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TITLE: WHERE DO THE NUCLEAR MATERIALS MANAGEMENT FUNCTIONS FIT IN THE MATERIALS CONTROL AND ACCOUNTABILITY (MC&A) PLAN.

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AUTHOR(S): Everett A. DeVer

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Los Alamos National Laboratory
Los Alamos, New Mexico 87545

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Where Do The Nuclear Materials Management Functions Fit in the Materials Control and Accountability (MC&A) Plan.

E. A. De Ver
Consultant
Los Alamos National Laboratory
Los Alamos, New Mexico

ABSTRACT

Safeguards had its beginning in the early 1940s and has continued to grow through the stormy years in dealing with nuclear materials. MC&A Plans have been developed for each facility which includes requirements for containment, surveillance, internal controls, measurements, statistics, records and report systems, and inventory certification of its nuclear materials, in the context of how precisely the inventory is known at stated risk or confidence levels. The I&E Regulations, the newest document affecting the control system, are used for testing the current MC&A plan in place at each facility.

Nuclear Materials Management activities also have reporting requirements that include, (1) Annual Forecast, (2) Materials Management Plan, (3) Quarterly Status Report, (4) Assessment Report, and (5) Scrap and Excess Material Management.

Data used to generate reports for both functions come from the same data base and source documents at most facilities. The separation of sponsoring groups at the DOE for NM Accountability and NM Management can and does pose problems for contractors. In this paper, we will try to separate and identify these overlaps at the Facility and DOE level

INTRODUCTION

My experience in Nuclear Materials Accountability and Nuclear Materials Management is approaching 30 years. During those years in dealing with facility records and DOE reports, certain things bothered me and they still do. Of course the subjects discussed in my paper are my personal thoughts, observations and experiences and not necessarily the consensus of every one in the business.

Where Do The Nuclear Materials Management Functions Fit in the Materials Control and Accountability (MC&A) Plan.

They don't, but should they?

To help answer this question, let's take the two functions and review them separately, then review them together.

I think we should keep in mind something that has bothered science for a long time. "Which came first, the chicken or the egg." I'll come back to this a little later in my paper.

SAFEGUARDS

NM Accountability began in the early 1940s with the Manhattan Project and has continued through the stormy years in between to what we are doing today. In the beginning, records were very spare of details, and measurements made were based upon the technology of the day. Some materials were impossible to measure and a "best value" was used however it was determined.

The AEC, ERDA, and DOE Syndrome passed through the system with minor changes in management style and requirements. But as new technology and better measurement capabilities began to develop, serious problems began to develop for accountability . More data were required for facility records; all transaction and inventory data required measurement values taken with instruments supported by a measurement control program.

Safeguards MC&A Plans have been developed for each facility which include the requirements for containment, surveillance, internal control, measurements, statistics, records and reports system, and inventory certification of its nuclear materials, in the context of how precisely the inventory is known at stated risk or confidence levels. The I&E Regulations, the newest document affecting the control system, are used for testing the current MC&A Plan in place at each facility.

For many years material losses were reported as Material Unaccounted For (MUF). I'm sure most of you remember preparing MUF data reports and MUF Control Charts based on historical data. The recording of losses is much improved as we do it today. Instead of treating all losses as MUF, we now refer to them as inventory differences and determine a category code which identifies the type of ID loss, i.e., rounding, measurement adjustments, equipment holdup, etc,. Inventory adjustments are now more realistic and accurate since they are broken down into components. There are other types of losses identified as (1) Normal Operational Losses, NOL, (2) Accidental losses, (3) Write-offs, and (4) Decay, to name a few of the more common ones.

MANAGEMENT OF NUCLEAR MATERIALS

Nuclear Materials Management activities include, (1) Allotment Control which is the link between NM quantities to the Budget dollars, (2) Annual Forecast, a long term usage requirement for 17 years, (3) Materials Management Plan, a fiscal planning document including changes to the annual forecast, (4) Quarterly Status Report, compares the actual quantities on inventory to the forecast, (5) Assessment Report, assessment of the on-hand inventory and the planned usage and disposition of excess material and scrap, (6) Scrap and Excess Material Management, includes the development of realistic discard limits and timely returns of excess material to production, and (7) Utilization Report, a report similar to the assessment report prepared prior to the annual DOE Facility Appraisal.

ADMINISTRATIVE RESPONSIBILITY

Now let's review the DOE and Facility Administrative Levels Responsible for Each Function or Activity.

1. The DOE Administrative Level Responsible for Safeguards Accountability is the Office of Safeguards and Safety.

Safeguards Accountability: "The combination of management, control and accounting which provides assurance that resources are available and guards against their misuse by timely analysis and reporting of data to facility management and to program sponsors".

2. The DOE Administrative Level Responsible for Nuclear Materials Management Activities is the Production Operations Division.

Management of Nuclear Materials : "Ensure that necessary nuclear material is available for facility programs, assures that proper levels of inventory are maintained, and that materials no longer needed are made available to other programs, contractors, or discarded and/or recovered properly."

This summary statement has been expanded in the "Policy and Objective" statement found in the Draft Copy of DOE Order 5660, Management of Nuclear Materials, dated February 5, 1987.

The Facility Administrative Level Responsible for Each Activity:

1. At some facilities, **the Safeguard Accountability activities** are performed by an assigned group (preferably independent of the production and research sections) so as not to be intimidated by the control procedures they are responsible for developing and enforcing. This group maintains the data base which is the official facility accountability records which includes the processing of all transaction and inventory data. All inventory adjustments are done with their approval (making certain prior approvals have been obtained from the DOE Nuclear Material Management personnel, when necessary). Measurement control data are also reviewed, as well as the reconciliation of the book balance to the physical inventory. When all of this has been done, the necessary monthly, quarterly, semi-annual and annual reports are prepared and distributed to the DOE

2. At some facilities, **the Management of Nuclear Materials** activities have been handled by the same Safeguard Accountability personnel who in turn acted as the liaison person(s) (through management) to the proper DOE personnel. In this case, the person designated the Nuclear Materials Representative wears "two" hats - "one" for Safeguard Accountability and "one" for Nuclear Materials Management. This is true because both reports are prepared from the same data base, using the same transaction data and the same inventory data processed by the accountability group personnel.

In the beginning of my paper, I said, " let's take the two functions, review each one, then review them together".

Now let's review them together.

REPORTING

After all transaction and inventory data have been collected and processed, a number of required reports are submitted to the Nuclear Material Management Safeguard System (NMMSS). NMMSS is the National Data Base for NM accounting for the DOE Headquarters and Operation Offices, and also including the IAEA and the NRC.

NMMSS processes the facilities data and generates specific reports. The reports are distributed to the various organizations who require the information at different administrative levels in order to complete their assigned tasks in the nuclear materials reporting cycle.

The definitions of NM accountability and NM management activities interface these two functions so closely that a separation is almost impossible. Whenever I think of separating the two, I always remember the definition for

equipment holdup - "the nuclear material adheres so tenaciously to the equipment that it becomes part of the equipment, etc.."

The accountability personnel know how much, the location, and the chemical and physical form of material that is present at the facility. The nuclear materials management liaison personnel (in the same group), working closely with the accountability personnel, can obtain the necessary program management information and convert it for the reports required for the management of nuclear materials functions. To accomplish this, program representatives are contacted to obtain the information necessary for the planning, forecasting, utilization and optimization functions. The NM Management system does not replace existing NM accountability and NM safeguards programs but rather is concerned with optimizing the production, distribution, and utilization of nuclear materials on inventory. It is no different from other systems in that it is composed of the planning, implementation, and control functions.

It is true that NM management reports are not NM accountability reports, but NM accountability reports are necessary to prepare NM management reports. Again, I repeat, it is almost impossible to separate the two functions.

Including the Nuclear Materials Management activities in the MC&A Plan would merge the accountability and management activities making a more efficient operation, especially reporting.

CONCLUSION

If my memory serves me correctly, when the Nuclear Material Safeguard Survey and the Nuclear Materials Management Appraisal were under the leadership of one DOE organization, more complete (or better) reports were generated on a more timely basis.

I said I would come back to a statement I made at the beginning of my paper, "Which came first, the chicken or the egg?"

"Once upon a time there was a group of people that had some nuclear material that another group of people wanted to do something with after many studies and experiments had been made. So the material was divided among several laboratories that had been very carefully selected to participate in further studies and experiments.

Due to the limited supply, characteristics and the dollar value of the material, some method of accounting was

necessary (the beginning of NM accountability) and also some planning was necessary (the beginning of NM Management) to utilize and optimize the material inventory in order to complete the planned experiments."

So we ask, "Which came first, NM Accountability or NM Management Control?"

I would like to conclude by repeating:

Where Do The Nuclear Materials Management Functions Fit in the Materials Control and Accountability (MC&A) Plan.

The answer is: They don't, but they should.