



Department of Energy
Washington, DC 20585

January 4, 2000

Mr. Brian Horn
International Safeguards Analyst
Office of Nuclear Material Safety
U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20852

Dear Mr. Horn:

This letter is a follow-up to a meeting held at NRC on December 21, 1999, on the proposed upgrade to the Nuclear Material Management and Safeguards System (NMMSS). In response to NRC's request at that meeting for additional information on the pricing out of the proposed upgrade to NMMSS, we are pleased to provide the following information.

There have been several DOE studies that have recommended improvements to the management of nuclear materials information. Examples of suggestions made by these studies included improvement in areas such as waste accounting, revisions to the composition of ending inventory codes, expanded obligations tracking, and the addition of new data fields. Programmatic management of the NMMSS has been provided by the International Nuclear Safeguards Division (NN-44) of the Office of Nonproliferation and National Security. In response to the findings of these studies, NN-44 committed to enhance the current capabilities of NMMSS and to upgrade the platform for NMMSS from the unsupported Foxpro software to a fully supported relational database platform. This decision to upgrade and enhance NMMSS was discussed in the user community through the NMMSS Steering Committee mechanism and through extensive discussions with the user community by NAC International.

In November 1999, programmatic management of NMMSS was transferred to the Office of Security and Emergency Operations, the Office of Plutonium, Uranium, and Special Material Inventory (SO-23). Because some of the enhancements recommended for the upgraded NMMSS are of particular importance to the standup of this new office, SO-23 is particularly interested in continuing to champion this upgrade.

At the same time the Department of Energy (DOE) has undertaken to review all corporate databases that track nuclear materials, including those maintained by Defense Programs, the Chief Financial Officer, the Environmental Management

Program, and others, as well as NMMSS. The departmental-wide review is being managed through the Nuclear Materials Stewardship Initiative (NMSI) Strategic Information Management (SIM) project. We briefed your NRC associates on the SIM process on December 16. Even though the eventual outcome of this Department-wide initiative may result in the selection of NMMSS as the corporate nuclear materials database, the basic upgrade of NMMSS will continue as we discussed in our meeting on December 21. This means that the needs of NRC and DOE will be met through this upgrade, regardless of the eventual outcome of the DOE corporate SIM process. If additional programmatic needs at DOE are identified through the SIM process, these needs will be addressed separately. If it is determined as a result of the SIM process to include reporting for other DOE programmatic elements, it is expected that funding to provide these data elements to the upgraded NMMSS will come from these same program elements within DOE, not from NRC.

NAC International, at the direction of NN-44, and now under the direction of SO-23, has developed a *Software Project Management Plan* that details the proposed upgrade process from initial benefit and cost analysis through final parallel testing of the new system to final delivery of the new system. NAC is following the DOE Software Engineering Methodology (SEM) developed by DOE's Chief Information Officer. The SEM process includes the criteria in the Level 2 and Level 3 key process areas for the Software Compatibility Maturity Model (CMM) developed by the Software Engineering Institute at Carnegie-Mellon University. The entire process to upgrade NMMSS has been broken down into the following stages: the Planning Stage, the Requirements Definition Stage, the Design Stage, the Programming Stage, the Integration Stage, the Parallel Testing Stage, and the Acceptance Stage.

The Planning Stage has now been completed. The costs given for this stage are actual costs. They include the actual costs of developing the four deliverables from this stage, including the research and interviews necessary to produce them. NRC has already paid its share of this stage as part of its funding for maintenance of NMMSS, as we discussed during our December 21 meeting. The deliverables produced or activities held during this stage are detailed as follows:

Planning Stage:

Project Kick-off Meeting

Meetings with all Stakeholders to discuss Upgrade Plans

Structured Walk-through of each deliverable by Project Team

Platform Evaluation
Feasibility Study/Analysis of Benefits and Costs
Software Configuration Management Plan
Software Quality Assurance Plan
Software Project Management Plan
Stage Exit
Total Man-hours = 2,100
Total Cost = \$322,300
NRC's share of the cost = \$109,600

The NMMSS Upgrade Project is currently in the Requirements Definition Stage. Although the NRC representatives present indicated in our December 21 meeting that NRC does not currently anticipate any additional requirements for NMMSS, the opportunity to express any requirements for the Upgraded NMMSS will be afforded NRC and its Licensees at the meeting NAC has currently scheduled for January 24-28, 1999, in Atlanta. If additional time is needed to convey NRC requirements to NAC for inclusion in the Upgraded NMMSS, the actual costs of the time NAC spends with NRC or its licensees will be billed to NRC. Thus, as we discussed at the December 21 meeting, unless NRC requests changes in the Upgraded NMMSS, no charge for the Requirements Stage will be assessed against NRC for work accomplished during this Stage. For your information, however, we are including a list of the deliverables from this Stage:

Requirements Stage:

Training of Software Engineering Staff
Requirements Validation Workshops (coordinated with DOE Corporate SEM Process)
Installation of Development Server and required software
Structured Walk-through of each deliverable by Project Team
Requirements Specification (draft)
In-Stage Assessment
Continuity of Operations Plan
Project Test Plan
Acceptance Test Plan (draft)
Requirements Specification (final)
Revise Feasibility Study/ABC
Revise SPMP

Stage Exit

Total Man-hours = 4,980

Total Cost = \$594,000

NRCs share of the cost = \$0 (unless NRC elects to have requirements added, costs then "actual billed hours")

Continuing with our assumption that NRC will not identify any new requirements for the Upgraded NMMSS, the Design Stage and Programming Stage will, for the most part, be driven by DOE's requirements. With this in mind, we proposed that we reduce NRC's share of these costs by approximately ½ from approximately \$600K to \$300K. The following deliverables will be produced in the Design and Programming Stages:

Design Stage:

Completion of System Design

Structured Walk-through of each deliverable by Project Team

Design Review by Project Team

Logical Model

Data Dictionary

Requirements Traceability Matrix

Design Specification (draft)

In-Stage Assessment

Program Specifications

Programming Standards

Integration Test Plan (draft)

System Test Plan (draft)

Conversion Plan (draft)

Design Specification (final)

Revise SPMP

Stage Exit

Total Man-hours = 5,960

Total Cost = \$630,000

NRCs share of the cost = \$214,200 (see costs for next Stage)

Programming Stage:

Development of Training Plan for Internal NMMSS Staff

Development of New NMMSS I and NMMSS II courses

Development of Application

Unit Testing of Application Modules
Structured Walk-through of each deliverable by Project Team
Peer Review of each module by Software Engineering Team
Acquisition Plan (if needed)
Conversion Plan (final)
Training Plan (draft)
Installation Plan (draft)
In-Stage Assessment
System Test Plan
User's Guide
Operating Documentation (draft)
Integration Test Plan
System Security Test Plan
Parallel Test Plan
Software Baseline
Revise SPMP

Stage Exit

Total Man-hours = 10,520

Total Cost = \$1,117,800

NRCs share of the cost = \$380,000

NRCs share of Design & Programming Stages = \$594,200, 1/2 of this is approximately \$300,000 for both stages as discussed above

The three testing phases, Integration Testing, Parallel Testing, and Installation and Acceptance Testing, will have to be completed, whether or not NRC identifies any requirements for the NMMSS Upgrade. Following the agreed to percentage of approximately 34%, the costs for this phase and deliverables to be produced are as follows:

Integration Testing:

Integration Testing of Upgraded System
Structured Walk-through of each deliverable by Project Team
In-Stage Assessment

Integration Test Report

Installation Plan (final)

Revise SPMP

Stage Exit

Total Man-hours = 2,960

Total Costs = \$324,000

NRCs share of the cost = \$110,160

Parallel Testing:

Parallel Run of the Existing and Upgraded Systems for 6 months

Structured Walk-through of each deliverable by Project Team

Pre-acceptance Checklist

In-Stage Assessment

System Test Report (final)

System Acceptance Test Plan (final)

Training Plan (final)

Operating Documentation (final)

Revise SPMP

Stage Exit

Total Man-hours = 8,280

Total Cost = \$892,800

NRCs share of the cost = \$303,552

Installation and Acceptance Testing:

Formal System Acceptance by Sponsors

Structured Walk-through of each deliverable by Project Team

Maintenance Plan

System Design Specification

Acceptance Test Report

Operational System

Stage Exit

Total Man-hours = 2,560

Total Cost = \$273,600

NRCs share of the cost = \$93,024

Thus, as discussed at the December 21 meeting, the total dollar amount to be supplied by NRC in support of the NMMSS Upgrade is approximately \$806,000 (\$300,000 and \$506,000) over the next two Fiscal Years. We believe that a minimum payment of \$150,000 is required in either of the two Fiscal Years. If NRC chooses to provide the minimum in FY 2001, this will delay completion of the Upgraded NMMSS slightly and will necessitate a payment of \$656,000 in FY 2002.

We have provided you with the planned deliverables or activities for each of the stages envisioned for the NMMSS Upgrade project, along with the estimated costs for each stage. We understand that these are estimates and appreciate that NRC, like DOE, is bound by the budget process that requires long lead time in developing budget requests for out years. We believe our offer to cite a fixed amount as the share to be paid by NRC will help with the need for firm commitments by DOE on the full costs to be born by NRC.

If additional information is required, please contact Susanne Furr of my staff on (301) 903-5750.

Sincerely,



Susanne Furr
NMMSS Program Manager
Office of Plutonium, Uranium and
Special Materials Inventory