AN ANALYSIS OF LANL NUCLEAR MATERIALS

CONTROL AND ACCOUNTABILITY JOBS:

FINAL REPORT

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Performed

by the

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In Support

of the

LANL MC&A Training Program

Executive Summary

At the request of the Los Alamos National Laboratory (LANL) Materials Control and Accountability (MC&A) training officer, the Cognitive Systems Engineering (CSE) Group, A-6, performed job analyses of the MC&A portions of the jobs of all workers having any involvement with, or working in the vicinity of, nuclear materials (NM) (including special nuclear materials [SNM]). We determined that there were four categories of such jobs, namely (1) custodians/alternate custodians, (2) handlers, (3) safeguards specialists, and (4) general employees. This last category includes all people who work in the vicinity of NM but who have no direct involvement with it or responsibility for it, such as electricians, plumbers, tinners, janitors, etc. In addition, we were asked to include NM managers as a category because their job activities are related to MC&A activities. During this study we determined that a detailed job analysis was not appropriate for the general employee category, so detailed analyses were performed only for the other four categories.

During the course of this study, we established that the LANL MC&A training officer did not have the primary MC&A training responsibility for two of the four employee categories, namely the safeguards specialists and the NM managers. Instead, the DOE is responsible for providing any MC&A training for the safeguards specialists; and the program directorate for NM (CM-NM) is responsible for training the NM managers, although their training should be coordinated with the MC&A training officer. However, because we already had validated task lists for both of these employee categories when this training responsibility was established, we did carry out most of the job analysis tasks for these two categories.

The requirement for this study emerged from Department of Energy (DOE) draft Order 5430.XX requiring the implementation of a safeguards and security training program. The DOE recommends that this training be performance based and designed according to the procedures recommended in their Order 5480.18, "Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities." As a result, the methodology used in this study was that recommended by the DOE in the documents supporting their Order 5480.18.

The job analysis process consists of two major steps; (1) generate a validated list of the MC&A tasks included in the job and (2) separate those tasks into two *major* categories, namely, those which require *formal* training and those which can be learned in the normal course of job activities (and, therefore, do not require *formal* training). (We call the former *train/overtrain* and the latter *no train*.) This separation is effected by having the job incumbents rate the *frequency*, *difficulty*, and *importance* of each of the tasks on the validated list. The ratings of all the respondents in each job category are then averaged and analyzed using a DOE-recommended decision tree to establish which of the tasks require *formal* training and which do not.

The two primary products of this study are (1) the detailed duty area/task lists for the four employee categories studied in detail (collected in Appendix C) and (2) the lists of *formal* task-training recommendations for each job (Tables III, VI, X, and XIII in Sec. III, below). Together they form the foundation on which the LANL MC&A training programs can be designed and developed. Unfortunately, several problems were encountered that limit the usefulness of the task-training requirement lists. These problems concerned the lack of MC&A subject-matter experts (SMEs) at the locations of many of the MC&A accounts and the large heterogeneity of the incumbent MC&A employees. The lack of resident SMEs requires that the MC&A training program for the custodian/ alternate and handler job categories includes all of the tasks on the validated task lists, instead of just that subset of tasks indicated by the decision tree analysis to require *formal training/overtraining*. (Unfortunately, this job analysis was not designed to determine which accounts have resident SMEs and which do not.) The great heterogeneity of the MC&A job activities results in questionable validity of the decision-tree analysis results and, therefore, requires that task-training-requirement validation meetings be convened to determine the training requirements of each of the tasks on the validated list instead of relying on the results of the decision-tree analysis.

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I. INTRODUCTION

A. Statement of the Problem

This study provides the Los Alamos National Laboratory (LANL) Materials Control and Account-ability (MC&A) training officer with a documented analysis of the MC&A portions of the jobs of five categories of employees who have some involvement with and/or responsibility for nuclear materials (NM), including special nuclear materials (SNM). The results of this job analysis will be used by the LANL MC&A training officer as the foundation on which to develop performance-based MC&A training to meet the requirements of draft Order 5630.XX issued by the U.S. Department of Energy (DOE). The five categories of employees with MC&A responsibilities are (1) custodians/alternate custodians (hereafter referred to as custodians), (2) handlers, (3) safeguards specialists, (4) NM managers, and (5) general employees. This last category was to include the people whose job required them to work in the vicinity of, but did not involve any direct interaction with or responsibility for, NM and/or SNM. (It has recently been decided to broaden the general employee MC&A category to include employees whose in-volvement with NM/SNM is more than that of the originally described general employee but less than that of the more typical handlers.) Thus, the general employee category will now include employees such as security inspectors (who frequently escort on-site shipments of SNM) and WX-Division engi-neers (who inspect weapons parts but are not responsible for their handling or storage). The intent is to provide these security inspectors, engineers, etc., with general MC&A awareness training that is more detailed than that provided to the employees originally included in this category. The formal definitions of these five categories, as used in this study, are presented in Appendix A.

The principal products of this job analysis are (1) a list of all the MC&A tasks included in each of the five employee categories and (2) a tabulation of the training requirements of each of the tasks de-termined using the methodology recommended by the DOE in the training accreditation guidelines as-sociated with their Order 5480.18.[1] However, in the course of this project, we determined that the task-training requirements resulting from applying the DOE-recommended procedures are not really valid for several of the MC&A job categories analyzed. As a result, the actual task-training decisions must be based on other criteria, as discussed below.

B. Background of the DOE Orders

DOE draft Order 5630.XX requires nuclear facilities working with NM/SNM to implement an MC&A training program. In addition, it required that the training program be performance-based and accreditable in accordance with their Order 5480.18, "Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities."[1] (We understand that this requirement has recently been postponed.)

The performance-based approach to training is a systematic approach to the training process involv-ing the establishment of high and uniform standards. (Performance-based training [PBT] is also referred to as the Instructional Systems Design [ISD] process or the Systems Approach to Training [SAT]). The PBT approach requires that training objectives and content be based on the specific individual tasks making up each job. In the case of DOE Order 5480.18, it also requires accreditation by an independent review board. This DOE Order is based upon well-accepted training practices used widely in the De-partment of Defense (DoD) and many industrial institutions. Generating a PBT program involves five phases.

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1   DOE Order 5480.18, "Accreditation of Performance-Based Training for Category A Reactors and Nuclear Facilities," U.S. Dept. of Energy, Office of Asst. Secy. for Environment, Safety, and Health, March 1989. (The order includes three *Training Accreditation Program [TAP] Manuals, TAP 1-, 2- and 3-88.)*

1. **Analysis:**   Determine the training requirements of the job.

2. **Design:**   Devise the training objectives in the correct format and with a content that matches the training requirements.

3. **Development:**   Generate the training materials and implementation plan for delivery of the required training.

4. **Implementation:**   Deliver the training.

5. **Evaluation:**   Evaluate both trainee performance and the training itself, keeping it up to date as an ongoing process. Trainee certification is the final performance measure.

For this project, we were chartered to perform only part of the analysis phase.

Recommendations for the design, implementation, and maintenance of DOE-accredited training programs are detailed in three supplementary training accreditation program (TAP) manuals accompanying Order 5480.18, namely the following:

TAP 1-88, Training Program Manual - It provides an introduction to the accreditation process, functional descriptions for programs that require accreditation, the objectives and criteria that must be addressed with a training program, and a glossary.

TAP 2-88, Performance-Based Training Manual - It provides narrative procedures for implementing PBT.

TAP 3-88, Training Program Support Manual - It provides guidelines for conducting self-evaluations and for writing training program accreditation plans and contractor self-evaluation reports.

C. This Report

This report was written to be used by the LANL MC&A training officer as guidance in the development of a LANL MC&A training program. It begins with a description of the methods and materials used in data collection. It then presents the results and a discussion and interpretation of these results. The report ends with a listing of conclusions, recommendations, and limitations based on the results of the study.

II. METHODS AND MATERIALS

A. Analysis Procedures of DOE Order 5480.18

To identify and document the PBT requirements for workers in the five MC&A categories, we followed the analysis procedures detailed in *TAP 2-88*. The following steps are recommended:

1. Determine training needs.

2. Develop a valid task list.

3. Select the tasks for training.

4. Prepare a task-to-training matrix.

5. Analyze existing training materials in accordance with DOE requirements.

6. Conduct a task analysis.

7. Compile a training program from the job/task analysis (JTA) information.

This study was limited to steps 2 and 3 of the list above. A-6 did not perform a training needs analysis. The purpose of such an analysis is to "determine training needs originating from performance problems, regulatory requirements, and, in some cases, requests for additional training or changes to existing training" (*TAP 2 - 88*). In this case, the need for MC&A training has been specified by DOE draft Order 5630.XX; therefore, job performance problems and/or improvement and other factors that may be contributing to the problems and/or improvement were not studied.

We did not prepare a task-to-training matrix because it requires information from the later phases of the training development process, which are not included in this project. This task-to-training matrix (which documents the training techniques and materials to be used for each task requiring formal training/overtraining) should be developed in parallel with the next steps of MC&A PBT development, i.e., the design and development of the training program.

B. Detailed Steps/Tasks Used

Four of the five MC&A categories (we excluded the general employee category) were analyzed following essentially the same procedures, which are discussed in detail in the following sections. For the general employee category, as discussed below, we decided that a formal analysis of the MC&A job portion was neither appropriate nor necessary.

1. Develop a Valid Task List.

a. Review Available Job Information.

We reviewed the following documentation:

"*Analysis of Nuclear Material Custodian Training,*" report prepared by M. Trainor and J. Keller, Group A-6 for Group OS-2, 9 August 1988.

"*Control and Accountability of Nuclear Materials,*" DOE Order 5633.3 U.S. Department of Energy, Office of Safeguards and Security, Division of Safeguards, March 1988.

"*Custodian Awareness Survey*" (memo and surveys) (1988), Roybal, M., Los Alamos National Laboratory, Group OS-2.

"*Glossary of Material Control and Accountability Terms,*" U.S. Department of Energy, Office of Safeguards and Security, Division of Safeguards, 1990.

"*Laboratory MBA/Operating Procedures*" (memo) (1989), Miskowicz, T., Los Alamos National Laboratory.

"*Los Alamos Job Analysis Questionnaire - Administrative,*" Control Data Corporation, 1987.

"*Los Alamos Job Analysis Questionnaire - Technical,*" Control Data Corporation, 1987.

"*Nuclear Material Control and Accountability Handbook,*" prepared by Program Director, Safeguards Assurance, Los Alamos National Laboratory, April 1989.

"*Nuclear Material Control and Accountability Plan,*" OS Division, Los Alamos National Laboratory, March 1989.

"*Nuclear Material Control and Accountability Training Manual,*" Draft of Los Alamos National Laboratory Report, December 1990.

"*Nuclear Material Management Handbook,*" US DOE - Albuquerque Operations Office, 1990.

"*Nuclear Materials Control and Accountability (NMC&A) Training,*" (memo and survey) (1990), Offutt, C., Martin Marietta Energy Systems, Inc.

"*Safeguards and Security Training Accreditation Program*," Vol. 2, US DOE, Office of Deputy Assistant Secretary for Security Affairs, Received at LANL March 1990.

Job Announcements in the LANL *NewsBulletin*, Los Alamos National Laboratory.

Job Description and Job Assignments: Nuclear Material Handler, OS-14 (now in OS-2).

Material Balance Area (MBA) Operating Procedures (OPs) for many of the LANL Accounts, which included the following:

1. Level I OPs (complex) for accounts 115, 225, 230, 520, 524, and 7XX.

2. Level II OPs (intermediate complexity) for accounts 180, 500, 516, 525, 526, and 528.

3. Level III OPs (least complex) for accounts 120, 130, 135, 150, 324, 440, 457, and 460.

NM-Related, Non-MC&A Standard Operating Procedures (SOPs) for selected technical areas.

b.   Develop the Task Listing.

We used the information obtained in item a above to subdivide each job into major duty areas and then to develop initial task lists.

c.   Validate the Task Lists.

The task lists and statements were reviewed by incumbents in each MC&A employee category and by subject-matter experts (SMEs) from the MC&A Training Advisory Committee (TAC) to ensure that all of the tasks required by the job were included and that the task descriptions were accurate. The validated task lists for each of the four employee categories analyzed in detail are presented in Appendix C.

d.   Prepare the Survey Questionnaire.

We prepared a computerized questionnaire to allow the MC&A workers to assign relative weights, on a five-point scale, to the *difficulty*, consequences of improper performance (i.e., the *importance*), and *frequency of occurrence* of each job task. The computer program used to administer and analyze these questionnaires is called QTA (questionnaire/task analysis). It allows employees to use a personal computer to respond to the survey questions and is described in Sec. D, below.

e.   Conduct the Survey with a Sample of MC&A Workers from Each Category.

The populations of several of the MC&A employee categories are quite large. For example, there are 62 custodians, 47 alternate custodians, and perhaps 1000 handlers; and the size of the safeguards specialist category was estimated at the beginning of the project at between 30 and 50. Even with computerized questionnaire administration, it is not practical to sample 100% of such large populations. As a result, we decided to administer the questionnaire to only a sample of the large populations. Therefore, we explored the sampling statistics that apply to this situation and found that a random sample of 30 members of each population would be representative, provided that the populations were "normal" in a statistical sense. (Normality here implies that for each aspect of each task, the responses are clustered around the mean, with equal numbers of responses being less than and greater than the mean.) We did not have any data that would allow us to test for normality before administering the questionnaire; and, in fact, we suspected that these MC&A populations were not normal. Therefore, the course we decided to follow was to assume a normal population and administer the questionnaire to a sample of about 30 incumbents. We then analyzed the results from that sample to determine normality, adequacy of sample size, etc.

<u>f.   Analyze the Survey Results</u>.

The questionnaire results were first examined for population normality and sample size adequacy. An initial analysis of the questionnaire results from the first employee category studied (i.e., the custodians and alternate custodians) suggested very heterogeneous populations in both cases. As a result, we consulted a statistician from Group A-1 to determine how to calculate an adequate sample size. We concluded after examining the data that both the custodian and the alternate custodian populations were very heterogeneous and were not normal in the statistical sense. In addition, we concluded that increasing the sample size would not significantly improve the statistical reliability of the data.

Our consultant observed that for any type of population (i.e., normally distributed or otherwise) one criterion of statistical significance (at the 90% confidence level) is that the results not be significantly altered by a variation of plus or minus three standard deviations in the responses. Thus, to assess the statistical significance of our survey results, we calculated the standard deviations of the averaged responses and then prepared two new sets of data. The first set consisted of the original averages plus one standard deviation (denoted by A+S in the tables), while the second set was the averages minus one standard deviation (denoted by A--S in the tables). We used one standard deviation rather than three because it was obvious from the outset that most of our MC&A populations were so heterogeneous that plus or minus three standard deviations would alter the decision-tree analysis results for essentially every task. We felt that a one standard deviation test, while not really statistically valid, would at least give us a qualitative idea about the significance/reliability of the results.

As recommended by the DOE, the questionnaire results were also examined, where appropriate, for differences between the responses of the supervisor(s) and the administrative assistants/technicians (TECs)/general employees. Additionally, to identify instructions or tasks that may have been misunderstood by the survey participants, individual responses and averages were reviewed to find any that appeared to be overinflated or underinflated.

2.   Select Tasks for Training.

a.   <u>Develop Task Selection Criteria</u>.

We used the DOE-recommended decision-tree process to analyze the questionnaire responses in an attempt to determine which tasks required *formal* training. Unfortunately, the results of this analysis could not be used to establish *formal* task-training requirements for the MC&A employee categories for a variety of reasons discussed below.

<u>b.   Apply Responses to the Decision Tree</u>.

For each task, the employee responses were averaged and these averages were analyzed using the DOE-recommended decision tree. This decision-tree structure and its break points are discussed on pp. I-9 and I-10 of *TAP 2-88* (1 March 1989). Our QTA program was used to perform this analysis. This decision tree is illustrated in Fig. 1 and described qualitatively in Fig. 2. As discussed above, to obtain a qualitative assessment of the statistical reliability of the decision-tree analysis results for each MC&A employee category, this decision-tree analysis was also performed for two additional data sets. These additional data sets were obtained by incrementing and by decrementing the average task rankings from the questionnaire resulting in the A+S and the A--S data sets, respectively.

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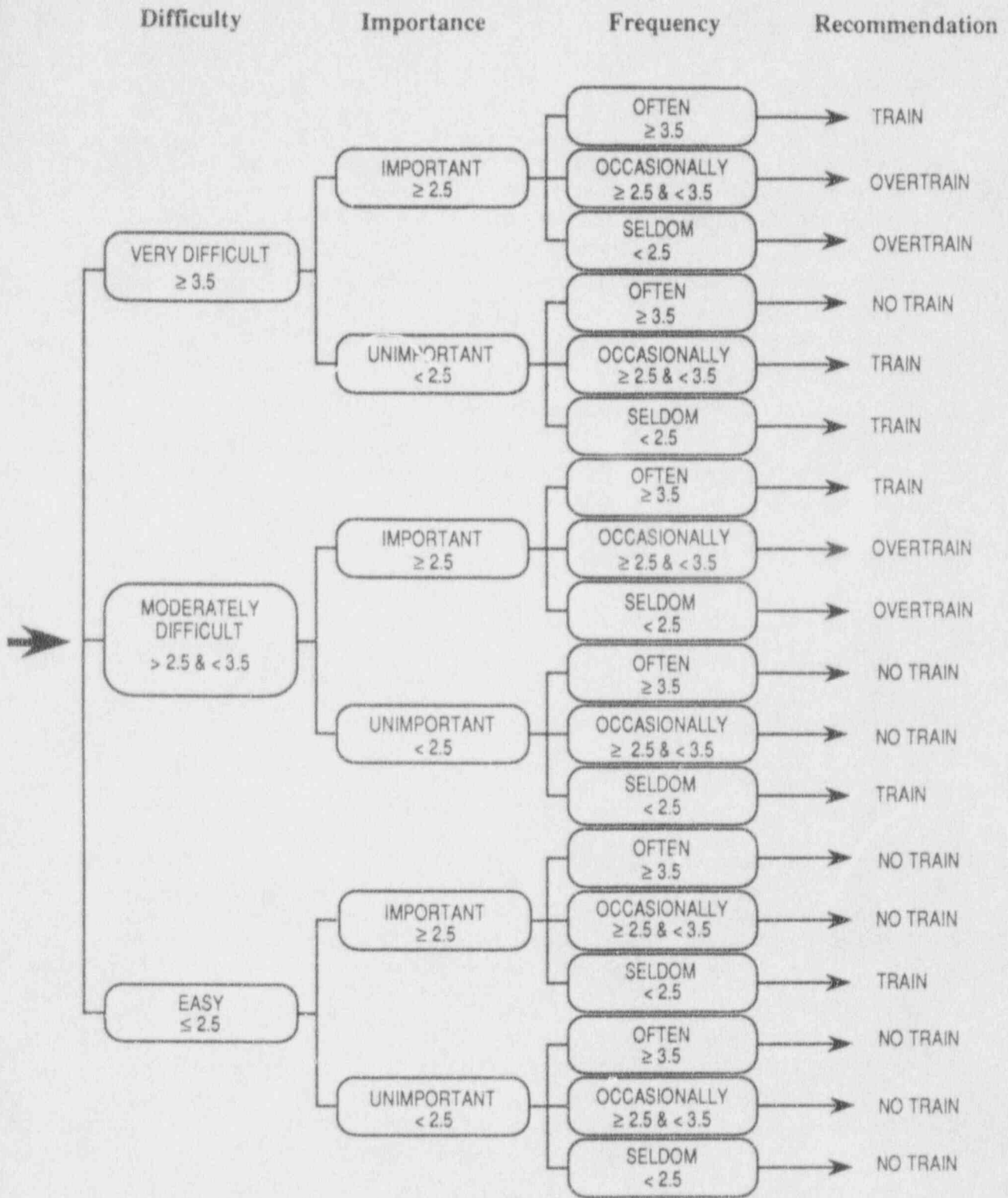
Figure 1. Decision Tree Used in Analysis of Survey Questionnaire.

NO TRAINING IS REQUIRED FOR THE FOLLOWING:*

- Easy tasks unless they are both very important and seldom performed

- Moderately difficult tasks if they are not important and are performed occasionally to often

TRAINING IS REQUIRED FOR THE FOLLOWING:

- Easy tasks that are very important and seldom performed

- Moderately difficult tasks that are (1) very important and performed often or (2) not important and seldom performed

- Very difficult tasks that are very important provided they are performed often

- Very difficult tasks that are not important if they are only occasionally or seldom performed

OVERTRAINING IS REQUIRED FOR THE FOLLOWING:

- Both very difficult and moderately difficult tasks that are very important and are only occasionally or seldom performed

*Note: The break points for our rating scales of 1 to 5 were set as follows:

Difficulty		Importance		Frequency	
Very	≥ 3.5	Very	≥ 2.5	Often	≥ 3.5
Moderate	> 2.5 & < 3.5	Not	< 2.5	Occasionally	≥ 2.5 & < 3.5
Easy	≤ 2.5			Seldom	< 2.5

Fig. 2. Summary of Decision-Tree Criteria and Rating Scales.

c.   Develop *No-Train/Train/Overtrain* Lists.

Using the decision tree with the break points as specified in Figs. 1 and 2, the formal training requirements of each task were determined, namely (1) *no train*, (2) *train*, or (3) *overtrain*. Definitions for these categories follow:

NO TRAIN   No *formal* training is necessary; the task can be learned in the normal course of job activities. (This category is not the same as on-the-job training, which is a formally designed training procedure requiring learning objectives, training records, proficiency demonstrations, etc.)

TRAIN   This category requires some type of *formal* training (can include a combination of classroom training, self-study, on-the-job training, drills, simulators, experience, job performance aids, etc.).

OVERTRAIN   This category requires a combination of *formal* training plus periodic retraining (i.e., practice of the task).

The task-training requirement lists generated by this process are collected as Tables D-I through D-X in Appendix D of this report. Also included in these tables are the results of the analyses of the A+S and A–S data sets, conducted to estimate the statistical reliability of the results. Unfortunately, as discussed in detail in Sec. IV below, we established that this decision-tree analysis was not a valid procedure to determine the *formal* task-training requirements for most of the MC&A employee categories

d.   Validate the Task-Training Lists.

In the DOE-recommended procedure, the next step is to review the *train/no train/overtrain* lists of each MC&A employee category with supervisors, SMEs, and incumbents from the respective employee category to obtain concurrence and/or refinement to the list of tasks identified for training. Because of the unique characteristics of this particular job analysis, as discussed below, this step was not carried out for most of the MC&A employee categories.

C. Impact of Decision-Tree Analysis on the Training Program

The results of the decision-tree analysis impact the required training program in two ways. First, they effectively establish the size of the training program required for the job being analyzed, which, of course, strongly impacts the cost of setting up and maintaining the training program. Probably the best measure of the training program size is the total number of tasks requiring either training or overtraining. A second-order measure of the size of the required training program is provided by the ratio of the number of tasks requiring overtraining to the number requiring training because overtraining is a continuing process, while training generally occurs only one time for new job incumbents.

The decision-tree analysis also establishes the detailed make-up of the training program by recommending which tasks must be *formally* trained or overtrained and which can be learned in the normal course of job activities, i.e., require no *formal* training. These considerations are discussed for this particular study in Sec. III, Results and Discussion, below.

D. Description of Our QTA Program

QTA is a computer program that is written in the Modula-2 language and runs on an IBM-compatible PC. It provides two capabilities. First, using a questionnaire format, it gathers numerical data to rank, on a scale of 1 to 5, the *frequency, importance*, a d *difficulty* of each task from the validated task list. Second, to obtain *no-train, train, overtrain* recommendations for each task, it averages and analyzes these task-ranking data using the decision tree discussed above and illustrated in Fig. 1.

The computerized QTA questionnaire essentially consists of three sections:

1. **Definitions**: Each rating scale is defined, and examples of the computer screen displays for each rating category are provided.

2. **Practice**: Four tasks (examples from everyday life) are presented in turn, and the incumbents are given an opportunity to use each rating scale and its definitions.

3. **Actual Questionnaire**: Each task of each duty area is presented in turn, and the respondent is requested to rate its *frequency, consequences of improper performance* (i.e., *importance*), and *difficulty* on a scale of 1 to 5. For the *frequency* category, we provided an additional ranking value of zero to indicate that the task is *never* performed; i.e., it is not part of the respondent's job. If this response is selected, the respondent is automatically moved on to the next task.

In response to the recommendation in *TAP 2-88* to compare the assessments of the supervisors with those of the job incumbents, the analysis section of QTA is set up to allow averaging and analysis of arbitrary combinations of data sets. In addition to allowing an easy comparison of the supervisors' and incumbents' responses, this capability is also useful to determine the effect on the analysis results of omitting the responses of one or more people if they are significantly different from the other responses.

As discussed above, we wanted to examine the effect on the task-training requirements of incrementing and decrementing the average task rating factors from the questionnaires, using some multiple of the data's standard deviation. This capability was obtained by modifying our QTA program to allow a decision-tree analysis of any set of previously averaged data, which allowed us to calculate the incremented and decremented data sets and then run them directly through the decision-tree analysis step. Unfortunately, this modification introduced a "bug" into our QTA program that led to the loss of some of the data sets, as discussed below.

As discussed above, in most cases we used one standard deviation rather than three because it was obvious from the outset that our populations were so heterogeneous that plus or minus three standard deviations would alter the decision-tree analysis results for essentially every task.

III. RESULTS AND DISCUSSION

The goal of this project was to complete two of the primary steps in the PBT design/implementation process: (1) develop a validated task list and (2) select tasks for training using the DOE-recommended task-assessment questionnaire and decision-tree analysis. We were completely successful in developing task lists for the four MC&A employee categories for which it was appropriate, and these lists are presented in Appendix C. However, we were not as successful in selecting tasks for training for a variety of reasons primarily related to the lack of validity of the DOE-recommended analysis methods for these MC&A employee categories.

In this section, we present all of the data collected in this project and the results of our analyses of those data. We also discuss the significance of these results. As discussed below, we established that a formal job analysis was not required for the general employee category of MC&A worker, which left us with four categories to analyze, namely (a) custodians/alternates, (b) handlers, (c) safeguards specialists, and (d) NM managers.

A hierarchical diagram of the employee categories and subcategories used in this job analysis is presented in Fig. 3 below. Because we anticipated some differences among subcategories of several of the MC&A employee categories, data were collected separately for a total of 10 employee categories and subcategories (noted in Fig. 3 below by a white oval); in addition, 3 pairs of these subcategories were analyzed together (noted in Fig. 3 below by a shaded oval), to give a total of 13 analysis categories.

(Employee categories and subcategories for which no analyses were performed are noted by ovals with diagonal lines in Fig. 3.) For most of these 13 analysis groups, we analyzed 3 data sets to estimate the statistical reliability of the results. As a result, a total of 37 data sets were analyzed, with populations ranging from a minimum of 3 to a maximum of 50. The questionnaire responses and the results of the decision-tree analyses of them are presented in Appendix D. Summaries of the training requirements resulting from all of the 37 analyzed data sets are listed in tables below. We will discuss the results in a general way in Sec. A, discuss the problems we encountered in Sec. B, and discuss in detail the results for the four MC&A employee categories analyzed in Secs. C, D, E, and F below.
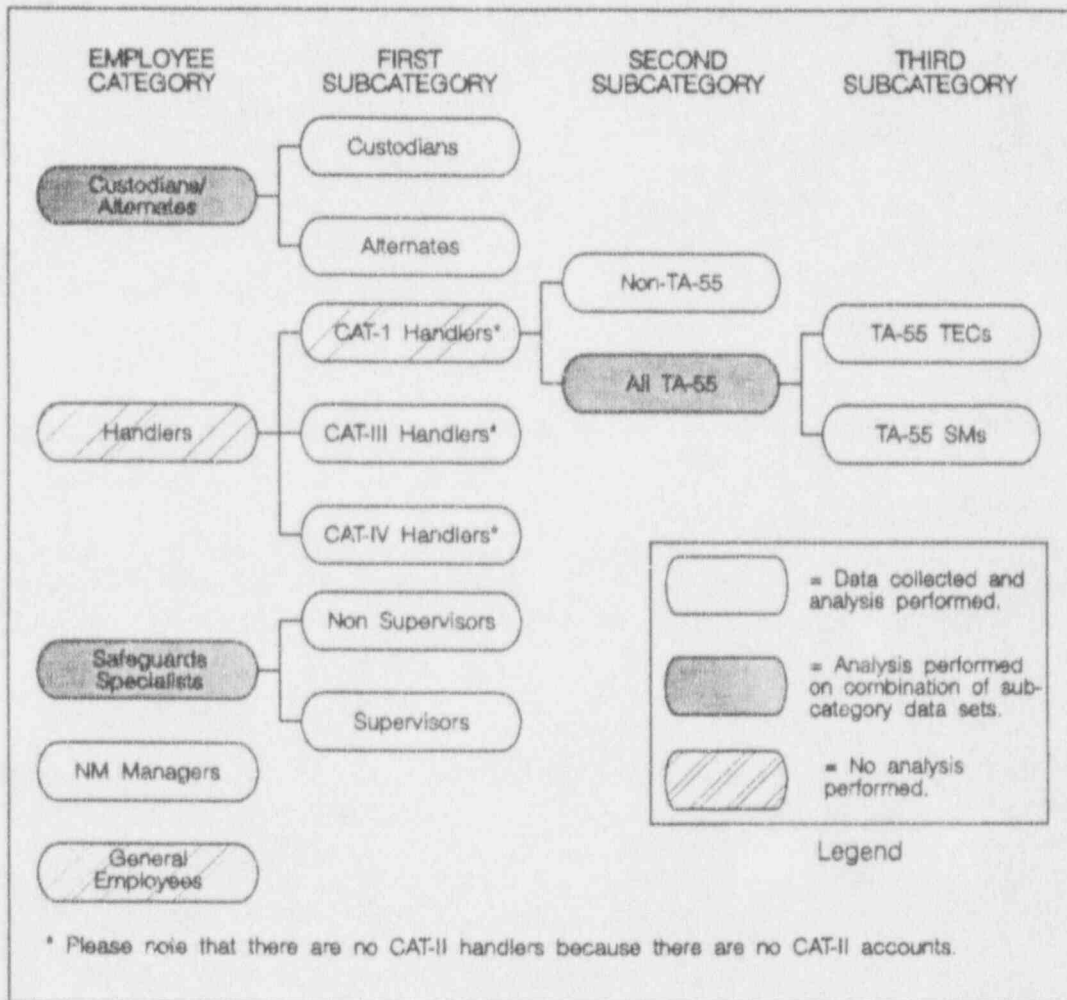
Fig. 3. Employee Categories and Subcategories Used in This Job Analysis.

A. Special Problems Encountered in This Job Analysis

Please note that much of what follows in this section is our interpretation of the DOE rationale for the methods they have recommended for implementing accreditable PBT programs for many of the jobs at their laboratories: It is not specifically explained in this way in their documents.

The PBT analysis and development procedures recommended in DOE Order 5480.18 and its associated *TAP* manuals are essentially the same as those employed in the nuclear power industry for training power plant operators. Unfortunately, some of the job conditions assumed for this process are not

appropriate for the research and development environment that exists at Los Alamos and the other DOE laboratories. As a result, several problems were encountered in the course of this job analysis that limited the extent to which the process recommended in DOE Order 5480.18 could be applied. The major factor was that many of the NM/SNM accounts lack experienced workers who are expert in the MC&A requirements and procedures. A second factor was the very great heterogeneity of the employees within the MC&A categories. Another potential factor was the small population of some of the MC&A employee categories. A final problem that we encountered was the lack of understanding of existing MC&A requirements by some of the custodians/alternates (and, presumably, by some of the handlers). These problems are discussed here to provide the readers with an overview of some of the essential results of this job analysis before discussing those results in detail.

1. Lack of Experienced Workers at the Job Site.

The DOE recognizes that operations at its many laboratories and plants can be carried out safely only if its workers are properly trained. At the same time, they recognize that training is expensive both to develop and to deliver. As a result, they have recommended the use of PBT analysis and development procedures as specified in their Order 5480.18 to allow the implementation of a "reasonable-size" training program. This Order and its associated *TAP Manuals* provide an objective procedure for determining which of the many tasks making up a particular job require *formal* training and which can be learned in the course of normal day-to-day job activities.

For example, one of the assumptions underlying the separation of tasks into *no-train* and *train/overtrain* categories is that some of the employees working at any specific job will be experienced and expert in the job tasks. When true, many of the frequently performed, less difficult tasks can be safely learned by new employees in the normal course of working alongside these experienced employees; such tasks do not require *formal* training. Of course, if such experienced workers are not available, this informal training mechanism simply cannot take place.

Unfortunately, the required applicability of the MC&A regulations is so broad that this resident-expert assumption is just not realistic for the custodian and handler jobs of many of the MC&A accounts at LANL because MC&A regulations are applied regardless of the level of activity (from 0 transactions per year to 100 transactions per day) and to many seemingly innocuous materials such as deuterium gas (D_2), heavy water (D_2O), depleted uranium (U), etc. At many of the sites that have MC&A accounts, there are *no* workers experienced in the MC&A job tasks. Therefore, the informal training assumed by the DOE is not possible. As a result, the MC&A training programs for both the custodians and the handlers will have to provide *formal* training for **all of the tasks** on the validated task lists for at least some of the workers in both job categories. The DOE assumptions probably do apply to custodians/alternates and handlers from some of the more active MC&A accounts, as well as to the NM manager and safeguards specialist categories. Unfortunately, this job analysis was not designed to identify those particular accounts.

2. Heterogeneity.

In those cases where some of the employees working at a specific job *are* experienced and expert in the job tasks, the job analyst must determine which job tasks require *formal* training and which can be learned informally while working alongside the experts. The DOE recommends the use of a questionnaire/decision-tree procedure to obtain an objective training recommendation for each of the job's tasks. This procedure requires the job incumbents to individually rate (using a scale from 1 to 5) the *difficulty, importance* and *Frequency of Performance* of each of the tasks included in their jobs. The results are then averaged and analyzed using a decision tree (see Fig. 1) to determine which tasks require *formal* training and which do not. This process will result in valid training

recommendations *only* if the number of workers participating in the task-assessment survey is large enough (i.e., sample size) and their job activities are similar enough (i.e., homogeneous) that the questionnaire results are statistically significant. Otherwise, the results of the decision-tree analysis to determine which tasks require *formal* training will not be valid. In this latter case, the task-training requirements must be determined in a task-training validation meeting where a group of incumbents and other SMEs review the *difficulty, importance,* and *frequency* of each task to arrive at consensus assessments from which the task-training requirements can be determined. In this job analysis, some problems were encountered with both the sample size and the homogeneity requirements for some of the MC&A employee categories.

The homogeneity requirement is not met for at least the custodians/alternates and several of the sub-categories of the handlers, which are very heterogeneous with respect to their job activities. The DOE Orders require MC&A of an extremely wide range of material types, from weapons-grade plutonium (Pu^{239}) to depleted U (in large quantities), D_2, and D_2O. In addition, the MC&A accounts range in activity from static, with essentially no activity, to the very heavy activity of some of the OS- and NMT-Division accounts. As a result, the type and frequency of MC&A activities vary significantly from account to account. In addition, the MC&A responsibilities of most of these people represent only a very small fraction of their total job responsibilities which, in fact, introduces a significant additional aspect of heterogeneity because the MC&A activities become the tail being wagged by the large normal-job-activity dog.

However, as discussed above, this heterogeneity is irrelevant for the custodians/alternates and the handlers because the lack of resident experts at the sites of many MC&A accounts requires that all MC&A tasks required for each individual MC&A account be included in the training program regardless of the outcome of the decision-tree analysis of the questionnaire results.

3. Sample Size.

We anticipated sample size problems for the NM managers (there are only four incumbents) and for the CAT-III handlers (we had only five respondents). However, these two categories turned out to provide the best decision-tree analysis results. In fact, the NM manager results prompted us to look at the results of decision-tree analysis of A±3S data sets in addition to the A±S data sets. Although both of these groups are small, their MC&A activities are apparently quite homogeneous.

The situation with respect to the safeguards specialists is somewhat different. The sample size should be large enough for valid results. Because this group spends essentially full time on MC&A activities, it should be relatively homogeneous. However, the decision-tree analysis of the questionnaire responses indicates that the training recommendations are not statistically reliable. As a result, the training requirements for many of the MC&A safeguards specialist tasks will have to be determined at a validation meeting. We believe that these results occurred because the respondents came from three different sections of Group OS-2, each with its relatively unique MC&A responsibilities. Therefore, each section is concerned with a subset of the MC&A task list, and having everybody complete the questionnaire for the entire task list (instead of one tailored to their section's activities) produces heterogeneous results.

4. Lack of Understanding of MC&A Requirements.

The final problem area we encountered was an apparent lack of understanding of MC&A requirements by some of the custodians/alternates and (presumably) handlers. This problem was recognized during the task-training-requirement validation meeting for the custodian/alternate category. At that meeting, our SMEs observed that some of the tasks that the questionnaire results listed as *not applicable,* (i.e., no one was responsible for knowing how to perform the task) were, in fact,

required activities for all accounts; therefore, every custodian should be performing them at some *frequency* level. As a result, it is not possible to use the questionnaire results to determine which tasks are not part of each job category. This situation is particularly unfortunate in the case of these MC&A job analyses because it is clear that many of the MC&A accounts require only a subset of the tasks on the validated task list for a particular job category. Therefore, it will be necessary to review, for each MC&A account, the validated task lists for the custodians/alternates and the handlers to determine which tasks are appropriate for that account and which are not. This review probably must be done by SMEs from OS-2 because they have the responsibility for setting and enforcing MC&A policy within the Lab.

B. Overview of Results

1. Numbers of Tasks and Duty Areas.

Table I summarizes the numbers of tasks and duty areas determined and validated for each of the five MC&A employee categories. Because workers in the general employee category require only an overall awareness of MC&A concerns, we list zero duties for them. The number of tasks listed for the other four categories varies by about a factor of 4 (from 32 to 133). This difference primarily reflects the differences in character of the various MC&A employee categories. However, the smaller number of tasks for the safeguards specialist category is also partially the result of a lower level of detail in their task list. As discussed above, all of the task lists were generated from (1) the information that was gathered from existing documents and from (2) discussions at subsequent validation meetings with the job incumbents and with SMEs from the MC&A TAC.

TABLE I. SUMMARY OF DUTY AREAS/TASKS FOR THE FOUR MC&A CATEGORIES.		
Category	Number of Duty Areas	Number of Tasks
Custodian/Alternate	18	133
Handler	12	104
Safeguards Specialist	9	60
NM Manager	11	32
General Employee	0	0

2. Administration of the Questionnaire Using QTA.

Each participant was scheduled to complete the survey questionnaire using QTA on a specific day and time. When the participants arrived at the survey location, they were given instructions both by verbal and written directions (see Appendix B for instructions and definitions). They were then requested to complete the questionnaire and encouraged to ask questions when help was desired. In addition to providing the *frequency*, *importance*, and *difficulty* ratings for each of the tasks, the incumbents were asked to verify the accuracy, validity, and completeness of the task list. Completion time for each survey questionnaire ranged from about 45 minutes to 2 hours, depending on both the individual and the number of tasks.

For this project, we required a relatively large number of MC&A workers to complete the task-assessment questionnaire. To gather data as efficiently as possible using our QTA program, we made arrangements with Group HRD-3 to use their PC training labs at the Canyon Complex, which would have allowed us to simultaneously collect task-assessment data from as many as 26 people. However, scheduling difficulties and the fact that a significant number of the scheduled people failed to show up limited us to a maximum of 10 people at any time. To more conveniently accommodate the handlers and safeguards specialists at TA-55, we also made arrangements with NMT-DO to use their computer-based training facilities at TA-55, which allowed us to simultaneously administer the task-assessment questionnaire to six people using QTA.

Because of problems encountered in previous surveys, the surveys were administered so that the questionnaire responses were anonymous. In some cases, we identified the account category, group, supervisor/worker and/or staff member (SM) or TEC status of the respondents, but never the names. This anonymity severely limited our options when we discovered that some of our questionnaire-response data files were invalid because of a "bug" in our QTA program.

3. Analysis Results

The desired products of a job analysis such as this one are (a) validated task lists and (b) a separation of the tasks into two sets, one which requires *formal* training and the other which does not. The first set is further subdivided into those tasks that require only initial training (*train*) and those that require initial training plus periodic retraining (*overtraining*). This further subdivision is of secondary importance because the tasks in both of the subcategories must be included in the formal training program.

In this project, we have produced validated task lists for four of the five MC&A employee categories analyzed and established that the fifth category did not require such a list. However, the situation with respect to the task-training requirements is much more complicated. We established that for the two largest MC&A employee categories (i.e., the custodians/alternates and the handlers), *formal* training of all of the tasks is required for most of the employees in those categories. However, the custodians/alternates and handlers of the CAT-I accounts, and particularly those workers at TA-55, probably do not require *formal* training in all of the tasks. Unfortunately, this job analysis was not really designed to determine which workers require *formal* training and which do not. As a result, in this report we want to give the MC&A training officer as much insight as possible into the MC&A activity, indicated training requirements, and data reliability for these various employee category populations so that he can set up the most cost-effective training program. During the course of this project, we collected a very large amount of data, and the analysis of these data produced an even

greater amount of data. Much of this detail is presented here, some of it in multiple formats, in an attempt to provide maximum usefulness for the MC&A training officer.

If a significant number of MC&A workers will not have to be formally trained in all of their respective MC&A tasks, in which tasks will they have to be trained? To answer this question, we look in detail at the task-training requirements that result from the decision-tree analysis of the *averaged* questionnaire responses for all of the employee categories and subcategories for which we had a task list. Then, to obtain a qualitative estimate of the reliability of these task-training requirements, we also look at how many of the task-training requirements change if we increment or decrement the averages of the responses by one standard deviation of those averages. In addition, in an attempt to provide further insight, we look at several other aspects of the data collected in the course of this project, such as the fraction of the respondents who actually perform the MC&A tasks, the *frequency* with which they perform them, the fraction of tasks that nobody performs,[2] and the fraction performed by only one person. In Figs. 4 through 9 below, we summarize much of the data obtained on this project as a function of MC&A employee category and subcategory.

Figure 4 plots the overall task-training requirements as determined by decision-tree analysis of the *averaged* questionnaire responses. This procedure presupposes that all of the assumptions on which the decision-tree analysis process is based are correct, which is clearly not true of the populations studied here. However, it provides one foundation on which a cost-effective training program can be built. The training requirements are presented as the percentage of tasks requiring *overtraining* (OT), *training* (T), and *no training* (NT) and tasks that no one is responsible for performing (i.e.,*not applicable* [N/]). The training requirement bars are ordered along the χ-axis by increasing total training requirements. From this figure we see that a training program based only on these results would require formal training of from 10% of the tasks for the CAT-III handler up to about 73% of the tasks of the safeguards specialists and NM managers. However, the CAT-III handler results are a little misleading because they listed about 53% of their MC&A tasks as not applicable (i.e., the respondents either were not responsible for them or else were not aware that they were responsible for performing them).

In Fig. 5, we plot the percentage of tasks (for each employee category and subcategory) with indeterminate training requirements. (These are tasks for which the decision-tree analyses of the A±S data sets result in training requirements differing from that obtained from the decision-tree analysis of the average data set. For purposes of this comparison, we consider the results of train and overtrain to be equivalent because they both require that the task be included in a formal training program.) As discussed above, this examination of the effect on the outcome of the decision-tree analysis of varying the responses by ±1 standard deviation, while not a rigorous test of statistical reliability of the data (which would require examination of the effect of an A±3S variation of the responses), does provide us with a relative measure of the reliability of the response data. Please note that no validity assessment can be made for tasks that only one person performs because no standard deviation can be calculated for these tasks. Therefore, we recalculated the percentage of tasks with indeterminate training requirements by first subtracting the NA and one-person tasks from the total, and these percentages are also plotted in Fig. 5 as the corrected data.

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2   Not applicable tasks (i.e., those with a frequency rating factor of 0) are those that none of the respondents believe they are responsible for performing. A frequency rating factor of 1 is used if the respondent is responsible for performing the task but has never actually performed it. Ordinarily, a result of NA for a task indicates that task is not a part of the job being studied. Unfortunately, as discussed above, in this study it can also mean that the respondents just do not realize that they are responsible for performing the task.
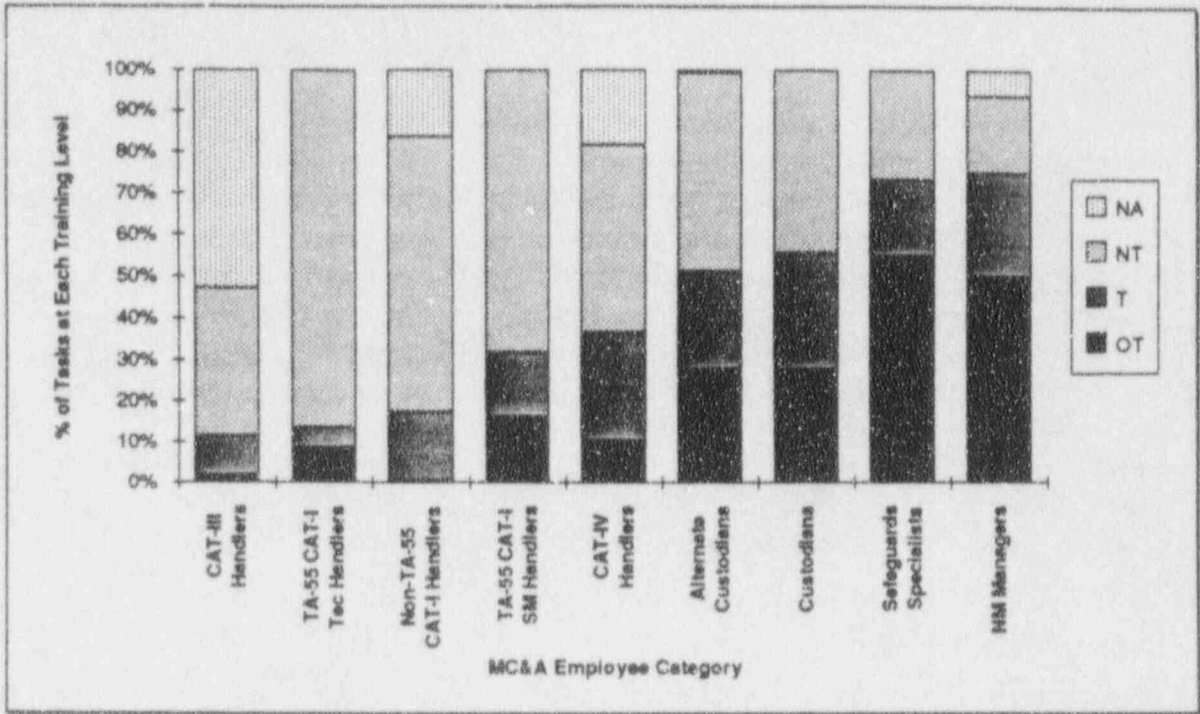
Fig. 4.   Task-Training Requirements from Decision-Tree Analyses of Averaged Question-
naire Responses (by MC&A Employee Category).
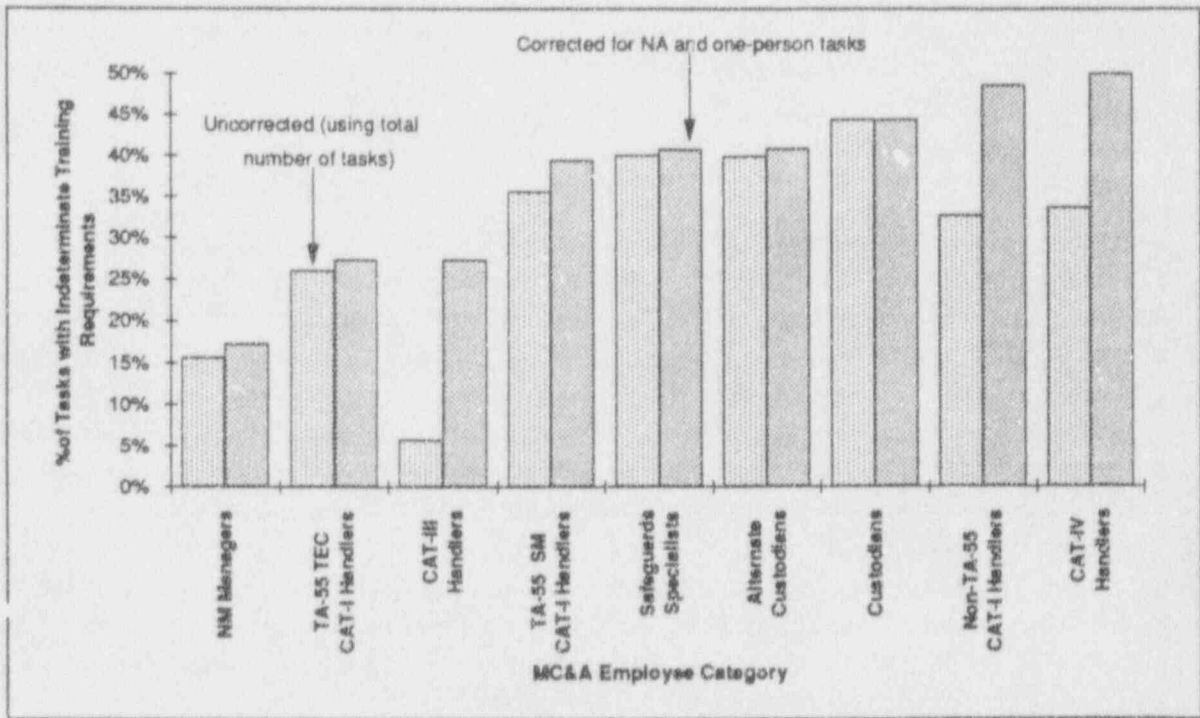
Fig. 5.   Percentage of Tasks with Training Requirements That Change When Decision-Tree
Analyses are Performed on A+S, A, and A–S Data Sets (by MC&A Employee Cate-
gory).

Based on this A±S criterion and examining only the corrected percentages, the most reliable responses are those of the NM managers, with only about 17% of the tasks having indeterminate training requirements. This result is somewhat surprising because there are only four NM managers, the smallest of all the MC&A employee categories. The least reliable responses are those of the non-TA-55 CAT-I handlers and the CAT-IV handlers with about 49% and 50% of the tasks, respectively, having indeterminate training requirements. The results for the TA-55 SM CAT-I handlers, safeguards specialists, alternate custodians, and custodians all cluster around 40%, and those for the TA-55 TEC CAT-I handlers and the CAT-III handlers are both 27%. The relatively high number of indeterminate training tasks for the safeguards specialists probably results from the fact that the respondents were from essentially three different sections of Group OS-2, each specializing in a different area of safeguards. As a result, there was a considerable spread from section to section in the responses for many of the tasks.

The next two figures explore the percentages of tasks not performed by anyone and by only one person and the average fraction of respondents performing the tasks and their *Frequency of Performance* of these tasks, averaged over all tasks. In Fig. 6, we plot the number of tasks not performed by anyone and, in Fig. 7, the number of tasks performed by only one person, both as a function of MC&A employee category and subcategory. Looking first at the NA tasks in Fig.6, the custodians, the TA-55 TEC CAT-I handlers, and the safeguards specialists all have at least someone performing every task, while the alternate custodians have only one task that no one performs. The TA-55 SM CAT-I handlers and NM managers both have two tasks that no one performs. In contrast, the non-TA-55 CAT-I and CAT-IV handlers have 17 and 19 such tasks, respectively, and the CAT-III handlers have 55 such tasks.
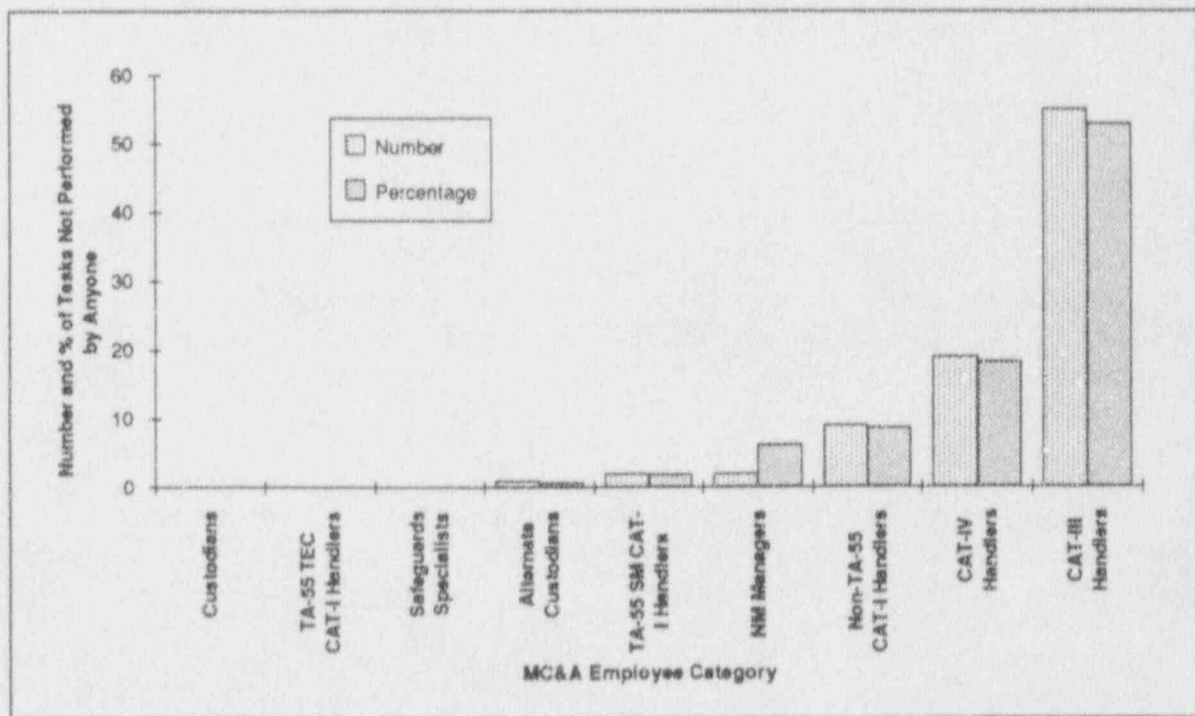
Fig. 6. Number and Percentage of Tasks That No One Performs (by MC&A Employee Category).

Looking at the one-person tasks in Fig. 7, the order is similar to that of the NA tasks in Fig. 6, and again the custodians do not have any one-person tasks. The CAT-III handlers have the most one-person tasks (27) with the non-TA-55 CAT-I handlers a close second at 25. The number of one-person tasks for the other handlers range from 5 to 15 while the number for the remaining employee categories ranges from 1 to 3 one-person tasks.
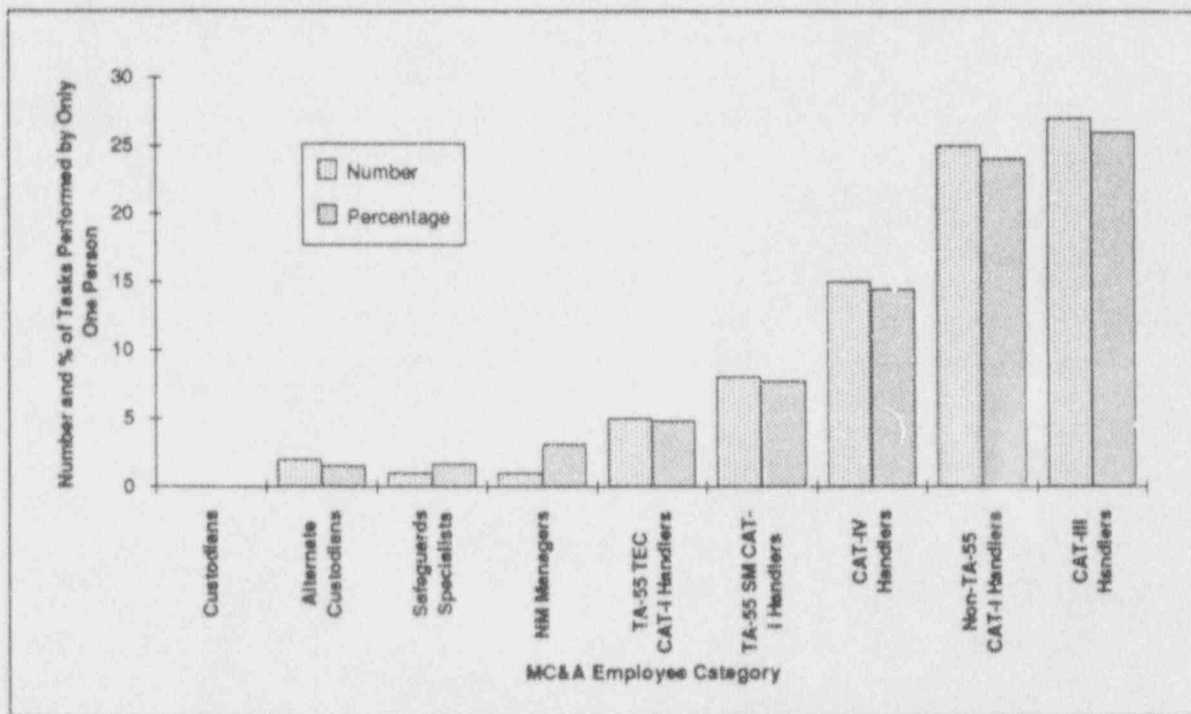
Fig. 7.   Number and Percentage of Tasks That Are Performed by Only One Respondent. (by MC&A Employee Category).

In Fig. 8 we plot the percentage of respondents that perform their respective tasks, averaged over all tasks within a given employee category, while in Fig. 9 we plot the MC&A task *Frequency of Performance* rating, again averaged over all tasks. The NM managers perform the greatest number of tasks (83%). The next highest percentages are performed by the custodians, the safeguards specialists, alternate custodians, and TA-55 TEC handlers, all with about 45%, followed by the other four employee categories in the 30% range.

In Fig. 9, the TA-55 TEC handlers have the highest task performance *frequency* rating followed by the two other CAT-I handler subcategories, the safeguards specialists and the custodians at nearly the same rating. The NM managers, alternate custodians, CAT-III and CAT-IV handlers have still lower frequencies of task performance, in the order listed. The overall spread in these *Frequency of Performance* ratings is not very large (i.e., from 1.84 to 3.59), but the nonlinear nature of the rating scale tends to minimize the differences. In actuality, the CAT-III and -IV handlers perform their MC&A tasks, on average, less often than one to two times per year while the TA-55 TECs perform theirs about once every two weeks.
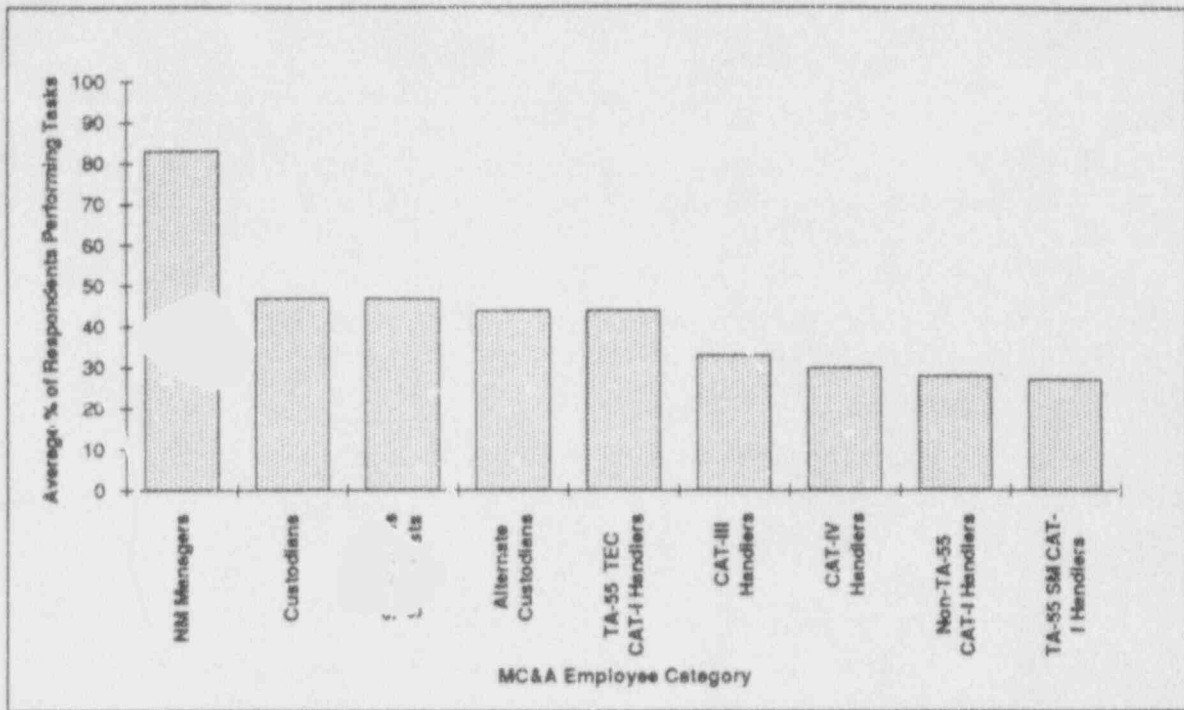
Fig. 8. Average Percentage of Respondents Performing MC&A Tasks (by MC&A Employee Category).
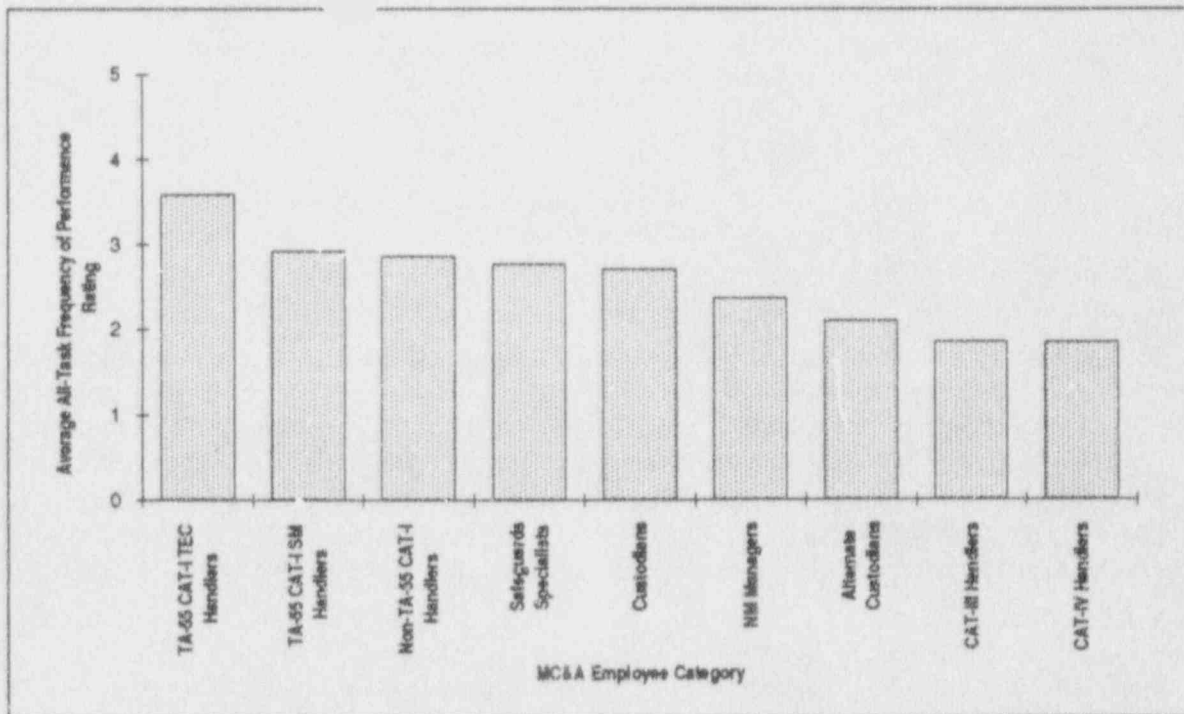
Fig. 9. *Frequency of Performance* Rating Factor Averaged Over All Tasks (by MC&A Employee Category).

C. Custodians and Alternate Custodians

1. Generation and Validation of MC&A Task List.

The custodian/alternate category was the first to be analyzed; as a result, many of the procedures used for the other categories were developed here. The list of MC&A tasks performed by the custodians was generated primarily from a review of the *MC&A Handbook* and the OPs of the various MBA accounts. However, the other documents listed above in Sec. II.B.1.a were also reviewed.

The task list was then validated to ensure that all relevant tasks were listed and that they were described properly. This validation was carried out in several steps as follows:

a. Review by several SMEs.

b. Review by one-on-one interviews with about seven custodians and alternates.

c. Review by a committee of five additional custodians, which led to an impasse in several of the duty areas because some accounts appeared to be inconsistent with the rules in the *MC&A Handbook*.

d. Another review by the committee from step c plus two SMEs from the MC&A TAC (one from NMT and one from OS-2). We established that the inconsistencies mentioned in step c above arose because some MBA accounts were operating under exceptions granted by OS-Division and the DOE.

The final validated task list includes a duty area entitled "Other NM activities (not MC&A but NM management activities)" that covers six tasks involving planning, forecasting, and material discard activities. These tasks are not listed as custodian responsibilities in the *MC&A Handbook*, but they are being performed by some of the custodians.

A copy of the validated MC&A task list for the custodians/alternates is attached as Table C-I in Appendix C.

2. Administration of the Task-Evaluation Questionnaires.

The second major step of the job analysis is administration of the task-assessment questionnaire to the job incumbents to determine their rating (on a scale of 1 to 5) of the *difficulty, consequences of improper performance* (i.e., *importance*), and *Frequency of Performance* (i.e., *frequency*) of each of the tasks on the validated task list.

As discussed above, we decided to administer the questionnaire to about 30 custodians and 30 alternates and to analyze the results to determine population normality, adequacy of sample size, etc. (We planned to perform this analysis by examining the questionnaire responses to determine the extent to which the training recommendations were changed by incrementing and by decrementing the averaged *difficulty, importance* and *frequency* ratings by one standard deviation. We believed that this process would also provide us with good guidance for the subsequent administration of a task-assessment questionnaire to the handler population, which numbers in excess of 1000.)

The sample populations of custodians and alternates were selected to be distributed evenly over their respective total populations. As a result, the CAT-IV accounts are represented much more heavily than the CAT-I and CAT-III accounts, simply because there are many more CAT-IV accounts. In spite of the fact that the CAT-I custodians/alternates perform most of the MC&A activities within the Lab, we believed that this type of sample was appropriate because the MC&A training program must train and/or certify *all* of the custodians/alternates on the MC&A tasks required for their

accounts, and our sample populations were weighted according to the existing total populations to be trained.

We administered the task-assessment questionnaire to the custodians/alternates on three separate days, using the HRD-3 computer labs at the Canyon Complex. Because of the scheduling and no-show problems discussed above, we administered the questionnaire to only 26 of the 47 custodians and to only 24 of the 62 alternate custodians. The data from the two groups were collected as separate populations because we anticipated different responses from the custodians and the alternate custodians for at least the *frequency of occurrence* of the tasks.

3. Detailed Analysis of the Questionnaire Responses and Task-Training Requirements.

As mentioned above, after a preliminary review of the analysis results, we discussed the data with a statistician from Group A-1 and concluded that both the custodian and the alternate custodian populations were very heterogeneous and were not normal in the statistical sense. In addition, we concluded that increasing the sample size would not significantly improve the statistical reliability of the data. As a result, the detailed analysis was performed on the questionnaire results from the 26 custodians and 24 alternates.

The data from the custodians and the alternate custodians were analyzed both as two separate sets and as a single, combined set because some differences were anticipated, especially in *frequency of occurrence* of the tasks. The questionnaire responses and the results of the decision-tree analyses of these responses are presented in Appendix D as Tables D-I and D-II for the custodians and alternate custodians, respectively. For each task, these tables list (a) the number and the percent of respondents actually performing the task; (b) the averages of the *difficulty*, *importance*, and *frequency* responses; and (c) the training recommendation resulting from the decision-tree analysis of those averages (the A column in the tables). In addition, the tables list the results of analyzing the averaged responses incremented (A+S) and decremented (A−S) by one standard deviation to obtain a qualitative indication of the statistical reliability of the results.

Figures 10 and 11 are scatter plots of the fraction of respondents performing each task as a function of duty area for the custodians and alternates, respectively. These plots allows us to easily see any significant differences between the two populations and also those duty areas where tasks are performed by unusually large or small percentages of the respondents. (This information should provide useful insights for setting up the training program by allowing a check for those duties that should be performed but that are somehow being overlooked, etc.) For the convenience of the reader in interpreting the figures, a summary of the duty areas is presented in Table II.

On average, 47% of the custodians are performing these MC&A tasks. The individual data points are reasonably well scattered about the average except for duty areas 3, 12, and 13 where they are mostly clustered below it. The tasks in these three duty areas are performed by fewer than 55%, 45%, and 35% of the respondents, respectively.

The alternate custodian data (Fig. 11) are similar but at a somewhat lower level, with an average of 41% of the alternate custodians performing the tasks. The alternate custodian data also exhibit more valleys than those of the custodians (i.e., duty areas where the fractions of alternate custodians performing most of the tasks are smaller than the average performance fraction for all of the duty areas), with all (or all but one) of the data points below the mean in duty areas 3, 4, 5, 11, and 14.

Frequency of Performance of the tasks is examined in Figs. 12 and 13, again as scatter plots by duty area. The custodians report an average *Frequency of Performance* of the MC&A tasks of 2.4 while the corresponding value for the alternates is 2.1. For reference, a *Frequency of Performance* of 2
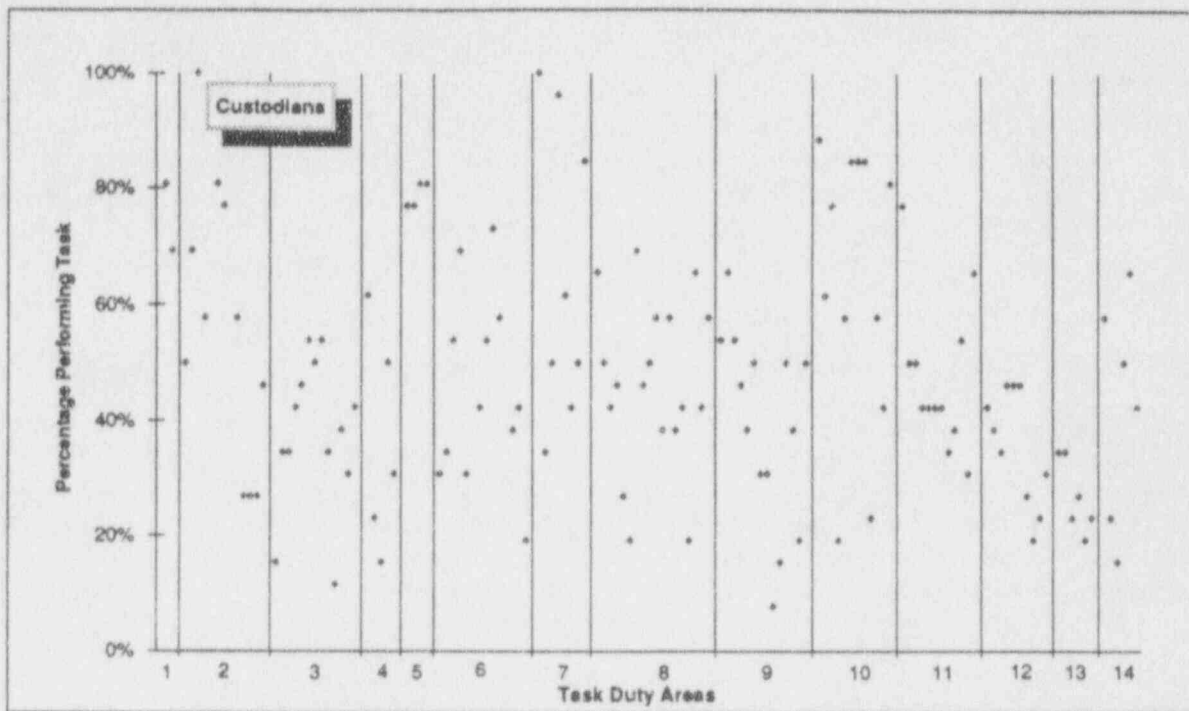
Fig. 10. Fraction of Custodian Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).
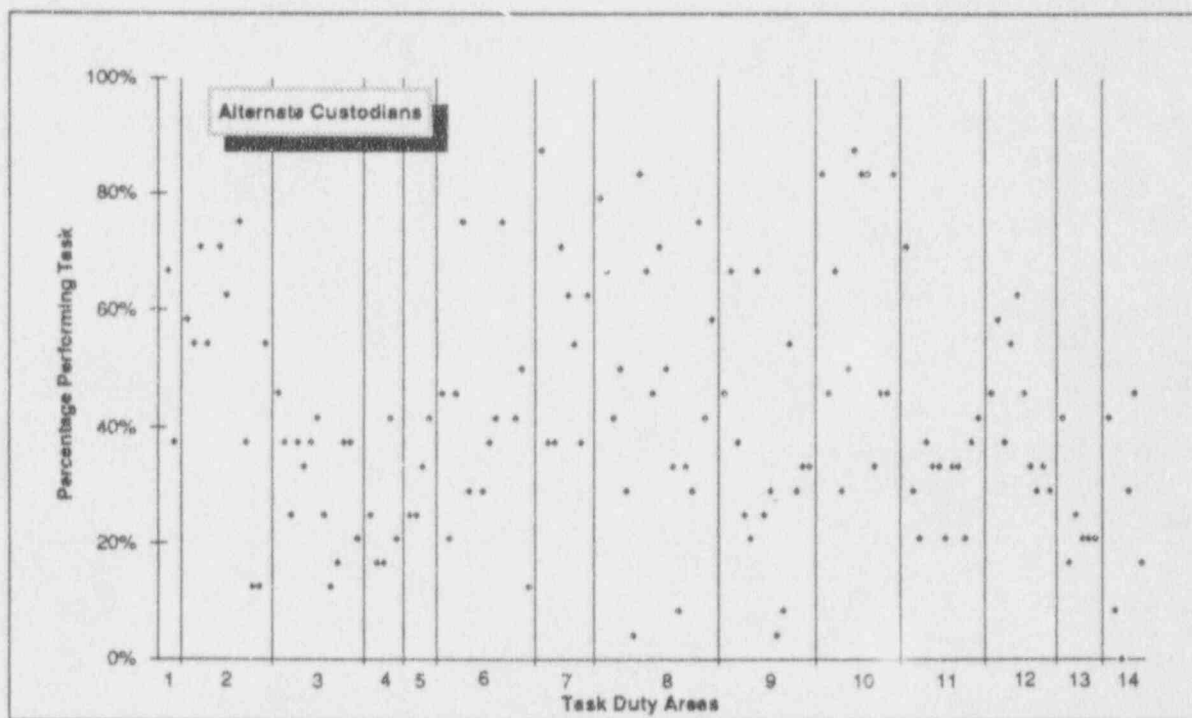
Fig. 11. Fraction of Alternate Custodian Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).

TABLE II. SUMMARY OF MC&A CUSTODIAN/ALTERNATE CUSTODIAN DUTY AREAS

1. Identify LANL groups and their responsibilities for NM MC&A and safeguards.
2. Perform MASS duties.
3. Implement measurement and measurement control programs.
4. Establish administrative controls.
5. Establish MBA OPs.
6. Implement material control program and physical security.
7. Perform inventory duties.
8. Perform external (off-site) NM transfers.
9. Receive external (off-site) transfers of NM.
10. Ship internal transfers of NM between different material access areas (MAAs).
11. Receive internal (on-site) NM transfer between different MAAs.
12. Send NM within or between MBAs of the same MAA.
13. Receive NM within or between MBAs of the same MAA.
14. Other NM activities (not MC&A but NM management activities).

means that the task is performed one or two times per year, while a value of 3 signifies that the task is performed more often than twice per year but less often than once every two weeks. The *frequency-of-performance* data exhibit fewer and less shallow valleys than seen in the fraction-performing data in Figs. 10 and 11. In fact, for the custodians, only duty area 3 has most of its data points below the mean, while for the alternates, none of the duty areas dips this low. The data sets in Figs. 12 and 13 were each separately reordered by *Frequency of Performance* and plotted in Fig. 14. Here it is clear that on average the custodians perform the MC&A tasks more frequently than the alternates do. The difference is less than we expected, but the nonlinear nature of the *frequency* scale deemphasises the size of the difference.

The task-training requirements resulting from the decision-tree analyses of the three data sets (i.e., average [A], average plus one standard deviation [A+S], and average minus one standard deviation [A−S]) are summarized in Table III below. Here, we present the data for the custodians, the alternate custodians, and a combination of the two. In this table, we have indicated by shading those tasks for which the training requirement changes when the average results are incremented or decremented by one standard deviation. For this purpose, we again consider results of *train* (T) and *overtrain* (OT) to be equivalent because both require including the task in the training program.

Table IV summarizes the task-training requirements resulting from the DOE-recommended decision-tree analysis for the custodians and alternate custodians. We have collected the tasks into seven categories according to the task-training requirements in Table III (as determined by considering the results of the decision-tree analyses of all three data sets, i.e., A+S, A, and A−S). These seven categories are (1) *no train* (NT), (2) *train* (T), (3) *overtrain* (OT), (4) *train/overtrain* (T/OT), (5) *no-train/train/overtrain* (NT/T/OT), (6) *not applicable* (NA), and (7) *one-person* tasks (1P). If the decision-tree analyses of all three data sets for a particular task return the same result, that task is counted as that result, i.e., *no train*, *train* or *overtrain*. If the results of the decision-tree analyses of the three data sets differ for a particular task, that task is counted as the category containing all of the training requirement results for that task. For example, if the decision-tree analysis of the A+S data set results in a training requirement of *overtrain* and the analyses of both the A and the A−S data sets result in a training requirement of *train*, that task is counted as *train/overtrain*. Similarly, if the
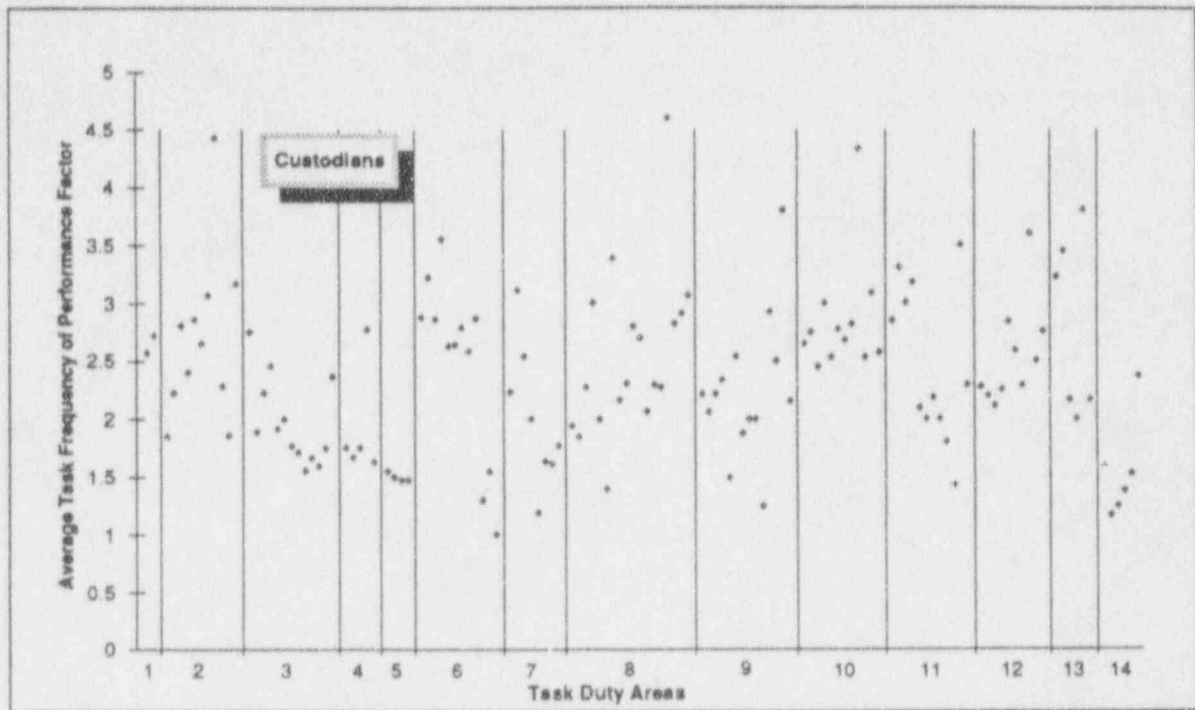
Fig. 12. Average *Frequency* of MC&A Task Performance by Custodians (Plotted Against Task Duty Area).
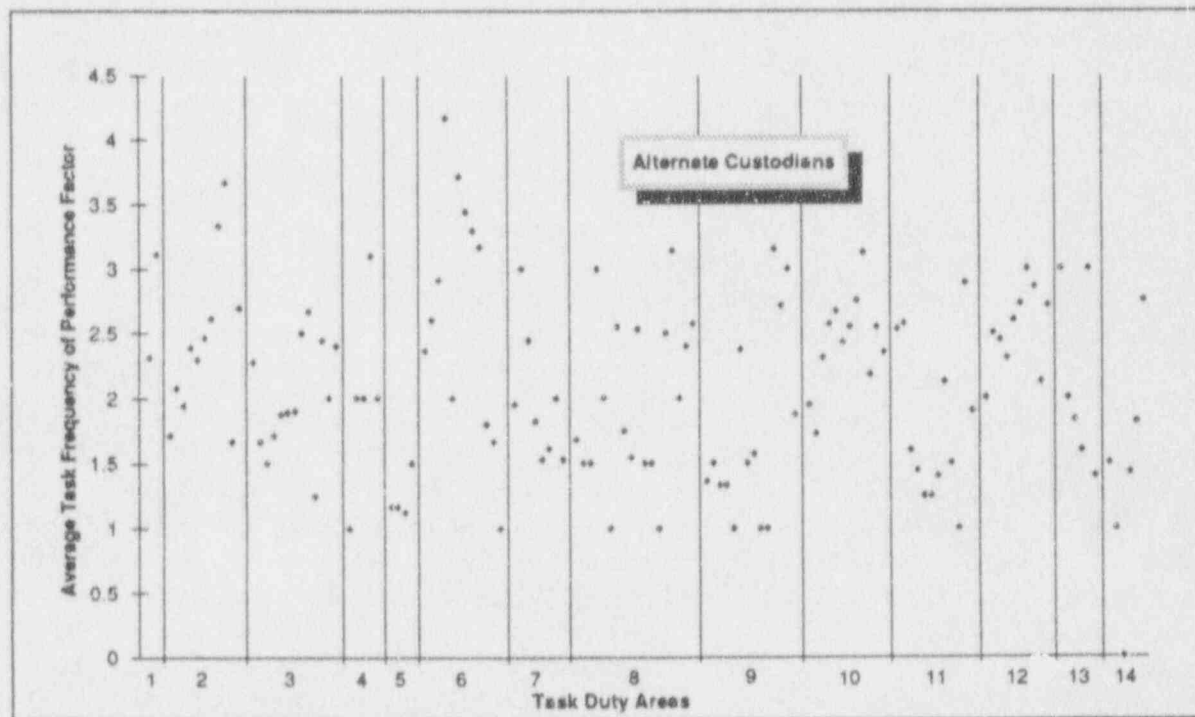
Fig. 13. Average *Frequency* of MC&A Task Performance by Alternate Custodians (Plotted Against Task Duty Area).
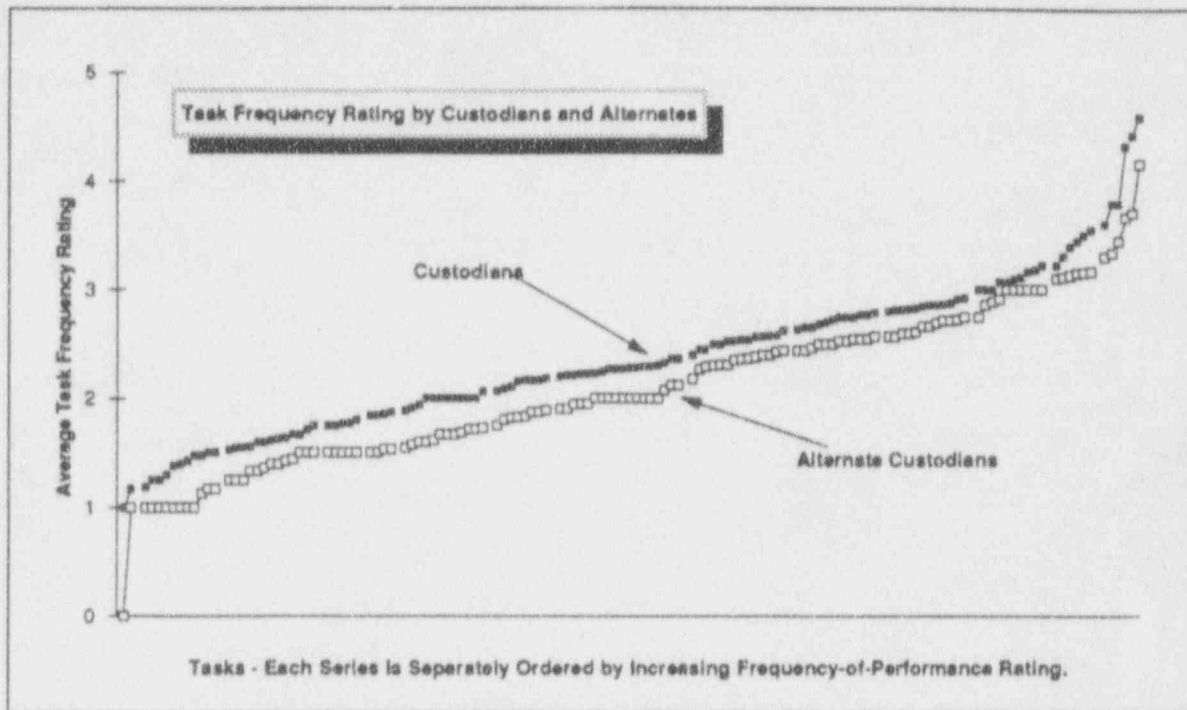
Fig. 14. Average *Frequency* of MC&A Custodian Task Performance by Custodians and Alternate Custodians. (Each Data Set Is Ordered *Separately* by Increasing *Frequency-of-Performance* Rating.)

decision-tree analysis of one of the data sets results in a training requirement of *no train* and the analysis of either of the other two data sets results in a training requirement of either *train* or *overtrain*, that task is counted as *no train/train/overtrain*. Finally, tasks are listed as *not applicable* (NA) if no one performs them and are listed as 1P if performed by only one respondent. (This latter distinction is made because we have no statistical measure of reliability for those tasks that only one person performs.)

These seven categories were chosen because they indicate the numbers of tasks for which the decision-tree analysis produces consistent results (i.e., the top three categories [NT, T,and OT] in Table IV) or inconsistent results (i.e., the T/OT and NT/T/OT categories) within the A±S (one standard deviation) level. The actual training requirement for tasks in these last two categories must be based on criteria and considerations other than the decision-tree analysis; they are divided into two categories because it is likely that the T/OT-category tasks will have to be included in the training program, whereas at least some of the NT/T/OT tasks will probably be *no train* and not be included in the *formal* training program. Therefore, the data in Table IV allow us to estimate the minimum training program required for a particular job category as the sum of the T, OT, and T/OT tasks.

The results in Table IV indicate that training for more than one-third (50 to 60) of the custodian/alternate tasks will have to be based on criteria other than the results of the DOE-recommended decision-tree analysis process. We believe that this situation is a result of the great heterogeneity of these custodian/alternate-custodian populations.

The task-training requirements resulting from the decision-tree analysis of the questionnaire task assessments are also plotted in Figs. 15 and 15 for the custodians and the alternates, respectively. To

TABLE III. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR CUSTODIANS AND ALTERNATES

Task Description	Training Recommendations (See notes 1, 2, 3, 4, & 5.)											
	26 Custodians				24 Alternates				All 50 Cust & Alt			
	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
1. Identify LANL Groups and Their Responsibilities for MC&A and Safeguards.												
1.1 Respond to internal and external questions regarding MC&A organization and the responsibilities at LANL.	21	OT	NT	NT	16	NT	T	NT	37	OT	NT	NT
1.2 Delegate tasks of NM MC&A and safeguards to appropriate groups and individuals when required.	18	OT	NT	NT	9	T	OT	OT	27	OT	OT	NT
2. Perform Material Accounting and Safeguards System (MASS) Duties.												
2.1 Submit monthly inventory difference (ID) report to OS-2 as required.	13	OT	T	NT	14	OT	OT	T	27	OT	OT	T
2.2 Perform inventory adjustments (for example, for normal operating loss or routing tests).	18	NT	NT	NT	13	T	NT	NT	31	NT	NT	NT
2.3 Review MASS reports provided by OS-2 and respond if required.	26	NT	NT	NT	17	T	T	NT	43	NT	NT	NT
2.4 Monitor and evaluate material-in-process (MIP) transactions.	15	OT	NT	NT	13	OT	OT	NT	28	OT	T	NT
2.5 Follow procedures of MASS as a non-MASS user.												
2.5.1 Obtain transaction information from NM handler as required.	21	NT	NT	NT	17	NT	NT	NT	38	NT	NT	NT
2.5.2 Report NM transaction activity to OS-2 in required time limits as a non-MASS user.	20	NT	NT	NT	15	NT	NT	NT	35	NT	NT	NT
2.6 Follow procedures of MASS as a validated MASS user.												
2.6.1 Obtain transaction information from NM handler as required.	15	NT	NT	NT	18	NT	NT	NT	33	NT	NT	NT
2.6.2 Perform MASS transactions using an on-line terminal.	7	T	NT	NT	9	T	NT	NT	16	T	NT	NT
2.6.3 Review and approve MASS user access request form and submit to OS-2.	7	NT	NT	NT	3	T	T	T	10	OT	NT	NT
2.6.4 Ensure that new MBA MASS users are validated.	7	OT	NT	NT	3	OT	OT	NT	10	OT	T	NT
2.6.5 Report NM transaction activity to OS-2 in required time limits as a MASS user.	12	NT	NT	NT	13	NT	NT	NT	25	NT	NT	NT
3. Implement Measurement and Measurement Control Programs.												
3.1 Perform the assay measurements of items in your holdings as required.	4	OT	NT	NT	11	OT	OT	NT	15	OT	OT	NT
3.2 Arrange for the assay measurements of items in your holdings as required.	9	OT	OT	NT	9	NT	NT	NT	18	T	NT	NT
3.3 Perform confirmation measurements as required.	9	OT	T	NT	6	OT	OT	OT	15	OT	OT	T
3.4 Arrange that confirmation measurements are performed as required.	11	OT	T	NT	7	T	NT	NT	18	T	T	NT
3.5 Perform verification measurements as required.	12	OT	OT	NT	8	OT	T	NT	20	OT	OT	NT
3.6 Arrange that verification measurements are performed as required.	14	OT	T	NT	9	T	NT	NT	23	T	NT	NT
3.7 If an item fails (in 3.3 through 3.6), ensure that item is not processed and resolve the discrepancy.	13	OT	OT	T	10	OT	OT	OT	23	OT	OT	T
3.8 Select, w/ OS-2 approval, the approval methods of how items will be measured (mass, form) following LANL graded-safeguards program.	14	OT	NT	NT	6	OT	NT	NT	20	OT	NT	NT
3.9 Ensure that persons performing measurements are trained/qualified as outlined in the OS-2 MC&A training & certification program.	9	OT	OT	T	3	T	OT	NT	12	OT	OT	OT
3.10 Participate in sample exchange program, if applicable.	3	OT	OT	NT	4	T	T	NT	7	OT	T	T
3.11 Ensure that all instruments, methods, & standards used for NM accountability measurements within your control are certified.	10	OT	OT	NT	9	OT	OT	NT	19	OT	OT	NT
3.12 Ensure that procedures for calibration of instruments and methods are in place.	8	OT	T	T	9	T	T	NT	17	OT	OT	NT
3.13 Maintain a measurement control program as presented in your MBA OP.	11	OT	OT	T	5	OT	OT	T	16	OT	OT	OT
4. Establish Administrative Controls.												
4.1 Perform duties required by the internal review and assessment (IRA) program.	16	OT	OT	T	6	OT	T	NT	22	OT	OT	T
4.2 Prepare and submit process accountability flow diagram (PAFD) to OS-2 for approval.	6	OT	OT	T	4	OT	T	T	10	OT	T	T
4.3 Monitor and modify PAFD as required.	4	OT	OT	T	4	T	T	NT	8	OT	OT	T
4.4 Perform daily administrative checks as required.	13	NT	NT	NT	10	NT	NT	NT	23	NT	NT	NT
4.5 Prepare temporary MBA OPs when required.	8	OT	OT	T	5	NT	NT	NT	13	OT	OT	T

Notes:

(1) Shaded tasks require training decision.
(2) # = number performing task.
(3) A+S = results of analysis of average responses plus one standard deviation.
(4) A = results of analysis of average responses.
(5) A-S = results of analysis of average responses minus one standard deviation.

TABLE III. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR CUSTODIANS AND ALTERNATES (cont)

Task Description	Training Recommendations										
	26 Custodians				24 Alternates				All 50 Cust & Alt		
	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
5. Establish MBA OPs.												
5.1 Write routine MBA OPs using MC&A Handbook guidelines and other relevant sources.	20	OT	T	T	6	T	T	T	26	OT	T	T
5.2 Obtain required approval of MBA procedures.	20	OT	T	T	6	OT	T	T	26	OT	T	T
5.3 Provide OS-2 group office with a copy of approved procedures.	21	T	NT	NT	8	NT	NT	NT	29	NT	NT	NT
5.4 Review and update MBA procedures when required.	21	OT	T	NT	10	T	NT	NT	31	T	T	NT
6. Implement Material Control Program and Physical Security.												
6.1 Perform duties as required in tamper-indicating device (TID) program.	8	T	OT	T	11	NT	T	T	19	NT	NT	T
6.2 Comply with the Detection and Assessment Systems.	9	T	OT	NT	5	OT	OT	T	14	OT	OT	NT
6.3 Comply with the Laboratory material containment program.	14	OT	OT	OT	11	NT	NT	T	25	OT	OT	NT
6.4 Comply with as-low-as-reasonably-attainable (ALARA) guidelines.	18	T	T	NT	18	NT	NT	NT	36	T	NT	NT
6.5 Determine and evaluate IDs using material control indicators (MCIs).	8	OT	OT	T	7	OT	OT	OT	15	OT	OT	OT
6.6 Assure compliance with MBA OPs												
6.6.1 Perform duties required for the personnel access control program.	11	OT	OT	T	7	NT	NT	NT	18	OT	NT	NT
6.6.2 Perform duties required by the Material Surveillance Procedures (MSP).	14	OT	OT	OT	9	T	OT	NT	23	OT	OT	OT
6.6.3 Comply with graded safeguards and designated attractiveness levels assigned to SNM and NM.	19	OT	OT	T	10	T	OT	OT	29	OT	OT	OT
6.6.4 Coordinate and implement controls (for example, combination-change sign-off sheet) for vaults and safes.	15	NT	NT	NT	18	NT	NT	NT	33	NT	NT	NT
6.7 Respond to emergencies using approved Lab and DOE procedures.												
6.7.1 Respond to suspected, alleged, or actual diversion of NM.	10	OT	T	T	10	OT	OT	OT	20	OT	OT	OT
6.7.2 Respond to significant inventory differences.	11	OT	T	NT	12	OT	OT	OT	23	OT	OT	OT
6.7.3 Respond to threats against LANL and the public involving NM (includes knowledge of threat statement and risk assessment).	5	OT	OT	T	3	OT	OT	T	8	OT	OT	T
7. Perform Inventory Duties.												
7.1 Prepare for the physical inventories as required by LANL Physical Inventory Plan.	26	T	T	NT	21	T	T	NT	47	T	NT	NT
7.2 Conduct daily inventories as required.	9	OT	OT	NT	9	NT	NT	NT	18	OT	NT	NT
7.3 Conduct bimonthly inventories as required.	13	OT	NT	NT	9	OT	T	NT	22	OT	NT	NT
7.4 Conduct semiannual inventory and annual inventories as required.	25	OT	T	T	17	OT	OT	T	42	OT	T	T
7.5 Conduct special inventories as required.	16	OT	T	NT	15	OT	OT	T	31	OT	OT	T
7.6 Perform measurements of selected inventory items as requested by OS-2.	11	OT	T	NT	13	OT	OT	T	24	OT	OT	NT
7.7 Arrange for measurements of selected inventory items as requested by OS-2.	13	OT	T	NT	9	OT	NT	NT	22	T	NT	NT
7.8 Reconcile discrepancies or problems identified as a result of the inventory.	22	OT	OT	NT	15	OT	OT	OT	37	OT	OT	OT
8. Perform External (Off-Site) NM Transfers.												
8.1 Request authorization to ship material off-site.	17	OT	OT	T	19	OT	OT	OT	36	OT	OT	OT
8.2 Verify authorization to ship has been granted by receiving facility.	13	OT	OT	NT	16	T	NT	NT	29	OT	NT	NT
8.3 Coordinate off-site NM transfer with OS-14 using the scheduling information outline (19 Points).	11	OT	OT	OT	10	OT	T	T	21	OT	OT	T
8.4 Follow classification guidelines.	12	OT	OT	NT	12	OT	OT	NT	24	OT	OT	NT
8.5 Arrange for preshipment measurements and provide results to OS-2 Accounting Section.	7	OT	OT	OT	7	T	T	T	14	OT	OT	T
8.6 Complete checklist for limit-of-error (LOE) calculations form and forward completed copies to A-1 and OS-2.	5	OT	NT	NT	1	·	T	·	6	OT	NT	NT
8.7 Arrange for health protection monitoring and swiping with the appropriate HS group.	18	NT	NT	NT	20	NT	NT	NT	38	NT	NT	NT
8.8 Package NM for off-site shipments.	12	OT	OT	OT	16	OT	OT	OT	28	OT	OT	OT
8.9 Arrange for proper labeling for off-site shipments of NM with the appropriate HS group.	13	OT	T	T	11	OT	OT	OT	24	OT	OT	OT
8.10 Complete appropriate section of radioactive material transfer tag (RMTT) and attach to container.	15	NT	NT	NT	17	NT	NT	NT	32	NT	NT	NT

Task Description	Training Recommendations										
	26 Custodians				24 Alternates				All 50 Cust & Alt		
	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S

8. Perform External (Off-Site) NM Transfers. (cont)

Task Description	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
8.11 Provide receiver with appropriate copies of shipping data sheet.	10	NT	NT	NT	12	NT	NT	NT	22	T	NT	NT
8.12 Prepare shipping manifest (SM) or courier shipment form as required and forward a copy to OS-2 and HS-3.	15	T	T	NT	8	OT	OT	NT	23	OT	T	NT
8.13 Perform a transfer check (Sec. 2, part 7, MC&A Handbook).	10	OT	T	NT	2	OT	OT	OT	12	OT	T	T
8.14 Perform MASS transaction as a non-MASS user.	11	NT	NT	NT	8	OT	NT	NT	19	NT	NT	NT
8.15 Perform MASS transaction as a MASS user.	5	T	NT	NT	7	NT	NT	NT	12	NT	NT	NT
8.16 Notify OS-14 that the shipment is prepared.	17	NT	NT	NT	18	NT	NT	NT	35	NT	NT	NT
8.17 Provide OS-14 NM handler with an items-in-transit list of the shipment.	11	NT	NT	NT	10	OT	T	NT	21	NT	NT	NT
8.18 Obtain appropriate authorization of RMTT and retain receipt.	15	NT	NT	NT	14	NT	NT	NT	29	NT	NT	NT

9. Receive External (Off-Site) Transfers of NM.

Task Description	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
9.1 Submit NM receipt authorization to OS-2.	14	NT	NT	NT	11	NT	NT	NT	25	NT	NT	NT
9.2 Notify OS-2 within required time of receipt of the off-site NM shipment.	17	T	T	NT	16	T	NT	NT	33	T	NT	NT
9.3 Perform a transfer check (Sec. 2, part 7, MC&A Handbook).	14	OT	T	NT	9	NT	NT	NT	23	T	NT	NT
9.4 Complete receipt of confirmation form.	12	NT	NT	NT	6	T	NT	NT	18	NT	NT	NT
9.5 If shipment does not confirm, respond using MBA OPs.	10	OT	OT	T	5	OT	T	NT	15	OT	OT	T
9.6 Arrange for incoming HS-Division monitoring.	13	NT	NT	NT	16	NT	NT	NT	29	NT	NT	NT
9.7 Perform accountability measurements when receiving off-site shipments.	8	OT	OT	OT	6	OT	OT	NT	14	OT	OT	OT
9.8 Arrange for accountability measurements when receiving off-site shipments.	8	OT	OT	OT	7	OT	T	NT	15	OT	OT	T
9.9 Complete checklist for LOE calculations form.	2	OT	T	NT	1	·	T	·	3	OT	T	NT
9.10 Send copies of completed checklist to A-1 and OS-2.	4	OT	T	NT	2	NT	NT	NT	6	OT	NT	NT
9.11 Confirm accuracy of information on RMTT tag and sign.	13	NT	NT	NT	13	NT	NT	NT	26	NT	NT	NT
9.12 Confirm an items-in-transit list if required.	10	OT	NT	NT	7	NT	NT	NT	17	NT	NT	NT
9.13 Perform MASS transaction as a MASS user.	5	NT	NT	NT	8	T	NT	NT	13	NT	NT	NT
9.14 Perform MASS transaction as a non-MASS user.	13	T	T	NT	8	T	NT	NT	21	T	NT	NT

10. Ship Internal Transfers of NM Between Different MAAs.

Task Description	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
10.1 Notify receiving NM custodian before making the NM transfer.	23	NT	NT	NT	20	NT	NT	NT	43	NT	NT	NT
10.2 Ensure proper measurement of items being transferred is complete.	16	OT	NT	NT	11	T	NT	NT	27	NT	T	NT
10.3 Package NM for on-site transfer following HS-1 requirements.	20	NT	T	NT	16	OT	T	T	36	NT	T	NT
10.3.1 Apply TID if required.	5	NT	NT	NT	7	NT	NT	T	12	NT	NT	T
10.4 Follow classification guidelines.	15	OT	NT	T	12	OT	OT	T	27	OT	OT	T
10.5 Coordinate transfer with OS-14.	22	NT	NT	NT	21	NT	NT	NT	43	NT	NT	NT
10.6 Complete appropriate section of RMTT and attach to container.	22	NT	NT	NT	20	NT	NT	NT	42	NT	NT	NT
10.7 Arrange for health protection monitoring and swiping with HS as required.	22	NT	NT	NT	20	NT	NT	NT	42	NT	NT	NT
10.8 Perform MASS transaction as a MASS user.	6	NT	NT	NT	8	NT	NT	NT	14	NT	NT	NT
10.9 Perform MASS transaction as a non-MASS user.	15	NT	NT	NT	11	NT	NT	NT	26	NT	NT	NT
10.10 Provide OS-14 NM handler with an items-in-transit list of the shipment.	11	NT	NT	NT	11	NT	NT	NT	22	NT	NT	NT
10.11 Obtain appropriate approval signatures of RMTT and retain receipt.	21	NT	NT	NT	20	NT	NT	NT	41	NT	NT	NT

11. Receive Internal (On-Site) NM Transfers Between Different MAAs.

Task Description	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
11.1 Confirm accuracy of information on RMTT tag and sign.	20	NT	NT	NT	17	NT	NT	NT	37	NT	NT	NT
11.2 Confirm an items-in-transit list if required.	13	NT	NT	NT	7	NT	NT	NT	20	NT	NT	NT
11.3 Perform transfer check as required (Sec. 8, part 3, MC&A Handbook).	13	NT	NT	NT	5	OT	T	NT	18	NT	NT	NT
11.4 Perform accountability measurements when receiving off-site shipments.	11	T	NT	NT	9	OT	T	NT	20	OT	OT	NT
11.5 Arrange for accountability measurements when receiving off-site shipments.	11	OT	T	NT	8	OT	OT	OT	19	OT	OT	T
11.6 Perform confirmation measurements as required.	11	T	T	NT	8	OT	OT	T	19	OT	OT	NT
11.7 Arrange for confirmation measurements as required.	11	OT	NT	NT	5	OT	T	NT	16	T	NT	NT
11.8 Perform verification measurements as required.	9	OT	T	NT	8	OT	T	NT	17	OT	OT	NT

Task Description	26 Custodians				24 Alternates				All 50 Cust & Alt			
	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
11. Receive Internal (On-Site) NM Transfers Between Different MAAs. (cont)												
11.9 Arrange for verification measurements as required.	10	OT	OT	NT	8	T	NT	NT	18	OT	T	NT
11.10 If transfer does not confirm, follow MBA OP.	14	OT	T	T	5	OT	OT	OT	19	OT	OT	T
11.11 Perform MASS transaction as a MASS user.	8	NT	NT	NT	9	NT	NT	NT	17	NT	NT	NT
11.12 Perform MASS transaction as a non-MASS user.	17	NT	T	NT	10	T	NT	NT	27	T	NT	NT
12. Send NM Within or Between MBAs of the Same MAA.												
12.1 Obtain authorization from receiving NM custodian before sending the NM as required (or follow the PAFD).	11	NT	T	NT	11	NT	NT	NT	22	T	NT	NT
12.2 Package NM for transfer if required.	10	OT	T	NT	14	OT	OT	NT	24	OT	OT	NT
12.3 Request proper packaging of NM for transfer if required.	9	OT	T	NT	9	OT	OT	OT	18	OT	OT	T
12.4 Arrange for proper labeling and documentation for transfer of NM, if required.	12	NT	T	NT	13	OT	OT	NT	25	OT	T	NT
12.5 Complete appropriate portion of RMTT and attach to container if required.	12	NT	NT	NT	15	NT	NT	NT	27	NT	NT	NT
12.6 Arrange for health protection monitoring and swiping with HS if required.	12	NT	NT	NT	11	NT	NT	NT	23	NT	NT	NT
12.7 Follow required MSP.	7	OT	OT	OT	8	T	NT	NT	15	OT	OT	T
12.8 Perform MASS transaction as a MASS user.	5	T	NT	NT	7	NT	NT	T	12	NT	NT	NT
12.9 Perform MASS transaction as a non-MASS user.	6	NT	NT	NT	8	NT	NT	NT	14	NT	NT	NT
12.10 Ensure that the receiving NM custodian performs receiving MASS transaction as required (or follow PAFD).	8	OT	OT	T	7	NT	NT	NT	15	OT	NT	NT
13. Receive NM Within or Between MBAs of the Same MAA.												
13.1 Confirm accuracy of information on RMTT and sign tag if required.	9	NT	NT	NT	10	NT	NT	NT	19	NT	NT	NT
13.2 Confirm an items-in-transit list if required.	9	NT	NT	NT	4	OT	T	NT	13	NT	NT	NT
13.3 Follow PAFD, MSP, and/or MBA-OP for confirming transfer.	6	OT	OT	NT	6	OT	T	NT	12	OT	T	T
13.4 If shipment does not confirm, respond using MBA operating procedures.	7	OT	T	NT	5	OT	OT	NT	12	OT	OT	NT
13.5 Perform MASS transaction as a MASS user.	5	NT	NT	NT	5	NT	NT	NT	10	NT	NT	NT
13.6 Perform MASS transaction as a non-MASS user.	6	NT	NT	NT	5	T	NT	NT	11	NT	NT	NT
14. Other NM Activities (Not MC&A but NM Management Activities).												
14.1 Assist in preparing the forecast of NM needs related to research, development and testing programs.	15	T	T	T	10	T	T	T	25	T	T	T
14.2 Assist in preparing a material management plan (MMP).	6	OT	OT	T	2	T	NT	NT	8	OT	T	T
14.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	4	T	NT	NT	0	-	NA	-	4	T	NT	NT
14.4 Identify material that is in excess of the programmatic needs.	13	T	T	NT	7	T	T	T	20	T	T	T
14.5 Arrange for discard of NM (excess and waste).	17	OT	OT	OT	11	OT	T	T	28	OT	OT	T
14.6 Create and maintain NM waste drums.	11	OT	OT	NT	4	OT	OT	OT	15	OT	OT	T
Number of usable respondent questionnaires:	26				24				50			

TABLE IV. RESULTS OF DECISION-TREE ANALYSIS OF CUSTODIANS' AND ALTERNATES' MC&A TASK QUESTIONNAIRE RESULTS

Numbers of Tasks as a Function of Level of Training Required, Considering A+S, A, and A–S Data

Training Requirement	From Custodians' Responses	From Alternate Custodians' Responses	From Combined Responses
No Train*	41	41	42
Train*	1	5	2
Overtrain*	9	14	12
Train or Overtrain, Depending on Data Set	23	17	27
No Train, Train, or Overtrain, Depending on Data Set	59	53	50
Not Applicable (i.e., No One Performs Task)	0	1	0
Only One Respondent Performs Task	0	2	0

* Totals of no-train, train, and overtrain tasks *do not* include the tasks performed by only one respondent.

provide a quick, graphical assessment of both the overall level of training required and of the relia-
bility of the decision-tree analysis results, we have plotted the training requirements resulting from
the decision-tree analysis of all three data sets (A+S, A, and A–S) as "high-low" data. We assigned
a numerical value of 2 (i.e., a training index) to training requirements of both *train* and *overtrain*, a
value of 1 to the training requirement of *no train*, and a value of 0 to those tasks that no one per-
forms. The three numerical training indices for each task (i.e., one each for the A+S, A, and A–S
data sets) are plotted individually on the chart at a common value on the task (χ) axis. Thus, if the
analyses of all three data sets result in the same training requirement, the three points are plotted on
top of one another and appear as a single data point for that task. (Tasks that only one person per-
forms also show up as a single data point on the chart because we have only one data set for them,
namely the A set.) If both NT and T and/or OT training requirements result for a particular task, the
training requirements are essentially indeterminate; and there will be two points on the plot for that
task at indices of 2 and 1 respectively. These two points are connected by a vertical line, showing
the spread of the results.
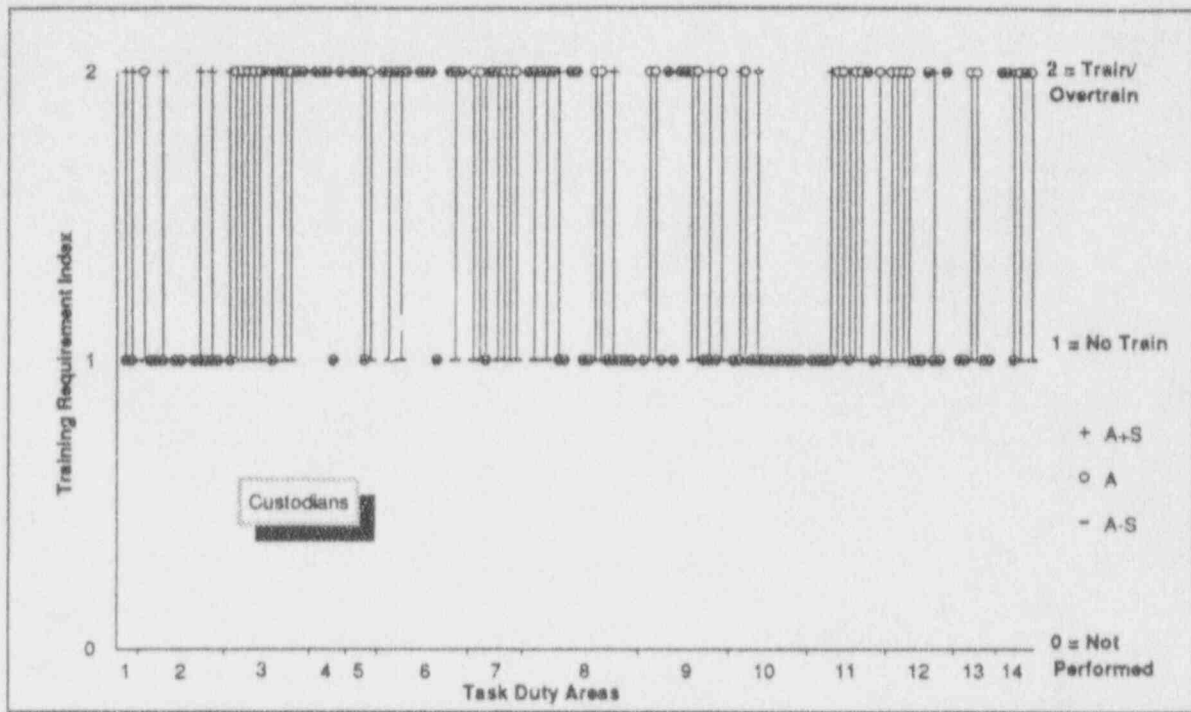
Fig. 15. Training Requirements for Custodians (Analysis of Averaged Responses [A] and of Averages Plus [A+S] and Minus [A–S] One Standard Deviation).
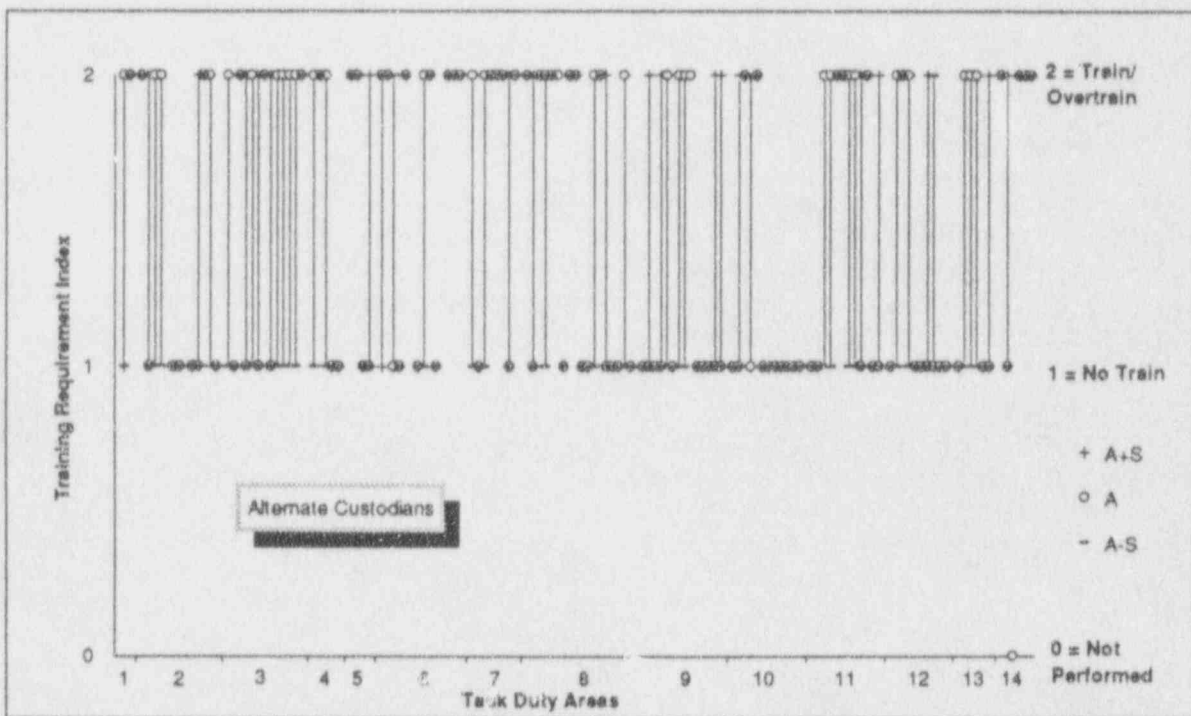
Fig 16. Training Requirements for Alternate Custodians (Analysis of Averaged Responses [A] and of Averages Plus [A+S] and Minus [A–S] One Standard Deviation).

Thus, the overall training-requirement level of the tasks is shown by the average height of the plotted data (i.e., the numerical training-requirement index) above the task axis, and the unreliability of the data is shown by the spread of the training index values (or the number of bars, as opposed to points, on the plot). For example, if the decision-tree analysis of the questionnaire data for one of the MC&A job categories resulted in training requirement of NT for all of the tasks and all three data sets produced the same results, the task-training requirement plot would be a series of points at a training index level of 1. If, however, the decision-tree analysis results of the three data sets for every task resulted in training requirements of NT for the A–S set, a value of T for the A set, and a value of OT for the A+S set, the task-training requirement plot would be a series of vertical lines, one for each task, extending from an index value of 1 to an index value of 2. The actual situation will be a mixture of these two possibilities plus all of the other possible results.

The training requirement plots for the custodians and the alternate custodians emphasize the fact that the decision-tree analyses of the three data sets for many of the custodian/alternate tasks result in many indeterminate training requirements; therefore, there are more vertical-bar type tasks than there are single-point type tasks.

4.   Validation of the Task-Training Requirement List.

We convened a task-training-requirement validation meeting consisting of SMEs from the MC&A TAC to consider the results of the analysis of these questionnaire responses. The SMEs on the Task-Training-Requirement Validation Committee disagreed with the training recommendations resulting from the decision-tree analysis for many of the tasks, even some of the tasks having questionnaire results that appeared to be statistically reliable (i.e., those tasks for which the decision-tree analysis of the A+S, A, and A–S data sets all resulted in the same training requirement). In addition, some of the NA tasks should have been performed by most of the custodians! The questionnaire results suggested to the committee that many of the custodians/alternates were either not performing their required MC&A tasks or else they were performing them improperly.

In the course of this discussion, we reconsidered the requirements of the DOE-recommended JTA process and the realities of the work environments in which many of the custodians find themselves. In particular, the DOE process attempts to differentiate between those tasks requiring formal training and those that can be learned in the normal course of job activities (i.e., informal training). This latter category requires that the new job incumbents be able to work with SMEs in the normal course of their job activities. In the case of many of the MC&A accounts, there are no MC&A SMEs working at the incumbent's job location. As a result, the informal training assumed by the DOE is not possible. Therefore, we concluded that the MC&A custodian/alternate custodian training program would have to provide formal training for at least some of the custodians/alternates for all of the tasks on our validated task list that are applicable to each individual account (i.e., none of the required tasks could be learned informally).

Because of the high overall level of MC&A activities in the CAT-I accounts, the DOE assumption of resident SMEs is probably valid for most of those accounts. Thus, it is likely that at least some of the CAT-I custodians/alternates will not have to be *formally* trained in all of the MC&A custodian tasks because they will be able to learn them in the normal course of job activities. Unfortunately, the methodology adopted at the beginning and used throughout this job analysis does not allow us to identify either those CAT-I custodians or alternates not requiring full *formal* training or the tasks that can be satisfactorily learned by these people in the normal course of job activities. Therefore, the MC&A training officer will have to employ some other technique to determine those people whose needs can be satisfied by the smaller, customized training program and which tasks to include in it.

D. Handlers

1. Generation and Validation of MC&A Task List

Following the same basic procedures discussed above, we generated a task list for the MC&A category of handler. Here again, the initial task list came primarily from a review of the *MC&A Handbook* and available OPs. However, many of the other documents listed in Sec.II.B.1.a above were also reviewed. This list was initially corrected and validated by interviewing five handlers who covered the full range of MC&A activities. However, representatives of several LANL groups pointed out to the MC&A training officer that their operations were rather different from those described in this validated handler's task list. As a result, we conducted additional validation meetings with representatives of three of these groups (M-4, MST-7, and MP-DO). The net result of these meetings was a good understanding of the difficulties experienced by some groups in implementing the prescribed MC&A activities. However, no substantive changes were made to the validated task list. A copy of the validated task list for the handlers is attached as Table C-II in Appendix C.

2. Administration of the Task-Evaluation Questionnaires.

We administered the task-assessment questionnaire to samples of handlers from each of three MC&A account categories, namely CAT I, CAT III, and CAT IV. (There are no CAT-II accounts.) In addition, the CAT-I category was divided into three subcategories, namely non-TA-55 CAT-I handlers, TA-55 TEC CAT-I handlers, and TA-55 SM CAT-I handlers, giving us a total of five different handler categories/subcategories. We also examined the combined data of all of the TA-55 handlers, which gave us a total of six handler data groups. (See Fig. 3 for a diagram of the MC&A categories and subcategories.)

We first administered the questionnaire to non-TA-55 CAT-I, CAT-III, and CAT-IV handlers on four different days using the computers in the HRD-3 PC labs at the Canyon Complex. We again used our computer-based software, QTA, to administer this questionnaire. The following week, we administered the same questionnaire on three different days to samples of the TA-55 TEC CAT-I and TA-55 SM CAT-I handlers using the computers at the TA-55 training facility.

Among the non-TA-55 handlers, we administered the questionnaire to 16 people from CAT-I accounts, 5 people from CAT-III accounts, and 21 people from CAT-IV accounts. (We had scheduled significantly more handlers than this number, but many of the scheduled people simply did not show up.) From the TA-55 handler population (all CAT I), we administered the questionnaire to a total of 47 people, including 25 TECs, 21 SMs, and 1 ASM. These people were distributed across the TA-55 groups as follows: 4 from NMT-1, 7 from NMT-2, 7 from NMT-3, 3 from NMT-4, 8 from NMT-5, 4 from NMT-6, 8 from NMT-7, and 6 from NMT-9. Our records identified each data set by category, group, and employee category so that we could compare the results from each of these different categories, if appropriate. We maintained these identifications for the data sets because we believed that the questionnaire responses from one or both of the TA-55 handlers subcategories might be statistically significant because these groups were expected to be the most homogeneous of all the MC&A categories.

Unfortunately, when we began the analysis of the questionnaire data collected from the handlers, we discovered that a "bug" existed in our QTA program This bug deleted one record from the respondent's data file whenever the respondent backed up in the questionnaire to check and/or revise a previous response. Because there was no way of determining which record was deleted, the entire data file was rendered invalid and unusable. As a result of this bug, we lost about one-third of the data files collected from the handlers during the questionnaire period. Because of the anonymity

maintained for questionnaire completion, it was not possible to identify those specific individuals whose data files were corrupted. We considered asking all of the respondents to repeat the questionnaire, but after reflecting on the cost effectiveness and realizing that the statistical validity of the results would probably not be significantly improved by a larger sample size, we decided against that option.

3.   Detailed Analysis of the Questionnaire Responses and Task-Training Requirements.

We performed detailed analyses of the questionnaire responses of six different subcategories of handlers: (a) non-TA-55 CAT-I handlers, (b) TA-55 TEC CAT-I handlers, (c) TA-55 SM CAT-I handlers, (d) all TA-55 CAT-I handlers (i.e., combined TEC and SM responses), (e) CAT-III handlers, and (f) CAT-IV handlers. The questionnaire responses and the results of the decision-tree analyses of these responses are presented in Appendix D as Tables D-III through D-VIII for these six handler subcategories, respectively. For each task, these tables list (a) the number and the percent of respondents actually performing the task; (b) the averages of the *difficulty, importance,* and *frequency* responses; and (c) the training recommendation resulting from the decision-tree analysis of those averages (the A column in the tables). In addition, the tables list the results of analyzing the averaged responses incremented (A+S) and decremented (A−S) by one standard deviation to obtain an indication of the statistical reliability of the results.

In Figs. 17 through 26 (after Table V), we present scatter plots of both the fraction of respondents performing each task and of the averages of the *Frequency of Performance* ratings of the tasks as a function of duty area for five of the handler subcategories. (A scatter plot is not presented for the combined set of TA-55 TECs and SMs [set (d) above] because it provides essentially no additional insight over and above the two individual sets. Likewise, scatter plots are not presented for the A+S or the A−S data.) These scatter plots allow us to easily discern any significant differences among the various populations and also among those duty areas with tasks performed by unusually large or small percentages of the respondents. (This information should provide insights useful for setting up the training program by allowing a check for those duties that should be performed but that are somehow being overlooked.) For the convenience of the reader in interpreting the figures, a summary of the duty areas is presented in Table V below .

The data for the non-TA-55 CAT-I handlers in Fig. 17 show that most of the tasks are performed by fewer than 55% of these handlers with a small number of tasks not performed at all.[3] On average, only 25% of the non-TA-55 CAT-I handlers are performing these MC&A tasks. Most of the tasks in duty areas 8 (transfer NM off-site) and 9 (operate and calibrate non-destructive analysis (NDA) instruments) are performed by fewer than 20% of these handlers. The *Frequency of Performance* data in Fig. 18 are scattered about an average value of 2.86 with no noteworthy peaks or valleys in individual duty areas.

The data for the TA-55 TECs (Figs. 19 and 20) are somewhat different, as might be expected. On average, 44% of the TA-55 TEC handlers perform their MC&A tasks, the highest percentage of any of the handler categories. However, there is a large valley in the data for duty areas 7, 8, and 9 (involving external transfers and NDA of NM). The tasks in these three duty areas are performed by half or fewer of these handlers, while the other duty areas show spreads from 0 to 100%. (It is our

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3   The reader should note that a frequency rating of 0 means that the respondent is not responsible for performing that particular task. This rating results in a training requirement of not applicable (NA) for that task. If, on the other hand, the respondent must know how to perform the task but has never actually performed it, a frequency rating of 1 is required, and the training requirement is determined by the decision-tree analysis.

TABLE V. SUMMARY OF MC&A HANDLER DUTY AREAS

1. Perform MASS Duties.
2. Perform administrative controls.
3. Receive internal (on-site) transfer of NM within or between MBAs of the same MAA.
4. Perform internal (on-site) transfer of NM within or between MBAs of the same MAA.
5. Receive internal (on-site) transfer of NM between different MAAs.
6. Perform internal (on-site) transfer of NM between different MAAs.
7. Receive external (off-site) transfer of NM.
8. Perform external (off-site) transfer of NM.
9. Operate and calibrate instruments.
10. Perform inventory duties.
11. Perform administrative duties.
12. Perform duties in the NM management program.

understanding that a small number of individuals spend essentially full time performing these transfers and NDA measurements for most of the accounts at TA-55.) The average of the *Frequency of Performance* ratings for the TA-55 TEC handlers (Fig. 20) is 3.59, higher than that of any other MC&A handler category. In addition, almost all of the tasks are rated at a *frequency* rating level of 3 or higher, i.e., the upper end of our *frequency* rating scale. It is interesting that there are no significant valleys in the data, even in duty areas 7, 8, or 9 so that essentially all of these handler MC&A tasks are performed with similar frequency by those TA-55 TECs who perform them.

The scatter plot for the fraction of TA-55 SMs performing the MC&A handler tasks (Fig. 21) looks qualitatively very much like that for the TA-55 TECs, except at a lower overall level. The maximum fraction performing any task is only 75% here; and the average value is only 27%, but the same valley is seen for duty areas 7, 8, and 9. Similarly, the average *frequency* of task performance (Fig. 22) is 2.92, i.e., the middle of the range, with the individual data points scattered widely about that average.

The data for the CAT-III handlers (Figs. 23 and 24) are again noteworthy. First, the fraction of respondents performing the tasks (Fig. 23) is the lowest seen in any group studied. A large number of tasks are not performed by anybody; the next largest group of tasks is performed by only 20% of the respondents (i.e., 1 out of 5), with still fewer tasks performed by 40%, 60% and 80% of the respondents. Few CAT-III handlers perform the tasks in duty areas 7 (receiving off-site NM) and 9 (NDA), and none of the tasks was performed by everybody. Similarly, the average *Frequency of Performance* of those tasks that are performed is low, 1.85, with only two tasks having a *Frequency of Performance* rating greater than 3.

The fraction of CAT-IV handlers performing the MC&A tasks (Fig. 25) looks very similar to that for the TA-55 SMs (Fig. 21), except that hardly any of the CAT-IV handlers performs tasks in duty area 9 (NDA). The average fraction of these handlers performing the MC&A tasks, for those tasks that are performed by at least one person, is 25%. The *Frequency of Performance* of those tasks that are performed (Fig. 26) is similar to that reported by the CAT-III handlers, with an average value of 1.84 and most of the ratings between 1 and 3.

Fig. 17. Fraction of Non-TA-55 CAT-I Handler Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).

Fig. 18. Average *Frequency* of MC&A Task Performance by Non-TA-55 CAT-I Handler Respondents (Plotted Against Task Duty Area).
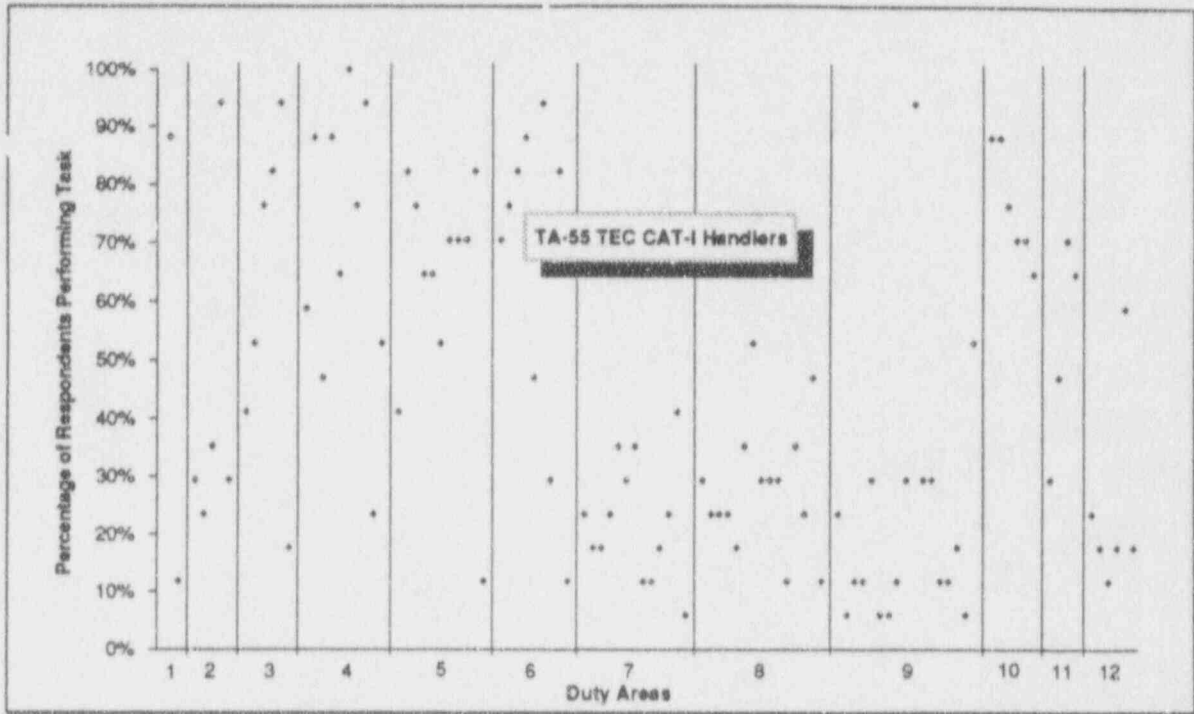
Fig. 19. Fraction of TA-55 TEC CAT-I Handler Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).
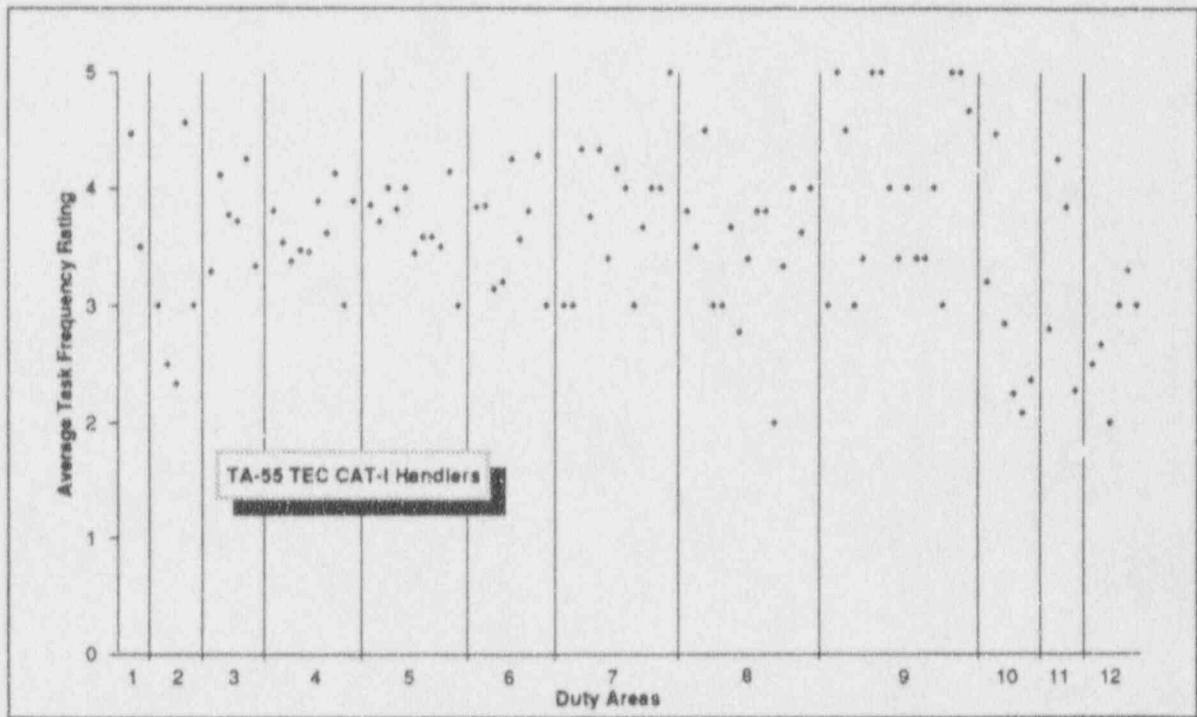
Fig. 20. Average *Frequency* of MC&A Task Performance by TA-55 TEC CAT-I Handler Respondents (Plotted Against Task Duty Area).

Fig. 21. Fraction of TA-55 SM CAT-I Handler Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).

Fig. 22. Average *Frequency* of MC&A Task Performance by TA-55 SM CAT-I Handler Respondents (Plotted Against Task Duty Area).
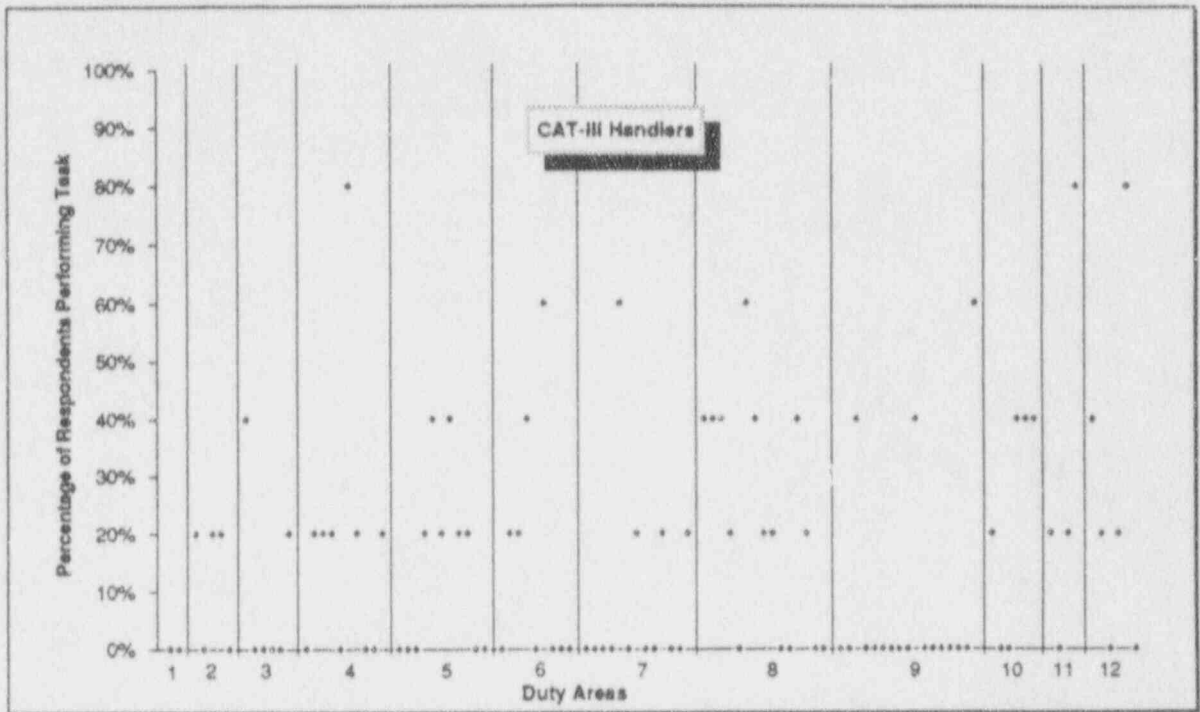
Fig. 23. Fraction of CAT-III Handler Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).
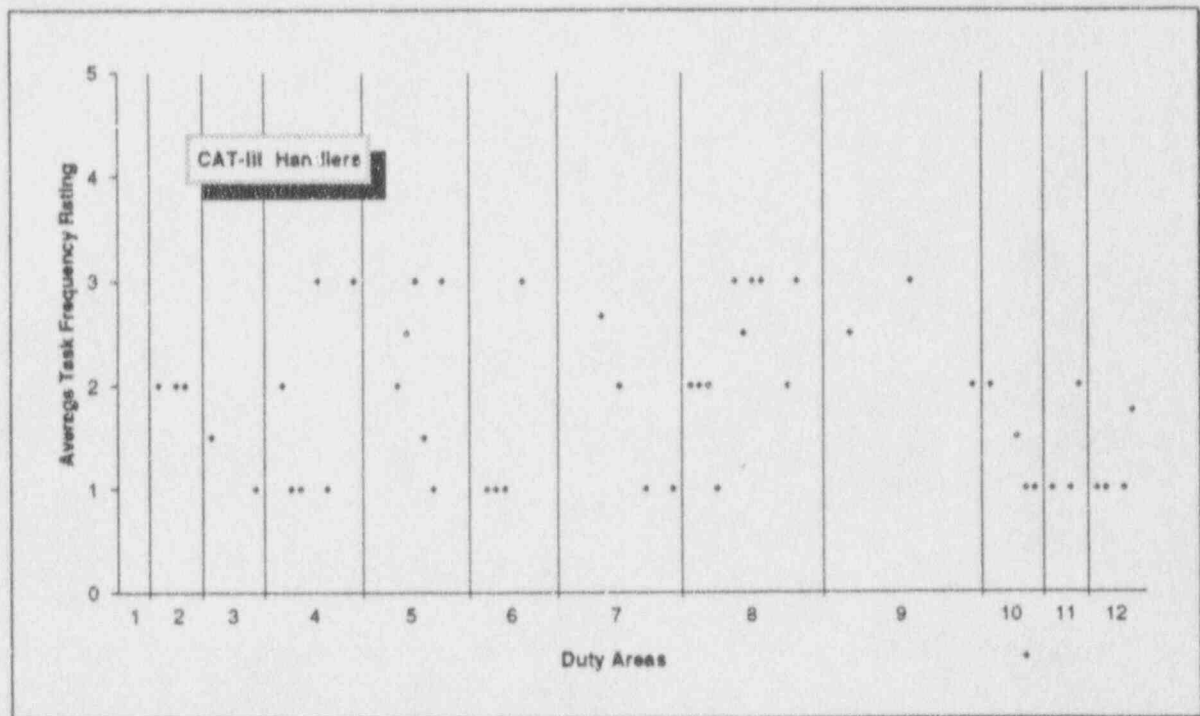
Fig. 24. Average *Frequency* of MC&A Task Performance by CAT-III Handler Respondents (Plotted Against Task Duty Area).
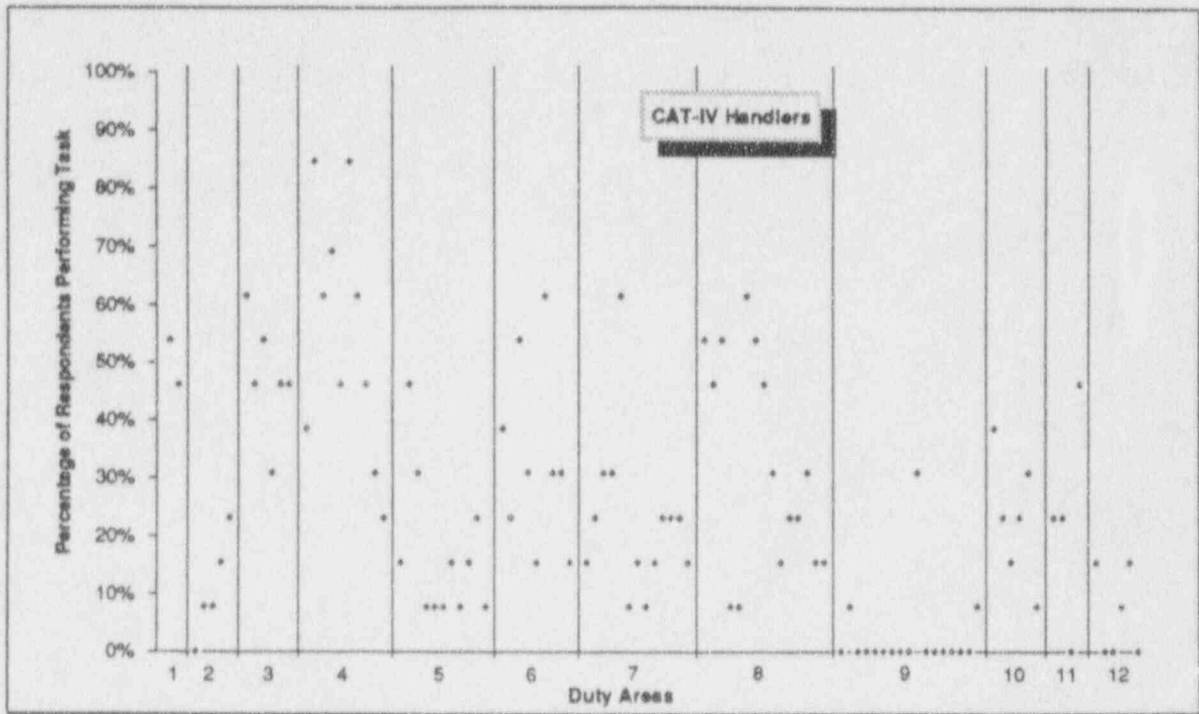
Fig. 25. Fraction of CAT-IV Handler Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).
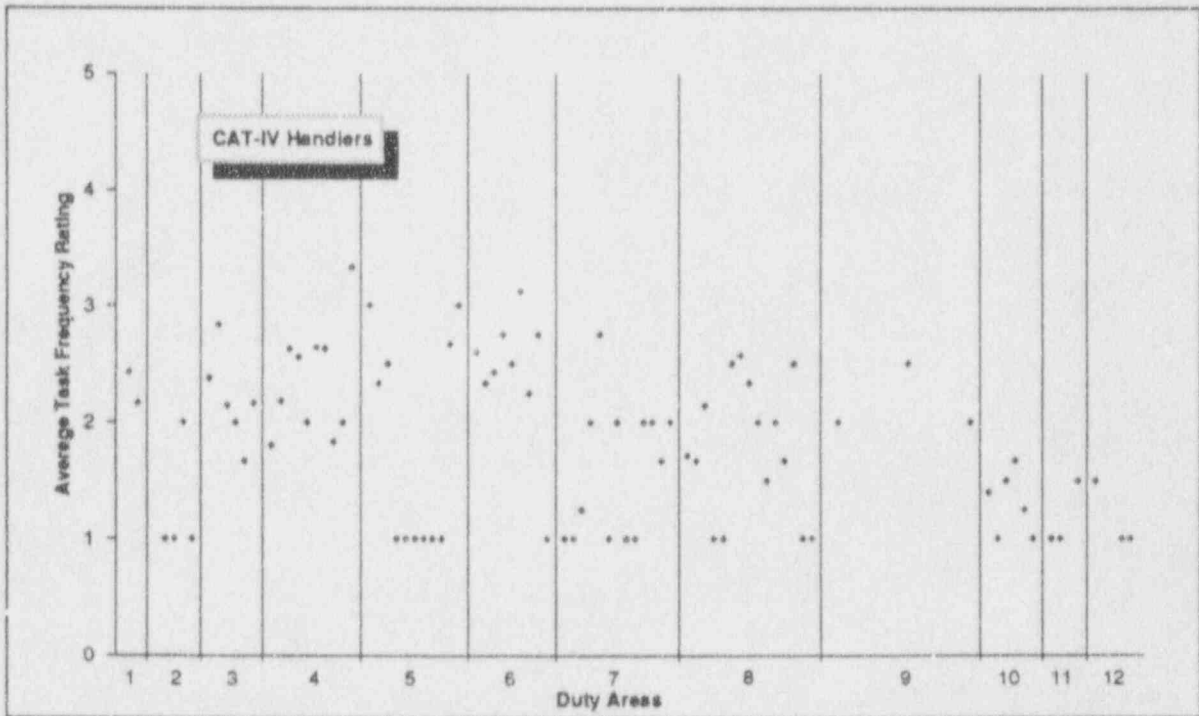
Fig. 26 Average *Frequency* of MC&A Task Performance by CAT-IV Handler Respondents (Plotted Against Task Duty Area).

These task performance observations are summarized in Figs. 27 and 28 where we compare, for the five categories of MC&A handlers, the fraction of respondents performing each task and the average *Frequency of Performance* rating of each task, respectively. In both figures, we have sorted the individual data sets by increasing value of the parameter being plotted. Figure 27 suggests that the five handler subcategories fall into one of three groups, namely (a) the TA-55 TECs who perform the greatest number of tasks; (b) the TA-55 SMs, the non-TA-55 CAT-I handlers, and the CAT-IV handlers, who perform an intermediate number of tasks; and (c) the CAT-III handlers, who perform the fewest tasks. For the average *Frequency of Performance* (Fig. 28), each individual handler subcategory plotted is relatively distinct except for considerable overlap of the TA-55 SMs with the non-TA-55 CAT-I handlers. Clearly, the total amount of MC&A activity of these handler categories decreases from the most to the least as follows: (a) the TA-55 TECs, (b) the TA-55 SMs, (c) the non-TA-55 CAT-I handlers, (d) the CAT-IV handlers, and (e) the CAT-III handlers, although the difference between categories (b) and (c) is not great.

The training requirements resulting from the decision-tree analyses of the three data sets (i.e., average [A], average plus one standard deviation [A+S], and average minus one standard deviation [A–S]) for all six of the handler subcategories analyzed (including the combined TA-55 TEC and SM category) are summarized in Table VI. This table lists, for each handler subcategory, the number of respondents and the training requirement (i.e., *no train* [NT], *train* [T], or *overtrain* [OT]) resulting from the decision-tree analysis of each of the three data sets. We have shaded those results for which the training requirement changes when the average results are incremented or decremented by one standard deviation. For this purpose, we consider a result of *train* (T) or *overtrain* (OT) to be equivalent because both require including the task in the training program.

Tables VII and VIII summarize the training requirements resulting from the DOE-recommended decision-tree analysis of the questionnaire data for the six subcategories of handlers analyzed. In Table VII, we consider the analysis of only the averages of the respondents' task ratings, while in Table VIII we consider the results of the analysis of the A+S, A, and A–S data.

The task-training requirements resulting from the decision-tree analysis of the questionnaire data are also plotted in Figs. 29 through 33. We have again plotted the training requirements as high-low training-requirement-index data, assigning a numerical value of 2 to the training requirements of both *train* and *overtrain*, a value of 1 to *no train*, and a value of 0 to those tasks that no one performs (NA). The training requirements resulting from the analyses of the A+S, A, and A–S data sets are plotted individually on the chart for each task at a common value on the task (χ) axis. Thus, if the analysis of all three data sets results in the same training requirement, the three points are plotted on top of one another. If different training requirements result, the points are connected by a vertical line, showing the variability of the results.

The data in Table VIII and Figs. 29 through 33 indicate that these handler populations are somewhat heterogeneous with respect to their assessment of the difficulty, importance and *frequency* of the MC&A tasks. As a result, the training decision for most of the tasks must be based on criteria other than the decision-tree analysis.

In the case of the handlers, the results suggest that a considerably abbreviated, customized training program can be provided for the CAT-I handlers. For the TA-55 TECs, in particular, decision-tree analysis of the average responses (see Table VII) indicated that 90 of the 104 tasks did not require formal training. The analysis of the A, A+S and A–S data sets (see Table VIII) indicates that the results are reasonably reliable with only 27 of the 104 tasks having both no-train and train/overtrain results.
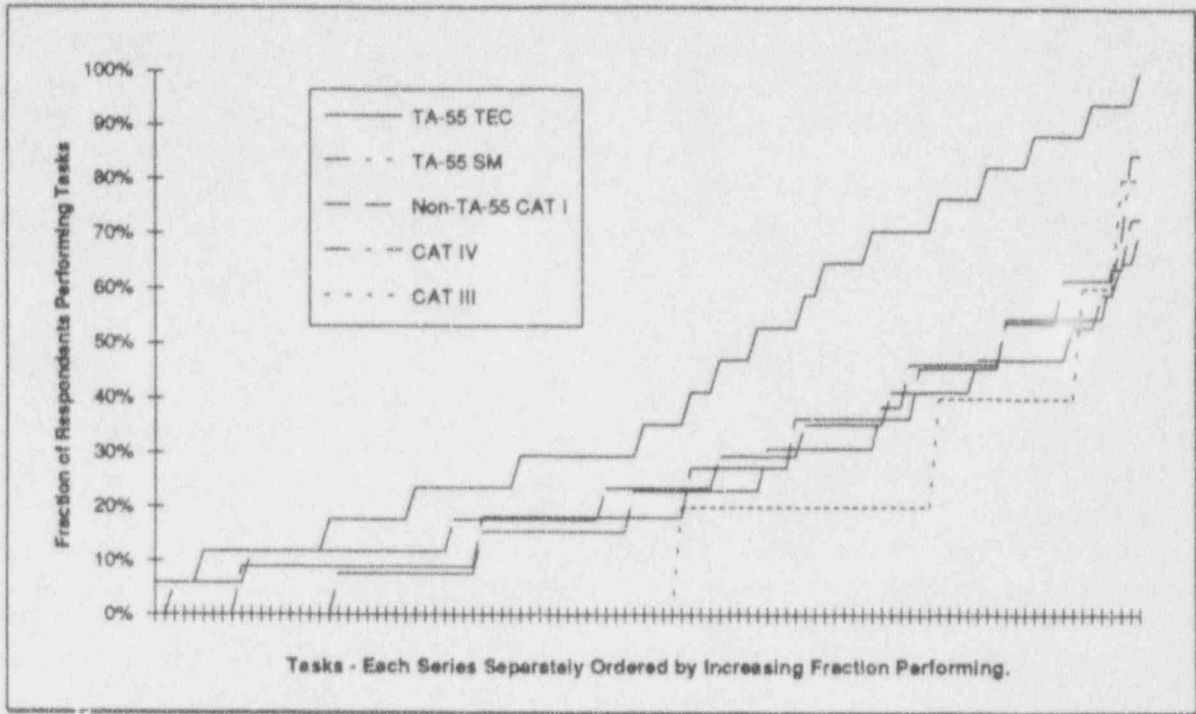
Fig. 27. Comparison of Fraction of Respondents Performing Each Task for All Five Handler Subcategories.
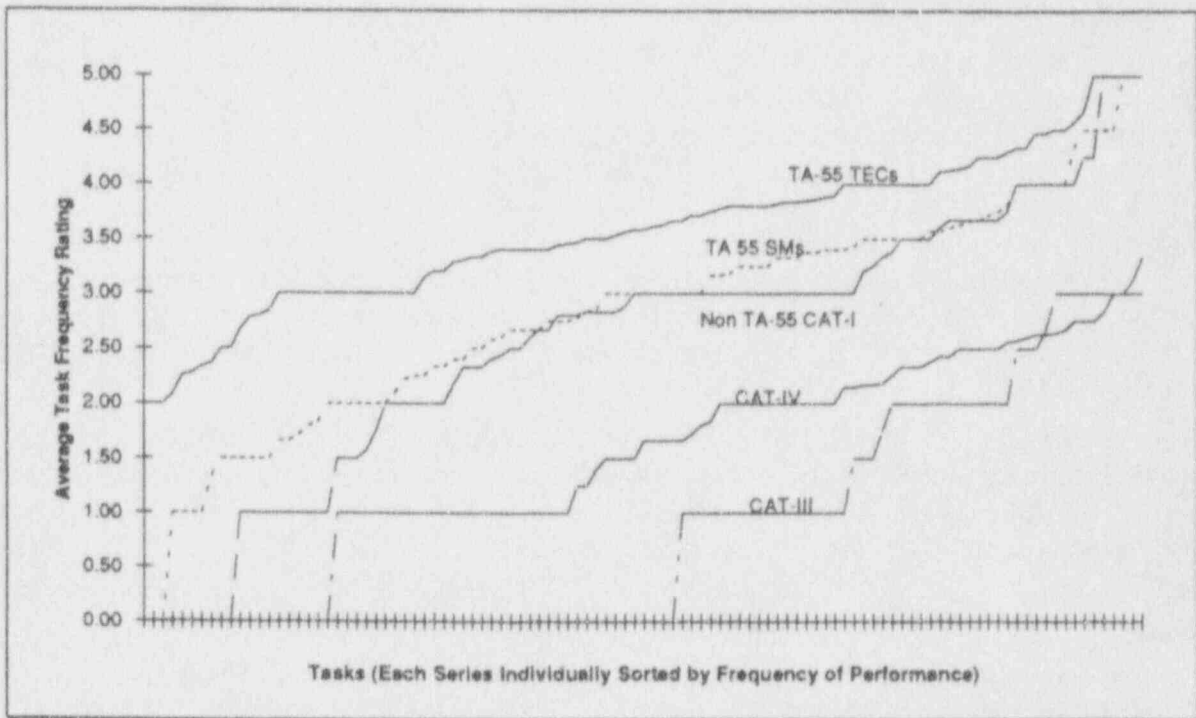
Fig. 28. Comparison of Average *Frequency* of Task Performance for All Five Handler Subcategories.

TABLE VI. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR HANDLERS

Tasks	CAT-I Handlers (See notes 1, 2, 3, 4, & 5.)																CAT III				CAT IV			
	Non TA-55				TA-55 Tecs				TA-55 SMs				TA-55 All											
	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
1. Perform MASS Duties.																								
1.1 Perform MASS transactions as a MASS user.	3	NT	NT	NT	15	NT	NT	NT	8	NT	NT	NT	23	NT	NT	NT	0	-	NA	-	7	NT	T	NT
1.2 Perform MASS transactions as a non-MASS user.	1	-	OT	-	2	T	NT	T	3	OT	NT	NT	5	NT	NT	NT	0	-	NA	-	6	NT	T	NT
2. Perform Administrative Controls.																								
2.1 Perform duties required by the IRA program.	4	NT	NT	NT	5	T	OT	NT	2	OT	NT	NT	7	OT	OT	NT	1	-	T	-	0	-	NA	-
2.2 Prepare and submit PAFD to OS-2 for approval.	1	-	OT	-	4	OT	OT	NT	6	OT	OT	T	10	OT	OT	T	0	-	NA	-	1	-	T	-
2.3 Monitor and modify PAFD as required.	2	OT	T	NT	6	NT	T	NT	6	OT	T	NT	12	T	T	NT	1	-	NT	-	1	-	T	-
2.4 Perform daily administrative checks as required.	4	NT	NT	NT	16	NT	NT	NT	10	NT	NT	NT	26	NT	NT	NT	1	-	NT	-	2	OT	T	T
2.5 Prepare temporary MAA operational procedures when required.	1	-	T	-	5	T	OT	T	3	OT	OT	NT	8	OT	OT	T	0	-	NA	-	3	OT	OT	T
3. Receive Internal (On-Site) Transfer of NM within or between MBAs of the Same MAA.																								
3.1 Notify NM custodian/alternate (OS-2) of receipt of NM shipment.	1	-	OT	-	7	NT	NT	NT	5	NT	T	T	12	NT	NT	NT	2	T	T	NT	8	NT	T	T
3.2 Confirm accuracy of information on the RMTT and sign if required.	5	NT	NT	NT	9	NT	NT	NT	6	NT	NT	NT	15	NT	NT	NT	0	-	NA	-	6	NT	NT	T
3.3 Confirm items-in-transit list if required.	6	NT	NT	NT	13	NT	NT	NT	5	NT	NT	NT	18	NT	NT	NT	0	-	NA	-	7	NT	NT	T
3.4 Follow PAFD, MSP, and/or MBA operating procedures for confirming transfer.	4	NT	NT	NT	14	NT	NT	NT	7	NT	NT	NT	21	NT	NT	NT	0	-	NA	-	4	OT	T	T
3.5 Perform MASS transactions as a MASS user.	4	NT	NT	NT	16	NT	NT	NT	8	NT	NT	NT	24	NT	NT	NT	0	-	NA	-	.	OT	T	T
3.6 Perform MASS transactions as a non-MASS user.	1	-	NT	-	3	T	NT	NT	3	OT	NT	NT	6	T	NT	NT	1	-	T	-	6	NT	NT	NT
4. Perform Internal (On-Site) Transfer of NM within or between MBAs of the Same MAA.																								
4.1 Obtain authorization from receiving NM custodian before sending NM or follow the PAFD.	2	T	T	T	10	NT	NT	NT	8	NT	NT	NT	18	NT	NT	NT	0	-	NA	-	5	OT	NT	T
4.2 Package NM for transfer if required.	7	NT	NT	NT	15	NT	NT	NT	8	OT	T	T	23	NT	NT	NT	1	-	NT	-	11	OT	OT	T
4.3 Request packaging of NM for transfer if required.	6	NT	NT	NT	8	NT	NT	NT	5	NT	NT	NT	13	NT	NT	NT	1	-	T	-	8	NT	NT	T
4.4 Arrange for proper labeling and documentation for transfer of NM if required.	5	OT	T	NT	15	NT	NT	NT	9	NT	T	NT	24	NT	NT	NT	1	-	NT	-	9	NT	NT	NT
4.5 Complete appropriate portion of RMTT and attach to container if required.	3	T	NT	NT	11	NT	NT	NT	6	NT	NT	NT	17	NT	NT	NT	0	-	NA	-	6	NT	NT	NT
4.6 Arrange for health protection monitoring and swiping with HS if required.	1	-	NT	-	17	NT	NT	NT	12	NT	NT	NT	29	NT	NT	NT	4	NT	NT	NT	11	NT	NT	T
4.7 Follow required MSP.	5	NT	NT	NT	13	NT	NT	NT	10	NT	NT	NT	23	NT	NT	NT	1	-	T	-	8	NT	NT	T
4.8 Perform MASS transactions as a MASS user.	4	NT	NT	NT	16	NT	NT	NT	8	NT	NT	NT	24	NT	NT	NT	0	-	NA	-	6	T	NT	NT
4.9 Perform MASS transactions as a non-MASS user.	0	-	NA	-	4	T	OT	T	3	NT	NT	NT	7	OT	OT	NT	0	-	NA	-	4	T	T	T
4.10 Ensure receiving NM custodian performs receiving MASS transaction or follows PAFD.	1	-	T	-	9	NT	NT	NT	6	NT	NT	NT	15	NT	NT	NT	1	-	NT	-	3	NT	NT	NT

Notes:

(1) Shaded tasks require training decision.
(2) # = number performing task.
(3) A+S = results of analysis of average responses plus one standard deviation.
(4) A = results of analysis of average responses.
(5) A-S = results of analysis of average responses minus one standard deviation.

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TABLE VI. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR HANDLERS (cont)

Tasks	CAT-I Handlers Non TA-55 #	A+S	A	A-S	TA-55 Tecs #	A+S	A	A-S	TA-55 SMs #	A+S	A	A-S	TA-55 All #	A+S	A	A-S	CAT III #	A+S	A	A-S	CAT IV #	A+S	A	A-S
5. Receive Internal (On-Site) Transfer of NM between Different MAAs.																								
5.1 Confirm accuracy of information of RMTT and sign.	6	NT	NT	T	7	NT	NT	NT	4	NT	NT	NT	11	NT	NT	NT	0	-	NA	-	2	NT	NT	NT
5.2 Confirm items-in-transit list if required.	6	NT	NT	NT	14	NT	NT	NT	5	T	NT	NT	19	NT	NT	NT	0	-	NA	-	6	NT	NT	NT
5.3 Perform transfer check and complete documentation as required.	4	T	NT	NT	13	NT	NT	NT	4	T	T	NT	17	NT	NT	NT	0	-	NA	-	4	OT	NT	T
5.4 Perform accountability measurements.	5	OT	NT	NT	11	NT	NT	NT	7	T	NT	NT	18	NT	NT	NT	1	-	NT	-	1	-	OT	-
5.5 Arrange for accountability measurements.	2	OT	NT	NT	11	NT	NT	NT	7	NT	NT	NT	18	NT	NT	NT	2	NT	NT	NT	1	-	T	-
5.6 Perform confirmation measurements as required.	6	OT	NT	NT	9	NT	NT	NT	5	T	NT	T	14	NT	NT	NT	1	-	NT	-	1	-	OT	-
5.7 Arrange for confirmation measurements as required.	2	OT	NT	NT	12	NT	NT	NT	7	NT	NT	NT	19	NT	NT	NT	2	NT	NT	NT	2	OT	OT	OT
5.8 Perform verification measurements as required.	6	NT	T	NT	12	NT	NT	NT	4	T	NT	T	16	NT	NT	NT	1	-	NT	-	1	-	T	-
5.9 Arrange for verification measurements as required.	2	OT	NT	NT	12	NT	NT	NT	3	T	NT	T	15	NT	NT	NT	1	-	NT	-	2	OT	OT	OT
5.10 Perform MASS transactions as a MASS user.	3	NT	NT	NT	14	NT	NT	NT	5	NT	NT	NT	19	NT	NT	NT	0	-	NA	-	3	T	NT	T
5.11 Perform MASS transactions as a non-MASS user.	0	-	NA	-	2	T	NT	NT	3	OT	NT	NT	5	T	NT	NT	0	-	NA	-	1	-	NT	-
6. Perform Internal (On-Site) Transfer of NM between Different MAAs.																								
6.1 Notify receiving NM custodian before making the NM transfer.	6	NT	NT	NT	12	NT	NT	NT	7	NT	NT	NT	19	NT	NT	NT	0	-	NA	-	5	NT	NT	NT
6.2 Ensure proper measurement of item being transferred is complete.	3	NT	NT	NT	13	NT	NT	NT	7	NT	NT	NT	20	NT	NT	NT	1	-	NT	-	3	NT	NT	NT
6.3 Package NM for transfer following HS-1 requirements.	3	NT	NT	NT	14	T	NT	NT	3	OT	OT	OT	17	OT	NT	T	1	-	NT	-	7	OT	OT	T
6.4 Apply TID if required.	5	NT	NT	NT	15	NT	NT	NT	5	T	NT	NT	20	NT	NT	NT	2	NT	NT	NT	4	NT	NT	T
6.5 Complete appropriate section RMTT and attach to container.	3	NT	NT	NT	8	NT	NT	NT	4	NT	NT	NT	12	NT	NT	NT	0	-	NA	-	2	NT	NT	NT
6.6 Arrange for health protection monitoring and swiping with HS as required.	1	-	NT	-	16	NT	NT	NT	8	NT	NT	NT	24	NT	NT	NT	3	NT	NT	NT	8	NT	NT	NT
6.7 Obtain appropriate signatures of RMTT and retain receipt.	1	-	NT	-	5	NT	NT	NT	4	NT	NT	T	9	NT	NT	NT	0	-	NA	-	4	NT	NT	NT
6.8 Perform MASS transactions as a MASS user.	3	NT	NT	NT	14	NT	NT	NT	4	NT	NT	NT	18	NT	NT	NT	0	-	NA	-	4	T	OT	OT
6.9 Perform MASS transactions as a non-MASS user.	1	-	NT	-	2	NT	NT	NT	2	NT	NT	NT	4	NT	NT	NT	0	-	NA	-	2	T	T	T
7. Receive External (Off-Site) Transfer of NM.																								
7.1 Submit NM receipt authorization to OS-2.	2	NT	NT	NT	4	NT	NT	NT	1	OT	OT	OT	5	OT	NT	T	0	-	NA	-	2	T	NT	NT
7.2 Notify OS-2 within required time of receipt of the NM shipment.	1	-	OT	-	3	NT	NT	NT	2	T	T	NT	5	NT	T	T	0	-	NA	-	3	T	NT	NT
7.3 Perform transfer check and complete documentation as required.	2	T	NT	NT	3	T	NT	NT	3	OT	OT	T	6	T	NT	NT	0	-	NA	-	4	T	T	NT
7.4 Complete receipt of confirmation form.	2	T	NT	NT	4	NT	NT	NT	2	OT	T	T	6	NT	NT	NT	0	-	NA	-	4	NT	NT	NT
7.5 Arrange for an HS monitoring.	6	NT	NT	NT	6	NT	NT	NT	4	NT	NT	NT	10	NT	NT	NT	3	NT	NT	NT	8	NT	NT	T
7.6 Perform accountability measurements.	3	OT	T	NT	5	NT	NT	NT	4	T	NT	NT	9	NT	NT	NT	0	-	NA	-	1	-	T	-
7.7 Arrange for accountability measurements.	2	OT	NT	NT	6	NT	NT	NT	4	NT	NT	NT	10	NT	NT	NT	1	-	NT	-	2	OT	OT	OT
7.8 Complete checklist for LOE calculations.	1	-	NT	-	2	T	NT	NT	2	OT	OT	OT	4	OT	NT	T	0	-	NA	-	1	-	T	-
7.9 Send copies of completed checklist to A-1 and OS-2.	1	-	NT	-	2	NT	NT	NT	0	-	NA	-	2	NT	NT	NT	0	-	NA	-	2	T	NT	NT
7.10 Confirm accuracy of information on RMTT and sign.	1	-	NT	-	3	T	NT	NT	2	T	T	T	5	T	NT	NT	1	-	NT	-	3	NT	T	NT
7.11 Confirm items-in-transit list if required.	2	NT	NT	NT	4	NT	NT	NT	3	T	NT	T	7	NT	NT	NT	0	-	NA	-	3	NT	T	NT
7.12 Perform MASS transactions as a MASS user.	2	T	NT	NT	7	NT	NT	NT	4	T	NT	T	11	NT	NT	NT	0	-	NA	-	3	OT	T	T
7.13 Perform MASS transactions as a non-MASS user.	0	-	NA	-	1	NT	NT	NT	1	NT	NT	NT	2	NT	NT	NT	1	-	T	-	2	NT	NT	NT

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Tasks	Non TA-55				TA-55 Tecs				TA-55 SMs				TA-55 All				CAT III				CAT IV			
	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
8. Perform External (Off-Site) Transfer of NM.																								
8.1 Request authorization for off-site shipment.	2	T	NT	NT	5	NT	NT	NT	3	OT	T	NT	8	OT	NT	NT	2	OT	OT	NT	7	NT	NT	NT
8.2 Verify authorization to ship has been granted by receiving facility.	1	-	OT	-	4	NT	NT	NT	1	T	T	T	5	NT	NT	NT	2	NT	T	NT	6	T	NT	NT
8.3 Follow classification guidelines.	4	OT	T	T	4	T	NT	NT	5	OT	OT	T	9	T	NT	NT	2	OT	OT	NT	7	OT	T	T
8.4 Arrange for preshipment measurements and provide results to OS-2 Accounting Section.	2	OT	T	NT	4	T	NT	T	5	OT	T	T	9	NT	T	T	1	-	NT	-	1	-	T	-
8.5 Complete checklist for LOE calculations form and forward completed copies to A-1 and OS-2.	1	-	NT	-	3	OT	NT	NT	2	OT	OT	T	5	OT	T	NT	0	-	NA	-	1	-	T	-
8.6 Arrange for health protection monitoring and swiping as required.	5	NT	NT	NT	6	NT	NT	NT	4	OT	T	T	10	NT	NT	T	3	NT	NT	NT	8	NT	NT	T
8.7 Package NM for shipment.	3	T	OT	T	9	OT	NT	T	2	NT	NT	T	11	NT	NT	T	2	OT	NT	T	7	OT	OT	T
8.8 Arrange for proper labeling of shipment with HS.	3	OT	OT	T	5	NT	NT	NT	2	NT	NT	NT	7	NT	NT	NT	1	-	NT	-	6	NT	T	T
8.9 Complete appropriate section of RMTT and attach to container.	2	T	NT	NT	5	NT	NT	NT	3	T	OT	NT	8	NT	NT	NT	1	-	NT	-	4	NT	NT	NT
8.10 Provide receiver with appropriate copies of shipping data sheet.	2	OT	NT	NT	5	NT	NT	NT	1	NT	NT	NT	6	NT	NT	NT	0	-	NA	-	2	T	NT	NT
8.11 Prepare SM or courier shipment form (CSF) as required and forward copies to OS-2 and HS.	1	-	OT	-	2	NT	NT	NT	1	NT	NT	NT	3	NT	NT	NT	0	-	NA	-	3	T	T	NT
8.12 Perform transfer check and complete documentation as required.	1	-	OT	-	6	NT	NT	NT	2	OT	T	T	8	NT	NT	T	2	NT	NT	NT	3	OT	NT	T
8.13 Obtain appropriate signatures of RMTT and retain receipt.	1	-	NT	-	4	NT	NT	NT	2	OT	NT	NT	6	NT	NT	NT	1	-	NT	-	4	NT	NT	NT
8.14 Perform MASS transactions as a MASS user.	2	NT	NT	NT	8	NT	NT	NT	3	T	NT	NT	11	NT	NT	NT	0	-	NA	-	2	OT	OT	OT
8.15 Perform MASS transactions as a non-MASS user.	0	-	NA	-	2	NT	NT	NT	1	NT	NT	NT	3	NT	NT	NT	0	-	NA	-	2	OT	T	T
9. Operate and Calibrate Instruments.																								
9.1 Operate active well (neutron) coincidence counter (AWCC) for U.	2	NT	T	NT	4	NT	NT	NT	2	NT	NT	NT	6	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.2 Operate barrel-segmented gamma scanner (B-SGS).	1	-	NT	-	1	NT	NT	NT	2	NT	NT	NT	3	NT	NT	NT	0	-	NA	-	1	-	NT	-
9.3 Operate calorimeter system.	0	-	NA	-	2	NT	NT	NT	3	NT	NT	NT	5	NT	NT	NT	2	NT	NT	NT	0	-	NA	-
9.4 Operate can-segmented gamma scanner (C-SGS).	1	-	NT	-	2	NT	NT	NT	2	NT	NT	NT	4	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.5 Operate confirmatory measurement (neutron) counter (CMC).	2	OT	NT	NT	5	NT	NT	NT	4	NT	NT	NT	9	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.6 Operate FRAM Pu gamma isotopic system (FRAM).	0	-	NA	-	1	NT	NT	NT	2	NT	NT	NT	3	FRAM	NT	NT	0	-	NA	-	0	-	NA	-
9.7 Operate LLNL Pu gamma isotopic system ("LLNL").	2	NT	NT	NT	1	NT	NT	NT	0	-	NA	-	1	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.8 Operate neutron barrel counter (NBC).	1	-	NT	-	2	NT	NT	NT	2	NT	NT	NT	4	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.9 Operate neutron coincidence counter (NCC) for Pu.	2	OT	T	T	5	NT	NT	NT	2	NT	NT	NT	7	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.10 Operate electronic balances.	8	NT	NT	NT	16	NT	NT	NT	11	NT	NT	NT	27	NT	NT	NT	2	NT	NT	NT	4	NT	NT	T
9.11 Perform calibration of balances.	7	T	NT	NT	5	NT	NT	NT	3	NT	NT	NT	8	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.12 Perform Pu/U assay measurements.	4	T	T	NT	5	T	NT	NT	3	T	NT	NT	8	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.13 Perform Pu/U verification measurements.	5	OT	NT	NT	2	T	NT	NT	2	T	NT	NT	4	T	NT	NT	0	-	NA	-	0	-	NA	-
9.14 Perform U verification measurements.	4	OT	NT	NT	2	T	NT	NT	2	T	NT	NT	4	T	NT	NT	0	-	NA	-	0	-	NA	-
9.15 Collect data for NDA equipment certification.	0	-	NA	-	3	NT	NT	NT	2	T	NT	NT	5	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.16 Certify NDA equipment.	1	-	NT	-	1	NT	NT	NT	1	NT	NT	NT	2	NT	NT	NT	0	-	NA	-	0	-	NA	-
9.17 Maintain documentation as required.	4	NT	NT	NT	9	T	NT	NT	8	NT	NT	NT	17	NT	NT	NT	3	NT	NT	NT	1	-	NT	-

TABLE VI. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR HANDLERS (cont)

Tasks	CAT-I Handlers															CAT III			CAT IV		
	Non TA-55			TA-55 Tecs				TA-55 SMs				TA-55 All				CAT III			CAT IV		
	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S	#	A+S	A	A-S
10. Perform Inventory Duties.																						
10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.	6	NT	NT	NT	15	NT	NT	NT	8	OT	NT	T	23	NT	NT	NT	1	-	NT	-	5	T	NT	NT
10.2 Assist in conducting daily inventories as required.	4	NT	NT	NT	15	NT	NT	NT	7	NT	NT	NT	22	NT	NT	NT	0	-	NA	-	3	T	NT	NT
10.3 Assist in conducting bimonthly inventories as required.	2	OT	T	NT	13	NT	NT	NT	7	OT	OT	OT	20	OT	NT	NT	0	-	NA	-	2	T	NT	NT
10.4 Assist in conducting semiannual and annual inventories as required.	6	T	T	NT	12	NT	T	T	8	OT	OT	OT	20	OT	T	T	2	NT	NT	NT	3	OT	T	T
10.5 Assist in conducting special inventories as required.	5	T	NT	NT	12	NT	T	T	8	OT	OT	T	20	T	T	T	2	NT	NT	NT	4	T	NT	NT
10.6 Assist in performing measurements of selected inventory items as requested by OS-2.	4	T	T	NT	11	NT	T	T	6	T	NT	NT	17	NT	NT	T	2	NT	NT	NT	1	-	T	-
11. Perform Administrative Duties.																						
11.1 Include MC&A procedures in writing operational standard operating procedures (SOPs).	2	OT	T	NT	5	OT	OT	OT	9	OT	OT	NT	14	OT	OT	OT	1	-	NT	-	3	T	NT	NT
11.2 Implement MC&A procedures from the SOPs.	3	T	NT	NT	8	T	T	NT	6	T	OT	OT	14	T	T	OT	0	-	NA	-	3	T	NT	NT
11.3 Know and observe vault access rules and records requirements.	8	NT	NT	NT	12	T	NT	NT	6	T	T	NT	18	T	NT	NT	1	-	T	-	0	-	NA	-
11.4 Assist in training new employees.	4	T	NT	NT	11	OT	OT	OT	11	OT	OT	OT	22	OT	OT	OT	4	NT	NT	NT	6	OT	NT	T
12. Perform Duties in the Nuclear Materials Management Program.																						
12.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	1	-	T	-	4	OT	OT	NT	7	OT	T	T	11	OT	OT	T	2	NT	NT	NT	2	T	NT	NT
12.2 Assist in preparing an MMP.	1	-	T	-	3	OT	NT	NT	2	OT	OT	NT	5	OT	OT	NT	1	-	T	-	0	-	NA	-
12.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	0	-	NA	-	2	OT	OT	OT	1	NT	NT	NT	3	OT	OT	NT	0	-	NA	-	0	-	NA	-
12.4 Identify material that is in excess of the programmatic needs.	0	-	NA	-	3	T	NT	T	6	T	T	NT	9	OT	T	NT	1	-	NT	-	1	-	NT	-
12.5 Arrange for discard of NM (excess and waste).	6	OT	NT	NT	10	T	NT	NT	9	OT	OT	NT	19	OT	OT	NT	4	OT	T	NT	2	T	T	T
12.6 Create and maintain NM waste drums.	5	NT	NT	NT	3	T	OT	T	3	T	NT	NT	6	T	NT	T	0	-	NA	-	0	-	NA	-
Number of usable respondent questionnaires:	11				17				13				30				5				13			

TABLE VII. RESULTS OF DECISION-TREE ANALYSIS OF HANDLERS' MC&A TASK QUESTIONNAIRE RESULTS

Number of Tasks as a Function of Level of Training Required, Considering Only the A Data

Training Requirement	Non-TA-55 CAT I	TA-55 TECs CAT I	TA-55 SMs CAT I	TA-55 All CAT I	CAT III	CAT IV
No Train*	69	90	69	86	37	47
Train*	18	5	16	8	10	27
Overtrain*	9	9	17	10	2	11
Not Applicable (i.e., No One Performs Task)	8	0	2	0	55	19
Only One Respondent Performs Task	25	5	8	1	27	15

* Totals of *no-train*, *train*, and *overtrain* tasks do include the tasks performed by only one respondent.

Again looking at the training recommendations from the analyses of all three data sets (A+S, A, and A−S) in Table VIII, an even smaller number of CAT-III handler tasks had both *no-train* and *train/overtrain* results, but the results may be somewhat misleading because of the very large number of tasks that no one performs (55) or that are performed by only one person (27).

4. **Validation of the MC&A Task-Training Requirement List.**

In general, we have the same situation with the handlers that we had for the custodians/alternates. There are no MC&A SMEs working at the locations of many of the CAT-III and CAT-IV MC&A accounts. Therefore, it is not reasonable to separate the tasks into no-train and train/overtrain categories. The training program for at least the handlers from those accounts will have to include all of the handler MC&A tasks. As a result, we did not conduct a task-training-requirement validation meeting.

TABLE VIII. RESULTS OF DECISION-TREE ANALYSIS OF HANDLERS' MC&A TASK QUESTIONNAIRE RESULTS

Numbers of Tasks as a Function of Level of Training Required, Considering A+S, A, and A-S Data Sets

Training Requirement	Non-TA-55 CAT I	TA-55 TECs CAT I	TA-55 SMs CAT I	TA-55 All CAT I	CAT III	CAT IV
No Train*	31	66	39	67	16	16
Train*	1	0	1	1	0	3
Overtrain*	0	3	5	2	0	4
Train or Overtrain, Depending on Data Set	4	3	12	5	0	12
No Train, Train, or Overtrain, Depending on Data Set	34	27	37	28	6	35
Not Applicable (i.e., No One Performs Task)	9	0	2	0	55	19
Only One Respondent Performs Task	25	5	8	1	27	15

* Totals of *no-train*, *train*, and *overtrain* tasks do not include the tasks performed by only one respondent.

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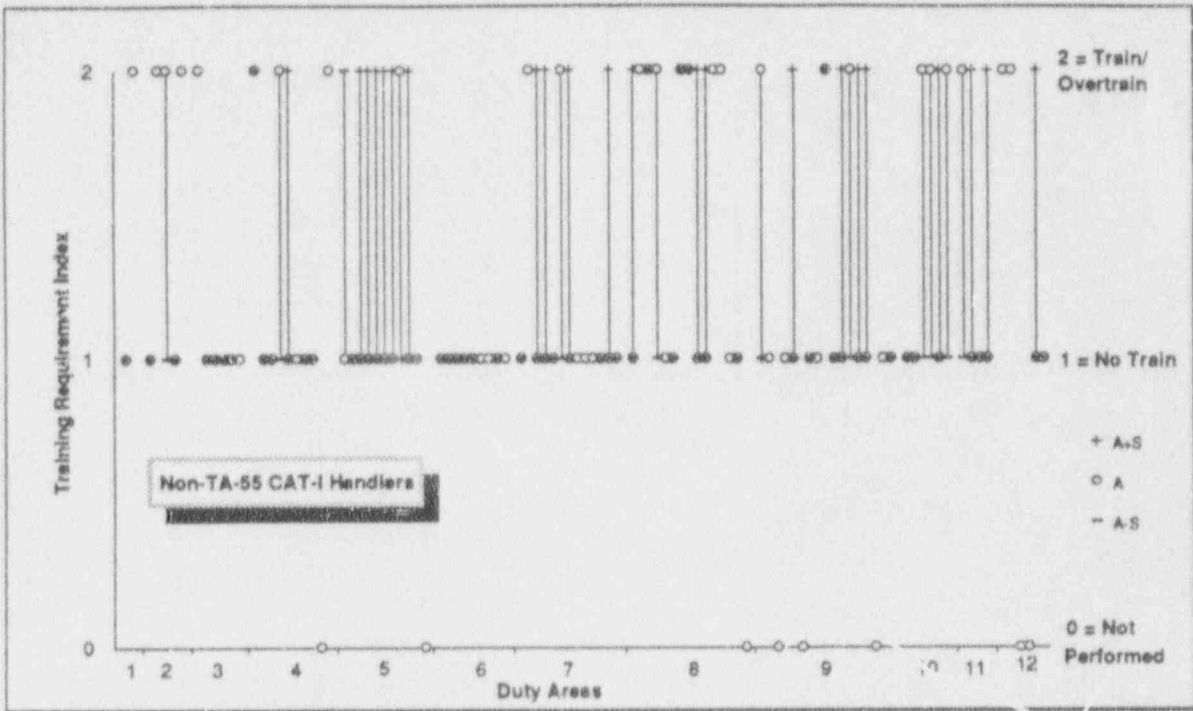
Fig. 29. Training Requirements for Non-TA-55 CAT-I Handlers (Analysis of Averaged Responses [A] and of Averages Plus [A+S] and Minus [A–S] One Standard Deviation).
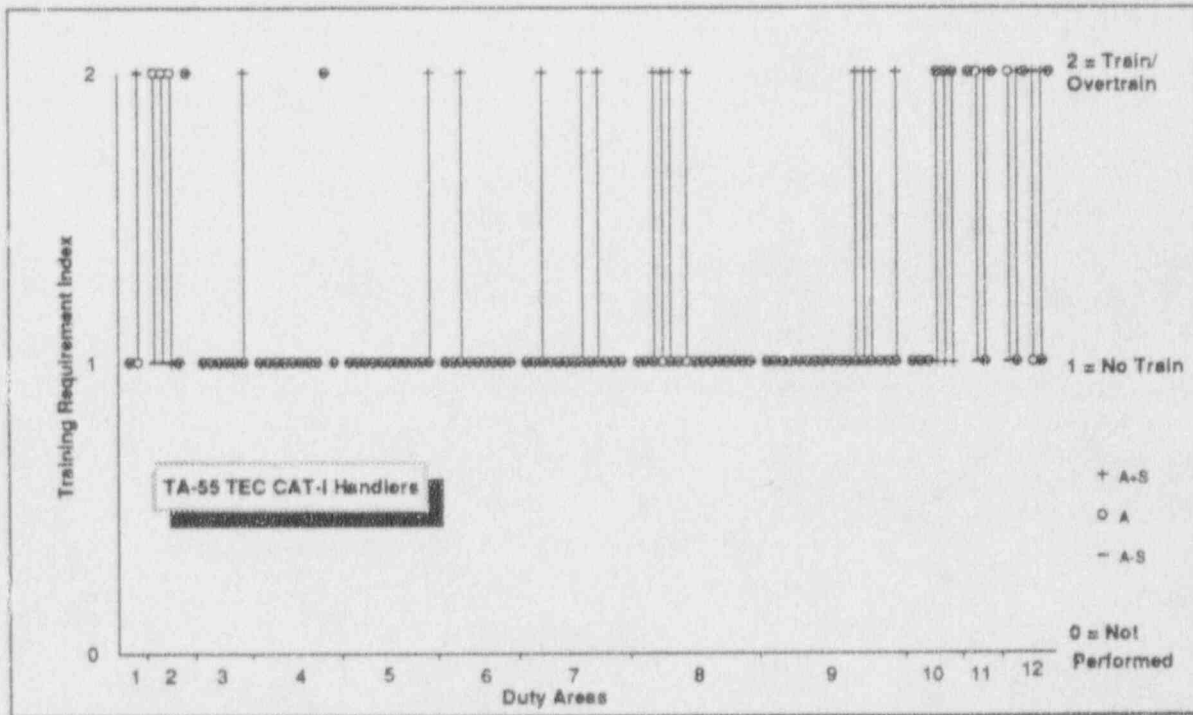
Fig. 30. Training Requirements for TA-55 TEC CAT-I Handlers (Analysis of Averaged Responses [A] and of Averages Plus [A+S] and Minus [A–S] One Standard Deviation).
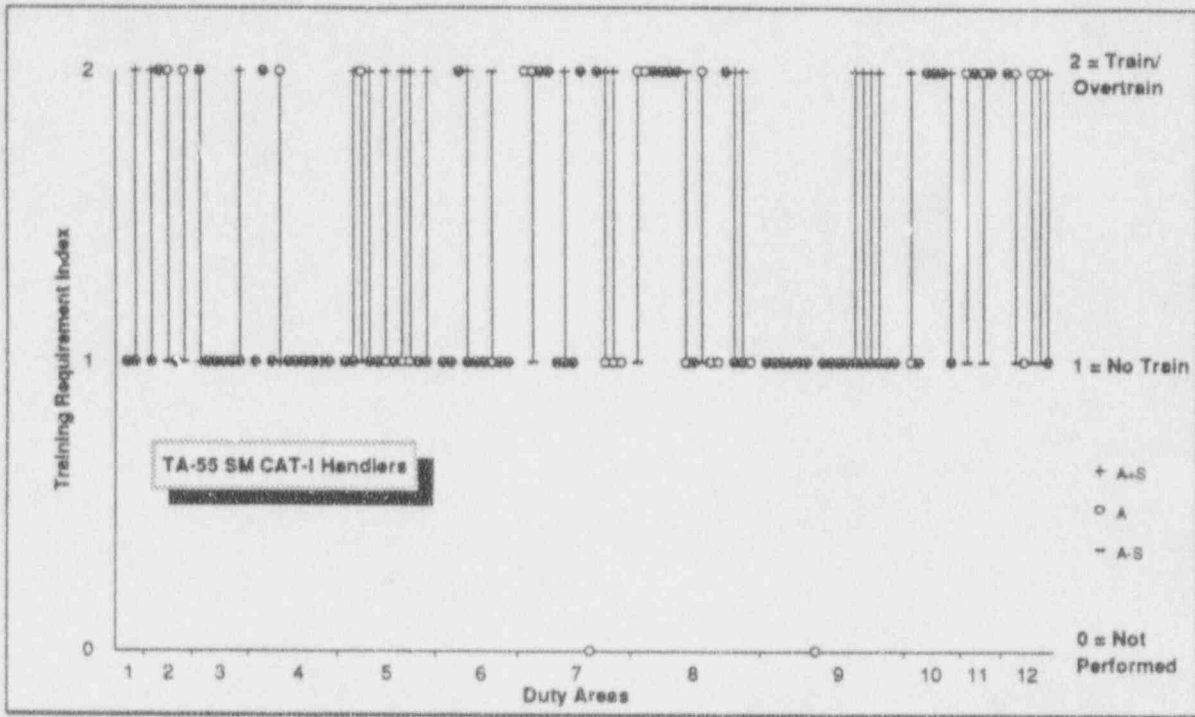
Fig. 31. Training Requirements for TA-55 SM CAT-I Handlers (Analysis of Averaged Responses [A] and of Averages Plus [A+S] and Minus [A−S] One Standard Deviation).
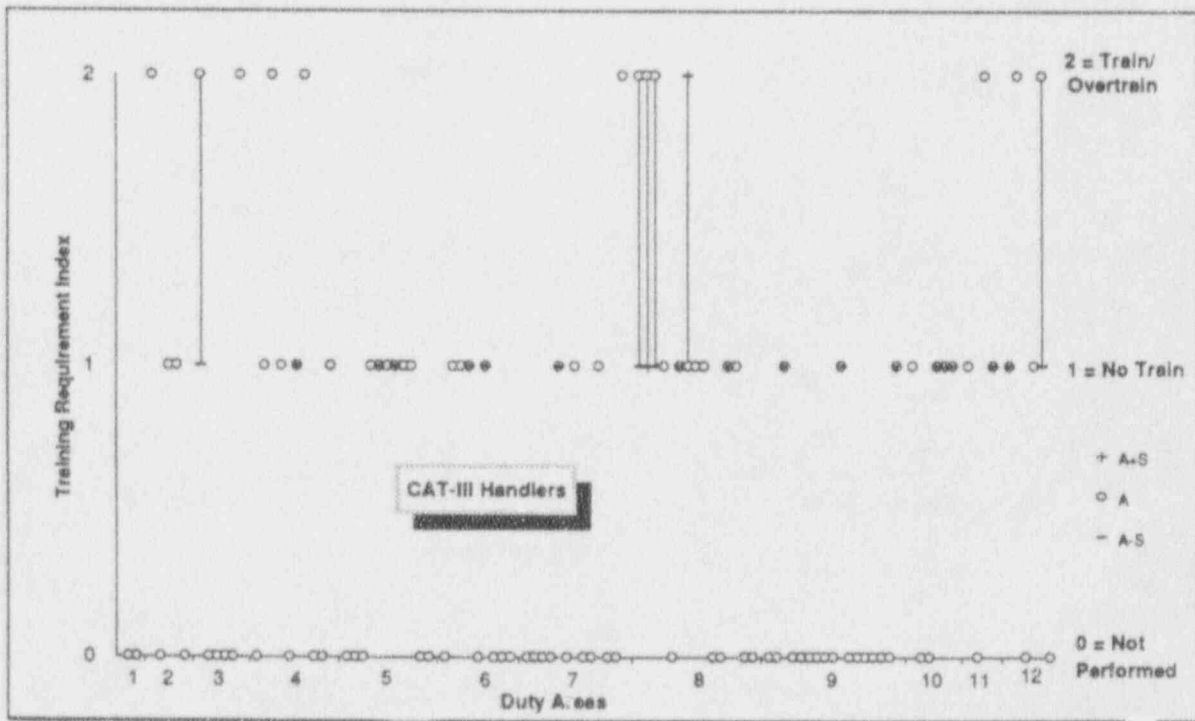
Fig. 32. Training Requirements for CAT-III Handlers (Analysis of Averaged Responses [A] and of Averages Plus [A+S] and Minus [A−S] One Standard Deviation).
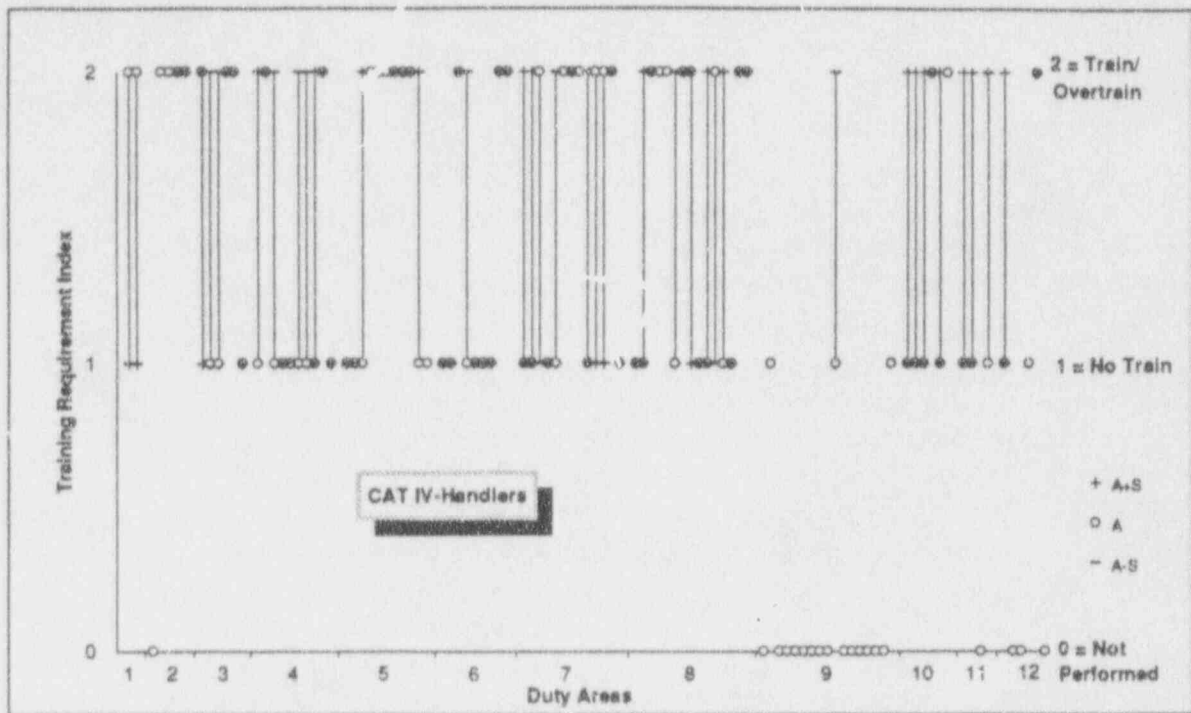
Fig. 33. Training Requirements for CAT-IV Handlers (Analysis of Averaged Responses [A] and of Averages Plus [A+S] and Minus [A–S] One Standard Deviation).

E. Safeguards Specialists

1.   Generation and Validation of MC&A Task List.

Following the same basic procedures discussed above, we generated the task list for the MC&A category of safeguards specialist. This list was then augmented and validated by interviews with four members of Group OS-2 and finally validated in a meeting with Bob Lopez, Relf Price, and Marcene Roybal. A copy of this validated task list is attached as Table C-III in Appendix C.

The definition of safeguards specialist was reviewed and refined at the task-list validation meeting. We agreed that this category would include only those people in OS-2 (excluding the Transportation Section whose job analysis had been completed previously) because essentially everybody else with any MC&A responsibilities was already either included in one of our other categories or else spent essentially full time on MC&A-related activities (such as the Transportation, Storage, and NDA Sections from the former OS-14 group) and would be trained by their line organizations.

We also determined that training for the OS-2 safeguards specialists was primarily the responsibility of the DOE (in conjunction with their line organization), rather than being the responsibility of the MC&A training officer and, thus, was not really a part of the present job analysis study. However, because we had already generated a validated task list for this category, we decided to administer the task-assessment questionnaire to the safeguards specialists and to provide the results to OS-2 for their use in setting up their in-house training program.

2.   Administration of the Task-Evaluation Questionnaire.

The task-assessment questionnaire was administered using our QTA program and the computers at the NMT-Division Training Office, which allowed us to accommodate six respondents at a time. We administered the questionnaire to all of the non-secretarial members of Group OS-2 (excluding the Transportation Section). However, at that time we had not yet discovered the bug in our QTA program. As a result, only 14 of the 18 data files originally collected were usable. Here again, we had maintained anonymity of the respondents during the administration of the questionnaire, recording only the supervisor or non-supervisor status of the respondents. Therefore, it was not possible to have the four respondents whose data files had been corrupted repeat the questionnaire because we could not identify them. It did not appear to be cost effective to have the entire group repeat the questionnaires, so we decided to limit our study to the 14 good files.

3.   Detailed Analysis of the Questionnaire Responses and Task-Training Requirements.

The questionnaire responses and the results of the decision-tree analyses of these responses are presented in Appendix D as Table D-IX. For each task, the table lists (a) the number and the percent of respondents actually performing the task; (b) the averages of the *difficulty, importance,* and *frequency* responses; and (c) the training recommendation resulting from the decision-tree analysis of those averages (the A column in the tables). In addition, the table lists the results of analyzing the averaged responses incremented (A+S) and decremented (A−S) by one standard deviation to obtain an indication of the statistical reliability of the results. For these safeguards specialists, we also analyzed the average data (the A±S data sets were not analyzed) from the supervisors (3 people) and from the non-supervisors (11 people). These results are also included in Table D-IX.

Figures 34 and 35 are scatter plots of the fraction of respondents performing each task and of the average *Frequency of Performance* of each of the tasks, respectively, as a function of duty area for safeguards specialist. These figures allow us to easily identify those duty areas with tasks performed

Fig. 34. Fraction of Safeguards Specialist Respondents Performing Each MC&A Task (Plotted Against Task Duty Area).

Fig. 35. *Frequency* of MC&A Task Performance by Safeguards Specialist Respondents (Plotted Against Task Duty Area).

by unusually large or small percentages of the respondents and also those duty areas with large or small frequencies of performance. (This information should provide insights useful in setting up the training program by allowing a check for those duties that should be performed but that are somehow being overlooked or not performed often enough.) For the convenience of the reader in interpreting the figures, a summary of the duty areas is presented in Table IX.

TABLE IX.   SUMMARY OF SAFEGUARDS SPECIALIST MC&A DUTY AREAS

1. Establish and monitor Laboratory NM inventories.
2. Perform NM accountability functions.
    2.11 Know and use MASS procedures.
3. Establish and monitor material control program.
    3.9 Assure compliance with MBA operating procedures.
    3.10 Respond to MC&A emergencies using approved Lab and DOE procedures.
    3.11 Perform audits.
4. Implement measurement and measurement-control programs.
5. Provide MC&A training.

The scatter plots indicate that task performance of these safeguards specialists is relatively heterogeneous. The safeguards specialist respondents work in one of three different sections in Group OS-2, and each section has relatively unique responsibilities. Therefore, we would expect the type of results displayed in Figs. 34 and 35 because the safeguards specialist task list included the tasks of all three sections.

The training requirements resulting from the decision-tree analyses of the three data sets from all of the safeguards specialists (i.e., average [A], average plus one standard deviation [A+S], and average minus one standard deviation [A−S]), as well as those from the analysis of the average data sets of the supervisor and non-supervisor, are summarized in Table X below. In this table, we have again indicated by shading those tasks for which the training requirement changes when the average results are incremented or decremented by one standard deviation. (For this purpose, we again consider a result of *train* (T) or *overtrain* (OT) to be equivalent because both require including the task in the training program.) The levels of training required for the safeguards specialist tasks are totaled in Table XI below as a function of the data set analyzed.

The task-training requirements resulting from the decision-tree analysis of the questionnaire data are also plotted in Fig. 36. We have again plotted the training requirements as high-low data, assigning a numerical value of 2 to the training requirements of both *train* and *overtrain*, a value of 1 to *no train*, and a value of 0 to those tasks that no one performs. The training requirements resulting from the analyses of the A+S, A, and A−S data sets are plotted individually on the chart for each task at a common location on the task (χ) axis. Thus, if the analysis of all three data sets results in the same training requirement, the three points are plotted on top of one another. If different training requirements result, the points are connected by a vertical line, showing the spread of the results.

TABLE X. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR SAFEGUARDS SPECIALISTS.

TASKS	All Safeguards Personnel (1, 2, 3, 4, & 5)					Workers			Supervisors		
	#	%	A+S	A	A-S	#	%	A	#	%	A
1.0 Establish and Monitor Laboratory NM Inventories.											
1.1 Plan and prepare for physical inventories as required by the LANL Physical Inventory Plan.	14	100%	OT	OT	NT	11	100%	NT	3	100%	OT
1.2 Conduct inventories as required.	13	93%	OT	OT	OT	10	91%	OT	3	100%	OT
1.3 Select inventory items for measurement.	13	93%	NT	NT	NT	10	91%	NT	3	100%	NT
1.4 Follow up on the reconciliation of discrepancies or problems identified as a result of the inventory.	13	93%	OT	NT	NT	10	91%	NT	3	100%	NT
1.5 Know and implement statistical sampling plans.	7	50%	OT	OT	OT	5	45%	OT	2	67%	OT
1.6 Complete inventory reports as required.	13	93%	OT	NT	NT	10	91%	NT	3	100%	OT
2.0 Perform Nuclear Material Accountability Functions.											
2.1 Perform inventory adjustments (for example, for normal operating loss or routine tests).	5	36%	T	T	NT	4	36%	NT	1	33%	T
2.2 Enter data into the Nuclear Materials Management Safeguards System using AutoMit.	5	36%	T	T	NT	4	36%	T	1	33%	T
2.3 Perform external transfers.	5	36%	T	T	NT	4	36%	NT	1	33%	OT
2.4 Validate source documentation.	7	50%	T	T	NT	6	55%	NT	1	33%	T
2.5 Perform reconciliation activities.	8	57%	T	OT	NT	7	64%	OT	1	33%	NT
2.6 Perform authorization reviews.	6	43%	T	T	OT	5	45%	OT	1	33%	T
2.7 Establish and monitor the shipper/receiver difference program.	8	57%	OT	OT	OT	6	55%	OT	2	67%	OT
2.8 Generate receipt and shipment plans.	7	50%	OT	OT	OT	5	45%	OT	2	67%	OT
2.9 Perform NM cost accounting.	4	29%	OT	OT	OT	3	27%	OT	1	33%	OT
2.10 Perform operating procedures maintenance.	12	86%	OT	OT	T	9	82%	OT	3	100%	OT
2.11 Know and use MASS procedures.											
2.11.1 Review and approve MASS user access request form.	4	29%	T	T	T	2	18%	T	2	67%	NT
2.11.2 Enter MASS user data as required.	7	50%	T	NT	NT	6	55%	NT	1	33%	T
2.11.3 Ensure that new MBA MASS users are validated.	2	14%	T	OT	OT	1	9%	OT	1	33%	T
2.11.4 Obtain information from indirect MASS users and perform the necessary transactions.	6	43%	NT	NT	NT	5	45%	NT	1	33%	NT
2.11.5 Distribute MASS reports to custodians as required.	6	43%	NT	NT	NT	6	55%	NT	0		NT
2.11.6 Know and use MASS tables.	14	100%	NT	NT	NT	11	100%	NT	3	100%	NT
2.11.7 Know and use MASS tiger reports.	7	50%	NT	NT	NT	5	45%	NT	2	67%	NT
2.11.8 Know and use MASS transaction options.	9	64%	NT	NT	NT	8	73%	NT	1	33%	T
3.0 Establish and Monitor Material Control Program.											
3.1 Administer and control the TID program.	6	43%	OT	OT	T	4	36%	T	2	67%	OT
3.2 Assure compliance with the Detection and Assessment Systems.	6	43%	OT	OT	T	5	45%	T	1	33%	OT
3.3 Assure compliance with the Laboratory material containment program.	5	36%	OT	OT	OT	4	36%	OT	1	33%	OT
3.4 Establish and monitor the ID program.	8	57%	OT	OT	OT	6	55%	OT	2	67%	OT
3.5 Know and monitor PAFDs.	7	50%	OT	OT	OT	5	45%	OT	2	67%	OT
3.6 Review and evaluate temporary MAAs.	6	43%	OT	OT	OT	4	36%	OT	2	67%	OT
3.7 Establish and monitor the portal monitor program.	3	21%	T	NT	NT	2	18%	NT	1	33%	OT
3.8 Approve MBA operating procedures.	5	36%	OT	OT	OT	4	36%	OT	1	33%	OT

Notes:

(1) Shaded tasks require training decision.

(2) # = number performing task.

(3) A+S = results of analysis of average responses plus one standard deviation.

(4) A = results of analysis of average responses.

(5) A-S = results of analysis of average responses minus one standard deviation.

TABLE X. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR SAFEGUARDS SPECIALISTS. (cont)

TASKS	All Safeguards Personnel (1,2,3,4, & 5)					Workers			Supervisors		
	#	%	A+S	A	A-S	#	%	A	#	%	A
3.9 Assure compliance with MBA operating procedures.											
3.9.1 Assure performance of duties required for the personnel access control program.	4	29%	OT	NT	NT	3	27%	NT	1	33%	OT
3.9.2 Assure performance of duties required by the MSP.	7	50%	OT	OT	T	6	55%	NT	1	33%	OT
3.9.3 Review NM accounts for attractiveness/category compliance.	10	71%	OT	NT	T	8	73%	NT	2	67%	NT
3.10 Respond to MC&A emergencies using approved Lab and DOE procedures.											
3.10.1 Respond to suspected, alleged, or actual diversion of NM.	12	86%	OT	OT	OT	9	82%	OT	3	100%	OT
3.10.2 Respond to threats against LANL and the public involving NM (includes knowledge of threat statement and risk assessment).	5	36%	OT	OT	OT	2	18%	OT	3	100%	OT
3.11 Perform audits.											
3.11.1 Perform internal review assessments.	6	43%	OT	OT	OT	5	45%	OT	1	33%	T
3.11.2 Perform internal operational audits.	6	43%	OT	OT	OT	4	36%	OT	2	67%	OT
4.0 Implement Measurement and Measurement Control Programs.											
4.1 Establish and monitor confirmatory measurement program.	2	14%	OT	OT	OT	1	9%	OT	1	33%	OT
4.2 Arrange for and/or perform confirmation measurements as required.	7	50%	OT	OT	OT	5	45%	OT	2	67%	OT
4.3 Arrange for and/or perform verification measurements as required.	6	43%	OT	NT	T	4	36%	T	2	67%	NT
4.4 Evaluate the results of verification and confirmation measurements.	9	64%	OT	OT	OT	8	73%	OT	1	33%	OT
4.5 If an item fails (in 4.4), ensure that the item is not processed and resolve the discrepancy.	10	71%	OT	OT	NT	9	82%	OT	1	33%	OT
4.6 Determine and/or approve measurement methods (mass, form) following LANL-graded safeguards program.	5	36%	T	OT	OT	4	36%	OT	1	33%	T
4.7 Ensure that persons performing measurements are trained and qualified.	4	29%	T	NT	NT	3	27%	NT	1	33%	OT
4.8 Participate in sample exchange program, if applicable.	1	7%	NT	NT	NT	0	0%	NT	1	33%	NT
4.9 Ensure that all instruments, methods, & standards used for NM accountability measurements are certified.	5	36%	T	OT	NT	4	36%	NT	1	33%	OT
4.10 Ensure that procedures for calibration of instruments and methods are in place.	4	29%	T	T	NT	3	27%	T	1	33%	OT
4.11 Establish and monitor a measurement control program.	2	14%	T	T	OT	1	9%	T	1	33%	OT
4.12 Certify measurement methods, instruments, and standards.	3	21%	T	T	NT	2	18%	NT	1	33%	T
4.13 Know capabilities and limitations of NDA instrumentation.	5	36%	T	OT	T	4	36%	NT	1	33%	T
4.14 Establish and monitor the Laboratory's remeasurement program.	2	14%	OT	T	T	1	9%	T	1	33%	OT
4.15 Establish and monitor the Laboratory's inventory verification program.	5	36%	T	OT	NT	3	27%	OT	2	67%	T
4.16 Maintain documentation as required.	10	71%	T	NT	NT	9	82%	NT	1	33%	OT
5.0 Provide MC&A Training.											
5.1 Provide TID training.	5	36%	OT	OT	NT	3	27%	NT	2	67%	OT
5.2 Provide NDA training.	3	21%	T	T	NT	2	18%	NT	1	33%	T
5.3 Provide MASS training for users and indirect users.	4	29%	OT	OT	NT	3	27%	OT	1	33%	OT
5.4 Provide MC&A training for NM custodians.	8	57%	OT	OT	NT	7	64%	T	1	33%	OT
5.5 Provide inventory training.	7	50%	OT	OT	T	5	45%	OT	2	67%	T
Number of usable respondent questionnaires:	14					11			3		

TABLE XI. RESULTS OF DECISION-TREE ANALYSIS OF SAFEGUARDS SPECIALISTS' MC&A TASK QUESTIONNAIRE RESULTS

Numbers of Tasks as a Function of Level of Training Required, Considering A+S, A, and A–S Data Sets

Data Set Analyzed	All Personnel Average*	All Personnel A and A±S**	Non-Supervisor Average**	Supervisor Average**
No Train	16	6	24	10
Train	11	1	9	14
Overtrain	33	17	26	35
Train or Overtrain, Depending on Data Set	0	11	0	0
No Train, Train, or Overtrain, Depending on Data Set	0	24	0	0
Not Applicable (i.e., No One Performs Task)	0	0	1	1
Only One Respondent Performs Task	1	1	34	4

*   Totals of *no-train, train,* and *overtrain* tasks do include the tasks performed by only one respondent.
**   Totals of *no-train, train,* and *overtrain* tasks do not include the tasks performed by only one respondent.

These results indicate that this population is more homogeneous than the custodians but less homogeneous than the NM managers with respect to their assessment of the difficulty, importance and frequency of the MC&A tasks. This result seems reasonable considering that the safeguards specialists perform MC&A tasks essentially full time, but three sections make up the safeguards specialist population. Here again, a relatively large fraction of tasks requires overtraining. Examination of the average task-assessment questionnaire ratings for task *difficulty, importance* and *frequency* in Table D-IX indicates that the respondents generally rated the tasks moderately difficult (>2.5 & <3.5), very important (>2.5) and performed them seldom (<2.5) to occasionally ($\geq$2.5 & <3.5). Reference to the decision tree in Fig. 1 quickly reveals that this combination does indeed require overtraining.

4. Validation of the Task-Training Requirement List.

We did not complete this step because, as discussed above, we established that the OS-2 safeguards specialist tasks were not really a part of this job analysis. Instead, the results will be given to OS-2 with the recommendation that they consider the results of the questionnaire analysis along with their detailed knowledge of their MC&A tasks to generate a required task-training list.

Fig. 36. Task-Training Requirements for Safeguards Specialists (Plotted as a Function of Task Duty Area).

F. NM Manager Category

1. **Generation and Validation of Task List.**

Following the same basic procedures discussed above, we generated a task list for the category of NM manager. Here we primarily reviewed the *NM Management Handbook* to generate the initial task list. We identified a total of 32 tasks for this category. This task list was then validated by interviews with several SMEs from NMT-7 and with several members of the MC&A TAC. The validated task list is attached as Table C-IV in Appendix C.

2. **Administration of the Task-Evaluation Questionnaires.**

The four people in NMT-7 identified as having NM manager responsibilities completed the questionnaire to determine their assessment of the *difficulty*, *importance* and *Frequency of Performance* of each of the tasks. Because of the small number of NM managers, we administered the questionnaire to them one at a time, using a PC located in the A-6 offices at the Pueblo Complex.

3. **Detailed Analysis of the Questionnaire Responses and Task-Training Requirements.**

The questionnaire responses and the results of the decision-tree analyses of these responses are presented in Appendix D as Table D-X. For each task, the table lists (a) the number and the percent of respondents actually performing the task; (b) the averages of the *difficulty*, *importance*, and *frequency* responses; and (c) the training recommendation resulting from the decision-tree analysis of those averages (the A column in the tables). In addition, the table lists the results of analyzing the averaged responses incremented (A+S) and decremented (A−S) by one standard deviation to obtain an indication of the statistical reliability of the results.

Figures 37 and 38 are scatter plots of the fraction of respondents performing each task and of the average *Frequency of Performance* of each of the tasks, respectively, as a function of duty area for these NM managers. These figures allow us to easily identify those duty areas with tasks performed by unusually large or small percentages of the respondents and also those with large or small frequencies of performance. (This information should provide insights useful in setting up the training program by allowing a check for those duties that should be performed but that are somehow being overlooked or not performed often enough.) For the convenience of the reader, a summary of the NM manager duty areas is presented in Table XII.

The scatter plots indicate that task performance of these four NM managers is relatively homogeneous with a high fraction of the NM managers performing most of the tasks but at a relatively low *Frequency of Performance*. The status of the two tasks that no one performs (which are the only tasks in duty area 9) was reexamined, and it was decided to eliminate this duty area from the NM manager job responsibilities. These two tasks are actually being performed by some custodians/ alternates and by some handlers.

The training requirements resulting from the decision-tree analyses of the three data sets (i.e., average [A], average plus one standard deviation [A+S], and average minus one standard deviation [A−S]) are summarized in Table XIII below. For this NM manager category, because the training requirement results were relatively homogeneous at the A±S level, we also looked at the training recommendations resulting from decision-tree analysis of two additional data sets, namely the average task ratings incremented and decremented by three times the standard deviation (A+3S and A−3S,
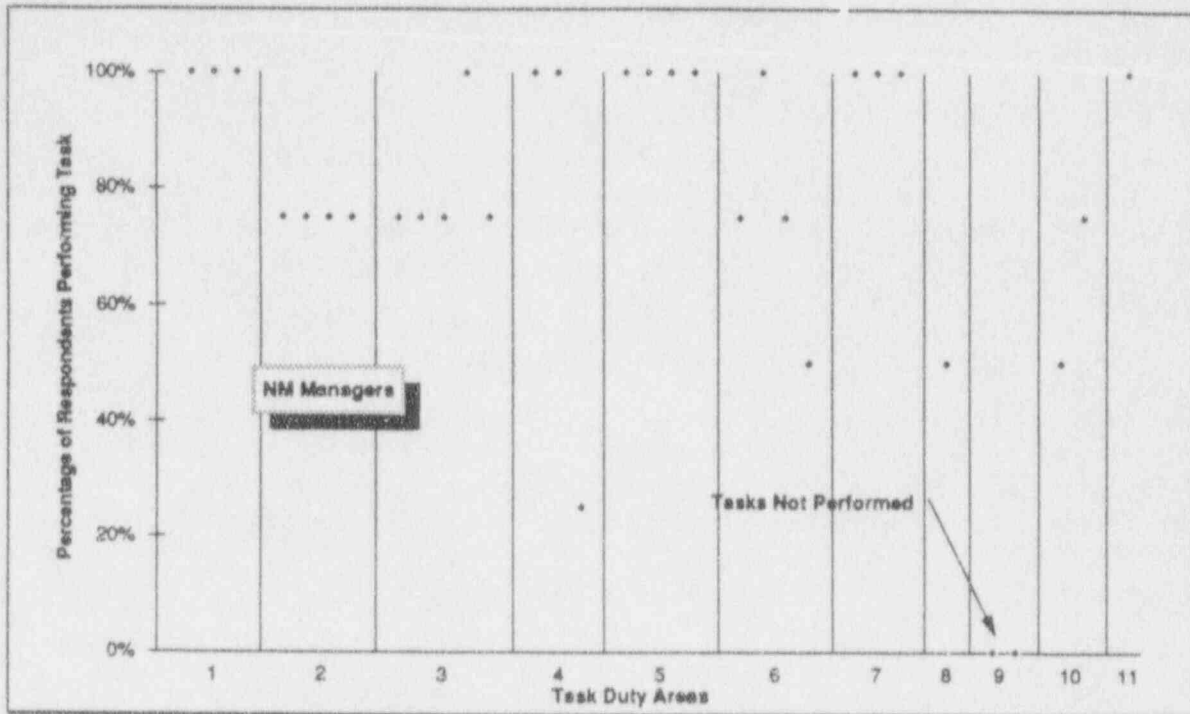
Fig. 37. Fraction of NM Manager Respondents Performing Each Task (Plotted Against Task Duty Area).
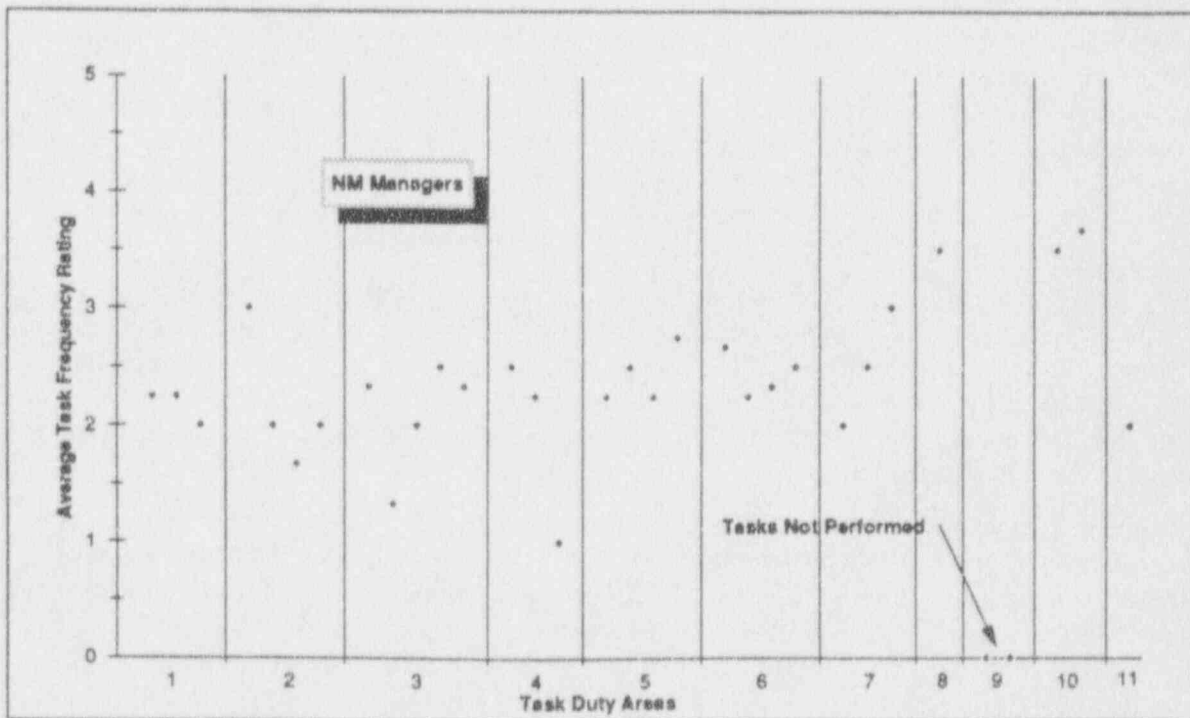
Fig. 38. *Frequency* of Task Performance by NM Manager Respondents (Plotted Against Task Duty Area).

TABLE XII. SUMMARY OF NM MANAGER DUTY AREAS

1. Prepare long-term forecast (16 yrs) of NM needs related to programs.
2. Prepare anMMP for DOE.
3. Assess validity of forecast data (Allotment Status Report).
4. Acquire NM for projects.
5. Prepare a disposition for usable excess NM (Inventory Assessment Report [IAR]).
6. Prepare a disposition for unusable excess NM [spent fuel & scrap] (IAR).
7. Discard NM when appropriate.
8. Ship excess NM.
9. Procure and maintain waste drums for NM material.*
10. Perform MASS duties.
11. Prepare/update descriptions for NM.

* This duty area has been deleted from the NM managers' task list because none of the NM managers was performing the two tasks included in it.

respectively). In Table XIII, we have again indicated by shading those tasks for which the training requirement changes when the average results are incremented or decremented by one standard deviation. In addition, those tasks having training requirements that are stable at A±S but which change if analyzed at A±3S are designated by shading only in the A+3S and A−3S columns. (For this purpose, we again consider a result of *train* (T) or *overtrain* (OT) to be equivalent because both require including the task in the training program.) The levels of training required for the NM manager tasks are totaled in Table XIV below as a function of the data sets analyzed.

The task-training requirements resulting from the decision-tree analysis of the questionnaire data are also plotted in Fig. 39. We have again plotted the training requirements as high-low data, assigning a numerical value of 2 to the training requirements of both *train* and *overtrain*, a value of 1 to *no train*, and a value of 0 to those tasks that no one performs. The training requirements resulting from the analyses of the A+S, A, and A−S data sets are plotted individually on the chart for each task at a common value on the task (χ) axis. Thus, if the analysis of all three data sets results in the same training requirement, the three points are plotted on top of one another. If different training requirements result, the points are connected by a vertical line, showing the spread of the results. These results indicate that this population is relatively homogeneous with respect to their assessment of the *difficulty*, *importance* and *frequency* of the tasks. In addition, the fact that the decision-tree analysis of the A±S data changed the gross training requirements of only 5 of the 32 tasks suggests that the training requirement results are relatively reliable in spite of the small number of incumbents. One noteworthy feature of the analysis results is the relatively large fraction of tasks requiring overtraining. Examination of the average task-assessment questionnaire ratings for task *difficulty*, *importance*, and *frequency* in Table D-X indicates that the respondents generally rated the tasks moderately difficult (>2.5 & <3.5) and very important (≥2.5) and performed them seldom (<2.5) to occasionally (≥2.5 & <3.5). Reference to the decision tree in Fig. 1 quickly reveals that this combination does indeed require overtraining.

TABLE XIII. SUMMARY OF DECISION-TREE TRAINING RECOMMENDATIONS FOR NM MANAGERS

TASKS	Performing Task (1)		Decision-Tree Analysis Training Recom. (2, 3, 4, & 5)		
	#	%	A+S	A	A-S
1. Prepare Long-Term Programmatic Forecast (16 yrs) of NM Needs.					
1.1 Gather data for preparing the long-term forecast.	4	100%	OT	OT	OT
1.2 Identify omissions or overstatements of needs from the previous forecast.	4	100%	OT	OT	OT
1.3 Write the long-term forecast and obtain required approvals.	4	100%	OT	OT	OT
2. Prepare an MMP for DOE.					
2.1 Establish details for NM acquisition for all programs.	3	75%	OT	OT	OT
2.2 Compile information from all contractors.	3	75%	OT	OT	T
2.3 Gather data for preparing the MMP.	3	75%	OT	T	T
2.4 Write the MMP and obtain required approvals.	3	75%	OT	T	T
3. Assess Validity of Forecast Data (Allotment Status Report).					
3.1 Write a quarterly review of the allotment data that appear on the Laboratory's forecast data.	3	75%	OT	OT	T
3.2 Write an explanation of the discrepancies when required and submit to user organization.	3	75%	T	NT	NT
3.3 Determine whether the current inventory represents an economical inventory level.	3	75%	OT	OT	OT
3.4 Identify material in excess of current programmatic needs.	4	100%	OT	OT	OT
3.5 Write an allotment report and obtain required approvals.	3	75%	OT	T	T
4. Acquire NM for Projects.					
4.1 Acquire NM for projects under Laboratory management (non-weapons test-related).	4	100%	OT	NT	T
4.2 Acquire NM for weapons test-related projects under Laboratory management.	4	100%	OT	OT	OT
4.3 Acquire NM for projects not under Laboratory control.	1	25%	-	T	-
5. Prepare a Disposition for Usable Excess NM (IAR).					
5.1 Identify usable excess NM.	4	100%	OT	OT	OT
5.2 Identify operating groups that have a programmatic need for excess material.	4	100%	OT	NT	T
5.3 Notify DOE/AL of excess NM availability when an internal need does not exist.	4	100%	T	T	T
5.4 Obtain DOE/AL recommendation for method of excess NM disposal when required.	4	100%	NT	NT	NT
6. Prepare a Disposition for Unusable Excess NM Spent Fuel & Scrap (IAR).					
6.1 Identify quantities and trends of scrap accumulation.	3	75%	OT	OT	T
6.2 Determine if material is recoverable.	4	100%	OT	OT	OT
6.3 Prepare a scrap declaration when recovery is not possible and obtain required approvals.	3	75%	OT	NT	T
6.4 Prepare a scrap declaration when recovery is possible and obtain required approvals.	2	50%	OT	OT	OT
7. Discard NM When Appropriate.					
7.1 Establish economic discard limits for common types of scrap.	4	100%	OT	OT	OT
7.2 Prepare discard requests for common scrap and special cases.	4	100%	OT	OT	OT
7.3 Review discard requests and obtain permission to discard NM.	4	100%	OT	OT	OT
8. Arrange Internal/External Shipment of Excess NM.	2	50%	T	T	OT
9. Procure and Maintain Waste Drums for NM Material.					
9.1 Maintain waste drums for NM material.	0		NA	NA	NA
9.2 Procure waste drums for NM material.	0		NA	NA	NA
10. Perform MASS Duties.					
10.1 Perform MASS duties to acquire/discard NM.	2	50%	NT	NT	NT
10.2 Use MASS to prepare forecast, allotment, and assessment reports.	3	75%	T	T	NT
11. Prepare/Update Descriptions for NM.	4	100%	T	T	T

Notes:

(1) # = number performing task.

(2) Shaded tasks require training decision.

(3) A+S = results of analysis of average responses plus one standard deviation.

(4) A = results of analysis of average responses.

(5) A-S = results of analysis of average responses minus one standard deviation.

(6) This duty area has been eliminated from the NM manager's job.

Number of usable respondent questionnaires: 4

TABLE XIV. RESULTS OF DECISION-TREE ANALYSIS OF NM MANAGERS' TASK QUESTIONNAIRE RESULTS

Numbers of Tasks as a Function of Level of Training Required, Considering the A, A±S, and A±3S Data Sets

Data Set Analyzed	Averages*	A±S**	A±3S**
No Train	6	2	2
Train	8	2	0
Overtrain	16	13	3
Train or Overtrain, Depending on Data Set	0	7	10
No Train, Train, or Overtrain, Depending on Data Set	0	5	14
Not Applicable (i.e., No One Performs Task)	2	2	2
Only One Respondent Performs Task	1	1	1

*   Totals of *no-train*, *train*, and *overtrain* tasks do include the tasks performed by only one respondent.

**   Totals of *no-train*, *train*, and *overtrain* tasks do **not** include the tasks performed by only one respondent.

4.   Validation of the Task-Training Requirement List.

We did not conduct a task-training validation meeting for these NM manager tasks because we established during the course of this job analysis that their line organization was responsible for providing training for these NM managers, with the MC&A training officer having only oversight responsibility.
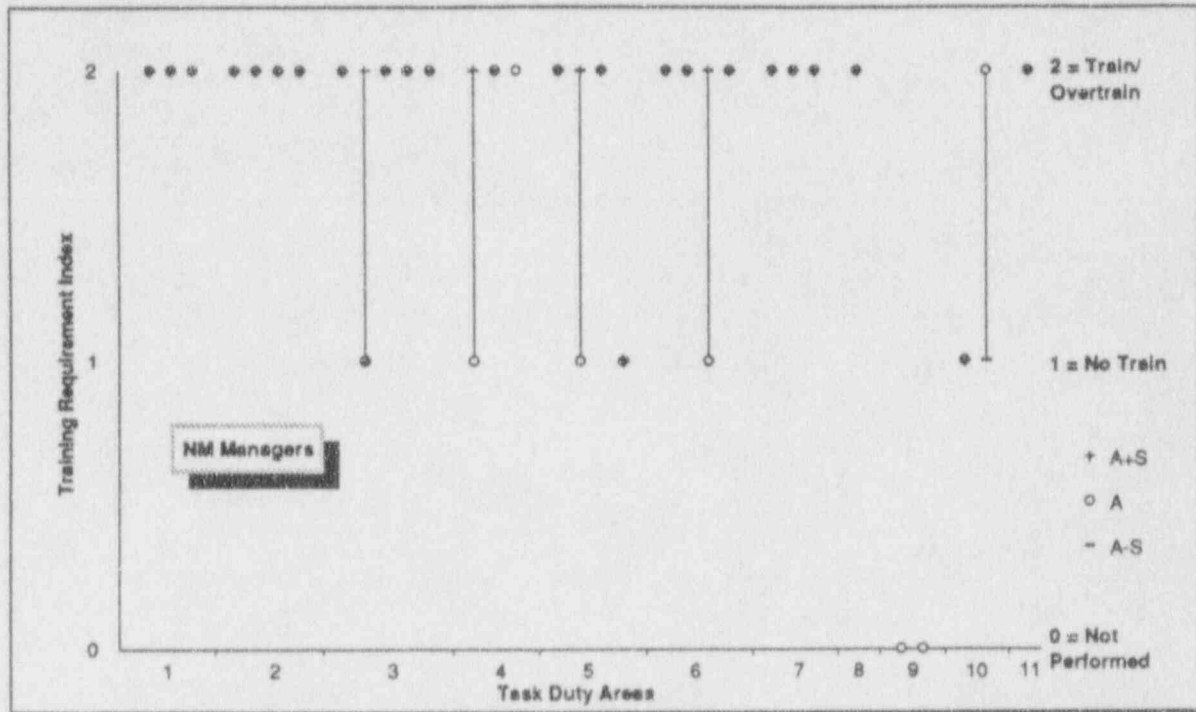
Fig. 39. Task-Training Requirements for NM Managers (Plotted as a Function of Task Duty Area).

IV. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

We conclude from the results of this job analysis that significant training programs are required for four of the five employee categories studied (i.e., custodians/alternates, handlers, safeguards specialists, and NM managers). Only a general orientation will be required for workers in the general employee category. For the first two categories (i.e., custodians/alternates and handlers), it was not possible to divide the tasks on the validated task lists into those requiring and those not requiring *formal* training because of the lack of MC&A SMEs working at many of the work areas having MC&A responsibilities. Therefore, the training program for both the custodians/alternates and the handlers will have to include all of the tasks on the validated task lists. However, for at least some of the MC&A accounts (e.g., CAT-I accounts at TA-55), an abbreviated training program can be implemented for the custodians/alternates and the handlers.

The SMEs on the Task-Training-Requirement Validation Committee for the custodians/alternates disagreed with the training recommendations resulting from the decision-tree analysis for many of the tasks, even some of the tasks with questionnaire results that appeared to be statistically reliable (i.e., those tasks for which the decision-tree analysis of the A+S, A, and A–S data sets all resulted in the same training requirement). The questionnaire results suggested to the committee that many of the custodians/alternates were either not performing their required MC&A tasks or else they were performing them improperly. The results from the other categories should also be examined for this situation.

Therefore, considering also the great amount of heterogeneity in the custodian/alternate responses, their decision-tree analysis results can be used only as a guideline for which tasks require training; the training requirement decision for many of the tasks will have to be determined in a task-training validation meeting.

It should be noted that considerable overlap of tasks exists among the four MC&A categories that require training. As a result, the required training program is not quite as formidable as it appears at first glance.

At the beginning of this project, we believed that five categories of employees required MC&A training, as stated above. As a result, we initially planned to perform a job analysis for each of these five employee categories according to the DOE guidelines to allow the LANL MC&A training officer to develop the required training program. However, as the job analyses proceeded, it was established that three of the five categories were special cases. These three special cases are discussed below.

1. Safeguards Specialist Category.

The definition of safeguards specialist was reviewed and refined several times at meetings with members of the MC&A TAC during the course of this project. Ultimately, it was agreed that this category would include only the members of group OS-2 (excluding the Transportation Section whose job analysis had been previously completed) because essentially everybody else with any MC&A responsibilities was already either included in one of the other MC&A categories or else spent essentially full time on MC&A-related activities and would therefore be trained by their line organizations (such as the Transportation, Storage, and NDA Sections from the former OS-14 group). Because OS-2 actually sets and oversees MC&A policy within LANL according to the

DOE requirements, OS-2's MC&A training, if any, must be provided by the DOE. (Apparently, the present plan is to train these safeguards specialists at the DOE Central Training Academy [CTA] in Albuquerque.) In view of these findings, this MC&A safeguards specialist employee category should not really have been a part of the present job analysis study. However, because a validated task list for this category had already been generated at the time this conclusion was reached, we decided to administer the task-assessment questionnaire to the safeguards specialists.

2. NM Manager Category.

This employee category was included at the request of the NM program director's office. We generated a task list and administered the resulting questionnaire to the four people identified as having the actual LANL NM management responsibilities. (At the start of this project, these four people were in group NMT-7, but they have recently been moved into the NM program director's office.) Here again, the actual training for these specialist jobs is the responsibility of their line organization (in conjunction with the LANL MC&A training officer). A subset of these NM manager tasks was also added to the task lists of the custodians and handlers to assess their activities in this area because many of the custodians and many of the handlers do, in fact, perform some of these NM management tasks even though they are not actual MC&A activities required by the *MC&A Handbook*.

3. General Employee Category.

From the outset of this project, we recognized that the general employee MC&A category required special procedures. As originally defined, these general employees were the people whose job required them to work in the vicinity of, but did not involve any direct interaction with or responsibility for, NM and/or SNM. The DOE *TAP* procedures were clearly not appropriate here because they assume the incumbents will have considerable knowledge of, and involvement in, the tasks being analyzed. People in this general employee category do not really have any specific MC&A tasks because they do not work with or account for NM in any way. As a result, it was concluded that a formal job analysis was not necessary or appropriate for this category and that the training needs could be met using a general MC&A awareness training.

A decision was recently made to broaden the general employee MC&A category to include employees more involved with NM/SNM than described in the paragraph above, but less involved than that of the more typical NM handlers. Thus, it will now include categories such as security inspectors (who frequently escort on-site shipments of SNM) and WX-Division engineers (who inspect weapons parts but are not responsible for their handling or storage). The intent is to provide the people in this recently added subcategory with a general MC&A awareness training that is more detailed than that provided to the people covered by the original definition. Here again, a formal job analysis is not appropriate.

B. Recommendations

The results of this job analysis provide the foundation necessary for planning a detailed training program, budgeting, selecting instructional approaches, and writing instructional objectives. However, a number of steps remain to be completed to attain accreditable training programs for the four employee categories requiring explicit MC&A training.

First, decide which custodian/alternate and handler subcategories **do not** require the *complete* MC&A training program; then convene a committee to generate the validated task-training requirement lists for these subcategories.

Next, conduct a task analysis for all of those tasks requiring formal training or overtraining in each of the jobs studied here. This step is necessary to determine the learning objectives for the training modules.

Following this task analysis, design and develop the training programs based on this job analysis and the subsequent task analysis. As previously mentioned, the desired effectiveness of training is not currently defined; thus, it is especially important that instructional goals be clearly stated.

Simultaneously with the design and development of the training, complete the remaining steps in the analysis phase, i.e., the task-to-training matrix and evaluation of existing training materials.

Appendix A

DEFINITIONS

TABLE A-I. GLOSSARY OF TRAINING TERMS

Ability - An ability is an innate capacity to perform job-related tasks.

Computer-Based Training (CBT) - CBT is training that involves delivering instruction by computer. The instructional strategy used is often "tutorial," which involves the presentation of information, followed by questioning, repetition, and then a mastery test.

Duty - A duty is one major subdivision of work performed by one individual. A job is made up of one or more duties. Duties have these characteristics:

- A duty is one of the job incumbent's main functions, but it may sometimes be the total job.
- A duty is a grouping of closely related tasks.
- Duty requirements often are the basis for assigning a job initially, for determining the qualifications required to perform the job, or for determining requirements for post-assignment training.

Elements - The smallest entity of a task that has practical meaning to instructional designers is an element, which is one step in the performance of a task. Each element is dependent upon other elements and is relatively meaningless outside of the group of elements that makes up the task.

Job - All of the duties and tasks performed by a single worker constitute his job. If identical duties and tasks are performed by several individuals, they all hold the same job.

Job Analysis - Such an analysis obtains a detailed listing of duty areas and tasks of a specific job or position. It provides reasonable assurance that all tasks essential to safe and efficient operation are addressed by the training program.

No Train - This term is applied to a task that requires no formal training. The task can be learned in the normal course of job activities.

Overtrain - This term is applied to a task that requires a combination of formal training plus periodic practice of the task (retraining).

Simulation-Based Training (SBT) - SBT is computer-based training that contains a core model of the problem solving domain. The instructional strategies used are "gaming" and "simulation," where students are presented realistic scenarios for which they must set parameters and specify actions to solve realistic problems. A score and a detailed comparison of the student's solution with an expert's solution are provided.

Skill - A skill is a proficiency for task performance that can be taught.

Task - For the purpose of this report, a task is interpreted as a well-defined unit of work with two or more steps, and it has an identifiable beginning and end. A job analysis is actually done at the task

level. The performance of clusters of tasks constitutes duties. Each task is independent of other tasks.

Task Analysis - Task analysis identifies the relevant conditions and standards for selected tasks and breaks them into their component elements. It also examines the tasks to define the knowledge, skills, tools, equipment, and physical abilities required of individuals performing them.

Train - This term is applied to a task that requires formal training. The training could be some combination of classroom, drills, simulators, self-study, and on-the-job training (OJT).

TABLE A-II. DEFINITIONS OF MC&A EMPLOYEE CATEGORIES[1]

Custodian: a classification of employee having assigned responsibility for the control and accountability of NM and/or SNM in a localized area of a facility

General Employee: a classification of employee who has access to protected and/or controlled areas where SNM is present and has the responsibility for understanding safeguards issues and threats

Handler: a classification of employee who is authorized to work with (i.e., to process, move, transport, assay, etc.) NM and SNM

Safeguards Specialist: a classification of employee who is responsible for material accounting and/or material control measures designed to deter, prevent, detect, and respond to unauthorized possession, use, or sabotage of SNM

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[1]   Please note that these are the definitions that were provided to us at the beginning of this project and/or that we developed through interactions with the MC&A TAC during the course of the project. As discussed in the main body of the report above, the definition for the general employee category has since been changed.

TABLE A-III. DEFINITIONS OF MC&A TERMS

Detection and Assessment Systems - "It is the Laboratory policy that a system for the detection of unauthorized material in areas of processing, storage and transportation is to be consistent with the graded safeguards concept . . . ." (*MC&A Handbook*, 1989)

Internal Review and Assessment Program (IRA) - "The purpose of the Laboratory's internal review and assessment program is to assess MC&A effectiveness and compliance with requirements to assure MC&A quality and integrity. This program shall determine Laboratory MC&A capabilities and vulnerabilities relative to DOE requirements and threat guidance and shall identify areas in which corrective actions are needed." The program director for safeguards assurance (PDSA) will establish and maintain the program. Checklists are provided as one indication of the MC&A effectiveness. (*MC&A Handbook*, 1989)

Material Access Area (MAA) - "An area which contains a Category I quantity of SNM and is specifically defined by physical barriers, located within a protected area, and subject to specific access controls." (DOE Order 5633.3)

Material Balance Area (MBA) - An identifiable exclusive physical area for the physical administrative control of NM so that the quantity of NM being moved into or out of the MBA is represented by a measured value. The design of the MBA is to establish accountability and localize inventory differences.

Material Containment Program - "Laboratory policy requires that all nuclear material included in the inventory is to be controlled through material containment programs commensurate with appropriate graded safeguards principles that are based on strategic and monetary value of material. Laboratory nuclear materials containment programs are also designed to insure proper levels of safety to all facility workers, to the public and to the environment." (*MC&A Handbook*, 1989)

Material Control Indicators (MCIs) - "Discrepancy indicators provided by the accounting system that signify abnormal conditions." (DOE Order 5633.3)

Material in Process (MIP) Transaction - The algebraic sum of MIP (difference between the book value and measured value) for a process/status by detailed material types is, by definition, the ID for a process/status for a month. (*MC&A Handbook*, 1989)

Material Surveillance Procedures (MSP)/Objectives - "Material surveillance procedures, as implemented by the Laboratory, are designed to monitor nuclear material and to detect unauthorized activities and/or anomalous conditions. MSP utilizes observation by two cleared, knowledgeable and authorized observers, process logs, inventory records, TIDs, daily administrative checks, and other means to detect unauthorized activities or anomalous conditions." (*MC&A Handbook*, 1989)

Process Accountability Flow Diagrams (PAFDs) - ". . . are used to document measurement methods; evaluate measurement techniques for specified categories of material; assure that only certified measurement techniques are used for accountability measurements; and are used as tools in ID evaluations and internal audits." (*MC&A Handbook*, 1989)

Risk Assessment - A risk evaluation where "the results are provided in the MSSA (Master Safeguards and Security Agreement) along with the specific consequence values and baseline risk values

associated with existing safeguards and security protection systems. Protection system effectiveness was calculated for each target against a specified threat." (*MC&A Handbook*, 1989)

Sample Exchange Programs - Programs providing information for the assessment of specific facility/laboratory measurement capabilities and general measurement instrument/method capability. The Laboratory currently participates in three sample exchange programs, first, Uranium Metal Exchange (CLS-1); second, Plutonium Metal exchange (CLS-1); and third, Calorimetry Sample Exchange (MST-10).

Threat Statement - ". . . . identifies the levels of protection against the defined threats of theft diversion, radiological and industrial sabotage. Those levels of protection are designed to provide a balanced, graded, and cost-effective safeguards and security program commensurate with defined threats and risks." (*MC&A Handbook*, 1989)

Transfer Check - "The act of verifying the shipping container or item count, verifying the tamper-indicating device's integrity including the identification number and comparing this information with appropriate documentation following the transfer of nuclear material." (DOE Order 5633.3)

TABLE A-IV. DEFINITIONS OF ACRONYMS

ALARA - As low as reasonably attainable

AWCC - Active well (neutron) coincidence counter

B–SGS - Barrel-segmented gamma scanner

C–SGS - Can-segmented gamma scanner

CAT - Category

CMC - Confirmatory measurement (neutron) counter

CSF - Courier shipment form

CTA - Central Training Academy

DoD - Department of Defense

DOE - Department of Energy

FRAM - FRAM Pu gamma counter isotopic system

HS - Health and Safety Division

IAR - Inventory assessment report

ID - Inventory difference

IRA - Internal review and assessment

ISD - Instructional systems design

JTA - Job/task analysis

LANL - Los Alamos National Laboratory

"LLNL" - Lawrence Livermore National Laboratory - used here to denote a gamma counter referred to as the LLNL gamma counter

LOE - Limit of error

MAA - Material access area

MASS - Material Accounting Safeguard System

MAT - Materials Management Division

MBA - Material balance area

MC&A - Material Control and Accountability

MCI - Material control indicator

MIP - Material in process

MMP - Material management plan

MSP - Material surveillance procedures

MSSA - Master safeguards and security agreement

NA - Not applicable

NBC - Neutron barrel counter

NCC - Neutron coincidence counter

NDA	- Non-destructive assay
NM	- Nuclear material(s)
OJT	- On-the-job training
OP	- Operating procedure
PAFD	- Process accountability flow diagram
PBT	- Performance-based training
PDSA	- Program director for safeguards assurance
Pu	- Plutonium
RMTT	- Radioactive material transfer tag
SAT	- Systems approach to training
SM	- Staff member, or see following
SM	- Shipping manifest, or see preceding
SME	- Subject-matter expert
SNM	- Special nuclear material(s)
SOP	- Standard operating procedure
SRM	- Standard reference material
TAC	- Training Advisory Committee
TAP	- Training Accreditation Program
TEC	- Technician
TID	- Tamper indicating device
U	- Uranium
1P	- Tasks performed by only one person

Appendix B

QTA

INSTRUCTIONS

AND DEFINITIONS

INSTRUCTIONS FOR COMPLETION OF QTA QUESTIONNAIRE

This survey contains a list of tasks, which we believe are a part of your job. Your responses will be used to plan training.

While your responses will be used in a final report, your identity will be kept confidential. Please be honest; your opinion counts.

On the following pages are definitions which will be used in the survey. Using these definitions, think back over your job and answer each question on the computer according to your experience and personal opinion. The computer program will provide further explanation about these definitions. If you do not understand them or cannot use them in completing the questionnaire, please let us know.

RATING-SCALE DEFINITIONS USED IN QTA QUESTIONNAIRE

CONSEQUENCES OF IMPROPER PERFORMANCE SCALE DEFINITIONS

What happens if you don't do a task right?

1 = Nothing happens

2 = Little consequence
   For example: You have to correct or repeat the work.

3 = Some Consequence
   For example: There is an internal MC&A investigation and/or personal injury, but the injured person can return to work.

4 = Severe Consequence
   For example: There is an external MC&A investigation (by DOE) and/or the environment is contaminated and/or personal injury occurs, which requires hospitalization.

5 = It is a disaster.
   For example: There is Lab, site, or facility shutdown and/or a criticality accident occurs and/or someone dies.

FREQUENCY OF PERFORMANCE SCALE DEFINITIONS

How often do you perform a task?

0 = Never

1 = Must be able to do but actually but do it less often than once a year

2 = Once or twice a year

3 = More often than twice a year but less often than every two weeks

4 = Once every one to two weeks

5 = More often than once a week

DIFFICULTY SCALE DEFINITIONS

How hard is a task?

1 = Very easy

2 = Somewhat easy

3 = Moderately Difficult

4 = Very Difficult

5 = Extremely Difficult

Appendix C

VALIDATED TASK LISTS

FOR MC&A JOBS

TABLE C-I. VALIDATED TASK LIST OF CUSTODIAN/ALTERNATE CUSTODIAN MC&A DUTIES

1.0 Identify LANL Groups and Their Responsibilities for MC&A and Safeguards.

 1.1 Respond to internal and external questions regarding MC&A organizations and responsibilities at LANL.

 1.2 Delegate tasks of NM MC&A and safeguards to appropriate groups and individuals when required.

2.0 Perform MASS Duties.

 2.1 Submit monthly ID report to OS-2 as required.

 2.2 Perform inventory adjustments (for example, for normal operating loss or routine tests).

 2.3 Review MASS reports as provided by OS-2 and respond if required.

 2.4 Monitor and evaluate MIP transactions.

 2.5 Follow MASS procedures as a non-MASS user.

  2.5.1 Obtain transaction information from NM handler as required.

  2.5.2 Report NM transaction activity to OS-2 in required time limits as a non-MASS user.

 2.6 Follow procedures of MASS as a validated MASS user.

  2.6.1 Obtain transaction information from NM handler as required.

  2.6.2 Perform MASS transactions using an on-line terminal.

  2.6.3 Review and approve MASS user access request form and submit to OS-2.

  2.6.4 Ensure new MBA MASS users are validated.

  2.6.5 Report NM transaction activity to OS-2 in required time limits as a MASS user.

3.0 Implement Measurement and Measurement Control Programs.

 3.1 Perform assay measurements of items in your holdings as required.

 3.2 Arrange for the assay measurements of items in your holdings as required.

 3.3 Perform confirmation measurements as required.

 3.4 Arrange that confirmation measurements are performed as required.

 3.5 Perform verification measurements as required.

 3.6 Arrange that verification measurements are performed as required.

 3.7 If an item fails (in 3.3 through 3.6), ensure the item is not processed and resolve the discrepancy.

 3.8 Select, w/ OS-2 approval, the appropriate methods of how items will be measured (mass, form) following LANL graded-safeguards program.

 3.9 Ensure that personnel performing measurements are trained and qualified as outlined in the OS-2 MC&A Training and Certification Program.

 3.10 Participate in Sample Exchange Program, if applicable.

 3.11 Ensure that all instruments, methods, and standards used for NM accountability measurements within your control are certified.

 3.12 Ensure that procedures for calibration of instruments and methods are in place.

 3.13 Maintain a measurement control program as presented in your MBA OP.

4.0 Establish Administrative Controls.

 4.1 Perform duties required by the IRA program.

 4.2 Prepare and submit PAFD to OS-2 for approval.

 4.3 Monitor and modify PAFD as required.

 4.4 Perform daily administrative checks as required.

4.5 Prepare temporary MAA OPs when requ.

5.0 Establish MBA OPs.

5.1 Write routine MBA OPs using *MC&A Handbook* guidelines and other relevant sources.

5.2 Obtain required approval of MBA procedures.

5.3 Provide OS-2 group office with a copy of approved procedures.

5.4 Review and update MBA procedures when required.

6.0 Implement Material Control Program and Physical Security.

6.1 Perform duties as required in TID program.

6.2 Comply with the Detection and Assessment Systems.

6.3 Comply with the Laboratory Material Containment Program.

6.4 Comply with ALARA guidelines.

6.5 Determine and evaluate IDs using MCIs.

6.6 Assure compliance with MBA OPs.

    6.6.1 Perform duties required for the Personnel Access Control Program.

    6.6.2 Perform duties required by the MSP.

    6.6.3 Comply with graded safeguards and designated attractiveness levels assigned to SNM and NM.

    6.6.4 Coordinate and implement controls (for example, combination change sign-off sheet) for vaults and safes.

6.7 Respond to emergencies using approved Lab and DOE procedures.

    6.7.1 Respond to suspected, alleged, or actual diversion of NM.

    6.7.2 Respond to significant IDs.

    6.7.3 Respond to threat against LANL and public involving NM (includes knowledge of threat statement and risk assessment).

7.0 Perform Inventory Duties.

7.1 Prepare for the physical inventories as required by LANL Physical Inventory Plan.

7.2 Conduct daily inventories as required.

7.3 Conduct bimonthly inventories as required.

7.4 Conduct semiannual inventory and annual inventories as required.

7.5 Conduct special inventories as required.

7.6 Perform measurements of selected inventory items, as requested by OS-2.

7.7 Arrange for measurements of selected inventory items, as requested by OS-2.

7.8 Reconcile discrepancies or problems identified as a result of the inventory.

8.0 Perform External (Off-Site) NM Transfers.

8.1 Request authorization to ship material off site.

8.2 Verify authorization to ship has been granted by receiving facility.

8.3 Coordinate off-site NM transfer with OS-14 using the scheduling information outline (19 Points).

8.4 Follow classification guidelines.

8.5 Arrange for preshipment measurements and provide results to OS-2 Accounting Section.

8.6 Complete checklist for limit of error (LOE) form and forward completed copies to A-1 and OS-2.

8.7 Arrange for health protection monitoring and swiping with the appropriate HS group.

8.8 Package NM for off-site shipments.

8.9 Arrange for proper labeling for off-site shipments of NM with the appropriate HS group.

8.10   Complete appropriate section of RMTT and attach to container.

8.11   Provide receiver with appropriate copies of shipping data sheet.

8.12   Prepare SM or CSF as required and forward a copy to OS-2 and HS-3.

8.13   Perform a transfer check (Sec. 2, part 7, *MC&A Handbook*).

8.14   Perform MASS transaction as a non-MASS user.

8.15   Perform MASS transaction as a MASS user.

8.16   Notify OS-14 that the shipment is prepared.

8.17   Provide OS-14 NM handler with an items-in-transit list of the shipment.

8.18   Obtain appropriate authorization of RMTT and retain receipt.

9.0 Receive External (Off-Site) Transfers of NM.

9.1   Submit NM receipt authorization to OS-2.

9.2   Notify OS-2 within required time of receipt of the off-site NM shipment.

9.3   Perform a transfer check (Sec. 2, part 7, *MC&A Handbook*).

9.4   Complete receipt of confirmation form.

9.5   If shipment does not confirm, respond using MBA OPs.

9.6   Arrange for incoming HS monitoring.

9.7   Perform accountability measurements when receiving off-site shipments.

9.8   Arrange for accountability measurements when receiving off-site shipments.

9.9   Complete checklist for LOE form.

9.10   Send copies of completed checklist to A-1 and OS-2.

9.11   Confirm accuracy of information on RMTT tag and sign.

9.12   Confirm an items-in-transit list if required.

9.13   Perform MASS transaction as a MASS user.

9.14   Perform MASS transaction as a non-MASS user.

10.0 Ship Internal Transfers of NM Between Different MAAs.

10.1   Notify receiving NM custodian before making the NM transfer.

10.2   Ensure proper measurement of items being transferred is complete.

10.3   Package NM for on-site transfer following HS-1 requirements.
      10.3.1 Apply TID if required.

10.4   Follow classification guidelines.

10.5   Coordinate transfer with OS-14.

10.6   Complete appropriate section of RMTT and attach to container.

10.7   Arrange for health protection monitoring and swiping with HS as required.

10.8   Perform MASS transaction as a MASS user.

10.9   Perform MASS transaction as a non-MASS user.

10.10   Provide OS-14 NM handler with an items-in-transit list of the shipment.

10.11   Obtain appropriate approval signatures of RMTT and retain receipt.

11.0 Receive Internal (On-Site) NM Transfer Between Different MAAs.

11.1   Confirm accuracy of information on RMTT tag and sign.

11.2   Confirm an items-in-transit list if required.

11.3   Perform transfer check as required (Sec. 8, part 3, *MC&A Handbook*).

11.4   Perform accountability measurements when receiving off-site shipments.

11.5   Arrange for accountability measurements when receiving off-site shipments.

11.6   Perform confirmation measurements as required.

11.7   Arrange for confirmation measurements as required.

11.8   Perform verification measurements as required.

11.9   Arrange for verification measurements as required.

11.10 If transfer does not confirm, follow MBA OP.

11.11 Perform MASS transaction as a MASS user.

11.12 Perform MASS transaction as a non-MASS user.

12.0 Send NM Within or Between MBAs of the Same MAA.

12.1   Obtain authorization from receiving NM custodian before sending the NM as required (or follow the PAFD).

12.2   Package NM for transfer if required.

12.3   Request proper packaging of NM for transfer if required.

12.4   Arrange for proper labeling and documentation for transfer of NM if required.

12.5   Complete appropriate portion of RMTT and attach to container if required.

12.6   Arrange for health protection monitoring and swiping with HS if required.

12.7   Follow required MSP.

12.8   Perform MASS transaction as a non-MASS user.

12.10 Ensure that the receiving NM custodian performs receiving MASS transaction as required (or follow PAFD).

13.0 Receive NM Within or Between MBAs of the Same MAA.

13.1   Confirm accuracy of information on RMTT and sign tag if required.

13.2   Confirm an items-in-transit list if required.

13.3   Follow PAFD, MSP, and/or MBA OP for confirming transfer.

13.4   If shipment does not confirm, respond using MBA OPs.

13.5   Perform MASS transaction as a MASS user.

13.6   Perform MASS transaction as a non-MASS user.

14.0 Perform Other NM Activities (Not MC&A but NM Management Activities).

14.1   Assist in preparing the forecast of NM needs related to research, development, and testing programs.

14.2   Assist in preparing an MMP.

14.3   Assist in preparing a quarterly review of the allotment data that appears in the Laboratory forecast.

14.4   Identify material in excess of the programmatic needs.

14.5   Arrange for discard of NM (excess and waste).

14.6   Create and maintain NM waste drums.

TABLE C-II. VALIDATED TASK LIST OF HANDLER MC&A DUTIES

1.0 **Perform MASS Duties.**
   1.1 Perform MASS transactions as a MASS user.
   1.2 Perform MASS transactions as a non-MASS user.

2.0 **Perform Administrative Controls.**
   2.1 Perform duties required by the IRA program.
   2.2 Prepare and submit PAFD to OS-2 for approval.
   2.3 Monitor and modify PAFD as required.
   2.4 Perform daily administrative checks as required.
   2.5 Prepare temporary MAA OPs when required.

3.0 **Receive Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.**
   3.1 Notify NM custodian/alternate (OS-2) of receipt of NM shipment.
   3.2 Confirm accuracy of information on the RMTT and sign if required.
   3.3 Confirm items-in-transit list if required.
   3.4 Follow PAFD, MSP, and/or MBA OPs for confirming transfer.
   3.5 Perform MASS transactions as a MASS user.
   3.6 Perform MASS transactions as a non-MASS user.

4.0 **Perform Internal (On-Site) Transfer of NM Within or Between MBAs of the Same Material Access Area (MAA).**
   4.1 Obtain authorization from receiving NM custodian before sending NM or follow the PAFD.
   4.2 Package NM for transfer if required.
   4.3 Request packaging of NM for transfer if required.
   4.4 Arrange for proper labeling and documentation for transfer of NM if required.
   4.5 Complete appropriate portion of RMTT and attach to container if required.
   4.6 Arrange for health protection monitoring and swiping with HS if required.
   4.7 Follow required MSP.
   4.8 Perform MASS transactions as a MASS user.
   4.9 Perform MASS transactions as a non-MASS user.
   4.10 Ensure receiving NM custodian performs receiving MASS transaction or follows PAFD.

5.0 **Receive Internal (On-Site) Transfer of NM Between Different MAAs.**
   5.1 Confirm accuracy of information of RMTT and sign.
   5.2 Confirm items-in-transit list if required.
   5.3 Perform transfer check and complete documentation as required.
   5.4 Perform accountability measurements.
   5.5 Arrange for accountability measurements.
   5.6 Perform confirmation measurements as required.
   5.7 Arrange for confirmation measurements as required.
   5.8 Perform verification measurements as required.
   5.9 Arrange for verification measurements as required.
   5.10 Perform MASS transactions as a MASS user.
   5.11 Perform MASS transactions as a non-MASS user.

6.0 Perform Internal (On-Site) Transfer of NM Between Different MAAs.

    6.1 Notify receiving NM custodian before making the NM transfer.

    6.2 Ensure proper measurement of item being transferred is complete.

    6.3 Package NM for transfer following HS-1 requirements.

    6.4 Apply TID if required.

    6.5 Complete appropriate section of the RMTT and attach to container.

    6.6 Arrange for health protection monitoring and swiping with HS as required.

    6.7 Obtain appropriate signatures on the RMTT and retain receipt.

    6.8 Perform MASS transactions as a MASS user.

    6.9 Perform MASS transactions as a non-MASS user.

7.0 Receive External (Off-Site) Transfer of NM.

    7.1 Submit NM receipt authorization to OS-2.

    7.2 Notify OS-2 within required time of receipt of the NM shipment.

    7.3 Perform transfer check and complete documentation as required.

    7.4 Complete receipt of confirmation form.

    7.5 Arrange for an HS monitoring.

    7.6 Perform accountability measurements.

    7.7 Arrange for accountability measurements.

    7.8 Complete checklist for LOE calculations.

    7.9 Send copies of completed checklist to A-1 and OS-2.

    7.10 Confirm accuracy of information on RMTT and sign.

    7.11 Perform MASS transactions as a MASS user.

    7.13 Perform MASS transactions as a non-MASS user.

8.0 Perform External (Off-Site) Transfer of NM.

    8.1 Request authorization for off-site shipment.

    8.2 Verify authorization to ship has been granted by receiving facility.

    8.3 Follow classification guidelines.

    8.4 Arrange for preshipment measurements and provide results to OS-2 Accounting Section.

    8.5 Complete checklist for LOE form and forward completed copies to A-1 and OS-2.

    8.6 Arrange for health protection monitoring and swiping as required.

    8.7 Package NM for shipment.

    8.8 Arrange for proper labeling of shipment with HS.

    8.9 Complete appropriate section of RMTT and attach to container.

    8.10 Provide receiver with appropriate copies of shipping data sheet.

    8.11 Prepare SM or CSF as required and forward copies to OS-2 and HS.

    8.12 Perform transfer check and complete documentation as required.

    8.13 Obtain appropriate signatures of RMTT and retain receipt.

    8.14 Perform MASS transactions as a MASS user.

    8.15 Perform MASS transactions as a non-MASS user.

9.0 Operate and Calibrate Instruments.

    9.1 Operate AWCC for U.

    9.2 Operate B-SGS.

    9.3 Operate Calorimeter System.

    9.4 Operate C-SGS.

    9.5 Operate CMC.

    9.6 Operate FRAM.

9.7 Operate "LLNL.."

9.8 Operate NBC.

9.9 Operate NCC for Pu.

9.10 Operate electronic balances.

9.11 Perform calibration of balances.

9.12 Perform Pu/U assay measurements.

9.13 Perform Pu/U verification measurements.

9.14 Perform U verification measurements.

9.15 Collect data for NDA equipment certification.

9.16 Certify NDA equipment.

9.17 Maintain documentation as required.

10.0 Perform Inventory Duties.

10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.

10.2 Assist in conducting daily inventories as required.

10.3 Assist in conducting bimonthly inventories as required.

10.4 Assist in conducting semiannual and annual inventories as required.

10.5 Assist in conducting special inventories as required.

10.6 Assist in performing measurements of selected inventory items as requested by OS-2.

11.0 Perform Administrative Duties.

11.1 Include MC&A procedures in writing operational SOPs.

11.2 Implement MC&A procedures from the SOPs.

11.3 Know and observe vault access rules and records requirements.

11.4 Assist in training new employees.

12.0 Perform Duties in the NM Management Program.

12.1 Assist in preparing the forecast of NM needs, related to research, development, and testing programs.

12.2 Assist in preparing an MMP.

12.3 Assist in preparing a quarterly review of the allotment data that appear in the Lab forecast.

12.4 Identify material that is in excess of the programmatic needs.

12.5 Arrange for discard of NM (excess and waste).

12.6 Create and maintain NM waste drums.

TABLE C-III. VALIDATED TASK LIST OF SAFEGUARDS SPECIALIST MC&A DUTIES

1.0 Establish and Monitor Laboratory NM Inventories.

1.1 Plan and prepare for physical inventories as required by LANL Physical Inventory Plan.

1.2 Conduct inventories as required.

1.3 Select inventory items for measurement.

1.4 Follow up on the reconciliation of discrepancies or problems identified as a result of the inventory.

1.5 Know and implement statistical sampling plans.

1.6 Complete inventory reports as required.

2.0 Perform NM Accountability Functions.

2.1 Perform inventory adjustments (for example, for normal operating loss or routine tests).

2.2 Enter data into the NM Management Safeguards System using AutoMiii.

2.3 Perform external transfers.

2.4 Validate source documentation.

2.5 Perform reconciliation activities.

2.6 Perform authorization reviews.

2.7 Establish and monitor the shipper/receiver difference program.

2.8 Generate receipt and shipment plans.

2.9 Perform NM cost accounting

2.10 Perform OP maintenance.

2.11 Know and use MASS procedures.

    2.11.1 Review ard approve MASS user access request forms.

    2.11.2 Enter MASS user data as required.

    2.11.3 Ensure new MBA MASS users are validated.

    2.11.4 Obtain information from indirect MASS users and perform the necessary transactions.

    2.11.5 Distribute MASS reports to custodians as required.

    2.11.6 Know and use MASS tables.

    2.11.7 Know and use MASS Tiger reports.

    2.11.8 Know and use MASS transaction options.

3.0 Establish and Monitor Material Control Program.

3.1 Administer and control the TID program.

3.2 Assure compliance with the Detection and Assessment Systems.

3.3 Assure compliance with the Laboratory Material Containment Program.

3.4 Establish and monitor the ID program.

3.5 Know and monitor PAFDs.

3.6 Review and evaluate temporary MAAs.

3.7 Establish and monitor the portal monitor program.

3.8 Approve MBA OPs.

3.9 Assure compliance with MBA OPs.

    3.9.1 Assure performance of duties required for the Personnel Access Control Program.

    3.9.2 Assure performance of duties required by the MSP.

    3.9.3 Review NM accounts for attractiveness/category compliance.

3.10 Respond to MC&A emergencies using approved Lab and DOE procedures.

    3.10.1 Respond to suspected, alleged, or actual diversion of NM.

    3.10.2 Respond to threat against LANL and public involving NM (includes knowledge of threat statement and risk assessment).

3.11 Perform audits

    3.11.1 Perform internal review assessments.

    3.11.2 Perform internal operational audits.

4.0 Implement Measurement and Measurement Control Programs.

4.1 Establish and monitor confirmatory measurement program.

4.2 Arrange for and/or perform confirmation measurements as required.

4.3 Arrange for and/or perform verification measurements as required.

4.4 Evaluate the results of verification and confirmation measurements.

4.5 If an item fails (in 4.4), ensure the item is not processed and resolve the discrepancy.

4.6 Determine and/or approve measurement methods (mass, form) following the LANL-Graded Safeguards Program.

4.7 Ensure that persons performing measurements are trained and qualified.

4.8 Participate in Sample Exchange Program, if applicable.

4.9 Ensure that all instruments, methods, and standards used for NM accountability measurements are certified.

4.10 Ensure that procedures for calibration of instruments and methods are in place.

4.11 Establish and monitor a measurement control program.

4.12 Certify measurement methods, instruments, and standards.

4.13 Know capabilities and limitations of NDA instrumentation.

4.14 Establish and monitor Laboratory's remeasurement program.

4.15 Establish and monitor Laboratory's IVP.

4.16 Maintain documentation as required.

5.0 Provide MC&A Training.

5.1 Provide TID training.

5.2 Provide NDA training.

5.3 Provide MASS training for users and indirect users.

5.4 Provide MC&A training for NM custodians.

5.5 Provide inventory training.

TABLE C-IV. VALIDATED TASK LIST OF NM MANAGER DUTIES

1.0 Prepare Long-Term Forecast (16 yrs) of NM Needs Related to Programs.

1.1 Gather data for preparing the long-term forecast.
1.2 Identify omissions or overstatements of needs from the previous forecast.
1.3 Write the long-term forecast and obtain required approvals.

2.0 Prepare an MMP for DOE.

2.1 Establish details for NM acquisition for all programs.
2.2 Compile information from all contractors.
2.3 Gather data for preparing the MMP.
2.4 Write the MMP and obtain required approvals.

3.0 Assess Validity of Forecast Data (Allotment Status Report).

3.1 Write a quarterly review of the allotment data that appears on the Laboratory's forecast data.
3.2 Write an explanation of the discrepancies when required and submit to user organization.
3.3 Determine whether the current inventory represents an economical inventory level.
3.4 Identify material in excess of current programmatic needs.
3.5 Write an allotment report and obtain required approvals.

4.0 Acquire NM for Projects.

4.1 Acquire NM for projects under Laboratory management (non-weapons test-related).
4.2 Acquire NM for weapons test-related projects under Laboratory management.
4.3 Acquire NM for projects not under Laboratory control.

5.0 Prepare a Disposition for Usable Excess NM - Inventory Assessment Report (IAR).

5.1 Identify usable excess NM.
5.2 Identify operating groups that have a programmatic need for excess material.
5.3 Notify DOE/AL of excess NM availability when an internal need does not exist.
5.4 Obtain DOE/AL recommendation for method of excess NM disposal when required.

6.0 Prepare a Disposition for Unusable Excess NM (Spent Fuel and Scrap) IAR.

6.1 Identify quantities and trends of scrap accumulation.
6.2 Determine if material is recoverable.
6.3 Prepare a scrap declaration when recovery is not possible and obtain required approvals.
6.4 Prepare a scrap declaration when recovery is possible and obtain required approvals.

7.0 Discard NM When Appropriate.

7.1 Establish economic discard limits for common types of scrap.
7.2 Prepare discard requests for common scrap and special cases.
7.3 Review discard requests and obtain permission to discard NM.

8.0 Ship Excess NM.

8.1 Arrange internal/external shipment of excess NM.

9.0 Procure and Maintain Waste Drums for NM.

9.1 Maintain waste drums for NM material.
9.2 Procure waste drums for NM material.

10.0 Perform MASS Duties.
   10.1 Perform MASS duties to acquire/discard NM.
   10.2 Use MASS to prepare forecast, allotment, and assessment reports.

11.0 Prepare/Update Descriptions for NM.
   11.1 Prepare/Update descriptions for NM.

Appendix D

RESPONSES TO TASK ASSESSMENT

QUESTIONNAIRES

AND

RESULTS OF DECISION-TREE ANALYSES

FOR

ALL JOB CATEGORIES STUDIED

TABLE D-I. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR CUSTODIANS

D-1

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Identify LANL Groups and Their Responsibilities for NM MC&A and Safeguards.														
1.1 Respond to internal and external question regarding MC&A organization and the responsibilities at LANL.	21	81%	2.57	2.73	2.83	OT	2.38	2.52	2.57	NT	2.19	2.32	2.31	NT
1.2 Delegate tasks of NM MC&A and safeguards to appropriate groups and individuals when required.	18	69%	2.63	2.72	3.01	OT	2.44	2.50	2.72	NT	2.26	2.28	2.43	NT
2. Perform MASS Duties.														
2.1 Submit monthly ID report to OS-2 as required.	13	50%	2.93	2.68	2.12	OT	2.69	2.46	1.85	T	2.46	2.25	1.57	NT
2.2 Perform inventory adjustments (for example, for normal operating loss or routine tests).	18	69%	2.45	2.26	2.43	NT	2.33	2.17	2.22	NT	2.22	2.08	2.02	NT
2.3 Review MASS reports as provided by OS-2 and respond if required.	26	100%	2.10	2.29	2.95	NT	1.92	2.15	2.81	NT	1.75	2.02	2.66	NT
2.4 Monitor and evaluate MIP transactions.	15	58%	2.66	2.63	2.75	OT	2.47	2.47	2.40	NT	2.27	2.30	2.05	NT
2.5 Follow procedures of MASS as a non-MASS user.														
2.5.1 Obtain transaction information from the handler as required.	21	81%	1.96	2.71	3.16	NT	1.81	2.52	2.86	NT	1.66	2.33	2.55	NT
2.5.2 Report NM transaction activity to OS-2 in required time limits as a non-MASS user.	20	77%	1.89	2.35	2.87	NT	1.75	2.25	2.65	NT	1.61	2.15	2.43	NT
2.6 Follow procedures of MASS as a validated MASS user.														
2.6.1 Obtain transaction information from the handler as required.	15	58%	2.06	2.66	3.40	NT	1.87	2.47	3.07	NT	1.67	2.27	2.74	NT
2.6.2 Perform MASS transactions using an on-line terminal.	7	27%	2.76	3.13	5.00	T	2.29	2.71	4.43	NT	1.81	2.29	3.86	NT
2.6.3 Review and approve MASS user access request form and submit to OS-2.	7	27%	2.31	2.22	2.71	NT	2.00	2.00	2.29	NT	1.69	1.78	1.87	NT
2.6.4 Ensure that new MBA MASS users are validated.	7	27%	2.65	2.57	2.20	OT	2.29	2.29	1.86	NT	1.93	2.00	1.52	NT
2.6.5 Report NM transaction activity to OS-2 in required time limits as a MASS user.	12	46%	2.25	3.00	3.64	NT	2.00	2.75	3.17	NT	1.75	2.50	2.69	NT
3. Implement Measurement and Measurement Control Programs.														
3.1 Perform the assay measurements of items in your holdings as required.	4	15%	3.15	3.15	3.23	OT	2.50	2.50	2.75	NT	1.85	1.85	2.27	NT
3.2 Arrange for the assay measurements of items in your holdings as required.	9	35%	2.80	2.80	2.34	OT	2.56	2.56	1.89	OT	2.31	2.31	1.43	NT
3.3 Perform confirmation measurements as required.	9	35%	2.62	2.90	2.69	OT	2.33	2.67	2.22	T	2.04	2.43	1.76	NT
3.4 Arrange that confirmation measurements are performed as required.	11	42%	2.61	2.92	2.82	OT	2.27	2.64	2.45	T	1.94	2.36	2.09	NT
3.5 Perform verification measurements as required.	12	46%	2.81	2.81	2.23	OT	2.58	2.58	1.92	OT	2.35	2.35	1.60	NT
3.6 Arrange that verification measurements are performed as required.	14	54%	2.55	2.73	2.33	OT	2.29	2.50	2.00	T	2.02	2.27	1.67	NT
3.7 If an item fails (in 3.3 through 3.6), ensure the item is not processed and resolve the discrepancy.	13	50%	2.81	3.23	2.11	OT	2.54	2.92	1.77	OT	2.27	2.61	1.43	T
3.8 Select, w/ OS-2 approval, the appro. methods of how items will be measured (mass, form) following the LANL-graded safeguards program.	14	54%	2.66	2.63	2.05	OT	2.43	2.43	1.71	NT	2.20	2.23	1.38	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TABLE D-I. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR CUSTODIANS (cont)

TASKS	Performing Task #	Performing Task %	QTA Analysis of (1) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
3. Implement Measurement and Measurement Control Programs. (cont)														
3.9 Ensure that persons performing measurements are trained and qualified as outlined in the OS-2 MC&A Training & Cert. Program.	9	35%	3.00	3.29	1.80	OT	2.67	3.00	1.56	OT	2.33	2.71	1.31	T
3.10 Participate in Sample Exchange Program if applicable.	3	12%	3.58	3.33	2.00	OT	3.00	2.67	1.67	OT	2.42	2.00	1.33	NT
3.11 Ensure that all instruments, methods, & standards used for NM accountability measurements within your control are certified.	10	38%	3.03	3.03	1.76	OT	2.60	2.70	1.60	OT	2.17	2.37	1.44	NT
3.12 Ensure that procedures for calibration of instruments and methods are in place.	8	31%	2.88	3.17	2.00	OT	2.50	2.88	1.75	T	2.12	2.58	1.50	T
3.13 Maintain a measurement control program as presented in your MBA OP.	11	42%	2.95	3.48	2.84	OT	2.64	3.18	2.36	OT	2.33	2.89	1.89	T
4. Establish Administrative Controls.														
4.1 Perform duties required by the IRA program.	16	62%	3.09	2.85	2.03	OT	2.81	2.63	1.75	OT	2.54	2.40	1.47	T
4.2 Prepare and submit the PAFD to OS-2 for approval.	6	23%	3.67	2.84	2.16	OT	3.33	2.50	1.67	OT	3.00	2.16	1.17	T
4.3 Monitor and modify the PAFD as required.	4	15%	3.41	3.71	2.50	OT	3.00	3.00	1.75	OT	2.59	2.29	1.00	T
4.4 Perform daily administrative checks as required.	13	50%	2.14	2.38	3.15	NT	1.85	2.15	2.77	NT	1.55	1.93	2.39	NT
4.5 Prepare temporary MAA OPs when required.	8	31%	4.33	3.39	1.89	OT	4.00	2.88	1.63	OT	3.67	2.36	1.36	T
5. Establish MBA OPs.														
5.1 Write routine MBA OPs using MC&A Handbook guidelines and other relevant sources.	20	77%	3.52	2.60	1.70	OT	3.30	2.40	1.55	T	3.08	2.20	1.40	T
5.2 Obtain required approval of MBA procedures.	20	77%	2.94	2.60	1.64	OT	2.75	2.40	1.50	T	2.56	2.20	1.36	T
5.3 Provide OS-2 group office with a copy of approved procedures.	21	81%	2.47	2.56	1.62	T	2.24	2.38	1.48	NT	2.01	2.21	1.33	NT
5.4 Review and update MBA procedures when required.	21	81%	2.92	2.62	1.61	OT	2.67	2.43	1.48	T	2.41	2.24	1.34	NT
6. Implement Material Control Program and Physical Security.														
6.1 Perform duties as required in TID program.	8	31%	2.81	3.64	3.54	T	2.63	3.38	2.88	OT	2.44	3.11	2.21	T
6.2 Comply with the Detection and Assessment Systems.	9	35%	3.10	4.10	3.82	T	2.78	3.78	3.22	OT	2.45	3.45	2.63	NT
6.3 Comply with the Laboratory Material Containment Program.	14	54%	3.23	4.05	3.36	OT	3.00	3.71	2.86	OT	2.77	3.38	2.36	OT
6.4 Comply with ALARA guidelines.	18	69%	2.88	3.57	3.99	T	2.67	3.28	3.56	T	2.45	2.99	3.13	NT
6.5 Determine and evaluate IDs using MCIs.	8	31%	3.42	3.12	3.28	OT	3.13	2.75	2.63	OT	2.83	2.38	1.97	T
6.6 Assure compliance with MBA OPs.														
6.6.1 Perform duties required for the Personnel Access Control Program.	11	42%	2.88	3.36	3.16	OT	2.64	3.00	2.64	OT	2.39	2.64	2.11	T
6.6.2 Perform duties required by the MSP.	14	54%	3.20	3.59	3.23	OT	2.93	3.29	2.79	OT	2.66	2.98	2.34	OT

TABLE D-I. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR CUSTODIANS (cont)

TASKS	Performing Task #	%	QTA Analysis of (I) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
6.7 Respond to emergencies using approved Lab and DOE Procedures.														
6.7.1 Respond to suspected, alleged, or actual diversion of NM.	10	38%	2.90	3.48	1.60	OT	2.50	3.10	1.30	T	2.10	2.72	1.00	T
6.7.2 Respond to significant IDs.	11	42%	2.74	3.03	1.79	OT	2.45	2.73	1.55	T	2.17	2.42	1.30	NT
6.7.3 Respond to threats against LANL and the public involving NM (includes knowledge of threat statement and risk assessment).	5	19%	3.55	4.38	1.00	OT	3.00	3.80	1.00	OT	2.45	3.22	1.00	T
7. Perform Inventory Duties.														
7.1 Prepare for the physical inventories as required by the LANL Physical Inventory Plan.	26	100%	2.39	2.75	2.38	T	2.23	2.58	2.23	T	2.07	2.40	2.08	NT
7.2 Conduct daily inventories as required.	9	35%	2.97	3.10	3.42	OT	2.56	2.78	3.11	OT	2.14	2.45	2.80	NT
7.3 Conduct bimonthly inventories as required.	13	50%	2.51	3.11	2.72	OT	2.23	2.77	2.54	NT	1.95	2.43	2.36	NT
7.4 Conduct semiannual inventory and annual inventories as required.	25	96%	2.53	3.05	2.10	OT	2.32	2.84	2.00	T	2.11	2.63	1.90	T
7.5 Conduct special inventories as required.	16	62%	2.77	3.02	1.29	OT	2.50	2.75	1.19	T	2.23	2.48	1.09	NT
7.6 Perform measurements of selected inventory items as requested by OS-2.	11	42%	2.55	2.84	1.84	OT	2.27	2.64	1.64	T	2.00	2.43	1.43	NT
7.7 Arrange for measurements of selected inventory items as requested by OS-2.	13	50%	2.78	2.53	1.83	OT	2.54	2.38	1.62	T	2.30	2.24	1.40	NT
7.8 Reconcile discrepancies or problems identified as a result of the inventory.	22	85%	2.78	2.89	2.00	OT	2.59	2.68	1.77	OT	2.40	2.47	1.55	NT
8. Perform External (Off-Site) NM Transfers.														
8.1 Request authorization to ship material off site.	17	65%	2.85	2.80	2.16	OT	2.71	2.59	1.94	OT	2.56	2.38	1.72	T
8.2 Verify authorization to ship has been granted by receiving facility.	13	50%	2.75	2.78	2.10	OT	2.54	2.54	1.85	OT	2.32	2.30	1.60	NT
8.3 Coordinate off-site NM transfer with OS-14 using the scheduling information outline (19 Points).	11	42%	2.92	3.04	2.63	OT	2.73	2.82	2.27	OT	2.53	2.59	1.91	OT
8.4 Follow classification guidelines.	12	46%	2.84	3.23	3.43	OT	2.58	2.92	3.00	OT	2.32	2.60	2.57	NT
8.5 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	7	27%	3.20	3.48	2.31	OT	2.86	3.14	2.00	OT	2.52	2.80	1.69	OT
8.6 Complete checklist for the LOE form and forward completed form and forward completed copies to A-1 and OS-2.	5	19%	2.69	2.64	1.64	OT	2.20	2.40	1.40	NT	1.71	2.16	1.16	NT
8.7 Arrange for health protection monitoring and swiping with the appropriate HS group.	18	69%	2.00	3.23	3.71	NT	1.83	3.00	3.39	NT	1.67	2.77	3.06	NT
8.8 Package NM for off-site shipments.	12	46%	3.17	4.02	2.37	OT	3.00	3.67	2.17	OT	2.83	3.31	1.96	OT
8.9 Arrange for proper labeling for off-site shipments of NM with the appropriate HS group.	13	50%	2.73	3.39	2.59	OT	2.46	3.08	2.31	T	2.19	2.77	2.02	T
8.10 Complete appropriate section of the RMTT and attach it to the container.	15	58%	2.02	2.59	3.11	NT	1.80	2.40	2.80	NT	1.58	2.21	2.49	NT
8.11 Provide receiver with appropriate copies of the shipping data sheet.	10	38%	2.33	3.10	3.26	NT	2.10	2.70	2.70	NT	1.87	2.30	2.14	NT
8.12 Prepare SM or CSF as required and forward copies to OS-2 and HS-3.	15	58%	2.40	2.85	2.33	T	2.20	2.60	2.07	T	2.00	2.35	1.80	NT
8.13 Perform a transfer check (Sec. 2, part 7, MC&A Procedural Handbook).	10	38%	2.51	2.96	2.72	OT	2.30	2.70	2.30	T	2.09	2.44	1.88	NT
8.14 Perform MASS transaction as a non-MASS User.	11	42%	2.12	2.61	2.58	NT	1.91	2.45	2.27	NT	1.70	2.30	1.97	NT
8.15 Perform MASS transaction as a MASS User.	5	19%	2.78	2.84	5.00	T	2.20	2.60	4.60	NT	1.62	2.36	4.20	
8.16 Notify OS-14 that the shipment is prepared.	17	65%	1.89	2.60	3.15	NT	1.71	2.41	2.82	NT	1.52	2.22	2.50	NT
8.17 Provide OS-14 handler with an items-in-transit list of the shipment.	11	42%	2.04	2.74	3.40	NT	1.82	2.45	2.91	NT	1.59	2.17	2.41	NT
8.18 Obtain appropriate authorization of the RMTT and retain the receipt.	15	58%	1.85	2.61	3.40	NT	1.67	2.40	3.07	NT	1.48	2.19	2.74	NT

TABLE D-I. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR CUSTODIANS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
9. Receive External (Off-Site) Transfers of NM.														
9.1 Submit NM receipt authorization to OS-2.	14	54%	2.09	2.70	2.53	NT	1.86	2.43	2.21	NT	1.63	2.16	1.90	NT
9.2 Notify OS-2 within required time of receipt of the off-site NM shipment.	17	65%	2.19	2.74	2.35	T	2.00	2.53	2.06	T	1.81	2.32	1.77	NT
9.3 Perform a transfer check (Sec. 2, part 7, MC&A Handbook).	14	54%	2.56	2.84	2.55	OT	2.36	2.64	2.21	T	2.16	2.44	1.88	NT
9.4 Complete receipt of confirmation form.	12	46%	2.50	2.48	2.67	NT	2.25	2.33	2.33	NT	2.00	2.19	2.00	NT
9.5 If shipment does not confirm, respond using MBA operating procedures.	10	38%	2.93	2.96	1.90	OT	2.80	2.70	1.50	OT	2.67	2.44	1.10	T
9.6 Arrange for incoming HS monitoring.	13	50%	2.16	2.93	2.92	NT	1.92	2.62	2.54	NT	1.68	2.30	2.15	NT
9.7 Perform accountability measurements when receiving off-site shipments.	8	31%	2.91	3.27	2.39	OT	2.75	3.00	1.88	OT	2.59	2.73	1.36	OT
9.8 Arrange for accountability measurements when receiving off-site shipments.	8	31%	3.27	3.17	2.42	OT	3.00	2.88	2.00	OT	2.73	2.58	1.58	OT
9.9 Complete checklist for the LOE form and forward completed form.	2	8%	3.00	3.00	3.00	OT	2.50	2.50	2.00	T	2.00	2.00	1.00	NT
9.10 Send copies of completed checklist to A-1 and OS-2.	4	15%	3.00	2.79	1.50	OT	2.50	2.50	1.25	T	2.00	2.21	1.00	NT
9.11 Confirm accuracy of information on RMTT tag and sign.	13	50%	1.90	2.83	3.25	NT	1.69	2.54	2.92	NT	1.48	2.25	2.59	NT
9.12 Confirm an items-in-transit list if required.	10	38%	2.74	3.13	2.93	OT	2.40	2.80	2.50	NT	2.06	2.47	2.07	NT
9.13 Perform MASS transaction as a MASS user.	5	19%	2.29	3.20	4.60	NT	1.80	2.60	3.80	NT	1.31	2.00	3.00	NT
9.14 Perform MASS transaction as a non-MASS user.	13	50%	2.04	2.93	2.43	T	1.85	2.69	2.15	T	1.66	2.46	1.88	NT
10. Ship Internal Transfers of NM Between Different MAAs.														
10.1 Notify receiving custodian before making the NM transfer.	23	88%	1.81	2.37	2.94	NT	1.70	2.26	2.65	NT	1.58	2.15	2.36	NT
10.2 Ensure proper measurement of items being transferred is complete.	16	62%	2.53	2.92	3.14	OT	2.31	2.69	2.75	NT	2.09	2.45	2.36	NT
10.3 Package NM for on-site transfer following HS-1 requirements.	20	77%	2.37	2.75	2.75	NT	2.20	2.55	2.45	T	2.03	2.35	2.15	NT
10.3.1 Apply TID if required.	5	19%	2.17	3.38	3.89	NT	1.80	2.80	3.00	NT	1.43	2.22	2.11	NT
10.4 Follow classification guidelines.	15	58%	2.53	3.02	2.97	OT	2.27	2.80	2.53	NT	2.00	2.58	2.10	T
10.5 Coordinate transfer with OS-14.	22	85%	1.89	2.47	3.09	NT	1.77	2.32	2.77	NT	1.66	2.17	2.46	NT
10.6 Complete appropriate section of the RMTT and attach it to the container.	22	85%	1.96	2.47	2.98	NT	1.82	2.32	2.68	NT	1.68	2.17	2.38	NT
10.7 Arrange for health protection monitoring and swiping with HS as required.	22	85%	1.98	2.64	3.11	NT	1.86	2.45	2.82	NT	1.74	2.27	2.53	NT
10.8 Perform MASS transaction as a MASS user.	6	23%	2.37	2.72	5.00	NT	2.00	2.50	4.33	NT	1.63	2.28	3.67	NT
10.9 Perform MASS transaction as a non-MASS user.	15	58%	1.85	2.49	2.77	NT	1.73	2.33	2.53	NT	1.62	2.17	2.30	NT
10.10 Provide OS-14 handler with an items-in-transit list of the shipment.	11	42%	1.75	2.83	3.62	NT	1.55	2.55	3.09	NT	1.34	2.26	2.56	NT
10.11 Obtain appropriate approval signatures of the RMTT and retain receipt.	21	81%	1.75	2.36	2.88	NT	1.62	2.24	2.57	NT	1.49	2.12	2.27	NT

TABLE D-I. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR CUSTODIANS (cont)

TASKS	Performing Task #	Performing Task %	QTA Analysis of (I) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
11. Receive Internal (On-Site) NM Transfer Between Different MAAs.														
11.1 Confirm accuracy of information on RMTT tag and sign.	20	77%	1.96	2.63	3.19	NT	1.80	2.45	2.85	NT	1.64	2.27	2.51	NT
11.2 Confirm an items-in-transit list if required.	13	50%	1.87	2.70	3.71	NT	1.69	2.46	3.31	NT	1.52	2.22	2.91	NT
11.3 Perform transfer check as required (Sec. 8, part 3, MC&A Handbook).	13	50%	2.36	2.83	3.44	NT	2.08	2.54	3.00	NT	1.79	2.25	2.56	NT
11.4 Perform accountability measurements when receiving off-site shipments.	11	42%	2.61	2.92	3.68	T	2.27	2.64	3.18	NT	1.94	2.36	2.68	NT
11.5 Arrange for accountability measurements when receiving off-site shipments.	11	42%	2.51	2.75	2.51	OT	2.27	2.55	2.09	T	2.04	2.34	1.68	NT
11.6 Perform confirmation measurements as required.	11	42%	2.41	2.79	2.45	T	2.18	2.55	2.00	T	1.96	2.30	1.55	NT
11.7 Arrange for confirmation measurements as required.	11	42%	2.51	2.57	2.66	OT	2.27	2.36	2.18	NT	2.04	2.16	1.70	NT
11.8 Perform verification measurements as required.	9	35%	2.74	3.10	2.41	OT	2.44	2.78	2.00	T	2.15	2.45	1.59	NT
11.9 Arrange for verification measurements as required.	10	38%	2.82	2.72	2.24	OT	2.60	2.50	1.80	OT	2.38	2.28	1.36	NT
11.10 If transfer does not confirm, follow MBA OP.	14	54%	2.60	3.13	1.74	OT	2.43	2.86	1.43	T	2.26	2.58	1.12	T
11.11 Perform MASS transaction as a MASS user.	8	31%	2.42	2.89	4.23	NT	2.13	2.63	3.50	NT	1.83	2.36	2.77	NT
11.12 Perform MASS transaction as a non-MASS user.	17	65%	2.03	2.74	2.60	NT	1.88	2.53	2.29	T	1.74	2.32	1.99	NT
12. Send NM Within or Between MBAs of the Same MAA.														
12.1 Obtain authorization from receiving custodian before sending the NM as required (or follow the the PAFD).	11	42%	2.45	2.89	2.66	NT	2.18	2.55	2.27	T	1.92	2.21	1.89	NT
12.2 Package NM for transfer if required.	10	38%	2.77	3.24	2.62	OT	2.50	2.80	2.20	T	2.23	2.36	1.78	NT
12.3 Request proper packaging of NM for transfer if required.	9	35%	2.55	3.31	2.57	OT	2.22	2.89	2.11	T	1.90	2.47	1.66	NT
12.4 Arrange for proper labeling and documentation for transfer of NM, if required.	12	46%	2.44	3.10	2.70	NT	2.17	2.75	2.25	T	1.90	2.40	1.80	NT
12.5 Complete appropriate portion of the RMTT and attach it to container if required.	12	46%	2.44	2.73	3.22	NT	2.17	2.42	2.83	NT	1.90	2.10	2.45	NT
12.6 Arrange for health protection monitoring and swiping with HS if required.	12	46%	2.28	2.62	2.98	NT	2.00	2.33	2.58	NT	1.72	2.05	2.19	NT
12.7 Follow required MSP.	7	27%	3.44	4.00	2.85	OT	3.00	3.43	2.29	OT	2.56	2.86	1.72	OT
12.8 Perform MASS transaction as a MASS user.	5	19%	2.78	2.84	4.35	T	2.20	2.60	3.60	NT	1.62	2.36	2.85	NT
12.9 Perform MASS transaction as a non-MASS user.	6	23%	2.00	2.67	3.00	NT	1.67	2.33	2.50	NT	1.33	2.00	2.00	NT
12.10 Ensure that the receiving custodian performs receiving MASS transaction as required (or follow the PAFD).	8	31%	3.09	3.23	3.34	OT	2.63	2.88	2.75	OT	2.16	2.52	2.16	T
13. Receive NM Within or Between MBAs of the Same MAA.														
13.1 Confirm accuracy of information on the RMTT and sign tag if required.	9	35%	2.37	3.07	3.74	NT	2.00	2.67	3.22	NT	1.63	2.26	2.70	NT
13.2 Confirm an items-in-transit list if required.	9	35%	2.37	2.89	3.78	NT	2.00	2.56	3.44	NT	1.63	2.22	3.11	NT
13.3 Follow the PAFD, MSP, and/or MBA OP for confirming transfer.	6	23%	3.22	3.52	2.71	OT	2.67	3.00	2.17	OT	2.11	2.48	1.62	NT
13.4 If shipment does not confirm, respond using MBA OPs.	7	27%	2.73	2.87	2.49	OT	2.43	2.57	2.00	T	2.13	2.27	1.51	NT
13.5 Perform MASS transaction as a MASS user.	5	19%	2.17	2.64	4.60	NT	1.80	2.40	3.80	NT	1.43	2.16	3.00	NT
13.6 Perform MASS transaction as a non-MASS user.	6	23%	2.00	2.67	2.71	NT	1.67	2.33	2.17	NT	1.33	2.00	1.62	NT

TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
14. Perform Other NM Activities (not MC&A but NM Management Activities).														
14.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	15	58%	3.26	2.49	1.76	T	3.00	2.33	1.60	T	2.74	2.17	1.44	T
14.2 Assist in preparing an MMP.	6	23%	3.64	2.84	1.33	OT	3.17	2.50	1.17	OT	2.69	2.16	1.00	T
14.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	4	15%	3.15	2.41	1.50	T	2.50	2.00	1.25	NT	1.85	1.59	1.00	NT
14.4 Identify material in excess of the programmatic needs.	13	50%	3.02	2.34	1.53	T	2.69	2.08	1.38	T	2.36	1.81	1.24	NT
14.5 Arrange for discard of NM (excess and waste).	17	65%	3.51	3.12	1.70	OT	3.24	2.82	1.53	OT	2.96	2.52	1.36	OT
14.6 Create and maintain NM waste drums.	11	42%	2.83	2.92	2.61	OT	2.55	2.64	2.36	OT	2.26	2.36	2.12	NT

Number of usable respondent questionnaires: 26

TABLE D-II. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR ALTERNATE CUSTODIANS

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Identify LANL Groups and Their Responsibilities for NM MC&A and Safeguards.														
1.1 Respond to internal and external questions regarding MC&A organization and the responsibilities at LANL.	16	67%	2.85	2.46	2.67	NT	2.63	2.25	2.31	T	2.40	2.04	1.95	NT
1.2 Delegate tasks of NM MC&A and safeguards to appropriate groups and individuals when required.	9	38%	3.00	3.29	3.65	T	2.78	3.00	3.11	OT	2.56	2.71	2.57	OT
2. Perform MASS Duties.														
2.1 Submit monthly ID report to OS-2 as required.	14	58%	2.97	2.77	2.04	OT	2.79	2.57	1.71	OT	2.60	2.37	1.39	T
2.2 Perform inventory adjustments (for example, for normal operating loss or routine tests).	13	54%	2.65	2.44	2.44	T	2.38	2.31	2.08	NT	2.12	2.17	1.71	NT
2.3 Review MASS reports as provided by OS-2 and respond if required.	17	78%	2.79	2.44	2.22	T	2.65	2.29	1.94	T	2.50	2.15	1.66	NT
2.4 Monitor and evaluate MIP transactions.	13	54%	2.81	2.83	2.73	OT	2.54	2.62	2.38	OT	2.27	2.40	2.03	NT
2.5 Follow procedures of MASS as a non-MASS user.														
2.5.1 Obtain transaction information from the handler as required.	17	78%	2.22	2.60	2.56	NT	2.06	2.41	2.29	NT	1.90	2.22	2.03	NT
2.5.2 Report NM transaction activity to OS-2 in required time limits as a non-MASS user.	15	63%	1.94	2.27	2.74	NT	1.80	2.13	2.47	NT	1.66	2.00	2.19	NT
2.6 Follow procedures of MASS as a validated MASS user.														
2.6.1 Obtain transaction information from the handler as required.	18	75%	1.93	2.18	2.93	NT	1.78	2.06	2.61	NT	1.63	1.93	2.30	NT
2.6.2 Perform MASS transactions using an on-line terminal.	9	38%	2.62	3.00	3.86	T	2.33	2.67	3.33	NT	2.04	2.33	2.81	NT
2.6.3 Review and approve MASS user access request form and submit to OS-2.	3	13%	3.55	4.00	5.00	T	2.67	3.33	3.67	T	1.78	2.67	2.33	T
2.6.4 Ensure that new MBA MASS users are validated.	3	13%	3.55	3.58	2.33	OT	2.67	3.00	1.67	OT	1.78	2.42	1.00	NT
2.6.5 Report NM transaction activity to OS-2 in required time limits as a MASS user.	13	54%	2.32	2.63	3.14	NT	2.08	2.38	2.69	NT	1.84	2.14	2.25	NT
3. Implement Measurement and Measurement Control Programs.														
3.1 Perform the assay measurements of items in your holdings as required.	11	46%	2.94	2.89	2.74	OT	2.55	2.55	2.27	OT	2.16	2.21	1.80	NT
3.2 Arrange for the assay measurements of items in your holdings as required.	9	38%	2.00	2.37	2.04	NT	1.78	2.11	1.67	NT	1.56	1.85	1.29	NT
3.3 Perform confirmation measurements as required.	6	25%	3.71	3.37	1.84	OT	3.17	3.00	1.50	OT	2.62	2.63	1.16	OT
3.4 Arrange that confirmation measurements are performed as required.	7	29%	2.31	2.57	2.19	T	2.00	2.29	1.71	NT	1.69	2.00	1.24	NT
3.5 Perform verification measurements as required.	8	33%	3.03	2.83	2.39	OT	2.50	2.50	1.88	T	1.97	2.17	1.36	NT
3.6 Arrange that verification measurements are performed as required.	9	38%	1.90	2.67	2.37	T	1.67	2.33	1.89	NT	1.43	2.00	1.40	NT
3.7 If an item fails (in 3.3 through 3.6), ensure the item is not processed and resolve the discrepancy.	10	42%	2.85	3.18	2.33	OT	2.70	2.90	1.90	OT	2.55	2.62	1.47	OT
3.8 Select, w/ OS-2 approval, the appropriate methods of how items will be measured (mass, form) following the LANL-graded safeguards program.	6	25%	2.57	2.84	3.31	OT	2.17	2.50	2.50	NT	1.77	2.16	1.69	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TABLE D-II. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR ALTERNATE CUSTODIANS (cont)

TASKS	Performing Task #	%	QTA Analysis of (I) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
3. Implement Measurement and Measurement Control Programs. (cont)														
3.9 Ensure that persons performing measurements are trained and qualified as outlined in the OS-2 MC&A Training & Cert. Program.	3	13%	4.22	4.00	3.87	T	3.33	3.00	2.67	OT	2.45	2.00	1.46	NT
3.10 Participate in Sample Exchange Program if applicable.	4	17%	3.82	2.23	1.50	T	3.00	1.75	1.25	T	2.18	1.27	1.00	NT
3.11 Ensure that all instrs., methods, & standards used for NM accountability measurements within your control are certified.	9	38%	3.18	2.90	2.86	OT	2.78	2.67	2.44	OT	2.38	2.43	2.03	NT
3.12 Ensure that procedures for calibration of instruments and methods are in place.	9	38%	3.00	2.37	2.33	T	2.56	2.22	2.00	T	2.11	2.08	1.67	NT
3.13 Maintain a measurement control program as presented in your MBA OP.	5	28%	3.78	2.84	3.15	OT	3.20	2.60	2.40	OT	2.62	2.36	1.65	T
4. Establish Administrative Controls.														
4.1 Perform duties required by the IRA program.	6	25%	3.00	2.54	1.00	OT	2.67	2.33	1.00	T	2.33	2.12	1.00	NT
4.2 Prepare and submit the PAFD to OS-2 for approval.	4	17%	4.15	2.50	3.00	OT	3.50	2.25	2.00	T	2.85	2.00	1.00	T
4.3 Monitor and modify the PAFD as required.	4	17%	4.00	2.41	3.00	T	3.25	2.00	2.00	T	2.50	1.59	1.00	NT
4.4 Perform daily administrative checks as required.	10	42%	1.76	2.91	3.70	NT	1.60	2.60	3.10	NT	1.44	2.29	2.50	NT
4.5 Prepare temporary MAA OPs when required.	5	28%	2.91	2.32	2.63	NT	2.40	2.00	2.00	NT	1.89	1.68	1.37	NT
5. Establish MBA OPs.														
5.1 Write routine MBA OPs using NM MC&A Handbook guidelines and other relevant sources.	6	25%	3.93	2.33	1.33	T	3.50	2.17	1.17	T	3.07	2.00	1.00	T
5.2 Obtain required approval of MBA procedures.	6	25%	3.71	2.54	1.33	OT	3.17	2.33	1.17	T	2.62	2.12	1.00	T
5.3 Provide OS-2 group office with a copy of approved procedures.	8	33%	2.38	2.41	1.25	NT	2.00	2.25	1.13	NT	1.62	2.09	1.00	NT
5.4 Review and update MBA procedures when required.	10	42%	2.67	2.15	1.72	T	2.50	2.00	1.50	NT	2.33	1.85	1.28	NT
6. Implement Material Control Program and Physical Security.														
6.1 Perform duties as required in TID program.	11	46%	2.30	3.34	2.73	NT	2.18	3.09	2.36	T	2.06	2.84	2.00	T
6.2 Comply with the Detection and Assessment Systems.	5	28%	2.84	3.57	3.35	OT	2.60	3.20	2.60	OT	2.36	2.83	1.85	T
6.3 Comply with the Laboratory Material Containment Program.	11	46%	2.45	3.16	3.44	NT	2.18	2.91	2.91	NT	1.92	2.66	2.38	T
6.4 Comply with ALARA guidelines.	18	75%	2.49	3.17	4.48	NT	2.28	2.94	4.17	NT	2.07	2.72	3.85	NT
6.5 Determine and evaluate IDs using MCIs	7	29%	3.12	3.20	2.58	OT	2.86	2.86	2.00	OT	2.60	2.52	1.42	OT
6.6 Assure Compliance with MBA OPs.														
6.6.1 Perform duties required for the Personnel Access Control Program.	7	29%	2.12	3.00	4.28	NT	1.86	2.71	3.71	NT	1.60	2.43	3.15	NT
6.6.2 Perform duties required by the MSP.	9	38%	2.96	3.29	3.97	T	2.67	3.00	3.44	OT	2.38	2.71	2.91	NT

TABLE D-II. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR ALTERNATE CUSTODIANS (cont)

TASKS	Performing Task #	%	QTA Analysis of (1) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
6.7 Respond to emergencies using approved Lab and DOE Procedures.														
6.7.1 Respond to suspected, alleged, or actual diversion of NM.	10	42%	3.70	4.13	2.22	OT	3.30	3.90	1.80	OT	2.90	3.67	1.38	OT
6.7.2 Respond to significant IDs.	12	50%	3.56	3.43	2.02	OT	3.33	3.25	1.67	OT	3.11	3.07	1.31	OT
6.7.3 Respond to threats against LANL and the public involving NM (includes knowledge of threat statement and risk assessment).	3	13%	3.87	5.00	1.00	OT	2.67	4.33	1.00	OT	1.46	3.67	1.00	T
7. Perform Inventory Duties.														
7.1 Prepare for the physical inventories as required by the LANL Physical Inventory Plan.	21	88%	2.76	2.49	2.13	T	2.52	2.38	1.95	T	2.29	2.27	1.78	NT
7.2 Conduct daily inventories as required.	9	38%	2.44	2.90	3.58	NT	2.22	2.67	3.00	NT	2.00	2.43	2.42	NT
7.3 Conduct bimonthly inventories as required.	9	38%	2.74	2.73	2.74	OT	2.44	2.56	2.44	T	2.15	2.38	2.15	NT
7.4 Conduct semiannual inventory and annual inventories as required.	17	78%	3.00	2.82	2.00	OT	2.76	2.65	1.82	OT	2.53	2.48	1.65	T
7.5 Conduct special inventories as required.	15	63%	3.08	2.76	1.75	OT	2.87	2.60	1.53	OT	2.65	2.44	1.32	T
7.6 Perform measurements of selected inventory items as requested by OS-2.	13	54%	3.16	2.72	1.86	OT	2.85	2.54	1.62	OT	2.53	2.36	1.37	T
7.7 Arrange for measurements of selected inventory items as requested by OS-2.	9	38%	2.82	2.50	2.47	OT	2.44	2.33	2.00	NT	2.07	2.17	1.53	NT
7.8 Reconcile discrepancies or problems identified as a result of the inventory.	15	63%	3.65	3.00	1.73	OT	3.40	2.80	1.53	OT	3.15	2.60	1.34	OT
8. Perform External (Off-Site) NM Transfers.														
8.1 Request authorization to ship material off-site.	19	79%	3.29	2.95	1.94	OT	3.11	2.74	1.68	OT	2.92	2.52	1.43	OT
8.2 Verify authorization to ship has been granted by the receiving facility.	16	67%	2.70	2.38	1.70	T	2.44	2.19	1.50	NT	2.18	2.00	1.30	NT
8.3 Coordinate off-site NM transfer with OS-14 using the scheduling information outline (19 Points).	10	42%	3.60	2.62	1.81	OT	3.30	2.40	1.50	T	3.00	2.18	1.19	T
8.4 Follow classification guidelines.	12	50%	2.89	2.85	3.48	OT	2.67	2.67	3.00	OT	2.44	2.48	2.52	NT
8.5 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	7	29%	3.65	2.47	2.49	T	3.14	2.29	2.00	T	2.6⁻	2.10	1.51	T
8.6 Complete checklist for the LOE form and forward completed completed cop to A-1 and OS-2.	1	42%	-	-	-	-	3.00	2.00	1.00	T	-	-	-	-
8.7 Arrange for health protection monitoring and swiping with the appropriate HS group.	20	83%	1.92	2.69	2.84	NT	1.80	2.55	2.55	NT	1.68	2.41	2.26	NT
8.8 Package NM for off-site shipments.	16	67%	3.23	3.33	2.06	...a	3.96	3.06	1.75	OT	2.89	2.80	1.44	OT
8.9 Arrange for proper labeling for off-site shipments of NM with the appropriate HS group.	11	46%	3.41	3.51	1.86	OT	3.18	3.27	1.55	OT	2.96	3.04	1.23	OT
8.10 Complete appropriate section of the RMTT and attach it to the container.	17	78%	2.10	2.41	2.86	NT	1.94	2.29	2.53	NT	1.78	2.18	2.20	NT
8.11 Provide receiver with appropriate copies of the shipping data sheet.	12	50%	2.15	2.17	1.79	NT	1.92	2.08	1.50	NT	1.69	2.00	1.21	NT
8.12 Prepare SM or CSF as required and forward copies to OS-2 and HS-3.	8	33%	2.89	2.89	1.77	OT	2.63	2.63	1.50	OT	2.36	2.36	1.23	NT
8.13 Perform a transfer check (Sec. 2, part 7, MC&A Handbook).	2	83%	3.00	4.00	1.00	OT	3.00	3.50	1.00	OT	3.00	3.00	1.00	OT
8.14 Perform MASS transaction as a non-MASS user.	8	33%	2.56	2.69	2.96	OT	2.25	2.50	2.50	NT	1.94	2.31	2.04	NT
8.15 Perform MASS transaction as a MASS user.	7	29%	2.47	2.77	3.65	NT	2.29	2.57	3.14	NT	2.10	2.37	2.63	NT
8.16 Notify OS-14 that the shipment is prepared.	18	75%	1.98	2.45	2.30	NT	1.83	2.33	2.00	NT	1.69	2.22	1.70	NT
8.17 Provide OS-14 handler with an items-in-transit list of the shipment.	10	42%	2.67	2.72	2.88	OT	2.40	2.50	2.40	T	2.13	2.28	1.92	NT
8.18 Obtain appropriate authorization of the RMTT and retain the receipt.	14	58%	2.40	2.14	2.93	NT	2.14	2.07	2.57	NT	1.89	2.00	2.21	NT

TABLE D-II. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR ALTERNATE CUSTODIANS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
9. Receive External (Off-Site) Transfers of NM.														
9.1 Submit NM receipt authorization to OS-2.	11	46%	2.48	2.36	1.61	NT	2.18	2.18	1.36	NT	1.89	2.00	1.12	NT
9.2 Notify OS-2 within required time of receipt of the off-site NM shipment.	16	67%	2.26	2.55	1.70	T	2.00	2.38	1.50	NT	1.74	2.20	1.30	NT
9.3 Perform a transfer check (Sec. 2, part 7, MC&A Handbook).	9	38%	2.00	2.44	1.57	NT	1.78	2.22	1.33	NT	1.56	2.00	1.10	NT
9.4 Complete receipt of confirmation form.	6	25%	2.57	2.33	1.67	T	2.17	2.17	1.33	NT	1.77	2.00	1.00	NT
9.5 If shipment does not confirm, respond using MBA operating procedures.	5	28%	3.55	2.57	1.00	OT	3.00	2.20	1.00	T	2.45	1.83	1.00	NT
9.6 Arrange for incoming HS monitoring.	16	67%	2.17	2.42	2.76	NT	1.94	2.25	2.38	NT	1.71	2.08	1.99	NT
9.7 Perform accountability measurements when receiving off-site shipments.	6	25%	3.38	2.84	1.84	OT	2.83	2.50	1.50	OT	2.29	2.16	1.16	NT
9.8 Arrange for accountability measurements when receiving off-site shipments.	7	29%	3.05	2.73	1.94	OT	2.57	2.43	1.57	T	2.09	2.13	1.20	NT
9.9 Complete checklist for the LOE form and forward completed form.	1	42%	-	-	-	-	3.00	2.00	1.00	T	-	-	-	-
9.10 Send copies of completed checklist to A-1 and OS-2.	2	83%	2.00	2.00	1.00	NT	1.50	2.00	1.00	NT	1.00	2.00	1.00	NT
9.11 Confirm accuracy of information on RMTT tag and sign.	13	54%	1.97	2.57	3.59	NT	1.77	2.38	3.15	NT	1.57	2.20	2.72	NT
9.12 Confirm an items-in-transit list if required.	7	29%	2.31	2.22	3.13	NT	2.00	2.00	2.71	NT	1.69	1.78	2.29	NT
9.13 Perform MASS transaction as a MASS user.	8	33%	2.56	2.77	3.57	T	2.25	2.50	3.00	NT	1.94	2.23	2.43	NT
9.14 Perform MASS transaction as a non-MASS user.	8	33%	2.56	2.00	2.32	T	2.25	2.00	1.88	NT	1.94	2.00	1.43	NT
10. Ship Internal Transfers of NM Between Different MAAs.														
10.1 Notify receiving custodian before making the NM transfer.	20	83%	1.82	2.32	2.27	NT	1.65	2.20	1.95	NT	1.48	2.08	1.63	NT
10.2 Ensure proper measurement of items being transferred is complete.	11	46%	2.61	2.41	2.06	T	2.27	2.27	1.73	NT	1.94	2.13	1.39	NT
10.3 Package NM for on-site transfer following HS-1 requirements.	16	67%	2.59	2.98	2.66	OT	2.44	2.75	2.31	T	2.28	2.52	1.96	T
10.3.1 Apply TID if required.	7	29%	2.40	3.12	3.32	NT	2.14	2.86	2.57	NT	1.88	2.60	1.82	T
10.4 Follow classification guidelines.	12	50%	3.07	2.85	3.13	OT	2.83	2.67	2.67	OT	2.59	2.48	2.20	T
10.5 Coordinate transfer with OS-14.	21	88%	2.15	2.41	2.75	NT	2.00	2.29	2.43	NT	1.85	2.16	2.11	NT
10.6 Complete appropriate section of the RMTT and attach it to the container.	20	83%	2.19	2.55	2.85	NT	2.05	2.40	2.55	NT	1.91	2.25	2.25	NT
10.7 Arrange for health protection monitoring and swiping with HS as required.	20	83%	2.09	2.52	3.08	NT	1.90	2.35	2.75	NT	1.71	2.18	2.42	NT
10.8 Perform MASS transaction as a MASS user.	8	33%	2.19	2.56	3.67	NT	2.00	2.38	3.13	NT	1.81	2.19	2.58	NT
10.9 Perform MASS transaction as a non-MASS user.	11	46%	2.41	2.57	2.53	NT	2.18	2.36	2.18	NT	1.96	2.16	1.83	NT
10.10 Provide OS-14 handler with an items-in-transit list of the shipment.	11	46%	2.36	2.47	3.04	NT	2.18	2.27	2.55	NT	2.00	2.08	2.05	NT
10.11 Obtain appropriate approval signatures of the RMTT and retain the receipt.	20	83%	2.06	2.37	2.66	NT	1.95	2.25	2.35	NT	1.84	2.13	2.04	NT

TABLE D-II. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR ALTERNATE CUSTODIANS (cont)

D-11

TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
11. Receive Internal (On-Site) NM Transfer Between Different MAAs.														
11.1 Confirm accuracy of information on RMTT tag and sign.	17	78%	2.12	2.30	2.90	NT	2.00	2.18	2.53	NT	1.86	2.05	2.15	NT
11.2 Confirm an items-in-transit list if required.	7	29%	2.40	2.63	3.10	NT	2.14	2.43	2.57	NT	1.88	2.23	2.04	NT
11.3 Perform transfer check as required (Sec. 8, part 3, MC&A Handbook).	5	28%	2.69	2.84	2.20	OT	2.20	2.60	1.60	T	1.71	2.36	1.00	NT
11.4 Perform accountability measurements when receiving off-site shipments.	D	38%	3.28	2.62	1.78	OT	2.89	2.44	1.44	T	2.50	2.27	1.11	NT
11.5 Arrange for accountability measurements when receiving off-site shipments.	8	33%	3.25	3.00	1.50	OT	3.13	2.88	1.25	OT	3.00	2.75	1.00	OT
11.6 Perform confirmation measurements as required.	8	33%	3.52	2.69	1.50	OT	3.13	2.50	1.25	OT	2.73	2.31	1.00	T
11.7 Arrange for confirmation measurements as required.	5	28%	2.57	2.84	1.80	OT	2.20	2.60	1.40	T	1.83	2.36	1.00	NT
11.8 Perform verification measurements as required.	8	33%	3.09	2.56	2.71	OT	2.63	2.38	2.13	T	2.16	2.19	1.54	NT
11.9 Arrange for verification measurements as required.	8	33%	2.96	2.41	1.83	T	2.50	2.25	1.50	NT	2.04	2.09	1.17	NT
11.10 If transfer does not confirm, follow MBA OP.	5	28%	3.32	3.00	1.00	OT	3.00	2.80	1.00	OT	2.68	2.60	1.00	OT
11.11 Perform MASS transaction as a MASS user.	9	38%	2.31	2.80	3.43	NT	2.11	2.56	2.89	NT	1.91	2.31	2.35	NT
11.12 Perform MASS transaction as a non-MASS user.	10	42%	2.67	2.45	2.28	T	2.40	2.30	1.90	NT	2.13	2.15	1.52	NT
12. Send NM Within or Between MBAs of the Same MAA.														
12.1 Obtain authorization from receiving custodian before sending the NM as required (or follow the the PAFD).	11	46%	2.19	2.30	2.36	NT	2.00	2.18	2.00	NT	1.81	2.06	1.64	NT
12.2 Package NM for transfer if required.	14	58%	2.87	2.77	2.89	OT	2.64	2.57	2.50	OT	2.42	2.37	2.11	NT
12.3 Request proper packaging of NM for transfer if required.	9	38%	3.29	2.83	3.00	OT	3.00	2.67	2.44	OT	2.71	2.50	1.89	OT
12.4 Arrange for proper labeling and documentation for transfer of NM if required.	13	54%	2.78	2.83	2.78	OT	2.54	2.62	2.31	OT	2.30	2.40	1.84	NT
12.5 Complete appropriate portion of the RMTT and attach it to container if required.	15	63%	2.25	2.61	3.05	NT	2.07	2.40	2.60	NT	1.88	2.19	2.15	NT
12.6 Arrange for health protection monitoring and swiping with HS if required.	11	46%	2.41	2.66	3.20	NT	2.09	2.45	2.73	NT	1.78	2.25	2.26	NT
12.7 Follow required MSP.	8	33%	2.62	2.89	3.65	T	2.25	2.63	3.00	NT	1.88	2.36	2.35	NT
12.8 Perform MASS transaction as a MASS user.	7	29%	2.40	2.90	3.56	NT	2.14	2.71	2.86	NT	1.88	2.53	2.15	T
12.9 Perform MASS transaction as a non-MASS user.	8	33%	2.79	2.25	2.57	NT	2.38	2.13	2.13	NT	1.96	2.00	1.68	NT
12.10 Ensure that the receiving custodian performs receiving MASS transaction as required (or follow the PAFD).	7	29%	2.31	2.47	3.43	NT	2.00	2.29	2.71	NT	1.69	2.10	2.00	NT
13. Receive NM Within or Between MBAs of the Same MAA.														
13.1 Confirm accuracy of information on the RMTT and sign tag if required.	10	42%	2.13	2.33	3.60	NT	1.90	2.20	3.00	NT	1.67	2.07	2.40	NT
13.2 Confirm an items-in-transit list if required.	4	17%	2.73	2.79	3.00	OT	2.25	2.50	2.00	T	1.77	2.21	1.00	NT
13.3 Follow the PAFD, MSP, and/or MBA OP for confirming transfer.	6	25%	2.75	3.00	2.49	OT	2.33	2.67	1.83	T	1.91	2.33	1.18	NT
13.4 If shipment does not confirm, respond using MBA OPs.	5	28%	3.17	3.00	2.20	OT	2.80	2.60	1.60	OT	2.43	2.20	1.00	NT
13.5 Perform MASS transaction as a MASS user.	5	28%	2.32	3.17	3.89	NT	2.00	2.80	3.00	NT	1.68	2.43	2.11	NT
13.6 Perform MASS transaction as a non-MASS user.	5	28%	2.69	2.40	1.80	T	2.20	2.20	1.40	NT	1.71	2.00	1.00	NT

TABLE D-II. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR ALTERNATE CUSTODIANS (cont)

TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
14. Perform Perform Other NM Activities (not MC&A but NM Management Activities).														
14.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	10	42%	3.05	2.20	1.72	T	2.80	2.10	1.50	T	2.55	2.00	1.28	T
14.2 Assist in preparing an MMP.	2	83%	3.00	2.00	1.00	T	2.50	2.00	1.00	NT	2.00	2.00	1.00	NT
14.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	0		-	-	-	-	0.00	0.00	0.00	NA	-	-	-	-
14.4 Identify material in excess of the programmatic needs.	7	29%	3.38	2.12	1.63	T	3.00	1.86	1.43	T	2.62	1.60	1.23	T
14.5 Arrange for discard of NM (excess and waste).	11	46%	3.48	2.66	2.14	OT	3.18	2.45	1.82	T	2.89	2.25	1.49	T
14.6 Create and maintain NM waste drums.	4	17%	3.50	3.00	3.38	OT	3.25	2.75	2.75	OT	3.00	2.50	2.12	OT

Number of usable respondent questionnaires: 24

TABLE D-III. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR NON-TA-55 CAT-I handlerS

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Perform MASS Duties.														
1.1 Perform MASS transactions as a MASS user.	3	27%	1.67	3.22	4.75	NT	1.33	2.33	3.67	NT	1.00	1.45	2.78	NT
1.2 Perform MASS transactions as a non-MASS user.	1	9%	-	-	-	NA	3.00	3.00	1.00	OT	-	-	-	NA
2. Perform Administrative Controls.														
2.1 Perform duties required by the IRA program.	4	36%	2.23	2.50	2.58	NT	1.75	2.25	2.00	NT	1.27	2.00	1.42	---
2.2 Prepare and submit the PAFD to OS-2 for approval.	1	9%	-	-	-	NA	3.00	4.00	1.00	OT	-	-	-	NA
2.3 Monitor and modify the PAFD as required.	2	18%	3.00	3.00	3.00	OT	2.50	2.50	2.00	T	2.00	2.00	1.00	NT
2.4 Perform daily administrative checks as required.	4	36%	1.50	2.79	4.00	NT	1.25	2.50	3.50	NT	1.00	2.21	3.00	NT
2.5 Prepare temporary MAA OPs when required.	1	9%	-	-	-	NA	2.00	3.00	1.00	T	-	-	-	NA
3. Receive Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
3.1 Notify custodian/alternate (OS-2) of receipt of NM shipment.	1	9%	-	-	-	NA	3.00	3.00	3.00	OT	-	-	-	NA
3.2 Confirm accuracy of information on the RMTT and sign if required.	5	45%	2.00	2.80	4.35	NT	2.00	2.40	3.60	NT	2.00	2.00	2.83	NT
3.3 Confirm items-in-transit list if required.	6	55%	1.72	2.54	4.63	NT	1.50	2.33	4.00	NT	1.28	2.12	3.37	NT
3.4 Follow the PAFD, MSP, and/or MBA OPs for confirming transfer.	4	36%	2.41	3.00	4.73	NT	2.00	2.50	4.25	NT	1.59	2.00	3.77	NT
3.5 Perform MASS transactions as a MASS user.	4	36%	2.41	2.50	4.37	NT	2.00	2.25	3.50	NT	1.59	2.00	2.63	NT
3.6 Perform MASS transactions as a non-MASS user.	1	9%	-	-	-	NA	2.00	3.00	5.00	NT	-	-	-	NA
4. Perform Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
4.1 Obtain authorization from receiving custodian before sending NM or follow the the PAFD.	2	18%	3.00	3.00	4.00	T	3.00	3.00	4.00	T	3.00	3.00	4.00	T
4.2 Package NM for transfer if required.	7	64%	2.40	2.63	3.00	NT	2.14	2.43	2.43	NT	1.88	2.23	1.86	NT
4.3 Request packaging of NM for transfer if required.	6	55%	2.37	2.54	3.38	NT	2.00	2.33	2.83	NT	1.63	2.12	2.29	NT
4.4 Arrange for proper labeling and documentation for transfer of NM if required.	5	45%	2.57	3.00	3.00	OT	2.20	2.60	2.40	T	1.83	2.20	1.80	NT
4.5 Complete appropriate portion of the RMTT and attach it to the container if required.	3	27%	2.67	3.00	4.33	T	2.33	2.67	3.67	NT	2.00	2.33	3.00	NT
4.6 Arrange for health protection monitoring and swiping with HS if required.	1	9%	2.21	3.25	3.59	NA	1.90	2.90	3.20	NT	1.59	2.55	2.81	NA
4.7 Follow required MSPs.	5	45%	-	-	-	NT	1.80	3.60	3.00	NT	-	-	-	NT
4.8 Perform MASS transactions as a MASS user.	4	36%	2.41	2.50	4.58	NT	2.00	2.25	4.00	NT	1.59	2.00	3.42	NT
4.9 Perform MASS transactions as a non-MASS user.	0		-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
4.10 Ensure receiving custodian performs receiving MASS transaction or follows the PAFD.	1	9%	-	-	-	NA	3.00	3.00	5.00	T	-	-	-	NA

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
5. Receive Internal (On-Site) Transfer of NM Between Different MAAs.														
5.1 Confirm accuracy of information of the RMTT and sign.	6	55%	1.72	3.14	3.49	NT	1.50	2.83	2.83	NT	1.28	2.53	2.18	T
5.2 Confirm items-in-transit list if required.	6	55%	1.84	3.16	4.63	NT	1.50	2.67	4.00	NT	1.16	2.17	3.37	NT
5.3 Perform transfer check and complete documentation as required.	4	36%	2.58	2.50	5.00	T	2.00	2.25	4.00	NT	1.42	2.00	3.00	NT
5.4 Perform accountability measurements.	5	45%	2.80	3.17	3.46	OT	2.40	2.80	2.80	NT	2.00	2.43	2.14	NT
5.5 Arrange for accountability measurements.	2	18%	3.00	3.00	3.00	OT	2.00	2.50	3.00	NT	1.00	2.00	3.00	NT
5.6 Perform confirmation measurements as required.	6	55%	2.67	3.00	3.38	OT	2.33	2.67	2.83	NT	2.00	2.33	2.29	NT
5.7 Arrange for confirmation measurements as required.	2	18%	3.00	3.00	3.00	OT	2.00	2.50	3.00	NT	1.00	2.00	3.00	NT
5.8 Perform verification measurements as required.	6	55%	2.47	3.00	2.83	NT	2.17	2.67	2.33	T	1.86	2.33	1.84	NT
5.9 Arrange for verification measurements as required.	2	18%	3.00	3.00	3.00	OT	2.00	2.50	3.00	NT	1.00	2.00	3.00	NT
5.10 Perform MASS transactions as a MASS user.	3	27%	2.00	2.67	4.35	NT	1.67	2.33	3.67	NT	1.33	2.00	2.78	NT
5.11 Perform MASS transactions as a non-MASS user.	0		-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
6. Perform Internal (On-Site) Transfer of NM Between Different MAAs.														
6.1 Notify receiving custodian before making the NM transfer.	6	55%	1.72	3.00	3.58	NT	1.50	2.67	3.00	NT	1.28	2.33	2.42	NT
6.2 Ensure proper measurement of item being transferred is complete.	3	27%	2.33	3.58	4.33	NT	1.67	3.00	3.67	NT	1.00	2.42	3.00	NT
6.3 Package NM for transfer following HS-1 requirements.	3	27%	1.67	3.00	4.15	NT	1.33	2.67	3.00	NT	1.00	2.33	1.85	NT
6.4 Apply TID if required.	5	45%	2.38	3.00	3.00	NT	1.80	2.60	2.60	NT	1.22	2.20	2.20	NT
6.5 Complete appropriate section of the RMTT and attach it to the container.	3	27%	2.00	3.00	4.33	NT	1.67	2.67	3.67	NT	1.33	2.33	3.00	NT
6.6 Arrange for health protection monitoring and swiping with HS as required.	1	9%	1.56	2.82	3.42	NA	1.40	2.60	3.00	NT	1.24	2.38	2.58	NA
6.7 Obtain appropriate signatures on the RMTT and retain the receipt.	1	9%	-	-	-	NA	1.00	3.00	5.00	NT	-	-	-	NA
6.8 Perform MASS transactions as a MASS user.	3	27%	2.00	2.67	4.54	NT	1.67	2.33	3.33	NT	1.33	2.00	2.13	NT
6.9 Perform MASS transactions as a non-MASS user.	1	9%	-	-	-	NA	1.00	2.00	1.00	NT	-	-	-	NA
7. Receive External (Off-Site) Transfer of NM.														
7.1 Submit NM receipt authorization to OS-2.	2	18%	-	-	-	NT	2.00	3.50	3.00	NT	-	-	-	NT
7.2 Notify OS-2 within required time of receipt of the NM shipment.	1	9%	-	-	-	NA	3.00	3.00	3.00	OT	-	-	-	NA
7.3 Perform transfer check and complete documentation as required.	2	18%	3.00	3.00	4.00	T	2.50	2.50	3.50	NT	2.00	2.00	3.00	NT
7.4 Complete receipt of confirmation form.	2	18%	3.00	3.00	4.00	T	2.50	2.50	3.50	NT	2.00	2.00	3.00	NT
7.5 Arrange for HS monitoring.	6	55%	1.72	3.00	3.58	NT	1.50	2.67	2.83	NT	1.28	2.33	2.08	NT
7.6 Perform accountability measurements.	3	27%	3.00	3.33	3.00	OT	2.33	2.67	2.33	T	1.67	2.00	1.67	NT
7.7 Arrange for accountability measurements.	2	18%	3.00	3.00	3.00	OT	2.00	2.50	3.00	NT	1.00	2.00	3.00	NT
7.8 Complete checklist for the LOE form and forward completed calculations.	1	9%	-	-	-	NA	1.00	2.00	1.00	NT	-	-	-	NA
7.9 Send copies of completed checklist to A-1 and OS-2.	1	9%	-	-	-	NA	1.00	2.00	1.00	NT	-	-	-	NA
7.10 Confirm accuracy of information on the RMTT and sign.	1	9%	-	-	-	NA	2.00	3.00	5.00	NT	-	-	-	NA
7.11 Confirm items-in-transit list if required.	2	18%	2.00	3.00	5.00	NT	1.50	2.50	5.00	NT	1.00	2.00	5.00	NT
7.12 Perform MASS transactions as a MASS user.	2	18%	3.00	3.00	5.00	T	2.00	2.50	3.00	NT	1.00	2.00	1.00	NT
7.13 Perform MASS transactions as a non-MASS user.	0		-	-	-	NT	0.00	0.00	0.00	NT	-	-	-	NT

TABLE D-III. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR NON-TA-55 CAT-I handlerS (cont)

TASKS	Performing Task #	Performing Task %	QTA Analysis of (1) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
8. Perform External (Off-Site) Transfer of NM.														
8.1 Request authorization for off-site shipment.	2	18%	3.00	3.00	5.00	T	2.50	2.50	3.00	NT	2.00	2.00	1.00	NT
8.2 Verify authorization to ship has been granted by the receiving facility.	1	9%	-	-	-	NA	3.00	3.00	3.00	OT	-	-	-	NA
8.3 Follow classification guidelines.	4	36%	2.73	3.41	2.00	OT	2.25	3.00	1.50	T	1.77	2.59	1.00	T
8.4 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	2	18%	3.00	4.00	3.00	OT	2.00	3.00	2.00	T	1.00	2.00	1.00	NT
8.5 Complete checklist for the LOE form and forward completed copies to A-1 and OS-2.	1	9%	-	-	-	NA	1.00	2.00	1.00	NT	-	-	-	NA
8.6 Arrange for health protection monitoring and swiping as required.	5	45%	1.64	2.64	3.89	NT	1.40	2.40	3.00	NT	1.16	2.16	2.11	NT
8.7 Package NM for shipment.	3	27%	3.00	3.00	3.55	T	2.67	3.00	2.67	OT	2.33	3.00	1.78	T
8.8 Arrange for proper labeling of shipment with HS.	3	27%	3.00	3.67	3.00	OT	2.67	3.33	2.33	OT	2.33	3.00	1.67	T
8.9 Complete appropriate section of the RMTT and attach it to the container.	2	18%	3.00	3.00	5.00	T	2.50	3.00	4.00	NT	2.00	3.00	3.00	NT
8.10 Provide receiver with appropriate copies of the shipping data sheet.	2	18%	3.00	3.00	3.00	OT	2.50	3.00	3.00	NT	2.00	3.00	3.00	NT
8.11 Prepare SM or CSF as required and forward copies to OS-2 and HS.	1	9%	-	-	-	NA	3.00	4.00	3.00	OT	-	-	-	NA
8.12 Perform transfer check and complete documentation as required.	1	9%	-	-	-	NA	3.00	3.00	3.00	OT	-	-	-	NA
8.13 Obtain appropriate signatures on the RMTT and retain the receipt.	1	9%	-	-	-	NA	2.00	3.00	3.00	NT	-	-	-	NA
8.14 Perform MASS transactions as a MASS user.	2	18%	2.00	4.00	5.00	NT	1.50	3.00	3.00	NT	1.00	2.00	1.00	NT
8.15 Perform MASS transactions as a non-MASS user.	0		-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9. Operate and Calibrate Instruments..														
9.1 Operate AWCC for U.	2	18%	2.00	3.00	3.00	NT	1.50	2.50	2.00	T	1.00	2.00	1.00	NT
9.2 Operate B-SGS.	1	9%	-	-	-	NA	1.00	2.00	3.00	NT	-	-	-	NA
9.3 Operate Calorimeter System.	0		-	-	-	NA	0.00	-	-	NA	-	-	-	NA
9.4 Operate C-SGS.	1	9%	-	-	-	NA	1.00	2.00	3.00	NT	-	-	-	NA
9.5 Operate CMC.	2	18%	3.00	3.00	3.00	OT	2.00	2.50	3.00	NT	1.00	2.00	3.00	NT
9.6 Operate FRAM.	0		-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.7 Operate "LLNL."	2	18%	3.00	2.00	5.00	NT	2.00	2.00	4.00	NT	1.00	2.00	3.00	NT
9.8 Operate NBC.	1	9%	-	-	-	NA	1.00	2.00	3.00	NT	-	-	-	NA
9.9 Operate NCC for Pu.	2	18%	3.00	4.00	2.00	OT	2.50	3.50	1.50	T	2.00	3.00	1.00	T
9.10 Operate electronic balances.	8	73%	1.69	2.56	3.64	NT	1.50	2.38	3.38	NT	1.31	2.19	3.11	NT
9.11 Perform calibration of balances.	7	64%	1.87	2.63	1.87	T	1.57	2.43	1.57	NT	1.27	2.23	1.27	NT
9.12 Perform Pu/U assay measurements.	4	36%	3.00	2.79	4.50	T	2.75	2.50	3.75	T	2.50	2.21	3.00	NT
9.13 Perform Pu/U verification measurements.	5	45%	2.80	2.57	3.46	OT	2.40	2.20	2.80	NT	2.00	1.83	2.14	NT
9.14 Perform U verification measurements.	4	36%	3.00	2.79	3.15	OT	2.50	2.50	2.50	NT	2.00	2.21	1.85	NT
9.15 Collect data for NDA equipment certification.	0		-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.16 Certify NDA equipment.	1	9%	-	-	-	NA	1.00	2.00	1.00	NT	-	-	-	NA
9.17 Maintain documentation as required.	4	36%	2.41	2.50	4.73	NT	2.00	2.25	4.25	NT	1.59	2.00	3.77	NT

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
10. Perform Inventory Duties.														
10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.	6	55%	2.47	3.00	2.84	NT	2.17	2.67	2.50	NT	1.86	2.33	2.16	NT
10.2 Assist in conducting daily inventories as required.	4	36%	1.00	3.00	3.88	NT	1.00	2.75	3.25	NT	1.00	2.50	2.62	NT
10.3 Assist in conducting bimonthly inventories as required.	2	18%	3.00	3.00	1.00	OT	2.50	2.50	1.00	T	2.00	2.00	1.00	NT
10.4 Assist in conducting semiannual and annual inventories as required.	6	55%	2.26	2.72	2.47	T	2.00	2.50	2.17	T	1.74	2.28	1.86	NT
10.5 Assist in conducting special inventories as required.	5	45%	2.32	2.64	2.45	T	2.00	2.40	2.00	NT	1.68	2.16	1.55	NT
10.6 Assist in performing measurements of selected inventory items as requested by OS-2.	4	36%	2.50	2.79	2.23	T	2.25	2.50	1.75	T	2.00	2.21	1.27	NT
11. Perform Administrative Duties.														
11.1 Include MC&A procedures in writing operational SOPs.	2	18%	3.00	3.00	3.00	OT	2.00	2.50	2.00	T	1.00	2.00	1.00	NT
11.2 Implement MC&A procedures from the SOPs.	3	27%	2.58	2.67	4.00	T	2.00	2.33	3.67	NT	1.42	2.00	3.33	NT
11.3 Know and observe vault access rules and records requirements.	8	73%	2.10	2.69	3.32	NT	1.88	2.50	2.88	NT	1.65	2.31	2.43	NT
11.4 Assist in training new employees.	4	36%	2.41	2.50	2.00	T	2.00	2.25	1.50	NT	1.59	2.00	1.00	NT
12. Perform Duties in the NM Management Program.														
12.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	1	9%	-	-	-	NA	3.00	2.00	1.00	T	-	-	-	NA
12.2 Assist in preparing an MMP.	1	9%	-	-	-	NA	3.00	2.00	2.00	T	-	-	-	NA
12.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	0		-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
12.4 Identify material in excess of the programmatic needs.	0		-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
12.5 Arrange for discard of NM (excess and waste).	6	55%	2.75	2.72	3.09	OT	2.33	2.50	2.67	NT	1.91	2.28	2.25	NT
12.6 Create and maintain NM waste drums.	5	45%	2.57	2.40	3.00	NT	2.20	2.20	2.80	NT	1.83	2.00	2.60	NT

Number of usable respondent questionnaires: 11

TABLE D-IV. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR TA-55 TECHNICIAN CAT-I HANDLERS

TASKS	Performing Task #	%	QTA Analysis of (1) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
1. Perform MASS Duties.														
1.1 Perform MASS transactions as a MASS user.	15	88%	1.94	3.20	4.68	NT	1.73	2.93	4.47	NT	1.53	2.67	4.25	NT
1.2 Perform MASS transactions as a non-MASS user.	2	12%	3.00	4.00	5.00	T	2.00	3.50	3.50	NT	1.00	3.00	2.00	T
2. Perform Administrative Controls.														
2.1 Perform duties required by the IRA program.	5	29%	3.29	3.17	3.84	T	2.80	2.80	3.00	OT	2.31	2.43	2.16	NT
2.2 Prepare and submit the PAFD to OS-2 for approval.	4	24%	3.38	3.23	3.37	OT	2.75	2.75	2.50	OT	2.12	2.27	1.63	NT
2.3 Monitor and modify the PAFD as required.	6	35%	2.47	3.09	3.05	NT	2.17	2.67	2.33	T	1.86	2.25	1.62	NT
2.4 Perform daily administrative checks as required.	16	94%	1.72	3.29	4.84	NT	1.56	3.06	4.56	NT	1.41	2.83	4.29	NT
2.5 Prepare temporary MAA OPs when required.	5	29%	3.11	3.78	3.55	T	2.60	3.20	3.00	OT	2.09	2.62	2.45	T
3. Receive Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
3.1 Notify custodian/alternate (OS-2) of receipt of NM shipment.	7	41%	1.73	2.77	3.85	NT	1.43	2.57	3.29	NT	1.13	2.37	2.72	NT
3.2 Confirm accuracy of information on the RMTT and sign if required.	9	53%	1.90	3.00	4.42	NT	1.67	2.78	4.11	NT	1.43	2.56	3.80	NT
3.3 Confirm items-in-transit list if required.	13	76%	2.13	3.39	4.18	NT	1.92	3.08	3.77	NT	1.71	2.77	3.36	NT
3.4 Follow the PAFD, MSP, and/or MBA OPs for confirming transfer.	14	82%	2.21	2.91	4.08	NT	2.00	2.71	3.71	NT	1.79	2.52	3.34	NT
3.5 Perform MASS transactions as a MASS user.	16	94%	2.02	2.89	4.55	NT	1.81	2.69	4.25	NT	1.60	2.49	3.95	NT
3.6 Perform MASS transactions as a non-MASS user.	3	18%	3.00	3.00	4.54	T	2.33	2.67	3.33	NT	1.67	2.33	2.13	NT
4. Perform Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
4.1 Obtain authorization from receiving custodian before sending NM or follow the the PAFD.	10	59%	1.91	2.82	4.27	NT	1.70	2.60	3.80	NT	1.49	2.38	3.33	NT
4.2 Package NM for transfer if required.	15	88%	2.35	3.60	3.96	NT	2.13	3.33	3.53	NT	1.92	3.06	3.11	NT
4.3 Request packaging of NM for transfer if required.	8	47%	2.35	3.46	3.97	NT	2.13	3.00	3.38	NT	1.90	2.54	2.78	NT
4.4 Arrange for proper labeling and documentation for transfer of NM if required.	15	88%	2.05	3.39	3.92	NT	1.93	3.13	3.47	NT	1.82	2.88	3.01	NT
4.5 Complete appropriate portion of the RMTT and attach it to the container if required.	11	65%	1.84	3.06	3.89	NT	1.64	2.73	3.45	NT	1.43	2.39	3.02	NT
4.6 Arrange for health protection monitoring and swiping with HS if required.	17	100%	1.93	3.64	4.20	NT	1.76	3.35	3.88	NT	1.60	3.07	3.56	NT
4.7 Follow required MSPs.	13	76%	2.16	3.20	4.10	NT	1.92	3.00	3.62	NT	1.68	2.80	3.13	NT
4.8 Perform MASS transactions as a MASS user.	16	94%	1.95	3.04	4.48	NT	1.81	2.8,	4.13	NT	1.68	2.58	3.77	NT
4.9 Perform MASS transactions as a non-MASS user.	4	24%	3.60	3.41	3.82	T	2.75	3.00	3.00	OT	1.90	2.59	2.18	T
4.10 Ensure receiving custodian performs receiving MASS transaction or follows the PAFD.	9	53%	2.00	2.89	4.48	NT	1.78	2.56	3.89	NT	1.56	2.22	3.30	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TABLE D-IV. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR TA-55 TECHNICIAN CAT-I HANDLERS (cont)

TASKS	Performing Task #	Performing Task %	QTA Analysis of (1) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
5. Receive Internal (On-Site) Transfer of NM Between Different MAAs.														
5.1 Confirm accuracy of information of the RMTT and sign.	7	41%	2.48	3.55	4.45	NT	2.14	3.14	3.86	NT	1.80	2.74	3.26	NT
5.2 Confirm items-in-transit list if required.	14	82%	1.97	2.93	4.11	NT	1.79	2.71	3.71	NT	1.60	2.49	3.32	NT
5.3 Perform transfer check and complete documentation as required.	13	76%	1.97	2.87	4.41	NT	1.77	2.69	4.00	NT	1.57	2.52	3.59	NT
5.4 Perform accountability measurements.	11	65%	2.12	2.88	4.30	NT	1.91	2.64	3.82	NT	1.70	2.39	3.34	NT
5.5 Arrange for accountability measurements.	11	65%	2.41	2.61	4.45	NT	2.18	2.45	4.00	NT	1.96	2.30	3.55	NT
5.6 Perform confirmation measurements as required.	9	53%	2.31	2.96	4.00	NT	2.11	2.67	3.44	NT	1.91	2.38	2.89	NT
5.7 Arrange for confirmation measurements as required.	12	71%	2.21	2.73	4.08	NT	2.00	2.50	3.58	NT	1.79	2.27	3.08	NT
5.8 Perform verification measurements as required.	12	71%	2.15	3.31	4.02	NT	1.92	3.08	3.58	NT	1.69	2.85	3.15	NT
5.9 Arrange for verification measurements as required.	12	71%	2.21	2.73	3.92	NT	2.00	2.50	3.50	NT	1.79	2.27	3.08	NT
5.10 Perform MASS transactions as a MASS user.	14	82%	2.12	3.00	4.50	NT	1.93	2.79	4.14	NT	1.73	2.57	3.78	NT
5.11 Perform MASS transactions as a non-MASS user.	2	12%	3.00	3.00	5.00	T	2.00	2.50	3.00	NT	1.00	2.00	1.00	NT
6. Perform Internal (On-Site) Transfer of NM Between Different MAAs.														
6.1 Notify receiving custodian before making the NM transfer.	12	71%	2.07	3.30	4.27	NT	1.83	3.00	3.83	NT	1.59	2.70	3.39	NT
6.2 Ensure proper measurement of item being transferred is complete.	13	76%	2.25	2.93	4.27	NT	2.08	2.69	3.85	NT	1.90	2.46	3.42	NT
6.3 Package NM for transfer following HS-1 requirements.	14	82%	2.51	3.77	3.63	T	2.29	3.50	3.14	NT	2.07	3.23	2.65	NT
6.4 Apply TID if required.	15	88%	2.17	3.59	3.68	NT	2.00	3.33	3.20	NT	1.83	3.08	2.72	NT
6.5 Complete appropriate section of the RMTT and attach it to the container.	8	47%	2.10	3.33	4.62	NT	1.88	3.00	4.25	NT	1.65	2.67	3.88	NT
6.6 Arrange for health protection monitoring and swiping with HS as required.	16	94%	2.11	3.26	4.01	NT	1.94	3.00	3.56	NT	1.77	2.74	3.12	NT
6.7 Obtain appropriate signatures on the RMTT and retain the receipt.	5	29%	2.45	2.40	4.29	NT	2.00	2.20	3.80	NT	1.55	2.00	3.31	NT
6.8 Perform MASS transactions as a MASS user.	14	82%	2.06	3.00	4.62	NT	1.86	2.79	4.29	NT	1.65	2.57	3.95	NT
6.9 Perform MASS transactions as a non-MASS user.	2	12%	3.00	2.00	5.00	NT	2.00	2.00	3.00	NT	1.00	2.00	1.00	NT
7. Receive External (Off-Site) Transfer of NM.														
7.1 Submit NM receipt authorization to OS-2.	4	24%	2.41	4.00	3.41	NT	2.00	3.50	3.00	NT	1.59	3.00	2.59	NT
7.2 Notify OS-2 within required time of receipt of the NM shipment.	3	18%	2.00	4.00	3.00	NT	1.67	3.33	3.00	NT	1.33	2.67	3.00	NT
7.3 Perform transfer check and complete documentation as required.	3	18%	2.58	3.33	5.00	T	2.00	2.67	4.33	NT	1.42	2.00	3.67	NT
7.4 Complete receipt of confirmation form.	4	24%	2.41	3.58	4.23	NT	2.00	3.00	3.75	NT	1.59	2.42	3.27	NT
7.5 Arrange for HS monitoring.	6	35%	2.14	3.23	4.75	NT	1.83	2.83	4.33	NT	1.53	2.43	3.91	NT
7.6 Perform accountability measurements.	5	29%	2.00	3.69	4.15	NT	1.80	3.20	3.40	NT	1.60	2.71	2.65	NT
7.7 Arrange for accountability measurements.	6	35%	2.26	3.14	4.57	NT	2.00	2.83	4.17	NT	1.74	2.53	3.77	NT
7.8 Complete checklist for the LOE form and forward completed calculations.	2	12%	3.00	4.00	4.00	T	2.00	3.00	4.00	NT	1.00	2.00	4.00	NT
7.9 Send copies of completed checklist to A-1 and OS-2.	2	12%	1.00	2.00	3.00	NT	1.00	2.00	3.00	NT	1.00	2.00	3.00	NT
7.10 Confirm accuracy of information on the RMTT and sign.	3	18%	2.58	4.22	4.33	T	2.00	3.33	3.67	NT	1.42	2.45	3.00	NT
7.11 Confirm items-in-transit list if required.	4	24%	2.41	3.58	5.00	NT	2.00	3.00	4.00	NT	1.59	2.42	3.00	NT
7.12 Perform MASS transactions as a MASS user.	7	41%	2.00	2.73	4.58	NT	1.71	2.43	4.00	NT	1.43	2.13	3.42	NT
7.13 Perform MASS transactions as a non-MASS user.	1	6%	1.00	1.00	5.00	NT	1.00	2.00	5.00	NT	1.00	1.00	5.00	NT

TABLE D-IV. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR TA-55 TECHNICIAN CAT-I HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
8. Perform External (Off-Site) Transfer of NM.														
8.1 Request authorization for off-site shipment.	5	29%	2.32	3.63	4.29	NT	2.00	3.00	3.80	NT	1.68	2.37	3.31	NT
8.2 Verify authorization to ship has been granted by the receiving facility.	4	24%	2.41	4.00	4.00	NT	2.00	3.25	3.50	NT	1.59	2.50	3.00	NT
8.3 Follow classification guidelines.	4	24%	2.73	4.38	5.00	T	2.25	3.75	4.50	NT	1.77	3.12	4.00	NT
8.4 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	4	24%	2.73	4.00	3.82	T	2.25	3.25	3.00	NT	1.77	2.50	2.18	T
8.5 Complete checklist for the LOE form and forward completed copies to A-1 and OS-2.	3	18%	2.58	3.33	3.00	OT	2.00	2.67	3.00	NT	1.42	2.00	3.00	NT
8.6 Arrange for health protection monitoring and swiping as required.	6	35%	2.00	3.71	4.33	NT	1.67	3.17	3.67	NT	1.33	2.62	3.00	NT
8.7 Package NM for shipment.	9	53%	2.57	3.89	3.27	OT	2.33	3.56	2.78	NT	2.10	3.22	2.28	T
8.8 Arrange with HS for proper labeling of shipment.	5	29%	2.32	2.80	4.15	NT	2.00	2.40	3.40	NT	1.68	2.00	2.65	NT
8.9 Complete appropriate section of the RMTT and attach it to the container.	5	29%	2.17	3.63	4.29	NT	1.80	3.00	3.80	NT	1.43	2.37	3.31	NT
8.10 Provide receiver with appropriate copies of the shipping data sheet.	5	29%	2.17	3.78	4.29	NT	1.80	3.20	3.80	NT	1.43	2.62	3.31	NT
8.11 Prepare SM or CSF as required and forward copies to OS-2 and HS. to OS-2 and HS.	2	12%	2.00	2.00	3.00	NT	2.00	2.00	2.00	NT	2.00	2.00	1.00	NT
8.12 Perform transfer check and complete documentation as required.	6	35%	2.26	4.09	3.95	NT	2.00	3.67	3.33	NT	1.74	3.25	2.72	NT
8.13 Obtain appropriate signatures on the RMTT and retain the receipt.	4	24%	2.41	3.23	4.58	NT	2.00	2.75	4.00	NT	1.59	2.27	3.42	NT
8.14 Perform MASS transactions as a MASS user.	8	47%	2.00	3.42	4.19	NT	1.75	3.00	3.63	NT	1.50	2.58	3.06	NT
8.15 Perform MASS transactions as a non-MASS user.	2	12%	1.00	2.00	5.00	NT	1.00	1.50	4.00	NT	1.00	1.00	3.00	NT
9. Operate and Calibrate Instruments.														
9.1 Operate AWCC for U.	4	24%	2.00	2.79	4.15	NT	1.75	2.50	3.00	NT	1.50	2.21	1.85	NT
9.2 Operate B-SGS.	1	6%	1.00	1.00	5.00	NT	1.00	2.00	5.00	NT	1.00	1.00	5.00	NT
9.3 Operate Calorimeter System.	2	12%	2.00	2.00	5.00	NT	1.50	2.00	4.50	NT	1.00	2.00	4.00	NT
9.4 Operate C-SGS.	2	12%	3.00	2.00	5.00	NT	2.00	2.00	3.00	NT	1.00	2.00	1.00	NT
9.5 Operate CMC.	5	29%	1.40	2.40	3.80	NT	1.20	2.20	3.40	NT	1.00	2.00	3.00	NT
9.6 Operate FRAM.	1	6%	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT
9.7 Operate "LLNL."	1	6%	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT
9.8 Operate NBC.	2	12%	2.00	3.00	5.00	NT	1.50	2.50	4.00	NT	1.00	2.00	3.00	NT
9.9 Operate NCC for Pu.	5	29%	2.17	2.40	4.15	NT	1.80	2.20	3.40	NT	1.43	2.00	2.65	NT
9.10 Operate electronic balances.	16	94%	1.94	2.64	4.35	NT	1.75	2.44	4.00	NT	1.56	2.23	3.65	NT
9.11 Perform calibration of balances.	5	29%	1.64	2.80	4.38	NT	1.40	2.40	3.40	NT	1.16	2.00	2.42	NT
9.12 Perform Pu/U assay measurements.	5	29%	2.57	2.84	4.15	T	2.20	2.60	3.40	NT	1.83	2.36	2.65	NT
9.13 Perform Pu/U verification measurements.	2	12%	3.00	3.00	5.00	T	2.00	2.50	4.00	NT	1.00	2.00	3.00	NT
9.14 Perform U verification measurements.	2	12%	3.00	3.00	5.00	T	2.00	2.50	3.00	NT	1.00	2.00	1.00	NT
9.15 Collect data for NDA equipment certification.	3	18%	3.70	2.00	5.00	NT	2.33	2.00	5.00	NT	1.67	2.00	5.00	NT
9.16 Certify NDA equipment.	1	6%	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT
9.17 Maintain documentation as required.	9	53%	2.78	3.15	4.90	T	2.44	2.89	4.67	NT	2.11	2.63	4.43	NT

TABLE D-IV. ANALYSIS OF MC&A TASK QUESTIONNAIRE FOR TA-55 TECHNICIAN CAT-I HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
10. Perform Inventory Duties.														
10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.	15	88%	2.35	3.46	3.53	NT	2.13	3.20	3.20	NT	1.92	2.94	2.87	NT
10.2 Assist in conducting daily inventories as required.	15	88%	1.94	3.06	4.77	NT	1.73	2.87	4.47	NT	1.53	2.67	4.16	NT
10.3 Assist in conducting bimonthly inventories as required.	13	76%	2.38	2.90	3.27	NT	2.15	2.69	2.85	NT	1.93	2.48	2.42	NT
10.4 Assist in conducting semiannual and annual inventories as required.	12	71%	2.44	3.18	2.66	NT	2.17	2.92	2.25	T	1.90	2.66	1.84	T
10.5 Assist in conducting special inventories as required.	12	71%	2.31	3.34	2.53	NT	2.08	3.08	2.08	T	1.85	2.82	1.63	T
10.6 Assist in performing measurements of selected inventory items as requested by OS-2.	11	65%	2.30	3.38	2.82	NT	2.09	3.09	2.36	T	1.88	2.81	1.91	T
11. Perform Administrative Duties.														
11.1 Include MC&A procedures in writing operational SOPs.	5	29%	3.57	4.11	3.46	OT	3.20	3.60	2.80	OT	2.83	3.09	2.14	OT
11.2 Implement MC&A procedures from the SOPs.	8	47%	3.06	3.75	4.78	T	2.75	3.38	4.25	T	2.44	3.00	3.72	NT
11.3 Know and observe vault access rules and records requirements.	12	71%	2.56	3.53	4.27	T	2.33	3.25	3.83	NT	2.11	2.97	3.39	NT
11.4 Assist in training new employees.	11	65%	3.11	3.41	2.74	OT	2.82	3.09	2.27	OT	2.52	2.78	1.80	OT
12. Perform Duties in the NM Management Program.														
12.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	4	24%	3.??	3.58	3.00	OT	2.75	3.00	2.50	OT	2.27	2.42	2.00	NT
12.2 Assist in preparing an MMP.	3	18%	2.58	3.00	3.00	OT	2.00	2.67	2.67	NT	1.42	2.33	2.33	NT
12.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	2	12%	3.00	3.00	2.00	OT	3.00	3.00	2.00	OT	3.00	3.00	2.00	OT
12.4 Identify material in excess of the programmatic needs.	3	18%	2.67	3.67	4.00	T	2.33	3.33	3.00	NT	2.00	3.00	2.00	T
12.5 Arrange for discard of NM (excess and waste).	10	59%	2.77	3.21	3.82	T	2.50	3.00	3.30	NT	2.23	2.79	2.78	NT
12.6 Create and maintain NM waste drums.	3	18%	3.00	4.58	4.15	T	2.67	4.00	3.00	OT	2.33	3.42	1.85	T

Number of usable respondent questionnaires: 17

TABLE D-V. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR TA-55 CAT-I STAFF MEMBER HANDLERS

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Perform MASS Duties.														
1.1 Perform MASS transactions as a MASS user.	8	47%	2.10	3.19	4.83	NT	1.88	3.00	^.50	NT	1.65	2.81	4.17	NT
1.2 Perform MASS transactions as a non-MASS user.	3	18%	2.58	2.67	3.00	OT	2.00	2.33	2.67	NT	1.42	2.00	2.33	NT
2. Perform Administrative Controls.														
2.1 Perform duties required by the IRA program.	2	12%	3.00	3.00	3.00	OT	2.50	2.50	2.50	NT	2.00	2.00	2.00	NT
2.2 Prepare and submit the PAFD to OS-2 for approval.	6	35%	3.26	2.84	1.84	OT	3.00	2.50	1.50	OT	2.74	2.16	1.16	T
2.3 Monitor and modify the PAFD as required.	6	35%	2.54	2.72	2.23	OT	2.33	2.50	1.83	T	2.12	2.28	1.43	NT
2.4 Perform daily administrative checks as required.	10	59%	1.85	3.13	3.83	NT	1.70	2.90	3.40	NT	1.55	2.67	2.97	NT
2.5 Prepare temporary MAA OPs when required.	3	18%	3.00	3.33	2.67	OT	2.67	2.67	2.33	OT	2.33	2.00	2.00	NT
3. Receive Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
3.1 Notify custodian/alternate (OS-2) of receipt of NM shipment.	5	29%	2.00	3.40	2.80	NT	1.80	3.20	2.40	T	1.60	3.00	2.00	T
3.2 Confirm accuracy of information on the RMTT and sign if required.	6	35%	2.00	2.33	3.33	NT	1.83	2.17	2.67	NT	1.67	2.00	2.00	NT
3.3 Confirm items-in-transit list if required.	5	29%	1.64	2.40	4.29	NT	1.40	2.20	3.80	NT	1.16	2.00	3.31	NT
3.4 Follow the PAFD, MSP, and/or MBA OPs for confirming transfer.	7	41%	2.22	3.00	3.49	NT	2.00	2.86	3.00	NT	1.78	2.71	2.51	NT
3.5 Perform MASS transactions as a MASS user.	8	47%	2.19	3.00	4.09	NT	2.00	2.88	3.63	NT	1.81	2.75	3.16	NT
3.6 Perform MASS transactions as a non-MASS user.	3	18%	2.67	2.67	3.00	OT	2.33	2.33	3.00	NT	2.00	2.00	3.00	NT
4. Perform Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
4.1 Obtain authorization from receiving custodian before sending NM or follow the the PAFD.	8	47%	1.91	3.33	3.70	NT	1.75	3.00	3.25	NT	1.59	2.67	2.80	NT
4.2 Package NM for transfer if required.	8	47%	2.69	3.00	2.66	OT	2.50	2.75	2.25	T	2.31	2.50	1.84	T
4.3 Request packaging of NM for transfer if required.	5	29%	2.32	2.32	2.84	NT	2.00	2.00	2.60	NT	1.68	1.68	2.36	NT
4.4 Arrange for proper labeling and documentation for transfer of NM if required.	9	53%	2.44	2.90	2.55	NT	2.22	2.67	2.22	T	2.00	2.43	1.90	NT
4.5 Complete appropriate portion of the RMTT and attach it to the container if required.	6	35%	2.37	2.47	3.58	NT	2.00	2.17	3.00	NT	1.63	1.86	2.42	NT
4.6 Arrange for health protection monitoring and swiping with HS if required.	12	71%	1.93	3.56	3.13	NT	1.75	3.33	2.83	NT	1.57	3.11	2.54	NT
4.7 Follow required MSPs.	10	59%	2.40	3.45	3.84	NT	2.20	3.30	3.50	NT	2.00	3.15	3.16	NT
4.8 Perform MASS transactions as a MASS user.	8	47%	2.00	2.91	3.83	NT	1.75	2.75	3.50	NT	1.50	2.59	3.17	NT
4.9 Perform MASS transactions as a non-MASS user.	3	18%	2.67	2.00	3.00	NT	2.33	2.00	3.00	NT	2.00	2.00	3.00	NT
4.10 Ensure receiving custodian performs receiving MASS transaction or follows the PAFD.	6	35%	2.14	2.88	4.00	NT	1.83	2.67	3.50	NT	1.53	2.46	3.00	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TABLE D-V. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR TA-55 CAT-I STAFF MEMBER HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
5. Receive Internal (On-Site) Transfer of NM Between Different MAAs.														
5.1 Confirm accuracy of information of the RMTT and sign.	4	24%	2.50	3.00	3.88	NT	2.25	3.00	3.25	NT	2.00	3.00	2.62	NT
5.2 Confirm items-in-transit list if required.	5	29%	2.57	2.84	3.91	T	2.20	2.60	3.40	NT	1.83	2.36	2.89	NT
5.3 Perform transfer check and complete documentation as required.	4	24%	3.00	3.00	4.15	T	2.75	3.00	3.50	T	2.50	3.00	2.85	NT
5.4 Perform accountability measurements.	7	41%	2.63	2.90	3.87	T	2.43	2.71	3.57	NT	2.23	2.53	3.27	NT
5.5 Arrange for accountability measurements.	7	41%	2.38	2.63	3.73	NT	2.00	2.43	3.43	NT	1.62	2.23	3.13	NT
5.6 Perform confirmation measurements as required.	5	29%	2.69	3.00	3.71	T	2.20	2.80	3.00	NT	1.71	2.60	2.29	T
5.7 Arrange for confirmation measurements as required.	7	41%	2.48	2.87	3.32	NT	2.14	2.57	2.86	NT	1.80	2.27	2.40	NT
5.8 Perform verification measurements as required.	4	24%	2.79	3.50	3.60	T	2.50	3.25	2.75	NT	2.21	3.00	1.90	T
5.9 Arrange for verification measurements as required.	3	18%	3.00	3.00	4.22	T	2.33	3.00	3.33	NT	1.67	3.00	2.45	T
5.10 Perform MASS transactions as a MASS user.	5	29%	2.40	3.00	4.20	NT	2.20	2.80	3.60	NT	2.00	2.60	3.00	NT
5.11 Perform MASS transactions as a non-MASS user.	3	18%	2.67	2.67	3.00	OT	2.33	2.33	3.00	NT	2.00	2.00	3.00	NT
6. Perform Internal (On-Site) Transfer of NM Between Different MAAs.														
6.1 Notify receiving custodian before making the NM transfer.	7	41%	2.47	2.63	3.00	NT	2.29	2.43	2.57	NT	2.10	2.23	2.14	NT
6.2 Ensure proper measurement of item being transferred is complete.	7	41%	2.31	3.07	3.87	NT	2.00	2.71	3.57	NT	1.69	2.35	3.27	NT
6.3 Package NM for transfer following HS-1 requirements.	3	18%	3.67	3.00	2.33	OT	3.33	3.00	1.67	OT	3.00	3.00	1.00	OT
6.4 Apply TID if required.	5	29%	2.57	3.00	3.91	T	2.20	3.00	3.40	NT	1.83	3.00	2.89	NT
6.5 Complete appropriate section of the RMTT and attach it to the container.	4	24%	2.41	2.79	4.23	NT	2.00	2.50	3.75	NT	1.59	2.21	3.27	NT
6.6 Arrange for health protection monitoring and swiping with HS as required.	8	47%	2.42	3.00	3.64	NT	2.13	2.75	3.38	NT	1.83	2.50	3.11	NT
6.7 Obtain appropriate signatures on the RMTT and retain the receipt.	4	24%	2.00	3.00	3.60	NT	2.00	2.75	2.75	NT	2.00	2.50	1.90	T
6.8 Perform MASS transactions as a MASS user.	4	24%	2.50	3.00	4.58	NT	2.25	2.75	4.00	NT	2.00	2.50	3.42	NT
6.9 Perform MASS transactions as a non-MASS user.	2	12%	2.00	3.00	3.00	NT	2.00	2.50	3.00	NT	2.00	2.00	3.00	NT
7. Receive External (Off-Site) Transfer of NM.														
7.1 Submit NM receipt authorization to OS-2.	1	6%	3.00	3.00	2.00	OT	3.00	3.00	2.00	OT	3.00	3.00	2.00	OT
7.2 Notify OS-2 within required time of receipt of the NM shipment.	2	12%	2.00	3.00	2.00	T	2.00	2.50	1.50	T	2.00	2.00	1.00	NT
7.3 Perform transfer check and complete documentation as required.	3	18%	3.00	3.00	2.58	OT	2.67	3.00	2.00	OT	2.33	3.00	1.42	T
7.4 Complete receipt of confirmation form.	2	12%	3.00	3.00	2.00	OT	2.50	3.00	2.00	T	2.00	3.00	2.00	T
7.5 Arrange for HS monitoring.	4	24%	2.00	3.41	4.15	NT	2.00	3.00	3.50	NT	2.00	2.59	2.85	NT
7.6 Perform accountability measurements.	4	24%	2.79	3.50	4.58	T	2.50	3.25	4.00	NT	2.21	3.00	3.42	NT
7.7 Arrange for accountability measurements.	4	24%	2.41	3.00	4.37	NT	2.00	3.00	3.50	NT	1.59	3.00	2.63	NT
7.8 Complete checklist for the LOE form and forward completed calculations.	2	12%	3.00	4.00	1.00	OT	3.00	3.50	1.00	OT	3.00	3.00	1.00	OT
7.9 Send copies of completed checklist to A-1 and OS-2.	0		-	-	-		0.00	0.00	0.00	NA	-	-	-	
7.10 Confirm accuracy of information on the RMTT and sign.	2	12%	3.00	3.00	5.00	T	3.00	3.00	4.50	T	3.00	3.00	4.00	T
7.11 Confirm items-in-transit list if required.	3	18%	2.67	3.00	4.15	T	2.33	3.00	3.00	NT	2.00	3.00	1.85	T
7.12 Perform MASS transactions as a MASS user.	4	24%	2.79	3.00	4.28	T	2.50	3.00	3.25	NT	2.21	3.00	2.22	T
7.13 Perform MASS transactions as a non-MASS user.	1	6%	2.00	3.00	3.00	NT	2.00	3.00	3.00	NT	2.00	3.00	3.00	NT

TABLE D-V. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR TA-55 CAT-I STAFF MEMBER HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
8. Perform External (Off-Site) Transfer of NM.														
8.1 Request authorization for off-site shipment.	3	18%	3.33	2.67	1.67	OT	2.67	2.33	1.33	T	2.00	2.00	1.00	NT
8.2 Verify authorization to ship has been granted by the receiving facility.	1	6%	2.00	3.00	2.00	T	2.00	3.00	2.00	T	2.00	3.00	2.00	T
8.3 Follow classification guidelines.	5	29%	2.84	3.00	3.08	OT	2.60	2.80	2.40	OT	2.36	2.60	1.72	T
8.4 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	5	29%	2.57	3.91	2.38	OT	2.20	3.40	1.80	T	1.83	2.89	1.22	T
8.5 Complete checklist for the LOE form and forward completed copies to A-1 and OS-2.	2	12%	3.00	3.00	1.00	OT	3.00	2.50	1.00	OT	3.00	2.00	1.00	T
8.6 Arrange for health protection monitoring and swiping as required.	4	24%	2.79	3.50	1.79	OT	2.50	3.25	1.50	T	2.21	3.00	1.21	T
8.7 Package NM for shipment.	2	12%	2.00	3.00	5.00	NT	2.00	3.00	3.00	NT	2.00	3.00	1.00	T
8.8 Arrange for proper labeling of shipment with HS.	2	12%	2.00	3.00	5.00	NT	1.50	2.00	3.50	NT	1.00	1.00	2.00	NT
8.9 Complete appropriate section of the RMTT and attach it to the container.	3	18%	3.00	3.00	4.54	T	2.67	2.67	3.33	OT	2.33	2.33	2.13	NT
8.10 Provide receiver with appropriate copies of the shipping data sheet.	1	6%	1.00	2.00	1.00	NT	1.00	2.00	1.00	NT	1.00	2.00	1.00	NT
8.11 Prepare SM or CSF as required and forward copies to OS-2 and HS.	1	6%	2.00	1.00	2.00	NT	2.00	1.00	2.00	NT	2.00	1.00	2.00	NT
8.12 Perform transfer check and complete documentation as required.	2	12%	3.00	3.00	2.00	OT	2.50	3.00	1.50	T	2.00	3.00	1.00	T
8.13 Obtain appropriate signatures on the RMTT and retain the receipt.	2	12%	3.00	3.00	1.00	OT	2.00	2.00	1.00	NT	1.00	1.00	1.00	NT
8.14 Perform MASS transactions as a MASS user.	3	18%	2.67	3.00	3.87	T	2.33	2.67	2.67	NT	2.00	2.33	1.46	NT
8.15 Perform MASS transactions as a non-MASS user.	1	6%	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT
9. Operate and Calibrate Instruments.														
9.1 Operate AWCC for U.	2	12%	2.00	3.00	3.00	NT	2.00	2.50	2.50	NT	2.00	2.00	2.00	NT
9.2 Operate B-SGS.	2	12%	3.00	2.90	5.00	NT	2.50	2.00	5.00	NT	2.00	2.00	5.00	NT
9.3 Operate Calorimeter System.	3	18%	2.67	2.00	4.33	NT	2.33	2.00	3.67	NT	2.00	2.00	3.00	NT
9.4 Operate C-SGS.	2	12%	2.00	2.00	5.00	NT	2.00	2.00	5.00	NT	2.00	2.00	5.00	NT
9.5 Operate CMC.	4	24%	2.50	2.00	3.88	NT	2.25	2.00	3.25	NT	2.00	2.00	2.62	NT
9.6 Operate FRAM.	2	12%	3.00	2.00	5.00	NT	3.00	2.00	4.00	NT	3.00	2.00	3.00	NT
9.7 Operate "LLNL."	0	0%	0.00	0.00	0.00	NT	0.00	0.00	0.00	NT	0.00	0.00	0.00	NT
9.8 Operate NBC.	2	12%	3.00	2.00	5.00	NT	2.50	2.00	5.00	NT	2.00	2.00	5.00	NT
9.9 Operate NCC for Pu.	2	12%	2.00	3.00	5.00	NT	1.50	2.50	4.00	NT	1.00	2.00	3.00	NT
9.10 Operate electronic balances.	11	65%	1.61	2.41	3.48	NT	1.45	2.27	3.18	NT	1.30	2.13	2.89	NT
9.11 Perform calibration of balances.	3	18%	1.67	2.67	3.55	NT	1.33	2.33	2.67	NT	1.00	2.00	1.78	NT
9.12 Perform Pu/U assay measurements.	3	18%	2.58	2.67	5.00	T	2.00	2.33	4.33	NT	1.42	2.00	3.67	NT
9.13 Perform Pu/U verification measurements.	2	12%	3.00	3.00	5.00	T	2.50	2.50	4.50	NT	2.00	2.00	4.00	NT
9.14 Perform U verification measurements.	2	12%	3.00	3.00	5.00	T	2.50	2.50	4.50	NT	2.00	2.00	4.00	NT
9.15 Collect data for NDA equipment certification.	2	12%	3.00	3.00	4.00	T	2.00	2.50	4.00	NT	1.00	2.00	4.00	NT
9.16 Certify NDA equipment.	1	6%	3.00	2.00	4.00	NT	3.00	2.00	4.00	NT	3.00	2.00	4.00	NT
9.17 Maintain documentation as required.	8	47%	2.35	2.70	3.84	NT	2.13	2.38	3.38	NT	1.90	2.05	2.91	NT

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
10. Perform Inventory Duties.														
10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.	8	47%	2.77	3.35	3.12	OT	2.50	3.13	2.75	NT	2.23	2.90	2.38	T
10.2 Assist in conducting daily inventories as required.	7	41%	2.22	3.40	4.19	NT	2.00	3.14	3.71	NT	1.78	2.88	3.24	NT
10.3 Assist in conducting bimonthly inventories as required.	7	41%	2.90	3.57	3.00	OT	2.71	3.29	3.00	OT	2.53	3.00	3.00	OT
10.4 Assist in conducting semiannual and annual inventories as required.	8	47%	3.23	3.79	2.56	OT	2.88	3.38	2.25	OT	2.52	2.96	1.94	OT
10.5 Assist in conducting special inventories as required.	8	47%	2.89	3.35	1.77	OT	2.63	3.13	1.50	OT	2.36	2.90	1.23	T
10.6 Assist in performing measurements of selected inventory items as requested by OS-2.	6	35%	2.54	2.88	3.64	T	2.33	2.67	3.17	NT	2.12	2.46	2.69	NT
11. Perform Administrative Duties.														
11.1 Include MC&A procedures in writing operational SOPs.	9	53%	2.85	2.90	2.57	OT	2.56	2.67	2.33	OT	2.26	2.43	2.10	NT
11.2 Implement MC&A procedures from the SOPs.	6	35%	3.14	3.84	3.64	T	2.83	3.50	3.17	OT	2.53	3.16	2.69	OT
11.3 Know and observe vault access rules and records requirements.	6	35%	3.00	3.33	4.00	T	2.67	3.17	3.67	T	2.33	3.00	3.33	NT
11.4 Assist in training new employees.	11	65%	3.22	3.51	2.41	OT	2.91	3.18	2.09	OT	2.59	2.86	1.78	OT
12. Perform Duties in the NM Management Program.														
12.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	7	41%	3.65	2.65	1.90	OT	3.29	2.29	1.71	T	2.93	1.93	1.53	T
12.2 Assist in preparing an MMP.	2	12%	5.00	4.00	2.00	OT	3.50	3.00	1.50	OT	2.00	2.00	1.00	NT
12.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	1	6%	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT
12.4 Identify material in excess of the programmatic needs.	6	35%	3.31	2.00	1.88	T	2.83	1.83	1.67	T	2.36	1.67	1.46	NT
12.5 Arrange for discard of NM (excess and waste).	9	53%	2.90	2.89	3.27	OT	2.67	2.56	2.78	OT	2.43	2.22	2.28	NT
12.6 Create and maintain NM waste drums.	3	18%	2.58	3.00	4.54	T	2.00	2.67	3.33	NT	1.42	2.33	2.13	NT

Number of usable respondent questionnaires: 13

TABLE D-VI. ANALYSIS of MC&A TASK QUESTIONNAIRES FOR ALL TA-55 CAT-I HANDLERS

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Perform MASS Duties.														
1.1 Perform MASS transactions as a MASS user.	23	77%	1.94	3.14	4.65	NT	1.78	2.96	4.48	NT	1.63	2.77	4.30	NT
1.2 Perform MASS transactions as a non-MASS user.	5	17%	2.45	3.17	3.55	NT	2.00	2.80	3.00	NT	1.55	2.43	2.45	NT
2. Perform Administrative Controls.														
2.1 Perform duties required by the IRA program.	7	23%	3.07	3.00	3.45	OT	2.71	2.71	2.86	OT	2.35	2.43	2.26	NT
2.2 Prepare and submit the PAFD to OS-2 for approval.	10	33%	3.18	2.87	2.31	OT	2.90	2.60	1.90	OT	2.62	2.33	1.49	T
2.3 Monitor and modify the PAFD as required.	12	40%	2.43	2.81	2.48	T	2.25	2.58	2.08	T	2.07	2.35	1.69	NT
2.4 Perform daily administrative checks as required.	26	87%	1.73	3.17	4.37	NT	1.62	3.00	4.12	NT	1.50	2.83	3.86	NT
2.5 Prepare temporary MAA OPs when required.	8	27%	2.95	3.42	3.12	OT	2.63	3.00	2.75	OT	2.30	2.58	2.38	T
3. Receive Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
3.1 Notify custodian/alternate (OS-2) of receipt of NM shipment.	12	40%	1.78	3.00	3.30	NT	1.58	2.83	2.92	NT	1.39	2.67	2.54	NT
3.2 Confirm accuracy of information on the RMTT and sign if required.	15	50%	1.89	2.70	3.90	NT	1.73	2.53	3.53	NT	1.58	2.37	3.17	NT
3.3 Confirm items-in-transit list if required.	18	60%	1.95	3.08	4.10	NT	1.78	2.83	3.78	NT	1.61	2.59	3.46	NT
3.4 Follow the PAFD, MSP, and/or MBA OPs for confirming transfer.	21	70%	2.15	2.90	3.77	NT	2.00	2.76	3.48	NT	1.85	2.63	3.18	NT
3.5 Perform MASS transactions as a MASS user.	24	80%	2.03	2.89	4.29	NT	1.88	2.75	4.04	NT	1.72	2.61	3.79	NT
3.6 Perform MASS transactions as a non-MASS user.	6	20%	2.67	2.72	3.71	T	2.33	2.50	3.17	NT	2.00	2.28	2.62	NT
4. Perform Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
4.1 Obtain authorization from receiving custodian before sending NM or follow the the PAFD.	18	60%	1.86	2.97	3.88	NT	1.72	2.78	3.56	NT	1.59	2.59	3.23	NT
4.2 Package NM for transfer if required.	23	77%	2.42	3.33	3.42	NT	2.26	3.13	3.09	NT	2.10	2.93	2.75	NT
4.3 Request packaging of NM for transfer if required.	13	43%	2.25	2.95	3.46	NT	2.08	2.62	3.08	NT	1.90	2.28	2.69	NT
4.4 Arrange for proper labeling and documentation for transfer of NM if required.	24	80%	2.15	3.14	3.33	NT	2.04	2.96	3.00	NT	1.93	2.77	2.67	NT
4.5 Complete appropriate portion of the RMTT and attach it to the container if required.	17	57%	1.95	2.77	3.63	NT	1.76	2.53	3.29	NT	1.58	2.29	2.95	NT
4.6 Arrange for health protection monitoring and swiping with HS if required.	29	97%	1.88	3.53	3.69	NT	1.76	3.34	3.45	NT	1.64	3.16	3.21	NT
4.7 Follow required MSPs.	23	77%	2.20	3.26	3.87	NT	2.04	3.13	3.57	NT	1.88	3.00	3.26	NT
4.8 Perform MASS transactions as a MASS user.	24	80%	1.91	2.95	4.18	NT	1.79	2.79	3.92	NT	1.67	2.63	3.65	NT
4.9 Perform MASS transactions as a non-MASS user.	7	23%	3.05	2.87	3.44	OT	2.57	2.57	3.00	OT	2.09	2.27	2.56	NT
4.10 Ensure receiving custodian performs receiving MASS transaction or follows the PAFD.	15	50%	1.97	2.81	4.13	NT	1.80	2.60	3.73	NT	1.63	2.39	3.34	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TABLE D-VI. ANALYSIS of MC&A TASK QUESTIONNAIRES FOR ALL TA-55 CAT-I HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
5. Receive Internal (On-Site) Transfer of NM Between Different MAAs.														
5.1 Confirm accuracy of information of the RMTT and sign.	11	37%	2.41	3.34	4.07	NT	2.18	3.09	3.64	NT	1.96	2.84	3.20	NT
5.2 Confirm items-in-transit list if required.	19	63%	2.06	2.86	3.95	NT	1.89	2.68	3.63	NT	1.73	2.51	3.31	NT
5.3 Perform transfer check and complete documentation as required.	17	57%	2.19	2.90	4.22	NT	2.00	2.76	3.88	NT	1.81	2.63	3.54	NT
5.4 Perform accountability measurements.	18	60%	2.27	2.83	4.03	NT	2.11	2.67	3.72	NT	1.95	2.50	3.41	NT
5.5 Arrange for accountability measurements.	18	60%	2.31	2.56	4.08	NT	2.11	2.44	3.78	NT	1.91	2.32	3.48	NT
5.6 Perform confirmation measurements as required.	14	47%	2.35	2.91	3.71	NT	2.14	2.71	3.29	NT	1.94	2.52	2.86	NT
5.7 Arrange for confirmation measurements as required.	19	63%	2.23	2.70	3.67	NT	2.05	2.53	3.32	NT	1.87	2.35	2.96	NT
5.8 Perform verification measurements as required.	16	53%	2.26	3.30	3.76	NT	2.06	3.13	3.38	NT	1.87	2.95	2.99	NT
5.9 Arrange for verification measurements as required.	15	50%	2.27	2.79	3.83	NT	2.07	2.60	3.47	NT	1.86	2.41	3.10	NT
5.10 Perform MASS transactions as a MASS user.	19	63%	2.15	2.95	4.31	NT	2.00	2.79	4.00	NT	1.85	2.63	3.69	NT
5.11 Perform MASS transactions as a non-MASS user.	5	17%	2.57	2.64	3.63	T	2.20	2.40	3.00	NT	1.83	2.16	2.37	NT
6. Perform Internal (On-Site) Transfer of NM Between Different MAAs.														
6.1 Notify receiving custodian before making the NM transfer.	19	63%	2.17	3.00	3.71	NT	2.00	2.79	3.37	NT	1.83	2.58	3.02	NT
6.2 Ensure proper measurement of item being transferred is complete.	20	67%	2.20	2.89	4.04	NT	2.05	2.70	3.75	NT	1.90	2.51	3.46	NT
6.3 Package NM for transfer following HS-1 requirements.	17	57%	2.68	3.64	3.32	OT	2.47	3.41	2.88	NT	2.26	3.18	2.45	T
6.4 Apply TID if required.	20	67%	2.20	3.44	3.63	NT	2.05	3.25	3.25	NT	1.90	3.06	2.87	NT
6.5 Complete appropriate section of the RMTT and attach it to the container.	12	40%	2.11	3.07	4.37	NT	1.92	2.83	4.08	NT	1.72	2.59	3.80	NT
6.6 Arrange for health protection monitoring and swiping with HS as required.	24	80%	2.15	3.11	3.81	NT	2.00	2.92	3.50	NT	1.85	2.73	3.19	NT
6.7 Obtain appropriate signatures on the RMTT and retain the receipt.	9	30%	2.24	2.62	3.80	NT	2.00	2.44	3.33	NT	1.76	2.27	2.86	NT
6.8 Perform MASS transactions as a MASS user.	18	60%	2.12	2.95	4.51	NT	1.94	2.78	4.22	NT	1.77	2.61	3.94	NT
6.9 Perform MASS transactions as a non-MASS user.	4	13%	2.41	2.50	3.82	NT	2.00	2.25	3.00	NT	1.59	2.00	2.18	NT
7. Receive External (Off-Site) Transfer of NM.														
7.1 Submit NM receipt authorization to OS-2.	5	17%	2.57	3.80	3.17	OT	2.20	3.40	2.80	NT	1.83	3.00	2.43	T
7.2 Notify OS-2 within required time of receipt of the NM shipment.	5	17%	2.00	3.45	2.80	NT	1.80	3.00	2.40	T	1.60	2.55	2.00	T
7.3 Perform transfer check and complete documentation as required.	6	20%	2.67	3.14	3.82	T	2.33	2.83	3.17	NT	2.00	2.53	2.51	NT
7.4 Complete receipt of confirmation form.	6	20%	2.47	3.37	3.64	NT	2.17	3.00	3.17	NT	1.86	2.63	2.69	NT
7.5 Arrange for HS monitoring.	10	33%	2.08	3.18	4.37	NT	1.90	2.90	4.00	NT	1.72	2.62	3.63	NT
7.6 Perform accountability measurements.	9	30%	2.31	3.50	4.14	NT	2.11	3.22	3.67	NT	1.91	2.94	3.20	NT
7.7 Arrange for accountability measurements.	10	33%	2.21	3.08	4.31	NT	2.00	2.90	3.90	NT	1.79	2.72	3.49	NT
7.8 Complete checklist for the LOE form and forward completed calculations.	4	13%	3.00	3.73	3.37	OT	2.50	3.25	2.50	NT	2.00	2.77	1.63	T
7.9 Send copies of completed checklist to A-1 and OS-2.	2	7%	1.00	2.00	3.00	NT	1.00	2.00	3.00	NT	1.00	2.00	3.00	NT
7.10 Confirm accuracy of information on the RMTT and sign.	5	17%	2.80	3.69	4.45	T	2.40	3.20	4.00	NT	2.00	2.71	3.55	NT
7.11 Confirm items-in-transit list if required.	7	23%	2.40	3.31	4.29	NT	2.14	3.00	3.57	NT	1.88	2.69	2.85	NT
7.12 Perform MASS transactions as a MASS user.	11	37%	2.23	2.84	4.23	NT	2.00	2.64	3.73	NT	1.77	2.43	3.22	NT
7.13 Perform MASS transactions as a non-MASS user.	2	7%	2.00	3.00	5.00	NT	1.50	2.50	4.00	NT	1.00	2.00	3.00	NT

TABLE D-VI. ANALYSIS of MC&A TASK QUESTIONNAIRES FOR ALL TA-55 CAT-I HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
8. Perform External (Off-Site) Transfer of NM.														
8.1 Request authorization for off-site shipment.	8	27%	2.56	3.16	3.42	OT	2.25	2.75	2.88	NT	1.94	2.34	2.33	NT
8.2 Verify authorization to ship has been granted by the receiving facility.	5	17%	2.32	3.78	3.69	NT	2.00	3.20	3.20	NT	1.68	2.62	2.71	NT
8.3 Follow classification guidelines.	9	30%	2.69	3.55	3.89	T	2.44	3.22	3.33	NT	2.20	2.90	2.78	NT
8.4 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	9	30%	2.50	3.74	2.83	NT	2.22	3.33	2.33	T	1.94	2.93	1.83	T
8.5 Complete checklist for the LOE form and forward completed copies to A-1 and OS-2.	5	17%	2.80	3.00	2.69	OT	2.40	2.60	2.20	T	2.00	2.20	1.71	NT
8.6 Arrange for health protection monitoring and swiping as required.	10	33%	2.26	3.53	3.33	NT	2.00	3.20	2.80	NT	1.74	2.87	2.27	T
8.7 Package NM for shipment.	11	37%	2.47	3.74	3.30	NT	2.27	3.45	2.82	NT	2.08	3.17	2.34	T
8.8 Arrange for proper labeling of shipment with HS.	7	23%	2.12	2.65	4.04	NT	1.86	2.29	3.43	NT	1.60	1.93	2.82	NT
8.9 Complete appropriate section of the RMTT and attach it to the container.	8	27%	2.42	3.27	4.12	NT	2.13	2.88	3.63	NT	1.83	2.48	3.13	NT
8.10 Provide receiver with appropriate copies of the shipping data sheet.	6	20%	2.00	3.52	3.95	NT	1.67	3.00	3.33	NT	1.33	2.48	2.72	NT
8.11 Prepare SM or CSF as required and forward copies to OS-2 and HS.	3	10%	2.00	2.00	2.58	NT	2.00	1.67	2.00	NT	2.00	1.33	1.42	NT
8.12 Perform transfer check and complete documentation as required.	8	27%	2.35	3.83	3.42	NT	2.13	3.50	2.88	NT	1.90	3.17	2.33	T
8.13 Obtain appropriate signatures on the RMTT and retain the receipt.	6	20%	2.37	2.93	3.73	NT	2.00	2.50	3.00	NT	1.63	2.07	2.27	NT
8.14 Perform MASS transactions as a MASS user.	11	37%	2.12	3.22	3.87	NT	1.91	2.91	3.36	NT	1.70	2.59	2.85	NT
8.15 Perform MASS transactions as a non-MASS user.	3	10%	1.67	2.00	4.22	NT	1.33	1.67	3.33	NT	1.00	1.33	2.45	NT
9. Operate and Calibrate Instruments.														
9.1 Operate AWCC for U.	6	20%	2.00	2.72	3.58	NT	1.83	2.50	2.83	NT	1.67	2.28	2.08	NT
9.2 Operate B-SGS.	3	10%	2.58	2.00	5.00	NT	2.00	2.00	5.00	NT	1.42	2.00	5.00	NT
9.3 Operate Calorimeter System.	5	17%	2.32	2.00	4.45	NT	2.00	2.00	4.00	NT	1.68	2.00	3.55	NT
9.4 Operate C-SGS.	4	13%	2.41	2.00	5.00	NT	2.00	2.00	4.00	NT	1.59	2.00	3.00	NT
9.5 Operate CMC.	9	30%	1.90	2.22	3.67	NT	1.67	2.11	3.33	NT	1.43	2.00	3.00	NT
9.6 Operate FRAM.	3	10%	3.00	2.00	5.00	NT	2.33	2.00	4.33	NT	1.67	2.00	3.67	NT
9.7 Operate "LLNL."	1	3%	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT	1.00	2.00	5.00	NT
9.8 Operate NBC.	4	13%	2.41	2.50	5.00	NT	2.00	2.25	4.50	NT	1.59	2.00	4.00	NT
9.9 Operate NCC for Pu.	7	23%	2.00	2.47	4.14	NT	1.71	2.29	3.57	NT	1.43	2.10	3.00	NT
9.10 Operate electronic balances.	27	90%	1.76	2.50	3.92	NT	1.63	2.37	3.67	NT	1.50	2.24	3.42	NT
9.11 Perform calibration of balances.	8	27%	1.56	2.64	3.79	NT	1.38	2.38	3.13	NT	1.19	2.11	2.46	NT
9.12 Perform Pu/U assay measurements.	8	27%	2.42	2.69	4.28	NT	2.13	2.50	3.75	NT	1.83	2.31	3.22	NT
9.13 Perform Pu/U verification measurements.	4	13%	2.73	2.79	4.73	T	2.25	2.50	4.25	NT	1.77	2.21	3.77	NT
9.14 Perform U verification measurements.	4	13%	2.73	2.79	4.70	T	2.25	2.50	3.75	NT	1.77	2.21	2.80	NT
9.15 Collect data for NDA equipment certification.	5	17%	2.69	2.40	4.84	NT	2.20	2.20	4.60	NT	1.71	2.00	4.36	NT
9.16 Certify NDA equipment.	2	7%	3.00	2.00	5.00	NT	2.00	2.00	4.50	NT	1.00	2.00	4.00	NT
9.17 Maintain documentation as required.	17	57%	2.50	2.86	4.35	NT	2.29	2.65	4.06	NT	2.09	2.44	3.77	NT

TABLE D-VI. ANALYSIS of MC&A TASK QUESTIONNAIRES FOR ALL TA-55 CAT-I HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
10. Perform Inventory Duties.														
10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.	23	77%	2.43	3.36	3.29	NT	2.26	3.17	3.04	NT	2.09	2.99	2.80	NT
10.2 Assist in conducting daily inventories as required.	22	73%	1.97	3.11	4.49	NT	1.82	2.95	4.23	NT	1.66	2.80	3.96	NT
10.3 Assist in conducting bimonthly inventories as required.	20	67%	2.52	3.08	3.17	OT	2.35	2.90	2.90	NT	2.18	2.72	2.63	NT
10.4 Assist in conducting semiannual and annual inventories as required.	20	67%	2.67	3.33	2.52	OT	2.45	3.10	2.25	T	2.23	2.87	1.98	T
10.5 Assist in conducting special inventories as required.	20	67%	2.48	3.28	2.14	T	2.30	3.10	1.85	T	2.12	2.92	1.56	T
10.6 Assist in performing measurements of selected inventory items as requested by OS-2.	17	57%	2.33	3.14	2.99	NT	2.18	2.94	2.65	NT	2.02	2.74	2.30	T
11. Perform Administrative Duties.														
11.1 Include MC&A procedures in writing operational SOPs.	14	47%	3.02	3.26	2.77	OT	2.79	3.00	2.50	OT	2.55	2.74	2.23	OT
11.2 Implement MC&A procedures from the SOPs.	14	47%	3.00	3.68	4.17	T	2.79	3.43	3.79	T	2.57	3.18	3.41	OT
11.3 Know and observe vault access rules and records requirements.	18	60%	2.63	3.41	4.09	T	2.44	3.22	3.78	NT	2.26	3.03	3.47	NT
11.4 Assist in training new employees.	22	73%	3.07	3.36	2.46	OT	2.86	3.14	2.18	OT	2.65	2.92	1.91	OT
12. Perform Duties in the NM Management Program.														
12.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	11	37%	3.38	2.86	2.23	OT	3.09	2.55	2.00	OT	2.81	2.23	1.77	T
12.2 Assist in preparing an MMP.	5	17%	3.28	3.17	2.57	OT	2.60	2.80	2.20	OT	1.92	2.43	1.83	NT
12.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	3	10%	3.00	3.00	2.00	OT	2.67	2.67	2.00	OT	2.33	2.33	2.00	NT
12.4 Identify material in excess of the programmatic needs.	9	30%	3.00	2.62	2.50	OT	2.67	2.33	2.11	T	2.33	2.04	1.72	NT
12.5 Arrange for discard of NM (excess and waste).	19	63%	2.76	2.99	3.41	OT	2.58	2.79	3.05	OT	2.40	2.59	2.70	NT
12.6 Create and maintain NM waste drums.	6	20%	2.67	3.75	3.92	T	2.33	3.33	3.17	NT	2.00	2.91	2.42	T

Number of usable respondent questionnaires: 30

TABLE D-VII. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR CAT-III HANDLERS

TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Perform MASS Duties.														
1.1 Perform MASS transactions as a MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
1.2 Perform MASS transactions as a non-MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
2. Perform Administrative Controls.														
2.1 Perform duties required by the IRA program.	1	20%	-	-	-	T	3.00	2.00	2.00	T	-	-	-	T
2.2 Prepare and submit the PAFD to OS-2 for approval.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
2.3 Monitor and modify the PAFD as required.	1	20%	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT
2.4 Perform daily administrative checks as required.	1	20%	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT	2.00	2.00	2.00	NT
2.5 Prepare temporary MAA OP's when required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
3. Receive Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
3.1 Notify custodian/alternate (OS-2) of receipt of NM shipment.	2	40%	1.00	3.00	2.00	T	1.00	2.50	1.50	T	1.00	2.00	1.00	NT
3.2 Confirm accuracy of information on the RMTT and sign if required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
3.3 Confirm items-in-transit list if required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
3.4 Follow the PAFD, MSP, and/or MBA OP's for confirming transfer.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
3.5 Perform MASS transactions as a MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
3.6 Perform MASS transactions as a non-MASS user.	1	20%	2.00	3.00	1.00	T	2.00	3.00	1.00	T	2.00	3.00	1.00	T
4. Perform Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
4.1 Obtain authorization from receiving custodian before sending NM or follow the the PAFD.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
4.2 Package NM for transfer if required.	1	20%	-	-	-	NT	2.00	2.00	2.00	NT	-	-	-	NT
4.3 Request packaging of NM for transfer if required.	1	20%	-	-	-	T	1.00	3.00	1.00	T	-	-	-	T
4.4 Arrange for proper labeling and documentation for transfer of NM if required.	1	20%	-	-	-	NT	2.00	2.00	1.00	NT	-	-	-	NT
4.5 Complete appropriate portion of the RMTT and attach it to the container if required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
4.6 Arrange for health protection monitoring and swiping with HS if required.	4	80%	1.00	2.50	3.41	NT	1.00	2.25	3.00	NT	1.00	2.00	2.59	NT
4.7 Follow required MSPs.	1	20%	-	-	-	T	2.00	3.00	1.00	T	-	-	-	T
4.8 Perform MASS transactions as a MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
4.9 Perform MASS transactions as a non-MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
4.10 Ensure receiving custodian performs receiving MASS transaction or follows the PAFD.	1	20%	-	-	-	NT	3.00	2.00	3.00	NT	-	-	-	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TABLE D-VII. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR CAT-III HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
5. Receive Internal (On-Site) Transfer of NM Between Different MAAs.														
5.1 Confirm accuracy of information of the RMTT and sign.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
5.2 Confirm items-in-transit list if required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
5.3 Perform transfer check and complete documentation as required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
5.4 Perform accountability measurements.	1	20%	-	-	-	NT	2.00	2.00	2.00	NT	-	-	-	NT
5.5 Arrange for accountability measurements.	2	40%	2.00	2.00	4.00	NT	2.00	2.00	2.50	NT	2.00	2.00	1.00	NT
5.6 Perform confirmation measurements as required.	1	20%	-	-	-	NT	2.00	2.00	3.00	NT	-	-	-	NT
5.7 Arrange for confirmation measurements as required.	2	40%	2.00	2.00	2.00	NT	2.00	2.00	1.50	NT	2.00	2.00	1.00	NT
5.8 Perform verification measurements as required.	1	20%	-	-	-	NT	2.00	2.00	1.00	NT	-	-	-	NT
5.9 Arrange for verification measurements as required.	1	20%	-	-	-	NT	2.00	2.00	3.00	NT	-	-	-	NT
5.10 Perform MASS transactions as a MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
5.11 Perform MASS transactions as a non-MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
6. Perform Internal (On-Site) Transfer of NM Between Different MAAs.														
6.1 Notify receiving custodian before making the NM transfer.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
6.2 Ensure proper measurement of item being transferred is complete.	1	20%	-	-	-	NT	2.00	2.00	1.00	NT	-	-	-	NT
6.3 Package NM for transfer following HS-1 requirements.	1	20%	-	-	-	NT	1.00	2.00	1.00	NT	-	-	-	NT
6.4 Apply TID if required.	2	40%	1.00	2.00	1.00	NT	1.00	2.00	1.00	NT	1.00	2.00	1.00	NT
6.5 Complete appropriate section of the RMTT and attach it to the container.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
6.6 Arrange for health protection monitoring and swiping with HS as required.	3	60%	1.00	2.67	3.00	NT	1.00	2.33	3.00	NT	1.00	2.00	3.00	NT
6.7 Obtain appropriate signatures on the RMTT and retain the receipt.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
6.8 Perform MASS transactions as a MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
6.9 Perform MASS transactions as a non-MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7. Receive External (Off-Site) Transfer of NM.														
7.1 Submit NM receipt authorization to OS-2.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.2 Notify OS-2 within required time of receipt of the NM.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.3 Perform transfer check and complete documentation as required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.4 Complete receipt of confirmation form.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.5 Arrange for HS monitoring.	3	60%	1.00	2.67	3.00	NT	1.00	2.33	2.67	NT	1.00	2.00	2.33	NT
7.6 Perform accountability measurements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.7 Arrange for accountability measurements.	1	20%	-	-	-	NT	1.00	2.00	2.00	NT	-	-	-	NT
7.8 Complete checklist for the LOE form and forward completed calculations.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.9 Send copies of completed checklist to A-1 and OS-2.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.10 Confirm accuracy of information on the RMTT and sign.	1	20%	-	-	-	NT	2.00	2.00	1.00	NT	-	-	-	NT
7.11 Confirm items-in-transit list if required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.12 Perform MASS transactions as a MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
7.13 Perform MASS transactions as a non-MASS user.	1	20%	-	-	-	T	1.00	3.00	1.00	T	-	-	-	T

TABLE D-VII. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR CAT-III HANDLERS (cont)

TASKS	Performing Task #	%	QTA Analysis of (I) Average + Std Dev (A+S) D	I	F	Rec	QTA Analysis of Average (A) D	I	F	Rec	QTA Analysis of Average - Std Dev (A-S) D	I	F	Rec
8. Perform External (Off-Site) Transfer of NM.														
8.1 Request authorization for off-site shipment.	2	40%	4.00	4.00	3.00	OT	3.00	3.00	2.00	OT	2.00	2.00	1.00	NT
8.2 Verify authorization to ship has been granted by receiving facility.	2	40%	2.00	3.00	3.00	NT	1.50	2.50	2.00	T	1.00	2.00	1.00	NT
8.3 Follow classification guidelines.	2	40%	4.00	3.00	3.00	OT	3.00	2.50	2.00	OT	2.00	2.00	1.00	NT
8.4 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	1	20%	-	-	-	NT	2.00	2.00	1.00	NT	-	-	-	NT
8.5 Complete checklist for the LOE form and forward completed copies to A-1 and OS-2.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
8.6 Arrange for health protection monitoring and swiping as required.	3	60%	1.00	3.00	3.00	NT	1.00	2.67	3.00	NT	1.00	2.33	3.00	NT
8.7 Package NM for shipment.	2	40%	4.00	4.00	3.00	OT	2.50	3.50	2.50	NT	1.00	3.00	2.00	T
8.8 Arrange for proper labeling of shipment with HS.	1	20%	-	-	-	NT	3.00	2.00	3.00	NT	-	-	-	NT
8.9 Complete appropriate section of the RMTT and attach it to the container.	1	20%	2.00	2.00	3.00	NT	2.00	2.00	3.00	NT	2.00	2.00	3.00	NT
8.10 Provide receiver with appropriate copies of the shipping data sheet.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
8.11 Prepare SM or CSF as required and forward copies to OS-2 and HS.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
8.12 Perform transfer check and complete documentation as required.	2	40%	2.00	2.00	3.00	NT	2.00	2.00	2.00	NT	2.00	2.00	1.00	NT
8.13 Obtain appropriate signatures on the RMTT and retain the receipt.	1	20%	-	-	-	NT	2.00	2.00	3.00	NT	-	-	-	NT
8.14 Perform MASS transactions as a MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
8.15 Perform MASS transactions as a non-MASS user.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9. Operate and Calibrate Instruments.														
9.1 Operate AWCC for U.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.2 Operate B-SGS.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.3 Operate Calorimeter System.	2	40%	2.00	2.00	3.00	NT	1.50	2.00	2.50	NT	1.00	2.00	2.00	NT
9.4 Operate C-SGS.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.5 Operate CMC.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.6 Operate FRAM.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.7 Operate "LLNL."	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.8 Operate NBC.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.9 Operate NCC for Pu.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.10 Operate electronic balances.	2	40%	2.00	3.00	3.00	NT	1.50	2.50	3.00	NT	1.00	2.00	3.00	NT
9.11 Perform calibration of balances.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.12 Perform Pu/U assay measurements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.13 Perform Pu/U verification measurements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.14 Perform U verification measurements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.15 Collect data for NDA equipment certification.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.16 Certify NDA equipment.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.17 Maintain documentation as required.	3	60%	2.00	2.00	2.58	NT	1.67	2.00	2.00	NT	1.33	2.00	1.42	NT

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TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
10. Perform Inventory Duties.														
10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.	1	20%	-	-	-	NT	2.00	2.00	2.00	NT	-	-	-	NT
10.2 Assist in conducting daily inventories as required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
10.3 Assist in conducting bimonthly inventories as required.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
10.4 Assist in conducting semiannual and annual inventories as required.	2	40%	2.00	2.00	2.00	NT	1.50	2.00	1.50	NT	1.00	2.00	1.00	NT
10.5 Assist in conducting special inventories as required.	2	40%	2.00	2.00	1.00	NT	1.50	2.00	1.00	NT	1.00	2.00	1.00	NT
10.6 Assist in performing measurements of selected inventory items as requested by OS-2.	2	40%	2.00	2.00	1.00	NT	1.50	2.00	1.00	NT	1.00	2.00	1.00	NT
11. Perform Administrative Duties.														
11.1 Include MC&A procedures in writing operational SOPs.	1	20%	-	-	-	NT	2.00	2.00	1.00	NT	-	-	-	NT
11.2 Implement MC&A procedures from the SOPs.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
11.3 Know and observe vault access rules and records requirements.	1	20%	-	-	-	T	2.00	3.00	1.00	T	-	-	-	T
11.4 Assist in training new employees.	4	80%	2.23	2.00	3.00	NT	1.75	2.00	2.00	NT	1.27	2.00	1.00	NT
12. Perform Duties in the NM Management Program.														
12.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	2	40%	2.00	2.00	1.00	NT	2.00	2.00	1.00	NT	2.00	2.00	1.00	NT
12.2 Assist in preparing an MMP.	1	20%	-	-	-	T	3.00	2.00	1.00	T	-	-	-	T
12.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
12.4 Identify material in excess of the programmatic needs.	1	20%	-	-	-	NT	2.00	2.00	1.00	NT	-	-	-	NT
12.5 Arrange for discard of NM (excess and waste).	4	80%	2.88	2.79	2.23	OT	2.25	2.50	1.75	T	1.62	2.21	1.27	NT
12.6 Create and maintain NM waste drums.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA

Number of usable respondent questionnaires: 5

TABLE D-VIII. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR CAT-IV HANDLERS

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Perform MASS Duties.														
1.1 Perform MASS transactions as a MASS user.	7	54%	2.87	2.47	3.00	NT	2.57	2.29	2.43	T	2.27	2.47	1.86	NT
1.2 Perform MASS transactions as a non-MASS user.	6	46%	3.00	2.00	2.57	NT	2.67	2.00	2.17	T	2.33	2.00	1.77	NT
2. Perform Administrative Controls.														
2.1 Perform duties required by the IRA program.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
2.2 Prepare and submit the PAFD to OS-2 for approval.	1	8%	-	-	-	NA	4.00	2.00	1.00	T	-	-	-	NA
2.3 Monitor and modify the PAFD as required.	1	8%	-	-	-	NA	3.00	2.00	1.00	T	-	-	-	NA
2.4 Perform daily administrative checks as required.	2	15%	3.00	3.00	3.00	OT	2.50	2.50	2.00	T	2.00	3.00	1.00	T
2.5 Prepare temporary MAA OPs when required.	3	23%	4.22	3.33	1.00	OT	3.33	2.67	1.00	OT	2.45	3.33	1.00	T
3. Receive Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
3.1 Notify custodian/alternate (OS-2) of receipt of NM shipment.	8	62%	1.91	2.69	2.79	NT	1.75	2.50	2.38	T	1.59	2.69	1.96	T
3.2 Confirm accuracy of information on the RMTT and sign if required.	6	46%	2.33	2.54	3.23	NT	2.17	2.33	2.83	NT	2.00	2.54	2.43	T
3.3 Confirm items-in-transit list if required.	7	54%	2.40	2.57	2.65	NT	2.14	2.29	2.14	NT	1.88	2.57	1.63	T
3.4 Follow the PAFD, MSP, and/or MBA OPs for confirming transfer.	4	31%	2.79	3.00	2.71	OT	2.50	2.75	2.00	T	2.21	3.00	1.29	T
3.5 Perform MASS transactions as a MASS user.	6	46%	2.84	2.72	2.16	OT	2.50	2.50	1.67	T	2.16	2.72	1.17	T
3.6 Perform MASS transactions as a non-MASS user.	6	46%	2.54	2.33	2.64	NT	2.33	2.17	2.17	NT	2.12	2.33	1.69	NT
4. Perform Internal (On-Site) Transfer of NM Within or Between MBAs of the Same MAA.														
4.1 Obtain authorization from receiving custodian before sending NM or follow the the PAFD.	5	38%	2.64	2.80	2.00	OT	2.40	2.40	1.80	NT	2.16	2.80	1.60	T
4.2 Package NM for transfer if required.	11	85%	2.96	3.27	2.51	OT	2.73	3.00	2.18	OT	2.49	3.27	1.86	T
4.3 Request packaging of NM for transfer if required.	8	62%	2.27	2.96	3.00	NT	1.88	2.50	2.63	NT	1.48	2.96	2.25	T
4.4 Arrange for proper labeling and documentation for transfer of NM if required.	9	69%	2.44	2.31	2.93	NT	2.22	2.11	2.56	NT	2.00	2.31	2.18	NT
4.5 Complete appropriate portion of the RMTT and attach it to the container if required.	6	46%	2.33	2.00	2.52	NT	2.17	2.00	2.00	NT	2.00	2.00	1.48	NT
4.6 Arrange for health protection monitoring and swiping with HS if required.	11	85%	1.52	3.22	3.11	NT	1.36	2.82	2.64	NT	1.21	3.22	2.16	T
4.7 Follow required MSPs.	8	62%	2.35	2.81	3.19	NT	2.13	2.63	2.63	NT	1.90	2.81	2.06	T
4.8 Perform MASS transactions as a MASS user.	6	46%	2.84	2.33	2.31	T	2.50	2.17	1.83	NT	2.16	2.33	1.36	NT
4.9 Perform MASS transactions as a non-MASS user.	4	31%	2.50	3.23	2.41	T	2.25	2.75	2.00	T	2.00	3.23	1.59	T
4.10 Ensure receiving custodian performs receiving MASS transaction or follows the PAFD.	3	23%	2.00	2.00	4.00	NT	1.67	1.67	3.33	NT	1.33	2.00	2.67	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TABLE D-VIII. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR CAT-IV HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
5. Receive Internal (On-Site) Transfer of NM Between Different MAAs.														
5.1 Confirm accuracy of information of the RMTT and sign.	2	15%	2.00	2.00	4.00	NT	2.00	2.00	3.00	NT	2.00	2.00	2.00	NT
5.2 Confirm items-in-transit list if required.	6	46%	2.64	2.47	2.95	NT	2.17	2.17	2.33	NT	1.69	2.47	1.72	NT
5.3 Perform transfer check and complete documentation as required.	4	31%	2.79	3.00	3.37	OT	2.50	2.75	2.50	NT	2.21	3.00	1.63	T
5.4 Perform accountability measurements.	1	8%	-	-	-	NA	3.00	3.00	1.00	OT	-	-	-	NA
5.5 Arrange for accountability measurements.	1	8%	-	-	-	NA	3.00	2.00	1.00	T	-	-	-	NA
5.6 Perform confirmation measurements as required.	1	8%	-	-	-	NA	3.00	1.00	1.00	OT	-	-	-	NA
5.7 Arrange for confirmation measurements as required.	2	15%	3.00	3.00	1.00	OT	3.00	2.50	1.00	OT	3.00	3.00	1.00	OT
5.8 Perform verification measurements as required.	1	8%	3.00	2.00	1.00	NA	3.00	2.00	1.00	T	3.00	2.00	1.00	NA
5.9 Arrange for verification measurements as required.	2	15%	3.00	3.00	1.00	OT	3.00	2.50	1.00	OT	3.00	3.00	1.00	OT
5.1 Perform MASS transactions as a MASS user.	3	23%	3.33	2.67	3.55	T	2.67	2.33	2.67	NT	2.00	2.67	1.78	T
5.11 Perform MASS transactions as a non-MASS user.	1	8%	-	-	-	NA	2.00	2.00	3.00	NT	-	-	-	NA
6. Perform Internal (On-Site) Transfer of NM Between Different MAAs.														
6.1 Notify receiving custodian before making the NM transfer.	5	38%	2.32	2.40	3.11	NT	2.00	2.20	2.60	NT	1.68	2.40	2.09	NT
6.2 Ensure proper measurement of item being transferred is complete.	3	23%	2.67	2.00	3.00	NT	2.33	2.00	2.33	NT	2.00	2.00	1.67	NT
6.3 Package NM for transfer following HS-1 requirements.	7	54%	2.94	3.38	2.73	OT	2.57	3.00	2.43	OT	2.20	3.38	2.13	T
6.4 Apply TID if required.	4	31%	2.41	3.73	3.23	NT	2.00	3.25	2.75	NT	1.59	3.73	2.27	T
6.5 Complete appropriate section of the RMTT and attach it to the container.	2	15%	3.00	2.00	4.00	NT	2.50	2.00	2.50	NT	2.00	2.00	1.00	NT
6.6 Arrange for health protection monitoring and swiping with HS as required.	8	62%	2.10	3.17	3.57	NT	1.88	2.88	3.13	NT	1.65	3.17	2.68	NT
6.7 Obtain appropriate signatures on the RMTT and retain the receipt.	4	31%	2.79	2.00	2.88	NT	2.50	2.00	2.25	NT	2.21	2.00	1.62	NT
6.8 Perform MASS transactions as a MASS user.	4	31%	3.41	2.79	3.50	T	3.00	2.50	2.75	OT	2.59	2.79	2.00	OT
6.9 Perform MASS transactions as a non-MASS user.	2	15%	3.00	2.00	1.00	T	3.00	2.00	1.00	T	3.00	2.00	1.00	T
7. Receive External (Off-Site) Transfer of NM.														
7.1 Submit NM receipt authorization to OS-2.	2	15%	3.00	2.00	1.00	T	2.50	2.00	1.00	NT	2.00	2.00	1.00	NT
7.2 Notify OS-2 within required time of receipt of the NM.	3	23%	2.67	2.00	1.00	T	2.33	2.00	1.00	NT	2.00	2.00	1.00	NT
7.3 Perform transfer check and complete documentation as required.	4	31%	3.23	2.00	1.50	T	2.75	2.00	1.25	T	2.27	2.00	1.00	NT
7.4 Complete receipt of confirmation form.	4	31%	2.79	2.00	2.71	NT	2.50	2.00	2.00	NT	2.21	2.00	1.29	NT
7.5 Arrange for HS monitoring.	8	62%	1.69	3.33	3.37	NT	1.50	3.00	2.75	NT	1.31	3.33	2.13	T
7.6 Perform accountability measurements.	1	8%	-	-	-	NA	3.00	2.00	1.00	T	-	-	-	NA
7.7 Arrange for accountability measurements.	2	15%	4.00	3.00	3.00	OT	3.50	2.50	2.00	OT	3.00	3.00	1.00	OT
7.8 Complete checklist for the LOE form and forward completed calculations.	1	8%	-	-	-	NA	3.00	2.00	1.00	T	-	-	-	NA
7.9 Send copies of completed checklist to A-1 and OS-2.	2	15%	3.00	2.00	1.00	T	2.50	2.00	1.00	NT	2.00	2.00	1.00	NT
7.10 Confirm accuracy of information on the RMTT and sign.	3	23%	3.00	2.00	3.00	NT	2.67	2.00	2.00	T	2.33	2.00	1.00	NT
7.11 Confirm items-in-transit list if required.	3	23%	3.33	2.00	3.00	NT	2.67	2.00	2.00	T	2.00	2.00	1.00	NT
7.12 Perform MASS transactions as a MASS user.	3	23%	3.58	2.67	2.33	OT	3.00	2.33	1.67	T	2.42	2.67	1.00	T
7.13 Perform MASS transactions as a non-MASS user.	2	15%	3.00	2.00	3.00	NT	2.50	2.00	2.00	NT	2.00	2.00	1.00	NT

TABLE D-VIII. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR CAT-IV HANDLERS (cont)

TASKS	Performing Task		QTA Analysis of (I) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
8. Perform External (Off-Site) Transfer of NM.														
8.1 Request authorization for off-site shipment.	7	54%	2.00	2.47	2.07	NT	1.71	2.29	1.71	NT	1.43	2.47	1.35	NT
8.2 Verify authorization to ship has been granted by receiving facility.	6	46%	2.75	1.88	2.00	T	2.33	1.67	1.67	NT	1.91	1.88	1.33	NT
8.3 Follow classification guidelines.	7	54%	2.57	3.12	2.60	OT	2.29	2.86	2.14	T	2.00	3.12	1.68	T
8.4 Arrange for preshipment measurements and provide the results to the OS-2 Accounting Section.	1	8%	-	-	-	NA	4.00	2.00	1.00	T	-	-	-	NA
8.5 Complete checklist for the LOE form and forward completed copies to A-1 and OS-2.	1	8%	-	-	-	NA	4.00	2.00	1.00	T	-	-	-	NA
8.6 Arrange for health protection monitoring and swiping as required.	8	62%	1.91	3.23	3.00	NT	1.75	2.88	2.50	NT	1.59	3.23	2.00	T
8.7 Package NM for shipment.	7	54%	3.26	3.55	3.00	OT	2.86	3.14	2.57	OT	2.45	3.55	2.14	T
8.8 Arrange for proper labeling of shipment with HS.	6	46%	2.26	2.84	2.83	NT	2.00	2.50	2.33	T	1.74	2.84	1.84	T
8.9 Complete appropriate section of the RMTT and attach it to the container.	4	31%	2.50	2.00	2.71	NT	2.25	2.00	2.00	NT	2.00	2.00	1.29	NT
8.10 Provide receiver with appropriate copies of the shipping data sheet.	2	15%	3.00	2.00	2.00	T	2.50	2.00	1.50	NT	2.00	2.00	1.00	NT
8.11 Prepare SM or CSF as required and forward copies to OS-2 and HS.	3	23%	3.58	2.00	2.58	T	3.00	2.00	2.00	T	2.42	2.00	1.42	NT
8.12 Perform transfer check and complete documentation as required.	3	23%	2.67	2.67	2.33	OT	2.33	2.33	1.67	NT	2.00	2.67	1.00	T
8.13 Obtain appropriate signatures on the RMTT and retain the receipt.	4	31%	3.23	2.00	3.15	NT	2.75	2.00	2.50	NT	2.27	2.00	1.85	NT
8.14 Perform MASS transactions as a MASS user.	2	15%	4.00	3.00	1.00	OT	3.50	2.50	1.00	OT	3.00	3.00	1.00	OT
8.15 Perform MASS transactions as a non-MASS user.	2	15%	3.00	3.00	1.00	OT	2.50	2.50	1.00	T	2.00	3.00	1.00	T
9. Operate and Calibrate Instruments.														
9.1 Operate AWCC for U.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.2 Operate B-SGS.	1	8%	-	-	-	NA	2.00	2.00	2.00	NT	-	-	-	NA
9.3 Operate Calorimeter System.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.4 Operate C-SGS.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.5 Operate CMC.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.6 Operate FRAM.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.7 Operate "LLNL."	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.8 Operate NBC.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.9 Operate NCC for Pu.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.10 Operate electronic balances.	4	31%	2.41	3.00	3.46	NT	2.00	2.50	2.50	NT	1.59	3.00	1.54	T
9.11 Perform calibration of balances.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.12 Perform Pu/U assay measurements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.13 Perform Pu/U verification measurements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.14 Perform U verification measurements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.15 Collect data for NDA equipment.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.16 Certify NDA equipment.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
9.17 Maintain documentation as required.	1	8%	-	-	-	NA	1.00	2.00	2.00	NT	-	-	-	NA

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
10. Perform Inventory Duties.														
10.1 Assist in performing the physical inventories as required by LANL's Physical Inventory Plan.	5	38%	2.57	2.40	1.80	T	2.20	2.20	1.40	NT	1.83	2.40	1.00	NT
10.2 Assist in conducting daily inventories as required.	3	23%	2.58	2.00	1.00	T	2.00	2.00	1.00	NT	1.42	2.00	1.00	NT
10.3 Assist in conducting bimonthly inventories as required.	2	15%	3.00	2.00	2.00	T	2.50	2.00	1.50	NT	2.00	2.00	1.00	NT
10.4 Assist in conducting semiannual and annual inventories as required.	3	23%	3.33	2.67	2.00	OT	0.00	0.00	0.00	T	2.00	2.67	1.33	T
10.5 Assist in conducting special inventories as required.	4	31%	2.73	2.41	1.50	T	2.25	2.00	1.25	NT	1.77	2.41	1.00	NT
10.6 Assist in performing measurements of selected inventory items as requested by OS-2.	1	8%	-	-	-	NA	3.00	2.00	1.00	T	-	-	-	NA
11. Perform Administrative Duties.														
11.1 Include MC&A procedures in writing operational SOPs.	3	23%	2.58	2.00	1.00	T	2.00	2.00	1.00	NT	1.42	2.00	1.00	NT
11.2 Implement MC&A procedures from the SOPs.	3	23%	3.00	2.00	1.00	T	2.33	2.00	1.00	NT	1.67	2.00	1.00	NT
11.3 Know and observe vault access rules and records requirements.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
11.4 Assist in training new employees.	6	46%	2.83	2.67	1.84	OT	2.33	2.33	1.50	NT	1.84	2.67	1.16	T
12. Perform Duties in the NM Management Program.														
12.1 Assist in preparing the forecast of NM needs related to research, development, and testing programs.	2	15%	3.00	2.00	2.00	T	2.00	2.00	1.50	NT	1.00	2.00	1.00	NT
12.2 Assist in preparing an MMP.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
12.3 Assist in preparing a quarterly review of the allotment data that appear in the Laboratory forecast.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA
12.4 Identify material in excess of the programmatic needs.	1	8%	-	-	-	NA	1.00	1.00	1.00	NT	-	-	-	NA
12.5 Arrange for discard of NM (excess and waste).	2	15%	1.00	4.00	1.00	T	1.00	3.00	1.00	T	1.00	4.00	1.00	T
12.6 Create and maintain NM waste drums.	0	0%	-	-	-	NA	0.00	0.00	0.00	NA	-	-	-	NA

Number of usable respondent questionnaires: 13

TABLE D-IX. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR SAFEGUARDS SPECIALISTS

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TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1.0 Establish and Monitor Laboratory NM Inventories.														
1.1 Plan and prepare for physical inventories as required by the LANL Physical Inventory Plan.	14	100%	2.81	2.70	2.84	OT	2.64	2.50	2.64	OT	2.47	2.30	2.44	NT
1.2 Conduct inventories as required.	13	93%	3.06	3.64	3.00	OT	2.92	3.46	3.00	OT	2.79	3.28	3.00	OT
1.3 Select inventory items for measurement.	13	93%	2.43	2.80	2.89	NT	2.23	2.62	2.77	NT	2.03	2.43	2.65	NT
1.4 Follow up on the reconciliation of discrepancies or problems identified as a result of the inventory.	13	93%	2.61	3.16	3.00	OT	2.46	2.92	2.92	NT	2.32	2.68	2.85	NT
1.5 Know and implement statistical sampling plans.	7	50%	3.63	3.38	2.55	OT	3.43	3.00	2.14	OT	3.23	2.62	1.74	OT
1.6 Complete inventory reports as required.	13	93%	2.60	3.00	3.00	OT	2.38	2.77	3.00	NT	2.17	2.54	3.00	NT
2.0 Perform NM Accountability Functions.														
2.1 Perform inventory adjustments (for example, for normal operating loss or routine tests).	5	36%	2.84	3.91	4.38	T	2.60	3.40	3.80	T	2.36	2.89	3.22	NT
2.2 Enter data into the NM Management Safeguards System using AutoMit.	5	36%	3.32	3.00	4.69	T	3.00	2.60	4.20	T	2.68	2.20	3.71	NT
2.3 Perform external transfers.	5	36%	2.84	3.57	4.69	T	2.60	3.20	4.20	T	2.36	2.83	3.71	NT
2.4 Validate source documentation.	7	50%	2.77	3.48	4.55	T	2.57	3.14	4.14	T	2.37	2.80	3.74	NT
2.5 Perform reconciliation activities.	8	57%	2.81	3.19	3.81	T	2.63	3.00	3.25	OT	2.44	2.81	2.69	NT
2.6 Perform authorization reviews.	6	43%	3.14	3.47	4.12	T	2.83	3.17	3.50	T	2.53	2.86	2.88	OT
2.7 Establish and monitor the shipper/receiver difference program.	8	57%	3.35	3.81	3.04	OT	3.13	3.63	2.63	OT	2.90	3.44	2.21	OT
2.8 Generate receipt and shipment plans.	7	50%	3.77	3.57	2.45	OT	3.57	3.29	1.86	OT	3.37	3.00	1.26	OT
2.9 Perform NM cost accounting.	4	29%	3.50	3.79	3.15	OT	3.25	3.50	2.50	OT	3.00	3.21	1.85	OT
2.10 Perform OP maintenance.	12	86%	3.04	2.85	3.08	OT	2.83	2.67	2.75	OT	2.63	2.48	2.42	T
2.11 Know and use MASS procedures.														
2.11.1 Review and approve MASS user access request form.	4	29%	2.00	3.00	2.23	T	2.00	2.75	1.75	T	2.00	2.50	1.27	T
2.11.2 Enter MASS user data as required.	7	50%	2.63	3.20	4.58	T	2.43	2.86	4.00	NT	2.23	2.52	3.42	NT
2.11.3 Ensure new MBA MASS users are validated.	2	14%	3.00	4.00	4.00	T	3.00	3.50	3.00	OT	3.00	3.00	2.00	OT
2.11.4 Obtain information from indirect MASS users and perform the necessary transactions.	6	43%	2.47	3.00	4.12	NT	2.17	2.67	3.50	NT	1.86	2.33	2.88	NT
2.11.5 Distribute MASS reports to custodians as required.	6	43%	2.14	2.54	3.00	NT	1.83	2.33	2.67	NT	1.53	2.12	2.33	NT
2.11.6 Know and use MASS tables.	14	100%	2.12	2.53	3.97	NT	1.93	2.36	3.57	NT	1.73	2.19	3.17	NT
2.11.7 Know and use MASS Tiger reports.	7	50%	2.12	2.29	3.07	NT	1.86	2.14	2.71	NT	1.60	2.00	2.35	NT
2.11.8 Know and use MASS transaction options.	9	64%	2.29	2.86	4.07	NT	2.00	2.44	3.44	NT	1.71	2.03	2.82	NT
3.0 Establish and Monitor Material Control Program.														
3.1 Administer and control the TID program.	6	43%	2.88	3.37	2.68	OT	2.67	3.00	2.00	OT	2.46	2.63	1.32	T
3.2 Assure compliance with the Detection and Assessment Systems.	6	43%	3.31	3.64	2.71	OT	2.83	3.17	2.17	OT	2.36	2.69	1.62	T
3.3 Assure compliance with the Laboratory Material Containment Program.	5	36%	3.45	3.57	2.80	OT	3.00	3.20	2.40	OT	2.55	2.83	2.00	OT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
3.0 Establish and Monitor Material Control Program. (cont)														
3.4 Establish and monitor the ID program.	8	57%	3.35	3.50	2.12	OT	3.13	3.25	1.75	OT	2.90	3.00	1.38	OT
3.5 Know and monitor the PAFDs.	7	50%	3.57	3.40	3.00	OT	3.29	3.14	2.57	OT	3.00	2.88	2.14	OT
3.6 Review and evaluate temporary MAAs.	6	43%	3.54	3.72	2.37	OT	3.33	3.50	2.00	OT	3.12	3.28	1.63	OT
3.7 Establish and monitor the portal monitor program.	3	21%	3.55	3.22	4.58	T	2.67	2.33	4.00	NT	1.78	1.45	3.42	NT
3.8 Approve MBA operating prodecures.	5	36%	3.64	3.57	7.59	OT	3.40	3.20	2.20	OT	3.16	2.83	1.71	OT
3.9 Assure compliance with MBA OPs.														
3.9.1 Assure performance of duties required for the Personnel Access Control Program.	4	29%	3.00	3.00	3.00	OT	2.50	2.75	2.75	NT	2.00	2.50	2.50	NT
3.9.2 Assure performance of duties required by the MSPs.	7	50%	3.32	4.00	2.87	OT	2.86	3.57	2.57	OT	2.40	3.14	2.27	T
3.9.3 Review NM accounts for attractiveness/category compliance.	10	71%	2.56	3.08	3.22	OT	2.40	2.90	2.70	NT	2.24	2.72	2.18	T
3.10 Respond to MC&A emergencies using approved Lab and DOE procedures.														
3.10.1 Respond to suspected, alleged, or actual diversion of NM.	12	86%	3.92	4.43	2.16	OT	3.67	4.25	1.83	OT	3.41	4.07	1.51	OT
3.10.2 Respond to threats against LANL and the public involving NM (knowledge of threat statement and risk assessment).	5	36%	4.40	4.64	1.00	OT	4.20	4.40	1.00	OT	4.00	4.16	1.00	OT
3.11 Perform audits.														
3.11.1 Perform internal review assessments.	6	43%	3.84	3.67	2.95	OT	3.50	3.33	2.33	OT	3.16	3.00	1.72	OT
3.11.2 Perform internal operational audits.	6	43%	3.26	3.33	3.14	OT	3.00	3.17	2.83	OT	2.74	3.00	2.53	OT
4.0 Implement Measurement and Measurement Control Programs.														
4.1 Establish and monitor confirmatory measurement program.	2	14%	4.00	4.00	3.00	OT	3.50	4.00	3.00	OT	3.00	4.00	3.00	OT
4.2 Arrange for and/or perform confirmation measurements as required.	7	50%	3.38	3.12	2.80	OT	3.00	2.86	2.43	OT	2.62	2.60	2.06	OT
4.3 Arrange for and/or perform verification measurements, as required.	6	43%	2.84	3.26	2.84	OT	2.50	3.00	2.50	NT	2.16	2.74	2.16	T
4.4 Evaluate the results of verification and confirmation measurements.	9	64%	3.42	3.69	2.80	OT	3.11	3.44	2.33	OT	2.80	3.20	1.86	OT
4.5 If an item fails (in 4.4), ensure the item is not processed and resolve the discrepancy.	10	71%	3.00	3.45	3.08	OT	2.70	3.30	2.90	OT	2.40	3.15	2.72	NT
4.6 Determine and/or approve measurement methods (mass, form) following the LANL-graded safeguards program.	5	36%	3.45	3.45	3.60	T	3.00	3.00	2.80	OT	2.55	2.55	2.00	OT
4.7 Ensure that persons performing measurements are trained and qualified.	4	29%	2.79	3.00	4.00	T	2.50	2.75	3.50	NT	2.21	2.50	3.00	NT
4.8 Participate in the Sample Exchange Program if applicable.	1	7%	1.00	1.00	1.00	NT	1.00	1.00	1.00	NT	1.00	1.00	1.00	NT
4.9 Ensure that all instruments, methods, & standards used for NM accountability measurements are certified.	5	36%	3.17	3.00	4.15	T	2.80	3.00	3.40	OT	2.43	3.00	2.65	NT
4.10 Ensure that procedures for calibration of instruments and methods are in place.	4	29%	3.00	4.23	4.23	T	2.75	3.75	3.75	T	2.50	3.27	3.27	NT

TABLE D-IX. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR SAFEGUARDS SPECIALISTS (cont)

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
4.0 Implement Measurement and Measurement Control Programs. (cont)														
4.11 Establish and monitor a measurement control program.	2	14%	3.00	4.00	5.00	T	3.00	3.50	4.00	T	3.00	3.00	3.00	OT
4.12 Certify measurement methods, instruments, and standards.	3	21%	4.22	4.00	4.67	T	5.33	3.33	4.33	T	2.45	2.67	4.00	NT
4.13 Know capabilities and limitations of NDA instrumentation.	5	36%	3.17	3.64	3.93	T	2.80	3.40	3.20	OT	2.43	3.16	2.47	T
4.14. Establish and monitor the Laboratory's remeasurement program.	2	14%	3.00	3.00	3.00	OT	2.50	3.00	2.00	T	2.00	3.00	1.00	T
4.15 Establish and monitor the Laboratory's IVP.	5	36%	3.17	3.45	4.15	T	2.80	3.00	3.40	OT	2.43	2.55	2.65	NT
4.16 Maintain documentation as required.	10	71%	2.67	3.05	3.90	T	2.40	2.80	3.50	NT	2.13	2.55	3.10	NT
5.0 Provide MC&A Training.														
5.1 Provide TID training.	5	36%	2.84	3.17	2.29	OT	2.60	2.80	1.80	OT	2.36	2.43	1.31	NT
5.2 Provide NDA training.	3	21%	3.00	2.00	1.67	T	2.67	1.67	1.33	T	2.33	1.33	1.00	NT
5.3 Provide MASS training for users and indirect users.	4	29%	3.00	3.23	3.15	OT	2.75	2.75	2.50	OT	2.50	2.27	1.85	NT
5.4 Provide MC&A training for custodians.	8	57%	3.00	2.77	2.06	OT	2.75	2.50	1.75	OT	2.50	2.23	1.44	NT
5.5 Provide inventory training.	7	50%	2.77	3.12	2.20	OT	2.57	2.86	1.86	OT	2.37	2.60	1.52	T

Number of usable respondent questionnaires: 14

TABLE D-X. ANALYSIS OF MC&A TASK QUESTIONNAIRES FOR NM MANAGERS

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
1. Prepare Long-Term Programmatic Forecast (16 yrs) of NM Needs.														
1.1 Gather data for preparing the long-term forecast.	4	100%	2.99	3.99	2.43	OT	2.75	3.75	2.25	OT	2.51	3.51	2.07	OT
1.2 Identify omissions or overstatements of needs from the previous forecast.	4	100%	2.93	3.78	2.49	OT	2.75	3.50	2.25	OT	2.57	3.22	2.01	OT
1.3 Write the long-term forecast and obtain required approvals.	4	100%	3.23	3.99	2.00	OT	3.00	3.75	2.00	OT	2.77	3.51	2.00	OT
2. Prepare an MMP for DOE.														
2.1 Establish details for NM acquisition for all programs.	3	75%	3.59	3.59	3.00	OT	3.33	3.33	3.00	OT	3.08	3.08	3.00	OT
2.2 Compile information from all contractors.	3	75%	2.92	3.59	2.33	OT	2.67	3.33	2.00	OT	2.41	3.08	1.67	T
2.3 Gather data for preparing the MMP.	3	75%	2.59	3.00	1.92	OT	2.33	3.00	1.67	T	2.08	3.00	1.41	T
2.4 Write the MMP and obtain required approvals.	3	75%	2.59	3.00	2.00	OT	2.33	3.00	2.00	T	2.08	3.00	2.00	T
3. Assess Validity of Forecast Data (Allotment Status Report).														
3.1 Write a quarterly review of the allotment data that appear on the Laboratory's forecast data.	3	75%	2.92	3.00	2.59	OT	2.67	3.00	2.33	OT	2.41	3.00	2.08	T
3.2 Write an explanation of the discrepancies when required and submit to user organization.	3	75%	2.59	2.00	1.59	T	2.33	2.00	1.33	NT	2.08	2.00	1.08	NT
3.3 Determine whether the current inventory represents an economical inventory level.	3	75%	3.00	3.00	2.33	OT	3.00	3.00	2.00	OT	3.00	3.00	1.67	OT
3.4 Identify material in excess of current programmatic needs.	4	100%	2.93	2.93	2.69	OT	2.75	2.75	2.50	OT	2.57	2.57	2.31	OT
3.5 Write an allotment report and obtain required approvals.	3	75%	2.59	3.00	2.59	OT	2.33	3.00	2.33	T	2.08	3.00	2.08	T
4. Acquire NM for Projects.														
4.1 Acquire NM for projects under Laboratory Management (non-weapons test-related).	4	100%	2.69	2.93	2.75	OT	2.50	2.75	2.50	NT	2.31	2.57	2.25	T
4.2 Acquire NM for weapons test-related projects under Laboratory Management.	4	100%	2.93	2.93	2.49	OT	2.75	2.75	2.25	OT	2.57	2.57	2.01	OT
4.3 Acquire NM for projects not under Laboratory control.	1	25%	-	-	-	-	2.00	2.00	1.00	T	-	-	-	-
5. Prepare a Disposition for Usable Excess NM (IAR)														
5.1 Identify usable excess NM.	4	100%	2.93	2.99	2.43	OT	2.75	2.75	2.25	OT	2.57	2.51	2.07	OT
5.2 Identify operating groups that have a programmatic need for excess material.	4	100%	2.69	2.99	2.69	OT	2.50	2.75	2.50	NT	2.31	2.51	2.31	T
5.3 Notify DOE/AL of excess NM availability when an internal need does not exist.	4	100%	2.43	2.93	2.49	T	2.25	2.75	2.25	T	2.07	2.57	2.01	T
5.4 Obtain DOE/AL recommendation for method of excess NM disposal when required.	4	100%	1.93	2.99	2.93	NT	1.75	2.75	2.75	NT	1.57	2.51	2.57	NT

Notes:

(1) D = difficulty, I = importance, F = frequency, and Rec = training recommendation.

TASKS	Performing Task		QTA Analysis of (1) Average + Std Dev (A+S)				QTA Analysis of Average (A)				QTA Analysis of Average - Std Dev (A-S)			
	#	%	D	I	F	Rec	D	I	F	Rec	D	I	F	Rec
6. Prepare a Disposition for Unusable Excess NM														
Spent Fuel & Scrap (IAR).														
6.1 Identify quantities and trends of scrap accumulation.	3	75%	2.92	2.92	2.92	OT	2.67	2.67	2.67	OT	2.41	2.41	2.41	T
6.2 Determine if material is recoverable.	4	100%	2.99	2.69	2.49	OT	2.75	2.50	2.25	OT	2.51	2.31	2.01	OT
6.3 Prepare a scrap declaration when recovery is not possible and obtain required approvals.	3	75%	2.59	2.59	2.69	OT	2.33	2.33	2.33	NT	2.08	2.08	1.98	T
6.4 Prepare a scrap declaration when recovery is possible and obtain required approvals.	2	50%	3.00	2.92	2.92	OT	3.00	2.50	2.50	OT	3.00	2.08	2.08	OT
7. Discard NM When Appropriate.														
7.1 Establish economic discard limits for common types of scrap.	4	100%	4.27	3.49	2.23	OT	4.00	3.25	2.00	OT	3.73	3.01	1.77	OT
7.2 Prepare discard requests for common scrap and special cases.	4	100%	2.93	2.93	2.69	OT	2.75	2.75	2.50	OT	2.57	2.57	2.31	OT
7.3 Review discard requests and obtain permission to discard NM.	4	100%	2.93	2.93	3.00	OT	2.75	2.75	3.00	OT	2.57	2.57	3.00	OT
8. Ship Excess NM.														
8.1 Arrange internal/external shipment of excess NM.	2	50%	3.92	3.00	3.92	T	3.50	3.00	3.50	T	3.08	3.00	3.08	OT
9. Procure and Maintain Waste Drums for NM.														
9.1 Maintain waste drums for NM.	0	0%	-	-	-	-	0.00	0.00	0.00	NA	-	-	-	-
9.2 Procure waste drums for NM.	0	0%	-	-	-	-	0.00	0.00	0.00	NA	-	-	-	-
10. Perform MASS Duties.														
10.1 Perform MASS duties to acquire/discard NM.	2	50%	2.00	2.00	3.92	NT	2.00	2.00	3.50	NT	2.00	2.00	3.08	NT
10.2 Use MASS to prepare forecast, allotment, and assessment reports.	3	75%	3.02	3.00	4.02	T	2.67	3.00	3.67	T	2.31	3.00	3.31	NT
11. Prepare/Update Descriptions for NM.	4	100%	2.99	2.00	2.27	T	2.75	2.00	2.00	T	2.51	2.00	1.73	T

Number of usable respondent questionnaires: 4