOE Materials Management Plan is the only document that combines user and supply project requirements and identifies the total demand for nuclear materials. The DOE Materials Management Plan also addresses other nuclear materials-related considerations such as the need for new production capability, shipping, storage, processing and management problems.
3. FIELD OFFICE MATERIALS MANAGEMENT PLANS
 - a. Content and Responsibilities. Field offices shall prepare Materials Management Plans containing the following information, as applicable:
 - (1) Projections of nuclear materials inventories and transactions for each "supply" project for which the field office is responsible. The following data shall be provided for each supply project for each of the 11 fiscal years of the designated planning period:
 - (a) Beginning Inventory;
 - (b) Receipts (identify other party);
 - (c) Removals (identify other party); and
 - (d) Ending Inventory.

- (2) Projections of nuclear material inventories and transactions for user projects involving weapon production or nuclear materials production activities. This requirement is applicable to any field office having programmatic responsibility for weapon production or nuclear materials production. The following data shall be provided for each project for each of the 11 fiscal years of the designated planning period:
- (a) Beginning Inventory;
 - (b) Receipts (identify other party);
 - (c) Removals (identify other party); and
 - (d) Ending Inventory.
- (3) Specific site issues related to nuclear materials production, processing, storing, and management activities. Typical issues would be: need for nuclear materials storage capability; impact of lack of acceptable shipping containers; need to maintain DOE nuclear materials processing/conversion capability to meet current or future needs or for long-term safe storage; and ways to minimize nuclear material wastes.
- (4) A list of nuclear materials management and related analytical studies being performed or completed during the previous year by the field office or its contractors. The title and a brief abstract of each study should be included.
- b. Schedule. The field office Materials Management Plan shall be provided annually to the Office of Nuclear-Weapons Management by 6-15.
- c. Materials Reported and Units. Materials and units to be included in the Materials Management Plans, unless otherwise authorized by the Office of Nuclear Weapons Management, are as follows:

<u>Material</u>	<u>Component Reported</u>	<u>Reporting Unit</u> (Nearest)
Enriched Uranium	U-235 isotope	kilogram
Plutonium	Total Pu (Wt. % Pu-240)	kilogram
Uranium-233	U-233 (PPM U-232)	kilogram
Heavy Water (D ₂ O)	D ₂ O equivalent	kilogram
Plutonium-238	Pu-238 (% Pu-238)	gram
Tritium	Tritium	gram
Normal Uranium	Total U	metric ton
Neptunium-237	Np-237 isotope	kilogram

³If the Office of Nuclear Weapons Management delays in providing planning assumptions and the nuclear materials withdrawals and returns summaries for use in the field office Materials Management Plan (see paragraph 3e below), the field office Materials Management Plan may be delayed an equivalent number of days.

- d. Assumptions. Each Materials Management Plan should contain the important assumptions used to develop projections for materials supply or user project inventories and transactions.
 - e. Coordination. Annually, by 4-1, the Office of Nuclear Weapons Management will provide field offices with planning assumptions and applicable nuclear materials withdrawals and returns summaries (developed from field office requirements forecasts (Chapter I)) for use in preparing the field office Materials Management Plan. Because resultant processing schedules developed by one field office may be needed by another field office for use in developing its Materials Management Plan schedules, it is important to coordinate such schedules between field offices at the earliest possible date so that the Materials Management Plan preparation date can be met by all organizations.
4. DOE MATERIALS MANAGEMENT PLAN. Annually, by 9-30, the Office of Nuclear Weapons Management will prepare and issue the DOE Materials Management Plan. It will be based on information from nuclear material requirements forecasts (Chapter 1), field office Materials Management Plans, the latest Nuclear Weapons Stockpile Plan approved by the President, and information developed from nuclear material strategic management plans. The DOE Materials Management Plan will be provided to appropriate DOE organizations and other Government agencies as a comprehensive analysis of nuclear materials supply-demand during the next n-year planning period together with important nuclear materials management issues.

CHAPTER III

ANALYTICAL STUDIES

1. GENERAL. Analytical studies are an important component of the DOE's nuclear materials management program. Studies can provide valuable planning information needed in the decision-making process associated with the production, processing, utilization, storage, or disposition of nuclear materials. Analytical studies take the form of complex computer models or simple paper exercises. In view of current DOE emphasis, study analysis should include costs and impacts associated with full compliance of all applicable environment, safety, health and waste management requirements, both from the short-term and long-term management aspects.
2. PROCEDURES. Major steps involved in the development and use of analytical studies are as follows:
 - a. Define the scope and objective(s) of the study.
 - b. Determine what data are available.
 - c. Define the approach to accomplishing the study.
 - d. Develop the analytical methodology.
 - e. Establish a schedule for completion of the study and milestones.
 - f. Perform analysis and determine economics and materials impacts.
 - g. Develop data displays and report presentation formats.
 - h. Review and evaluate study in terms of original objectives.
 - i. Prepare and issue report.
3. ANALYTICAL STUDIES FORMAT. Attachment 111-1 provides a recommended format for reporting the results of analytical studies. (The report should include the items presented, with sufficient flexibility to accommodate local requirements".)
4. TYPES OF ANALYTICAL STUDIES. The following list provides examples of analytical studies involved in managing DOE's existing and planned nuclear material resources:
 - a. Value of nuclear materials.
 - b. Alternative methods for producing/supplying/storing nuclear materials.
 - c. Scrap recovery/disposal analysis.
 - d. Use of alternative materials for mission requirements.

- e. Determination of optimum inventory levels.
- f. Development of contingency plans.
- g. Utilization of inactive nuclear materials.
- h. Operational-materials requirement tradeoffs.

5. GENERAL RESPONSIBILITIES.

a. Director of the office of Nuclear Weapons Management.

- (1) Provides field offices and Headquarters programs with guidance and instructions for preparing special analytical studies;
- (2) Suggests topics for analytical studies;
- (3) Reviews and comments on analytical studies prepared by the field offices, contractors, and Headquarters programs;
- (4) Provides data to field offices and Headquarters programs on nuclear material requirements and, in coordination with the Chief Financial Officer, data on nuclear material values;
- (5) Performs, or commissions performance of, special studies required to support the Office of Nuclear Weapons Management's nuclear materials management mission;
- (6) Provides analytical studies to appropriate Headquarters and field organizations for review and comment; and
- (7) Implements or recommends implementation of study results.

b. Directors of Headquarters Programs. Perform analytical studies necessary to define and evaluate budgetary/materials management tradeoff options to ensure that total resources (operating, equipment, and capital dollars, and material values) committed to program objectives are optimized.

c. Heads of Field Organizations.

- (1) Identify and perform studies necessary to ensure that inventory levels for projects under the office's management control are at reasonable levels.
- (2) Provide contractors with guidance, instructions, information, data, and funding, as necessary, to perform analytical studies and coordinate the studies with the appropriate Headquarters organization.

- (3) Implement recommendations of analytical studies that have been approved by the cognizant program.
- (4) Review, evaluate, and comment on analytical studies performed by contractors and provide copies to the Office of Nuclear Weapons Management and other Headquarters organizations. Studies conducted primarily for operational purposes that impact nuclear materials management also should be provided to the Office of Nuclear Weapons Management.
- (5) Perform studies and prepare plans to carry out materials management coordination functions that have been assigned to the field office, if applicable.
- (6) Provide the Office of Nuclear Weapons Management with an annual list of nuclear materials management studies being performed or completed (see page II-2, paragraph 3a(4)).

ANALYTICAL STUDIES FORMAT

1. TITLE. A descriptive study title used for referencing and filing the study.
2. SUMMARY. A concise statement of the study, scope, and results.
3. OBJECTIVE. A statement of the problem(s) studied and the objectives realized.
4. CONCLUSIONS. This section reports the results and the conclusions reached. It should clearly identify the issues and the recommendations, and if appropriate, the preferred alternative and resultant actions.
5. DISCUSSION. This section should include, but not be limited to those items listed below. Some studies will contain more details than others, but these items should be common to all studies:
 - a. Assumptions. List assumptions used in the study.
 - b. Technique. Specify the quantitative technique/methodology used.
 - c. Alternatives. Provide a list and evaluation of the alternatives.
 - d. Costs. Identify the projected costs for each alternative.
 - e. Advantages/Disadvantages. Discuss the advantages and disadvantages of the alternatives.
 - f. Data. Provide data supporting the conclusions and, where appropriate, identify the source of the data.
 - g. References. Cite prior studies, where relevant.

CHAPTER IV

NUCLEAR MATERIALS ALLOTMENTS

1. GENERAL. One element of the nuclear materials management program is the distribution of nuclear materials to user programs. A key component of that activity is the nuclear materials allotment control system.
2. ALLOTMENTS.
 - a. Terminology. An allotment is the quantity of a nuclear material allocated annually to a field office for a user project for which the field office has been assigned program management responsibility by a Headquarters program. The terms that describe an allotment are "withdrawals" and "returns". Categorization of material transactions depends on the type of project involved in the transaction and whether the transaction is considered by the shipper or receiver of the nuclear material.
 - (1) Types of projects are:⁴
 - (a) User Projects. Projects that use nuclear materials for research and development, production and nonproduction reactors, and weapon production activities.
 - (b) Supply Projects. Nonuser projects that produce, process, or store nuclear materials for distribution to user projects. "E" and "M" projects are considered supply projects.
 - (c) Special Projects. Projects under the program management control of the Office of Environmental Restoration and Waste Management, but do not include user projects. Special project materials are identified with an "I" project number or other project numbers established by the Office of Nuclear Weapons Management.
 - (2) Allotments are categorized as follows:
 - (a) Withdrawals. Receipt of nuclear material by a user project from a supply project.
 - (b) Returns. Removal of nuclear material from a user project to a supply project.

⁴The Nuclear Materials Management and Safeguards System report T-141 "Project Number-Title Index by Programmatic Field Office" identifies user, supply, and special projects.

- b. Issuing Allotments. The Office of Nuclear Weapons Management will issue nuclear materials allotments (for materials identified in Figure VIII-2), by project, to each field office before the beginning of the fiscal year. Allotments will cover one fiscal year without carryover to the subsequent fiscal year. The Oak Ridge Operations Office allotments will include foreign and domestic withdrawals of enriched uranium to be provided by DOE, rather than the United States Enrichment Corporation. The field office receiving the allotment should contact the field office that is to supply the material to arrange for delivery.
- c. Allotment Control. Each field office is responsible for monitoring, controlling, and reporting the status of its allotments, and for approving all transfers of materials between projects. (See additional requirement in paragraph d, below.)
- d. Transfer Approvals. All withdrawals and transfers of very highly enriched uranium (94.00% and above U-235) and very low tritium content heavy water (<0.00005 microcuries tritium/milliliter) require prior approval by the Office of Nuclear Weapons Management. Other transfers will be controlled at the project level by the field offices. From time to time, additional material types or projects may be added that require approval by the Office of Nuclear Weapons Management for transfer of materials between projects. This guidance will be identified in the transmittal of the annual allotments.
- e. Reporting. Each field office shall provide the Office of Nuclear Weapons Management with semi annual allotment status reports that compare actual withdrawal and return quantities with quantities allotted by project. The original allotments and all revisions issued by the Office of Nuclear Weapons Management for the year should be shown. The first report, covering the first two quarters of the fiscal year, is due to the Office of Nuclear Weapons Management by 6-1. Brief explanations should be provided if differences of greater than 10 percent are expected for the full year between allotted quantities and those currently projected for the year. The full fiscal year report, due to the Office of Nuclear Weapons Management by 12-1, should explain differences of greater than 10 percent between actual transactions and allotted quantities. Attachment IV-1 shows the format to be used for the allotment status reports.
- f. Allotment Revisions.
 - (1) Withdrawals. Actual withdrawals of nuclear material that exceed allotted quantities must first be approved by the Office of Nuclear Weapons Management. Requests for increases are to be sent to the Office of Nuclear Weapons Management with a copy to the cognizant Headquarters program. The requests should contain

sufficient details to allow a thorough evaluation of the proposed change. If the request is approved by the Office of Nuclear Weapons Management and the Headquarters program, the Office of Nuclear Weapons Management will issue a revised allotment to the requesting field office and provide a copy to the field office supplying the material. For a decrease to an allotment, notification shall be provided to the Office of Nuclear Weapons Management, with a copy to the cognizant Headquarters program. The Office of Nuclear Weapons Management will issue a revised allotment and notify the applicable field offices of the change.

- (2) Returns. The Office of Nuclear Weapons Management and the appropriate Headquarters program organization should be notified if projected returns for the year are expected to vary from allotted quantities. Explanations of changes should accompany the notification. The Office of Nuclear Weapons Management will issue a revised returns allotment and notify the field office responsible for receiving and/or processing the return.
- (3) Excepted Quantities. If total changes in project withdrawals or returns allotments for the year are within the following quantities, allotment revision approval by the Office of Nuclear Weapons Management is not required.

Excepted Project Quantities

<u>Material</u>	<u>Unit</u>
Enriched Uranium	2 kg U-235
Normal Uranium	10 MT U
Uranium-233	1 kg U-233
Plutonium	2 kg Pu
Plutonium-238	100 gm Pu-238
Tritium	10 gm Tritium
Heavy Water (D ₂ O)	500 kg D ₂ O (Equivalent)
Neptunium-237	1 kg Np-237

Sample Allotment Status Report
Chicago Operations Office

Through Second Quarter FY 1994

	<u>Withdrawals</u>		<u>Current</u>	<u>Unirradiated Returns</u>		<u>Current</u>	<u>Irradiated Returns</u>		<u>Current</u>
	<u>Allotment</u>	<u>Actual</u>	<u>Projections</u>	<u>Allotment</u>	<u>Actual</u>	<u>Projections</u>	<u>Allotment</u>	<u>Actual</u>	<u>Projections</u>
FACILITIES, FUEL CYCLE AND TEST PROGRAMS									
<u>Enriched Uranium (kg U-235)</u>									
C-AF-8020-00C	200	100	120 ¹	150	80	150	20	-0-	25 ³
C-AF-8010-000				5	5	5			
<u>Plutonium (kg Pu)</u>									
C-AF-2070-100	10	9	9						
C-AF-8010-00C	100	20	40 ²						

¹ As a result of budget limitations, total withdrawals expected to be only 120 kg U-235 in FY 1994. An allotment change is requested.

² As a result of budget limitations and limited fabrication capacity, total withdrawals expected to be only 40 kg Pu in FY 1994. An allotment change is requested.

³ Total returns are expected to be 25 kg during FY 1994 because of additional reactor usage. An allotment change is requested.

CHAPTER V

NUCLEAR MATERIALS INVENTORY MANAGEMENT

1. GENERAL. Nuclear materials are a highly valuable resource that must be considered along with dollars and work force in making decisions based on the total resources to accomplish program objectives at the least cost to the Government. Sound materials management policies minimize nuclear materials stored onsite, or held in user programs, which are not needed for near-term mission accomplishment. Annual assessments of nuclear material inventories are required to evaluate the need for the inventory levels and to determine if the materials are categorized properly. Appropriate indicators for inventory evaluation should be developed and used.
2. REQUIREMENTS AND RESPONSIBILITIES.
 - a. Field Offices.
 - (1) Establish appropriate inventory management guidelines based on programmatic needs, and review/evaluate contractor inventories on a continuing basis.
 - (2) Ensure that the nuclear materials for which the field office has programmatic responsibility are accurately categorized, e.g., project number, composition of ending inventory, and usage status.
 - (3) Perform formal reviews of contractor nuclear materials utilization and report the findings according to the procedures set forth in Chapter VII.
 - (4) Prepare and provide to Headquarters, by 1-15, an annual assessment of the nuclear material inventories held by contractors, as of 9-30, for which the field office has programmatic responsibility.
 - b. Headquarters Program Organizations. Directors of Headquarters program organizations shall review the annual assessments of nuclear materials inventories submitted by the field offices and approve and/or recommend changes in project inventory levels, based on existing and planned program activities, to ensure that appropriate inventory levels and good inventory management practices are maintained.
3. FIELD OFFICE ASSESSMENT OF CONTRACTOR USE OF NUCLEAR MATERIALS. The following instructions are provided for preparing the annual nuclear materials Inventory assessment report:

- a. Inventory Date. The assessment shall cover nuclear materials on inventory as of 9-30.
- b. Reporting Responsibility. The assessment should cover nuclear materials under all user and supply projects for which the field office has programmatic responsibility or, in the case of nuclear materials or weapons production operations, contract administration responsibility. This responsibility is identified by the prefix in the alphanumeric project number used to identify all DOE program nuclear materials. Onsite "M" and "E" project materials should be included in the assessment. Materials with "I" project numbers are excluded from the assessment report.
- c. Material to be Reported. The following table shows the nuclear materials to be included in the annual inventory assessment reports along with project quantities below which no explanations are required:

<u>Material Type</u>	<u>Reporting Unit</u>	<u>Project Exempt Quantities</u>
Enriched Uranium	kg U-235	2 kg
Plutonium	kg Pu	2 kg
Uranium-233	kg U-233	1 kg
Heavy Water (D ₂ O)	kg D ₂ O equiv.	500-kg
Plutonium-238	gm Pu-238	100 gm
Tritium	gm Tritium	10 gm
Normal Uranium	MT U	10 MT
Depleted Uranium	MT U	10 MT
Plutonium-242	gm Pu-242	100 gm
Americium-243	gm Am-243	1 gm
Curium	gm Cm	1 gm
Americium-241	kg Am-241	1 kg
Berkelium-249	µgm Bk-249	1 µgm
Californium-252	µgm Cf-252	1 µgm
Lithium-6	kg Li-6	2 kg
Neptunium-237	kg Np-237	1 kg
Thorium	kg Th	1000 kg

- d. Analysis Format. Assessments submitted to Headquarters should summarize inventories by individual projects with explanations using the following categories:
 - (1) Active Material Material that is actively used in DOE user programs.

- (2) Inactive Material - Defined Use Material not in active use, but held for probable future use in an identifiable DOE program within the next 2 years or being held in designated reserves for probable future use beyond 2 years.
- (3) Inactive Material - No Defined Use. Material not in active use or needed for an onsite DOE program now or in the next 2 years. Includes material that is surplus to projected needs but is desirable for retention, but does not include reserves designated for specific purposes.

In addition, the assessments shall include composition of ending inventory data codes with the material quantities.

- e. Source of Data. The quantities of nuclear materials contained in the assessment reports should be consistent with that reported to Nuclear Materials Management and Safeguards System. Reports are available from Nuclear Materials Management and Safeguards System that show the project inventories, inventory composition, assays, etc.
- f. Assessments. The explanations should contain sufficient information to allow determination as to whether inventory levels are reasonable relative to programmatic objectives and established inventory guidelines, where applicable. Merely restating composition of ending inventory categories is not adequate. A major consideration in assessing inventories, associated with processing operations, fabrication operations, reactor operations, and scrap processing operations, is the rate of inventory use, throughput, or turnover. The circumstances related to all inactive usable materials should be clearly identified, as well as the rationale for continued storage, and the final disposition plan, if known. Information, such as problems in disposing of scrap, irradiated fuel ("I" project material excluded) or other excess material should be specified. In effect, the assessment is not merely a look at the inventory at a point in time but includes plans in terms of quantities and timeframe to make the review dynamic in nature. Significant recent materials management activities, such as the reduction in inventory levels, should be reported.
- g. Timing. The annual field office inventory assessment report is due to the Office of Nuclear Weapons Management (with copies to the appropriate Headquarters programs) by 1-15. Headquarters program comments on the field office submissions should be forwarded to the Office of Nuclear Weapons Management by 1-31.

CHAPTER VI

INACTIVE MATERIALS

1. GENERAL. The management of inactive nuclear material has as its primary objective the prompt return of material to the DOE supply inventory after it is no longer needed by the user program. The management process includes: early determination that the material is inactive; proper characterization of the material as to quantity and chemical and physical composition; identification of programs that can use the material in its existing form; processing of materials, if needed, for long-term safe storage or distribution to user programs; and the availability of acceptable facilities for long-term storage.
2. REQUIREMENTS.
 - a. Usable Inactive Nuclear Materials.
 - (1) "M" Project Numbers. Field offices shall assign an "M" project number to usable inactive nuclear material returned from user projects for which they have programmatic responsibility. The establishment of "M" project numbers must be approved in advance by the Office of Nuclear Weapons Management. Nuclear material transferred from a user project number to an "M" project number is considered a "return" for allotment purposes (see Chapter IV).
 - (2) Inactive Materials Bulletins. Field offices will issue Inactive Materials Bulletins to other field offices and the Office of Nuclear Weapons Management, to notify potential users of the availability of usable inactive nuclear materials. Inactive Materials Bulletins should contain descriptive information on the nuclear material, including quantity, assay, and chemical and physical form.
 - (3) Requesting Usable Inactive Materials. Field offices that have contractors that are interested in obtaining nuclear materials listed in an Inactive Materials Bulletin should contact the Office of Nuclear Weapons Management with details of the planned use for the material. If justified, the Office of Nuclear Weapons Management will authorize transfer of the material. Nuclear material obtained by a user program from an "M" project number is considered a "withdrawal" for allotment purposes (see Chapter IV).
 - (4) Transfers of "M" Project Materials. Nuclear material with an "M" project number retains its "M" designator, irrespective of location, until transferred to a user program, a supply project,

or the Office of Environmental Restoration and Waste Management for management. "M" project material may not be transferred, shipped offsite, or processed without approval by the Office of Nuclear Weapons Management.

- (5) Handling and Storage of "M" Project Materials The field office program which supplies the usable inactive nuclear material that is designated with an "M" project number is responsible for all costs associated with the handling and storage of such material until it is transferred to other user programs or transferred to another site for storage and/or processing and the receiving site assumes management and financial responsibility.
- (6) Processing "M" Project Materials. Field offices responsible for contractors who process "M" project materials to other product forms shall assign supply project numbers to the processed products. The use of such supply project numbers must be approved in advance by the Office of Nuclear Weapons Management.

b. Unusable Inactive Nuclear Materials

(1) Unirradiated Scrap at Sites Without Processing Capability.

- (a) Retention Determination Field offices responsible for programs that generate unusable nuclear material scrap and residues are responsible for determining if the materials should be retained for future processing or discarded. Such determinations should be based on discard methodology or guidance issued by the Office of Nuclear Weapons Management. If assistance is needed, the appropriate Central Scrap Management Office or the Office of Nuclear Weapons Management should be contacted. If the material is to be retained, the field office shall assign an "E" project number. Normally, this is accomplished by replacing the first character of the project number with an "E". The "E" project identification is retained, irrespective of location of the material, until the material is actually processed for recovery. If the material is to be discarded, disposal must be coordinated with the Office of Environmental Restoration and Waste Management program. Discarded material to be retained in inventory under the program management control of the Office of Environmental Restoration and Waste Management shall be assigned an "I" project number. Discarded material disposed of as waste shall be removed from the accountability system in accordance with DOE 5633.3A, 5633.4, and 5633.5.
- (b) Handling and Storage of "E" Project Material. The field office program that generates nuclear material scrap and residues which are designated as "E" project material, maintains responsibility for all costs associated with handling, storage, and characterization (if required) of the

material until it is sent to another site for storage and/or processing, and the receiving site assumes management and financial responsibility.

- (c) Central Scrap Management Office Activities. The Central Scrap Management Office shall have primary responsibility for arranging for the transfer of "E" project material for processing and/or storage and actual processing of the material. The Central Scrap Management Office shall coordinate these activities with the Office of Nuclear Weapons Management.
 - (d) Processing "E" Project Material. The field office responsible for the contractor that processes "E" project material to an acceptable product form shall assign an appropriate "supply" project number to the product. The use of supply project numbers must be approved in advance by the Office of Nuclear Weapons Management.
- (2) Unirradiated Scrap at Sites With Processing Capability.
- (a) Retention Determination. Field offices responsible for programs that generate unusable nuclear material scrap and residues are responsible for determining if the material should be retained for future processing or discarded. The decision should be based on discard methodology or guidance issued by the Office of Nuclear Weapons Management. If assistance is needed, the appropriate Central Scrap Management Office or the Office of Nuclear Weapons Management should be contacted. If the material is to be retained and it will not be processed onsite to a product form within a 2-year period, the field office shall assign it an "E" project number. (Scrap that is expected to be processed within the 2-year period retains its project number and shall be handled according to procedures established by the cognizant field office.) The "E" project identification is retained, irrespective of location of the material, until the material is actually recovered. For material to be discarded, disposal must be coordinated with the Office of Environmental Restoration and Waste Management. Discarded material retained in inventory under the program management control of the Office of Environmental Restoration and Waste Management shall be assigned an "I" project number. Discarded material disposed of as waste shall be removed from the accountability system in accordance with DOE 5633.A, 5633.4 and 5633.5.

(b) Processing Arrangements.

- 1 Onsite Processing. The field office responsible for the contractor that generates and processes the "E" project material shall have the primary responsibility for arranging and scheduling the processing of the material. Such activities shall be coordinated with the Office of Nuclear Weapons Management.
- 2 Offsite Processing. It may be desirable to process "E" project material at a site other than where generated. In such instances, the field office responsible for establishing the "E" project should contact the appropriate Central Scrap Management Office for materials disposition arrangements. Central Scrap Management Office responsibilities for this material will be similar to that under paragraph 2b(1)(c), "Central Scrap Management Office Activities."

- (c) Processing "E" Project Material. The field office responsible for the contractor that processes the "E" project materials to an acceptable product form shall assign appropriate "supply" project numbers to the product. The use of supply project numbers must be approved in advance by the Office of Nuclear Weapons Management.

(3) Unusable Irradiated Nuclear Material

- (a) Project Identification. Field offices responsible for contractors that generate unusable irradiated nuclear material are responsible for assigning "E" project numbers to the material unless it is scheduled for onsite processing to a product form within 2 years (in which case the material retains its project number) or the material is transferred to the Office of Environmental Restoration and Waste Management. Nuclear material assigned an "E" project number will retain that identification until the material is recovered or transferred to the Office of Environmental Restoration and Waste Management.
- (b) Processing "E" Project Materials. The field office responsible for the contractor that processes irradiated nuclear material with an "E" project number shall assign an appropriate supply project number to the recovered material if it is processed to an acceptable product form. The use of supply project numbers shall be approved in advance by the Office of Nuclear Weapons Management.

- (c) Transfer of Nuclear Material to the Office of Environmental Restoration and Waste Management. Unusable irradiated nuclear material having "E" project identification that is transferred to the Office of Environmental Restoration and Waste Management for program management shall be redesignated with an "I" project number. The field office responsible for the site holding the material is responsible for establishing and reporting the "I" project number. If needed, the Office of Nuclear Weapons Management should be contacted for assistance in establishing the project number.
 - (d) Transfer of Sites to the Office of Environmental Restoration and Waste Management for Management Control. When sites are transferred to the Office of Environmental Restoration and Waste Management for management control, any unusable irradiated nuclear material existing at the sites shall be redesignated with an "I" project number if there are no plans to recover the nuclear material. The procedures for establishing the "I" project numbers are the same as paragraph (3)(c) above. (See "I" Material definition.)
- (4) Unirradiated Nuclear Material at Sites Controlled by the Office of Environmental Restoration and Waste Management. Unirradiated nuclear material at sites controlled by the Office of Environmental Restoration and Waste Management (material categorized as waste not included) shall be identified by an appropriate project number.
- (a) Unusable nuclear materials under the program management of the Office of Environmental Restoration and Waste Management, for which no recovery processing is planned (except that which is incidental to stabilization), shall be identified with an "I" project number. The field office responsible for the site controlled by the Office of Environmental Restoration and Waste Management shall establish the "I" project number. If needed, the Office of Nuclear Weapons Management should be contacted for assistance in establishing the project number.
 - (b) Other nuclear materials (such as scrap and residues held for future recovery onsite or elsewhere and other forms of material held for future recovery and/or use) shall be identified with appropriate project numbers established by the Office of Nuclear Weapons Management. The field office responsible for the site controlled by the Office of Environmental Restoration and Waste Management should contact the Office of Nuclear Weapons Management to establish these project numbers.

- c. Reserves. The Office of Nuclear Weapons Management is responsible for managing the nuclear material reserves. The primary source of the nuclear material for these reserves is retired nuclear warheads returned to DOE by DOD. However, other inactive nuclear materials (both usable and unusable) in DOE inventories may also be designated reserves. The Office of Nuclear Weapons Management will establish specific project numbers to identify nuclear materials in the reserve category.

3. RESPONSIBILITIES.

a. Field Offices.

- (1) Assign "M" project numbers to usable inactive nuclear materials (coordination with the Office of Nuclear Weapons Management).
- (2) Issue Inactive Materials Bulletins to advertise the availability of usable inactive nuclear materials.
- (3) Assist contractors in determining if unusable nuclear material scrap and residues generated at their sites should be retained or discarded. (Based on discard methodology or guidance provided by the Office of Nuclear Weapons Management and/or guidance from the appropriate Central Scrap Management Office.)
- (4) Assign "E" project numbers to unusable inactive nuclear material scrap and residues, and irradiated nuclear fuel and targets.
- (5) Assign "supply" project numbers to nuclear material product forms obtained from processing "E" and, if applicable, "M" project materials (coordination with the Office of Nuclear Weapons Management).
- (6) Assign "I" project numbers to unusable nuclear materials transferred to the Office of Environmental Restoration and Waste Management according to the procedures in this Order.
- (7) Fund for all costs associated with the handling, storage and characterization (if required) of nuclear material scrap and residues generated from their programs, even after such material is designated as "E" or "M" project material. This responsibility continues until the material is sent to another site for storage and/or processing and the receiving site assumes management and funding responsibility.
- (8) Fund for Central Scrap Management Office operations, if applicable.

b. Headquarters Programs.

- (1) Review nuclear material inventories assigned to their programs to ensure that continued retention is justified.
- (2) Report program changes that will result in the generation of unneeded materials (such as a reduction in funding level), to the Office of Nuclear Weapons Management and the applicable field office.
- (3) Fund for the storage, handling, characterization, packaging, and shipment of nuclear materials generated in their programs as noted in paragraph 3a(7) above.

c. Director of the Office of Nuclear Weapons Management.

- (1) Assists field offices in establishing project numbers.
- (2) Authorizes the use of "M" project numbers.
- (3) Manages "M" project nuclear materials.
- (4) Coordinates management of "E" project materials.
- (5) Coordinates disposition of usable inactive nuclear materials reported on Inactive Materials Bulletins.
- (6) Investigates the uses of inactive nuclear materials by other Government agencies and/or sale to industry.
- (7) Issues nuclear material values, methodology, and guidance to determine the merits of recovering, continuing to store, or discarding nuclear materials.
- (8) Determines if scrap containing nuclear material is to be discarded, if requested by the field offices or DOE management. These requests should be limited to special cases where discard limits have not been established or an exemption from established discard limits is being requested.
- (9) Manages nuclear material reserves, as defined by Presidential directive, law, or strategic management plans.

d. Central Scrap Management Offices. Arrange for the transfer of "E" project nuclear material scrap and residues to other sites, and schedule the processing of such materials to a product form (coordination with the Office of Nuclear Weapons Management).

e. Environmental Restoration and Waste Management Program. Manages "I" project materials and other nuclear materials designated for the Office of Environmental Restoration and Waste Management program management.

CHAPTER VII

MATERIALS MANAGEMENT REVIEWS AND APPRAISALS

1. GENERAL. Basic to any program is the need to systematically review and evaluate the status and performance of the program. The objective is to determine the quality and effectiveness of the program, the adequacy and effectiveness of established policies and procedures, and identify the actions necessary to improve the program. In planning and conducting nuclear materials management reviews and appraisals, it should be recognized that the success of these activities depends on the mutual cooperation and understanding of both the appraiser and the appraised of the purpose, objective, and scope of the appraisal.
2. HEADQUARTERS REVIEWS.
 - a. Applicability. Field offices responsible for nuclear materials management programs and activities are subject to periodic Headquarters reviews by the Office of Nuclear Weapons Management.
 - b. Objective. The objective of the Headquarters review of the field office materials management program is to evaluate the effectiveness of the office's materials management program and to identify functions and activities that will strengthen the program.
 - c. Frequency. The frequency of Headquarters reviews is based on the value of nuclear materials for which the field office has programmatic responsibility and the importance of related materials management activities. The minimum appraisal frequency for field offices is as follows:

<u>Annual</u>	<u>Biennial</u>
Albuquerque	Chicago
Oak Ridge	Idaho
Rocky Flats	Richland
Savannah River	Oakland
 - d. Content. Field office reviews conducted by Headquarters shall assess the effectiveness in carrying out the requirements of the Order.
 - e. Review Format. The Office of Nuclear Weapons Management will provide the field office with an agenda of presentations and discussions during the review. The on-site review is expected to be completed in 1 to 2 days.

- f. Review Reports. The Office of Nuclear Weapons Management shall issue a written report appraising the field office materials management program within 8 weeks after visiting the field office.

3. FIELD OFFICE APPRAISALS.

- a. Applicability. Contractors having DOE-supplied nuclear materials are subject to materials management appraisals by the cognizant field office, consistent with applicable contract provisions.
- b. Objectives. Objectives of the contractor materials management appraisal are to:
- (1) Ensure that the contractor staff understands the objectives and goals of the materials management program and has implemented applicable requirements of this Order.
 - (2) Determine if the contractor is optimizing the use of nuclear materials and is promptly identifying unneeded materials.
 - (3) Determine the effectiveness of the contractor's nuclear materials management program.
 - (4) Verify that information contained in contractor-prepared nuclear materials management reports is accurate.
- c. Frequency. The frequency of field office appraisals of contractor activities is based on the value of nuclear materials physically held by the contractor ("I" project materials are excluded). The Office of Nuclear Weapons Management will issue and periodically update unit values of nuclear materials to be used for determining contractor appraisal frequency. The following are the value criteria for contractor appraisal frequency.

APPRAISAL FREQUENCY

<u>Value of Materials</u> <u>\$ Millions</u>	<u>Minimum Frequency</u>
0 < 10	Field office discretion
10 < 100	2 Years
> 100	1 Year

- d. Content. Field office appraisals of contractor materials management activities should concentrate on the effectiveness of contractor programs and procedures for managing nuclear materials. Specific activities should include, but not be limited to, the following evaluations:

- (1) Material quantities in inventory and on order with respect to minimum inventory levels required to meet program objectives (see Chapter V for guidance).
- (2) Contractor programs, procedures, and practices for managing nuclear materials.
- (3) Forecasts as to accuracy, thoroughness, completeness, usefulness, and compatibility with program plans and budgets.
- (4) Contractor use of materials in the quantities and for the projects specifically authorized.
- (5) Procedures for identifying, reporting, and managing inactive materials and scrap.
- (6) Nuclear materials allotment control system, where applicable.
- (7) Adequacy of information provided by contractors responsible for developing materials management plans.
- (8) Adequacy of materials management procedures in contracts and subcontracts issued by the contractor.
- (9) Verification of the materials inventory composition/status reported by the contractors in the annual inventory assessment report.
- (10) Contractor responsiveness to routine and special field office requests for materials management information.
- (11) Analytical studies performed by the contractor related to materials management, if applicable.

e. Appraisal Reports.

- (1) Content. The contractor performance appraisal report should contain adequate coverage of all materials management aspects pertinent to the contractor's operation. Statements of findings and recommendations in the report should be supported. The materials management appraisal may be conducted as part of a comprehensive appraisal that includes other functions. The report on materials management, however, shall be a separate document or at least a separate section of a comprehensive contractor appraisal report. The report should logically present the findings of the appraisal in a format such as: Scope of Review, Conclusions, Main Findings, Recommended Actions, Follow-up Plans, and Supporting Data.

- (2) Timing. Field offices shall issue a formal report appraising contractor materials management within 8 weeks after the appraisal is completed. The reports of contractor appraisals generally shall be provided to the contractor, the Office of Nuclear Weapons Management, and the applicable Headquarters program organization.
- (3) Special Situations. Appraisals related to non-management and operating contractors and subcontractors (see Chapter VIII) may require special treatment. Appraisals sent to those contractors may be limited to violations of materials management provisions in the contract. However, full appraisal reports containing other pertinent information and analyses should be sent to the Office of Nuclear Weapons Management and the appropriate Headquarters programs.

CHAPTER VIII

MISCELLANEOUS ACTIVITIES

1. CONTRACTOR PARTICIPATION IN NUCLEAR MATERIALS MANAGEMENT.

- a. General. In view of the high intrinsic value, strategic importance, and environment, safety, and health considerations, it is necessary that nuclear materials be effectively managed. The degree of responsibility for managing nuclear materials held by DOE contractors or subcontractors is related to the type of contract and the specific contract provisions applicable to nuclear materials management.
- b. Management and Operating Contracts. Most of the inventories of nuclear materials are held by contractors under Management and Operating contracts. Generally, these contractors operate DOE-owned facilities involved in materials production, weapons production, and research and development activities. One mechanism for attaining effective materials management in such contracts is through administrative procedures identified either in the contract itself or in related DOE instructions and requirements imposed by the contract. Through these means, Management and Operating contractors should be made aware of the need to manage nuclear materials effectively and to participate with the Department in programs and studies to achieve that objective.
- c. Non-Management and Operating Contracts. Basic provisions covering materials management for DOE-owned nuclear materials shall be included in these contracts and subcontracts.

2. PROJECT NUMBERS.

- a. General. Project numbers are 10-character alphanumeric designations used to identify nuclear materials for tasks or phases of work assigned to a field office by Headquarters programs. Project numbers generally are structured to coincide with the DOE Budget and Reporting Classification System. Thus, they provide a link between nuclear material quantities and related financial data. The first character of the project number identifies the field office responsible for the activity under which the nuclear materials will be held or indicates a special categorization/assignment for the inventory. An assigned project number remains the same regardless of the physical location of the nuclear material. The following are the first character codes currently in use:

FIELD OFFICE PROJECT IDENTIFICATION

<u>Code</u>	<u>Field Office</u>
A ¹	Albuquerque
C	Chicago
D	Savannah River
F ²	Oak Ridge
H	Richland
J	Idaho
K	Schenectady
L	Oakland
N	Nevada
P	Pittsburgh

<u>Code</u>	<u>Special Category</u>
B	Uranium Enrichment Activity
E	Materials Management Program ("E" project material)
I	Environmental Restoration and Waste Management ("I" project material)
M	Materials Management Program ("M" project material)
Q	Safeguards and Security
R	International Programs
Y	Domestic Licensees

¹ "A" is also used for the Rocky Flats office projects.

² "F" is also used for the Fernald office projects.

b. Responsibilities.

(1) Office of Nuclear Weapons Management.

- (a) Assist the field offices in developing project numbers, if requested.
- (b) Review and approve all requests for "M" project numbers and assign them and other special "supply" project numbers, as required.
- (c) Establish project numbers for nuclear material reserves, as required.

(2) Field Office.

- (a) Inform the Nuclear Materials Management and Safeguards System program, in writing, of new projects or changes to existing projects.
- (b) Perform annual reviews of the project numbers to assure consistency with the DOE Budget and Reporting Classification System.

(3) Nuclear Materials Management and Safeguards System Program.

- (a) Maintain a master list of project numbers and titles and make appropriate changes to the list as requested by the Office of Nuclear Weapons Management, Headquarters programs, or the field offices.
- (b) Prepare and distribute the "DOE Project Number - Title Index" (Nuclear Materials Management and Safeguards System Report T-141) annually or more frequently when major changes occur.

c. Project Number - Title Index. The DOE Project Number - Title Index contains the following information:

- (1) Previous project number.
- (2) Project number.
- (3) Project title (due to computer limitations, only 40 spaces are allowed).
- (4) Classification of project:
 - (a) Number,
 - (b) Title, and
 - (c) Quantity.

The DOE Project Number - Title Index is not a classification guide. Classification information is included in the Index primarily to assist in the classification marking of reports that contain project numbers or project titles and related nuclear materials quantity data. Proper classification of the information must be based on appropriate classification guides.

(5) Allotment code.

- (a) Supply Project
- (b) User Project
- (c) Special Project.

(6) Programmatic reporting identification symbol.

3. COMPOSITION OF ENDING INVENTORY.

a. General. A set of 3-digit codes has been established for routinely reporting inventories of nuclear materials to the Nuclear Materials Management and Safeguards System centralized data base. The coding allows inventories to be quantified as to chemical or physical composition and/or processing status. This data base is used to prepare a variety of reports used for management of nuclear materials and other applications.

b. Responsibilities.

(1) Office of Nuclear Weapons Management.

- (a) Initiate the development of appropriate composition of ending inventory codes and matrices.
- (b) Review all requests for additions or deletions to the existing coding matrix and notify the Nuclear Materials Management and Safeguards System program accordingly.
- (c) Advise the American National Standards Institute concerning the continuing applicability of a standardized coding for nuclear material scrap.

(2) Field Offices.

- (a) Assist the Office of Nuclear Weapons Management in the development of new codes or in the adjustment of existing codes.
- (b) Ensure that contractors accurately assign composition of ending inventory codes to existing inventories and report such data to the Nuclear Materials Management and Safeguards System program.

(3) Nuclear Materials Management and Safeguards System Program.

Maintain and issue the Composition of Ending Inventory index contained in Nuclear Materials Management and Safeguards System Report 1-17, Inventory Data Categories and Reporting Format.

4. RESEARCH MATERIALS. Many U.S. colleges/universities and other Government agencies possess DOE-owned nuclear materials obtained under DOE contractual or loan/lease agreements. To facilitate materials management coordination and oversight under these agreements, the following DOE field office responsibilities are identified:

<u>Material Type</u>	<u>Financial and Administration Responsibility^{1 & 2}</u>	<u>Central Scrap Management Office²</u>	<u>Receipt, Storage and Processing²</u>
Enriched Uranium			
- Universities ³	ID ⁴	OR	ID/SR/OR ⁵
- Others	OR	OR	ID/SR/OR ⁵
Normal Uranium	OR	OR	⁶
Depleted Uranium	OR	OR	
Uranium-233	OR	OR	OR
Plutonium ⁷	SR	SR	SR/AL ⁸
Americium-241	AL	AL	AL
Californium-252	OR	OR	OR
Neptunium-237	SR	SR	SR
Tritium	SR	SR	SR
Heavy Water (D ₂ O)	SR	SR	SR
Thorium	SR	OR	OR
Enriched Lithium	OR	OR	OR

¹ Financial records of assigned nuclear materials and oversight of applicable nuclear materials management activities (forecasting and coordinating withdrawals and returns, inventory reporting, assessments, etc.)

² ID is Idaho Operations Office; OR is Oak Ridge Operations Office; AL is Albuquerque Operations Office; and SR is Savannah River Operations Office.

³ Includes plutonium that may be produced by transmutation in reactor fuel.

⁴ Enriched uranium university reactor fuels only.

⁵ ID and SR-irradiated fuel; OR-irradiated fuel.

⁶ No current assignment.

⁷ Includes plutonium, Pu-238 and Pu-242.

⁸ Los Alamos National Laboratory for plutonium-beryllium sources only.

Figure VIII-1
DOE-Owned Nuclear Material Under Loan or Lease Agreements

The field offices that have financial and administrative responsibilities are expected to maintain copies of the applicable agreements and notify the agreement-holders of the DOE field office contacts. Field offices assigned as Central Scrap Management Offices have the responsibility for determining whether nuclear material to be returned to DOE is recoverable or to be handled as waste. Field offices assigned the responsibility for receipt and processing are expected to provide storage and/or processing capability for recoverable material returned to DOE.

5. NUCLEAR MATERIALS MANAGEMENT CONTROL. DOE subjects nuclear materials to varying degrees of management control. Figure VIII-2 lists the nuclear materials subject to materials management control and the functions of the materials management program which apply to them.

Materials	Inventory Reporting	Requirements Forecasts	Materials Management		Inventory Assessment	Appraisal
			Plan Coverage	Allotment Control		
Enriched U	x	x	x	x	x	x
Plutonium	x	x	x	x	x	x
U-233	x	x	x	x	x	x
Heavy Water	x	x	x	x	x	x
Pu-238	x	x	x	x	x	x
Tritium	x	x	x	x		x
Normal U	x	x	x	x	x	x
Depleted U	x	x			x	x
Pu-242	x	x			x	x
*Am-243	x	x			x	x
*Curium	x	x			x	x
*Am-241	x				x	x
*Bk-249	x				x	x
*Cf-252	x				x	x
Li-6	x				x	x
Np-237	x	x	x		x	x
Thorium	x				x	x

*The management of inventories and distribution of these materials is the responsibility of the Office of Isotope Production and Distribution Program, Office of Nuclear Energy.

Figure VIII-2
Applicable Materials Management Functions

6. CALENDAR OF EVENTS. The following is a calendar of events for field office and Headquarters actions identified in this Order:

Month/Day

- 1-15 Field office inventory assessment reports for 9-30 are due to the Office of Nuclear Weapons Management and Headquarters program organizations.
- 1-31 Headquarters program organization comments on field office inventory assessment reports are due to the Office of Nuclear Weapons Management.
- 2-15 Field office nuclear material requirements forecasts are due to Headquarters program organizations and the Office of Nuclear Weapons Management.
- 3-1 Headquarters program organization approved forecasts are due to the Office of Nuclear Weapons Management.
- 4-1 Nuclear materials withdrawals and returns forecast summaries (not including weapon production) are sent by the Office of Nuclear Weapons Management to applicable field offices for use in preparing their Materials Management Plan.
- 4-1 The Office of Nuclear Weapons Management provides field offices with the planning assumptions for preparation of the field Materials Management Plan.
- 4-15 Nuclear materials withdrawals and returns forecasts for weapons production are provided by the Office of Nuclear Weapons Management to applicable field offices.
- 6-1 Field office allotment status reports covering the first two quarters of the fiscal year are due to the Office of Nuclear Weapons Management.
- 6-15 Field office Materials Management Plans are due to Headquarters.
- 9-30 The Office of Nuclear Weapons Management issues nuclear materials allotments to each field office.
- 9-30 The Office of Nuclear Weapons Management issues DOE Materials Management Plan.
- 11-1 Headquarters program organizations provide guidance to field offices for preparation of their nuclear material requirements forecasts.
- 12-1 Field office allotment status reports for the prior fiscal year are due to the Office of Nuclear Weapons Management.