

(2) Collusion between two individuals, one or both of whom have authorized access to SNM.

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§ 74.43 Internal controls, inventory, and records.

(a) *General.* Licensees subject to § 74.41 shall maintain the internal control, inventory, and recordkeeping capabilities required in paragraphs (b), (c), and (d) of this section.

(b) Internal controls.

(1) A management structure shall be established, documented, and maintained that assures:

(i) Clear overall responsibility for material control and accounting (MC&A) functions;

(ii) Independence from production and manufacturing responsibilities; and

(iii) Separation of key responsibilities.

(2) The overall planning, coordination, and administration of the MC&A functions for special nuclear material (SNM) shall be vested in a single individual at an organizational level sufficient to assure independence of action and objectiveness of decisions.

(3) The licensee shall provide for the adequate review, approval, and use of written MC&A procedures that are identified in the approved FNMC plan as being critical to the effectiveness of the described system.

(4) The licensee shall assure that personnel who work in key positions where mistakes could degrade the effectiveness of the MC&A system are trained to maintain a high level of safeguards awareness and are qualified to perform their duties and/or responsibilities.

(5) The licensee shall establish, document, and maintain an item control program that:

(i) Provides current knowledge of SNM items with respect to identity, element and isotope content, and stored location; and

(ii) Assures that SNM items are stored and handled, or subsequently measured, in a manner such that unauthorized removal of 200 grams or more of plutonium or uranium-233 or 300 grams or more of uranium-235, as one or more whole items and/or as SNM re-

moved from containers, will be detected.

(6) Exempted from the requirements of paragraph (b)(5) of this section are items that exist for less than 14 calendar days and licensee-identified items each containing less than 200 grams of plutonium or uranium-233 or 300 grams or more of uranium-235 up to a cumulative total of one formula kilogram of strategic SNM or 17 kilograms of uranium-235 contained in uranium enriched to 10.00 percent or more but less than 20.00 percent in the uranium-235 isotope.

(7) Conduct and document shipper-receiver comparisons for all SNM receipts, both on an individual batch basis and a total shipment basis, and ensure that any shipper-receiver difference that is statistically significant and exceeds twice the estimated standard deviation of the difference estimator and 200 grams of plutonium or uranium-233 or 300 grams of uranium-235 is investigated and resolved; and

(8) Perform independent assessments of the total MC&A system, at intervals not to exceed 18 months, that assess the performance of the system, review its effectiveness, and document management's action on prior assessment recommendations and identified deficiencies. These assessments must include a review and evaluation of any contractor who performs SNM accountability measurements for the licensee.

(c) *Inventory control and physical inventories.* The licensee shall:

(1) Provide unique identification for each item on inventory and maintain inventory records showing the identity, location, and quantity of SNM for these items;

(2) Document all transfers of SNM between designated internal control areas within the licensee's site;

(3) Maintain and follow procedures for tamper-safing of containers or vaults containing SNM, if tamper-safe seals are to be used for assuring the validity of prior measurements, which include control of access to, and distribution of, unused seals and to records showing the date and time of seal application;

(4) Maintain and follow procedures for confirming the validity of prior measurements associated with

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unencapsulated and unsealed items on ending inventory;

(5) Maintain and follow physical inventory procedures to assure that:

(i) The quantity of SNM associated with each item on ending inventory is a measured value;

(ii) Each item on ending inventory is listed and identified to assure that all items are listed and no item is listed more than once;

(iii) Cutoff procedures for transfers and processing are established so that all quantities are inventoried and none are inventoried more than once;

(iv) Cutoff procedures for records and reports are established so that only transfers for the inventory and material balance interval are included in the records for the material balance period in question;

(v) Upon completion of the physical inventory, all book and inventory records, for total plant and individual internal control areas, are reconciled with and adjusted to the results of the physical inventory; and

(vi) Measurements will be performed for element and isotope content on all quantities of SNM not previously measured.

(6) Conduct physical inventories according to written instructions for each physical inventory which:

(i) Assign inventory duties and responsibilities;

(ii) Specify the extent to which each internal control area and process is to be shut down, cleaned out, and/or remain static;

(iii) Identify the basis for accepting previously made measurements and their limits of error; and

(iv) Designate measurements to be made for physical inventory purposes and the procedures for making these measurements.

(7) Conduct physical inventories of all possessed SNM for each plant at intervals not to exceed 9 calendar months; and

(8) Within 60 calendar days after the start of each physical inventory required by paragraph (c)(7) of this section:

(i) Calculate, for the material balance period terminated by the physical inventory, the inventory difference (ID) and its associated standard error

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of inventory difference (SEID) for both element and isotope;

(ii) Reconcile and adjust the book record of quantity of element and isotope content, as appropriate, to the results of the physical inventory; and

(iii) Investigate and report to the Director, Office of Nuclear Material Safety and Safeguards, any occurrence of SEID exceeding 0.125 percent of active inventory, and any occurrence of ID exceeding both three times SEID and 200 grams of plutonium or uranium-233 or 300 grams of uranium-235 contained in high enriched uranium, or 9000 grams of uranium-235 contained in low enriched uranium. The report shall include a statement of the probable reasons for the excessive inventory difference and the corrective actions taken or planned.

(d) *Recordkeeping.* The licensee shall:

(1) Maintain records of the receipt, shipment, disposal, and current inventory associated with all possessed SNM;

(2) Maintain records of the quantities of SNM added to and removed from process;

(3) Maintain records of all shipper-receiver evaluations associated with SNM receipts;

(4) Retain each record pertaining to receipt and disposal of SNM until the Commission terminates the license; and

(5) Establish records that will demonstrate that the performance objectives of § 74.41(a)(1) through (4), the system capabilities of paragraphs (b) and (c) of this section and § 74.45(b) and (c) have been met, and maintain these records in an auditable form, available for inspection, for at least 3 years, unless a longer retention time is specified by § 74.19(b), part 75 of this chapter, or by a specific license condition.

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§ 74.45 Measurements and measurement control.

(a) *General.* Licensees subject to § 74.41 of this part shall establish and maintain the measurement and measurement control capabilities required by paragraphs (b) and (c) of this section.

(b) *Measurements.* The licensee shall: