



Environment, Safety, Health & Assurance

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Interoffice Communication

July 31, 2012

To: Tom Wessels
Shawn Nelson

From: G. P. Jones

**Subject: 2012 Review of Ames Laboratory Materials Control and
Accountability Program**

The review of the Ames Laboratory Materials Control and Accountability Program is attached. One Level 3 finding was cited involving the use of a storage cave on the upper tier without prior authorization, and four Level 3 findings were cited involving the creation of the DOE 741 documentation necessary to move SNM waste back into the MC&A inventory system.

If you have any questions, please let me know.

2012 Review of the Ames Laboratory Materials Control and Accountability Program

Scope

This review was performed by G. P. Jones, Ames Laboratory Safeguards and Security Assistant Program Manager, at the request of Tom Wessels, Ames Laboratory Safeguards and Security Program Manager. The review was performed during the period extending from July 1, 2012, to July 31, 2012, and included:

- A review of Plan 10202.002, *Materials Control and Accountability Program Plan*,
- A review of the MC&A logbook,
- A review of material balance reports, transfer records, and inventory documents,
- Observation of applicable security measures,
- Observation of materials storage in B53 Spedding Hall,
- A review of the status of corrective actions from previous reviews in 2007 and 2009.

Background

The Ames Laboratory Materials Control and Accountability Program is applicable to source and special nuclear materials owned by the USDOE, and stored and used at Ames Laboratory. The Program implements the requirements of USDOE Manual 470.4-6, *Nuclear Material Control and Accountability*, which establishes requirements for program administration, materials accountability and material control.

The program is administered by the Ames Laboratory Health Physics group, a subgroup of the Environment, Safety, Health and Assurance Office for Ames Laboratory. Since 2000, significant inventory reductions have been made to the site MC&A inventory, with the approval and assistance of the USDOE. The Radiation Safety Officer is the lead for the Health Physics group, and serves as the Ames Laboratory's Nuclear Materials Representative (NMR).

Materials Balance Areas

Ames Laboratory uses a two-tier process for Material Balance Areas (MBAs). The primary MBA site is B53 Spedding Hall. This area is the storage location for the bulk of the accountable material in the Ames Laboratory's inventory. The area is locked 24 hours a day/7 days a week, and accessible by authorized card access and personal identification number entry only. The door is monitored by two security systems, Simplex and C-Cure 9000, with alarms monitored by Plant Protection Section. Three individuals (all members of Health Physics Group) have access to the room, and an access key is kept in a sealed ampoule in Plant Protection Section for emergency access. Entry into/exit out of the area requires radio communication with Plant Protection Section, or a response by the local law enforcement agency is initiated.

B53 Spedding Hall is currently the sole Material Balance Area for Ames Laboratory, with Michael McGuigan serving as the Nuclear Materials Representative and Custodian.

Results

I conducted a review of the Opportunities for Improvement that were identified in the 2007 and 2009 Program reviews. In addition, two findings from the 2009 S&S Review by the Ames Site Office were included. Three points of observation are now obsolete, due to the installation of the card reader/keypad to control room access, and removal from future reviews is recommended.

Green denotes a satisfactory finding/observation, yellow indicates an area in need of improvement, and red would signify an unsatisfactory finding. There were no red findings in the review.

Point of observation	Page	Date Reviewed	Finding	Comments
MC&A 2007 OFI-1a (update 10202.002 before July 2009 review)	n/a	07-31-12	Green	Rev 7 done 11-01-11
MC&A 2007 OFI-1b (add Importance Rating of PP; define)	n/a	07-31-12	Green	observation, Plan 10202.002 Rev 7
MC&A 2007 OFI-2 (5+ years' worth of ALCATS reminders)	n/a	07-31-12	Green	observed ALCATS entries
MC&A 2007 OFI-3 (10202.043 MC&A Checklist filed for each action)	n/a	07-31-12	Green	observed all pertinent docs- all okay
MC&A 2007 OFI-4 (database used; separate entries for MC&A and Rad Mat'l)	n/a	07-31-12	Green	found Cs-57 in MC&A file- it was moved
MC&A 2007 OFI-5 (Scales Calibration booklet up-to-date)	n/a	07-31-12	Green	reviewed scale log and logbook for entries
MC&A 2007 OFI-6 (MC&A Logbook up-to-date, contains: nuc. Mat'l transfer form #s; rad mat lot #s; consistent weights or explain; details.	n/a	07-31-12	Green	Logbook entries satisfactory
MC&A 2007 OFI-7 (Keys in ampoules in PPS)	n/a	07-31-12	Green	obsolete observation- card reader/key entry with double alarm systems now
MC&A 2007 OFI-9 annual inventory "satisfactory"; memo to file of who, how, when, results.	n/a	07-31-12	Green	2012 memo observed
MC&A 2007 OFI-9 Historical records orderly; files/file drawers labeled clearly)	n/a	07-31-12	Green	observation
MC&A 2007 OFI-10 (MC&A materials not in top row of caves)	n/a	07-31-12	Yellow	current level of stored mat'l necessitated use of one upper cave- should correct when snm waste re-introduced to inventory
Inventory below DOE O474.2 thresholds	2	07-31-12	Green	Observed qtrly NMMS reports
Category IV Attractiveness level E facility (confirmed) pg 2 "Scope"	2	07-31-12	Green	observation, Plan 10202.002 Rev 7
inventoried once each year	5	07-31-12	Green	observation
1 person in each MBA is Nuc. Matls Custodian	5	07-31-12	Green	currently 1 MBA; B53 SPH
Materials Balance Area Inventory and Report every 2yrs	5	07-31-12	Green	observed 2011 documents; see above
NMC signs and dates MBAIR, returns it to NMR	5	07-31-12	Green	observed 2011 documents; see above
Quarterly Material Balance Report to S&S	5	07-31-12	Green	observed CQ4-11, CQ1-12 & CQ2-12
separate DOE/NRC form #742 for each type of nuc. matl	5	07-31-12	Green	observed CQ2-12 report
entry should be made in the MC&A Log book, for Qtrly Reports	5	07-31-12	Green	observed all pertinent docs- all okay
memo to file prepared for each quarter's reporting	5	07-31-12	Green	observed CQ4-11, CQ1-12 & CQ2-12
Composition of Ending Inventory Report (COEI) quarterly	5	07-31-12	Green	observed CQ4-11, CQ1-12 & CQ2-12
DOE/NRC Form #741 if shipped/received	6	07-31-12	Yellow	discovered MC&A waste not acceptable to vendor- currently working on 741 form- reviewed with ANL peer, consulting w/NMMS analyst before submittal.
copies of transfer docs. maintained in B53 SPH	7	07-31-12	Green	followed HP-434 crystal shipping docs
B53 is equipped with a limited access keyed lock	7	07-31-12	Green	observed at B53 SPH
alarmed to the Plant Protection Section	7	07-31-12	Green	observed in 34 TASF
Health Physics staff only personnel w/keys	7	07-31-12	Green	obsolete observation- card reader/key entry with double alarm systems now
keys are encapsulated in glass in PPS	7	07-31-12	Green	obsolete observation- card reader/key entry with double alarm systems now
scales and balances are calibrated annually	7	07-31-12	Green	reviewed scales log
MBA to MBA transfers equal docs of other transfers, NMR involved	7	07-31-12	Green	followed HP-434 crystal shipping docs
shipments from MBA to NMR to off-site	8	07-31-12	Green	followed HP-434 crystal shipping docs
edit and improve usage of MC&A Checklist	n/a	07-31-12	Green	all sample movements documented satisfactorily
09AUG13-CH-0033-SSPS-NMCA.2-001- Ames Lab did not complete the reconciliation of the July 23rd, 2009 physical inventory within fifteen days. (DOE M 470.4-6, Chapter II, 3.a.(4) and Chapter, II, 2a)	n/a	07-31-12	Yellow	discovered MC&A waste not acceptable to vendor- currently working on 741 form- reviewed with ANL peer, consulting w/NMMS analyst before submittal.
NMCA-1 Ames Lab should review and clarify policies and procedures for designating items in the laboratory inventory database and updating inventory values. At present, use of materials to create smaller items or samples is not being recorded in the inventory database	n/a	07-31-12	Green	all samples currently in B53 SPH MBA. Aliquot process numbering established in Zamzow sampling process, as well.
11AUG18-CH-0033-SSPS-NMCA.2-001 – Transaction CAK-CAK 0901 did not accurately reflect the inventory adjustment and was not included in the September 30, 2009 Material Balance Report. [DOE M 470.4-6 Change 1, Chapter II, 2.c (1)]	n/a	07-31-12	Yellow	discovered MC&A waste not acceptable to vendor- currently working on 741 form- reviewed with ANL peer, consulting w/NMMS analyst before submittal.
NMCA-1 Ames Laboratory should clearly mark materials removed from inventory as waste and segregate such materials from materials under safeguards.	n/a	07-31-12	Yellow	discovered MC&A waste not acceptable to vendor- currently working on 741 form- reviewed with ANL peer, consulting w/NMMS analyst before submittal.
NMCA-2 Ames Laboratory should retain annotated inventory listing and other documentation concerning nuclear material physical inventories.	n/a	07-31-12	Green	observed file in 40 TASF file cabinet

Five citations were identified as needing improvement, but it should be noted that the issuance of the planned DOE Form 741 would allow the relocation of the SNM “waste” back to the active inventory, which will free up a Tier 2 storage cave, effectively allowing correction of all five citations simultaneously. The DOE Form 741 for the return of the SNM to active inventory has been drafted, reviewed by a peer from Argonne National Lab, and has been presented to a NMMS analyst for review prior to submittal.

Conclusions

Review of the documentation, practices and processes for the MC&A Program appear to be adequate to the need. No Level 1 or 2 Corrective Actions were discovered. Five Level 3 findings were identified, as indicated above.