any MC&A alarm that remains unresolved beyond the time period specified for its resolution in the licensee's fundamental nuclear material control plan. Notification must occur within 24 hours except when a holiday or weekend intervenes in which case the notification must occur on the next scheduled workday. The licensee may consider an alarm to be resolved if:

(1) Clerical or computational error is found that clearly was the cause for the alarm; or

(2) An assignable cause for the alarm is identified or it is substantiated that no material loss has occurred.

(d) If a material loss has occurred, the licensee shall determine the amount of SSNM lost and take corrective action to:

(1) Return out-of-place SSNM, if possible, to its appropriate place;

(2) Update and correct associated records; and

(3) Modify the MC&A system, if appropriate, to prevent similar future occurrences.

(e) The licensee shall provide an ability to rapidly assess the validity of alleged thefts.

(f) If an abrupt loss detection estimate exceeds five formula kilograms of SSNM:

(1) Material processing operations related to the alarm must be suspended until completion of planned alarm resolution activities, unless the suspension of operations will adversely affect the ability to resolve the alarm. Operation of continuous processes may continue for 24 hours from the time of the occurrence of the alarm during which time checks shall be made for mistakes in records or calculations that could have caused the alarm.

(2) Within 24 hours, the licensee shall notify the Licensing Branch, Division of Industrial and Medical Nuclear Safety, Office of Nuclear Material Safety and Safeguards by telephone on (301) 415–7231 that an MC&A alarm resolution procedure has been initiated.

[52 FR 10040, Mar. 30, 1987, as amended at 54 FR 6877, Feb. 15, 1989; 55 FR 5979, Feb. 21, 1990; 60 FR 24553, May 9, 1995]

§ 74.59 Quality assurance and accounting requirements.

(a) Licensees subject to § 74.51 shall provide the quality assurance and accounting capabilities described in paragraphs (b) through (h) of this section.

(b) *Management structure.* The licensee shall:

(1) Establish and maintain a management structure that includes clear overall responsibility for planning, coordinating, and administering material control and accounting functions, independence of material control and accounting functions from production responsibilities, and separation of functions such that the activities of one individual or organizational unit serve as controls over and checks of the activities of others; and

(2) Provide for the adequate review, approval, and use of those material control and accounting procedures that are identified in the approved FNMC plan as being critical to the effectiveness of the described system.

(c) *Personnel qualification and training.* The licensee shall assure that personnel who work in key positions where mistakes could degrade the effectiveness of the material control and accounting system are trained to maintain a high level of safeguards awareness and are qualified to perform their duties and/or responsibilities.

(d) *Measurements.* The licensee shall establish and maintain a system of measurements sufficient to:

(1) Substantiate the plutonium element and uranium element and fissile isotope content of all SSNM received, produced, transferred between areas of custodial responsibility, or inventory, or shipped, discarded, or otherwise removed from inventory;

(2) Enable the estimation of the standard deviation associated with each measured quantity; and

(3) Provide the data necessary for performance of the material control tests required by § 74.53(b).

(e) *Measurement control.* The licensee shall assure that the quality of SSNM measurement systems and material

processing practices is continually controlled to a level of effectiveness sufficient to satisfy the capabilities required for detection, response, and accounting. To achieve this objective the licensee shall:

(1) Perform engineering analyses and evaluations of the design, installation, preoperational tests, calibration, and operation of all measurement systems to be used for MC&A purposes;

(2) Perform process and engineering tests using well characterized materials to establish or to verify the applicability of existing procedures for mixing and sampling SSNM and maintaining sample integrity during transport and storage. Tests must be repeated at least every three years, at any time there is a process modification that alters the physical or chemical composition of the SSNM, or whenever there is a change in the sampling technique or equipment; and

(3) Generate current data on the performance of measurement processes, including, as appropriate, values for bias corrections, uncertainties on calibration factors, and random error standard deviations. The program must include:

(i) The onging use of standards for calibration and control of all applicable measurement systems. Calibrations must be repeated whenever any change in a measurement system occurs which has the potential to affect a measurement result or when program data, generated by tests performed at a predetermined frequency, indicate a need for recalibration. Calibrations and tests must be based on standards with traceability to national standards or nationally accepted measurement systems; and

(ii) A system of control measurements to provide current data for the estimation of the standard deviations that are significant contributors to the measurement uncertainties associated with shipper/receiver differences, inventory differences, and process differences.

(4) Utilize the data generated during the current material balance period for the estimation of the standard error of the inventory difference (SEID) and the standard error of the process differences. Calibration and measurement error data collected and used during immediately preceeding material balance periods may be combined with current data provided that the measurement systems are in statistical control and the combined data are utilized in characterizing the unknowns.

(5) Evaluate all program data and information to assure that measurement performance is so controlled that the SEID estimator is less than 0.1 percent of active inventory.

(6) Apply bias corrections by an appropriate procedure whereby:

(i) Bias corrections are applied to individual items if for any measurement system the relative bias estimate exceeds twice the standard deviation of its estimator, the absolute bias estimate exceeds 50 grams of SSNM when applied across all affected items, and the absolute bias estimate on an individual item basis exceeds the rounding error of affected items; and

(ii) All biases (regardless of significance) that are not applied as corrections to individual items are applied as a correction to the inventory difference.

(7) Investigate and take corrective action, as appropriate, to identify and reduce associated measurement biases when, for like material types (i.e., measured by the same measurement system), the net cumulative shipper/receiver differences accumulated over a six-month period exceed the larger of one formula kilogram or 0.1 percent of the total amount received.

(8) Establish and maintain a statistical control system designed to monitor the quality of each type of program measurement. Control limits must be established to be equivalent to levels of significance of 0.05 and 0.001. Control data exceeding the 0.05 limits must be investigated and corrective action taken in a timely manner. Whenever a single data point exceeds the 0.001 control limit, the measurement system in question must not be used for material control and accounting purposes until it has been brought into control at the 0.05 level.

(f) *Physical inventory*. The licensee shall:

(1) Except as required by part 75 of this Chapter, perform a physical inventory at least every six calendar months

and within 45 days after the start of the ending inventory:

(i) Calculate the inventory difference, estimate the standard error of the inventory difference, and investigate and report any SEID estimate of 0.1 percent or more of active inventory and any ID that exceeds three times the standard error and 200 grams of plutonium or uranium-233 or 300 grams of uranium-235;

(ii) If required to perform an investigation pursuant to paragraph (f)(1)(i) of this section, evaluate the significance of the inventory difference relative to expected performance as determined from an analysis of an appropriate sequence of historical inventory differences;

(iii) Investigate and report to the Licensing Branch, Division of Industrial and Medical Nuclear Safety, Office of Nuclear Material Safety and Safeguards and difference that exceeds three times the standard deviation determined from the sequential analysis;

(iv) Perform a reinventory if directed to do so by the Commission; and

(v) Reconcile and adjust the plant and subsidiary book records to the results of the physical inventory.

(2) Implement policies, practices, and procedures designed to ensure the quality of physical inventories. These must include:

(i) Development of procedures for tamper-safing of containers or vaults containing SSNM not in process that include adequate controls to assure the validity of assigned SSNM values;

(ii) Maintenance of records of the quantities of SSNM added to and removed from process;

(iii) Requirements for signed documentation of all SSNM transfers between areas with different custodial responsibility that reflect all quantities of SSNM transferred;

(iv) Means for control of and accounting for internal transfer documents;

(v) Cutoff procedures for transfers and processing so that all quantities of SSNM are inventoried and none are inventoried more than once;

(vi) Cutoff procedures for records and reports so that all transfers for the inventory and material balance interval and no others are included in the records;

(vii) Inventory procedures for sealed sources and containers or vaults containing SSNM that assure reliable identification and quantification of contained SSNM;

(viii) Inventory procedures for in-process SSNM that provide for measurement of quantities not previously measured for element and isotope, as appropriate, and remeasurement of material previously measured but whose validity has not been assured by tamper-safing or equivalent protection; and

(ix) Written instructions for conducting physical inventories that detail assignments, responsibilities, and preparation for and performance of an inventory.

(g) *Accounting*. The licensee shall establish auditable records sufficient to demonstrate that the requirements of §§ 74.53, 74.55, 74.57, and 74.59 have been met and retain those records for at least three years unless a longer retention period is required by part 75 of this Chapter.

(h) *Internal control*. The licensee shall:

(1) Establish procedures for shipping and receiving SSNM that provide for:

(i) Accurate identification and measurement of the quantities shipped and received;

(ii) Review and evaluation of shipper/receiver differences on an individual container or lot basis, as appropriate, on a shipment basis, and on a batch basis when required by part 75 of this Chapter;

(iii) Investigation and corrective action when shipper/receiver differences exceed twice the estimated standard deviation of the difference estimator and the larger of 0.5 percent of the amount of SSNM in the container, lot, or shipment, as appropriate, or 50 grams of SSNM; and

(iv) Documentation of shipper/receiver difference evaluations, investigations, and corrective actions.

(2) Establish a scrap control program that assures that:

(i) Internally generated scrap and scrap from other licensees or contractors is segregated until accountability is established; and

(ii) Any scrap measured with a standard deviation greater than five percent

of the measured amount is recovered so that the results are segregated by inventory period and received within six months of the end of the inventory period in which the scrap was generated except where it can be demonstrated that the scrap measurement uncertainty will not cause noncompliance with § 74.59(e)(5).

(3) Incorporate checks and balances in the MC&A system sufficient to control the rate of human errors in material control and accounting information.

(4) Perform independent assessments at least every 12 months that assess the performance of the MC&A system, review its effectiveness, and document management's action on prior assessment recommendations. Assessments must include an evaluation of the measurement control program of any outside contractor laboratory performing MC&A measurements for a licensee, unless the contractor is also subject to the requirements of § 74.59(e).

(5) Assign custodial responsibility in a manner that ensures that such responsibility can be effectively executed for all SSNM possessed under license.

[52 FR 10040, Mar. 30, 1987, as amended at 54 FR 6878, Feb. 15, 1989; 55 FR 5979, Feb. 21, 1990; 60 FR 24553, May 9, 1995]

Subpart F—Enforcement

§ 74.81 Inspections.

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect special nuclear material and the premises and facilities wherein special nuclear material is used, produced, or stored.

(b) Each licensee shall make available to the Commission for inspection, upon reasonable notice, records kept by the licensee pertaining to its receipt, possession, use, acquisition, import, export, or transfer of special nuclear material.

(c)(1) In the case of fuel cycle facilities where nuclear reactor fuel is fabricated or processed, each licensee shall upon request by the Director, Office of Nuclear Material Safety and Safeguards or the appropriate NRC Regional Administrator, provide rent-free office space for the exclusive use of Commission inspection personnel. Heat, air conditioning, light, electrical outlets, and janitorial services shall be furnished by each licensee. The office shall be convenient to and have full access to the facility, and shall provide the inspector both visual and acoustic privacy.

(2) For a site with a single fuel facility licensed pursuant to part 70 of this chapter, the space provided shall be adequate to accommodate a full-time inspector, a part-time secretary, and transient NRC personnel. It will be generally commensurate with other office facilities at the site. A space of 250 square feet either within the site's office complex or in an office trailer or other on-site space is suggested as a guide. For sites containing multiple fuel facilities, additional space may be requested to accommodate additional full-time inspector(s). The office space that is provided shall be subject to the approval of the Director, Office of Nuclear Material Safety and Safeguards or the appropriate NRC Regional Administrator. All furniture, supplies, and communication equipment will be furnished by the Commission.

(3) The licensee shall afford any NRC resident inspector assigned to their site, or other NRC inspectors identified by the Director of the Office of Nuclear Material Safety and Safeguards as likely to inspect the facility, immediate unfettered access, equivalent to access provided regular plant employees, following proper identification and compliance with applicable access control measures for security, radiological protection, and personal safety.

(d) At a facility using and possessing a formula quantity of strategic special nuclear material in unirradiated form, the licensee may not announce or otherwise communicate to its employees or site contractors the arrival or presence of an NRC safeguards inspector unless specifically requested to do so by the safeguards inspector.

[50 FR 7579, Feb. 25, 1985, as amended at 52 FR 31613, Aug. 21, 1987; 54 FR 6878, Feb. 15, 1989; 55 FR 5979, Feb. 21, 1990; 58 FR 29522, May 21, 1993]

§ 74.82 Tests.

Each licensee shall perform, or permit the Commission to perform, any