NRC FORM 464 Part I (6-1998)

U.S. NUCLEAR REGULATORY COMMISSION

# RESPONSE TO FREEDOM OF INFORMATION ACT (FOIA) / PRIVACY ACT (PA) REQUEST

| FOIA/PA | RESPONSE NUMBER |
|---|---|
| 2000-0162 | 1 |

RESPONSE TYPE ☑ FINAL ☐ PARTIAL

REQUESTER: James F. Kerrigan

DATE: MAR 29 2000

## PART I. -- INFORMATION RELEASED

- ☐ No additional agency records subject to the request have been located.
- ☐ Requested records are available through another public distribution program. See Comments section.
- ☐ APPENDICES ( ) Agency records subject to the request that are identified in the listed appendices are already available for public inspection and copying at the NRC Public Document Room.
- ☑ APPENDICES A Agency records subject to the request that are identified in the listed appendices are being made available for public inspection and copying at the NRC Public Document Room.
- ☐ Enclosed is information on how you may obtain access to and the charges for copying records located at the NRC Public Document Room, 2120 L Street, NW, Washington, DC.
- ☑ APPENDICES A Agency records subject to the request are enclosed.
- ☐ Records subject to the request that contain information originated by or of interest to another Federal agency have been referred to that agency (see comments section) for a disclosure determination and direct response to you.
- ☐ We are continuing to process your request.
- ☐ See Comments.

## PART I.A -- FEES

AMOUNT * $ 52.20

* See comments for details

- ☑ You will be billed by NRC for the amount listed.
- ☐ You will receive a refund for the amount listed.
- ☐ None. Minimum fee threshold not met.
- ☐ Fees waived.

## PART I.B -- INFORMATION NOT LOCATED OR WITHHELD FROM DISCLOSURE

- ☐ No agency records subject to the request have been located.
- ☐ Certain information in the requested records is being withheld from disclosure pursuant to the exemptions described in and for the reasons stated in Part II.
- ☐ This determination may be appealed within 30 days by writing to the FOIA/PA Officer, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. Clearly state on the envelope and in the letter that it is a "FOIA/PA Appeal."

## PART I.C COMMENTS (Use attached Comments continuation page if required)

**The actual fees for processing your request are as follows:**

| | |
|---|---|
| **1 hour professional search:** | **$39.00** |
| **69 pages duplication:** | **13.20** |
| **TOTAL:** | **$52.20** |

SIGNATURE - FREEDOM OF INFORMATION ACT AND PRIVACY ACT OFFICER

for Carol Ann Reed Nina L. Rough

Re: FOIA-2000-0162

**APPENDIX A**
**RECORDS BEING RELEASED IN THEIR ENTIRETY**
**(If copyrighted identify with *)**

| NO. | DATE | DESCRIPTION/(PAGE COUNT) |
|---|---|---|
| 1. | 10/6/99 | Exhibit 53 of OMB Circular A-11. (3 pages) |
| 2. | No date | OMB Exhibit 300B. (66 pages) |

Bureau Line

*NRC*

## Data on IT System by Mission Area

| Bureau Line | Title | FY2001 |
|---|---|---|
| 01-0000 | Mission Area 1: Financial Management | |
| 01-1000 | Major IT: | |
| 01-1010 | STARFIRE | |
| 01-1011 | Development/modernization/enhancement | 0.00 |
| 01-1012 | Steady State | 0.60 |
| 01-1013 | Subtotal, IT Costs | 0.60 |
| 01-1014 | Appropriation/Funding Sources | |
| 01-1014-01 | Salaries and Expenses | 0.60 |
| 01-1014-02 | Inspector General | 0.00 |
| 01-1017 | Subtotal, funding sources | 0.60 |
| 01-2000 | All other IT systems | |
| 01-2015 | Federal Financial System(FFS) | 1.70 |
| 01-2025 | Payroll Personnel(PayPers) | 0.00 |
| 01-2886 | Subtotal, Significant non-major | 1.70 |
| 01-2895 | Non-significant | 0.50 |
| 01-2993 | Subtotal, all other | 2.20 |
| 01-3000 | Total: Mission Area 1 | |
| 01-3001 | Development/modernization/enhancement | 0.00 |
| 01-3002 | Steady State | 0.60 |
| 01-3003 | Subtotal, IT Costs | 2.80 |
| 11-0000 | Mission Area 2: Human Resources and Administration | |
| 11-2000 | All other IT systems | |
| 11-2015 | STARS | 0.10 |
| 11-2025 | COTS | 0.10 |
| 11-2035 | HRIS | 1.10 |
| 11-2035 | Service Request System | 0.10 |
| 11-2045 | Space Planning System | 0.10 |
| 11-2886 | Subtotal-Significant, non-major | 1.50 |
| 11-2895 | Non-significant | 0.90 |
| 11-2993 | Subtotal, all other | 2.40 |
| 11-3000 | Total: Mission Area 2 | |
| 11-3001 | Development/modernization/enhancement | 0.00 |
| 11-3002 | Steady State | 0.00 |
| 11-3003 | Subtotal, IT Costs | 2.40 |
| 12-1000 | Major IT | |
| 12-0000 | Mission Area 3: Nuclear Reactors | |
| 12-1010 | Reactor Program System | |
| 12-1011 | Development/modernization/enhancement | 0.10 |
| 12-1012 | Steady State | 0.40 |
| 12-1013 | Subtotal, IT costs | 0.50 |
| 12-1014 | Appropriation/Funding Sources | |
| 12-1014-01 | Salaries and Expenses | 0.50 |
| 12-1014-02 | Inspector General | 0.00 |
| 12-1017 | Subtotal, funding sources | 0.50 |
| 12-2000 | All other IT systems | |
| 12-2015 | Performance Measure | 0.00 |
| 12-2025 | Performance Indicators | 0.00 |
| 12-2035 | OLTS | 0.00 |
| 12-2035 | APMP | 0.10 |

A1,

| | | |
|---|---|---|
| 12-2045 | Regulatory Oversight | 0.00 |
| 12-2055 | ETS/DALS | 1.60 |
| 12-2065 | RIMS | 0.10 |
| 12-2075 | SCSS | 0.00 |
| 12-2085 | OIMIS | 0.20 |
| 12-2886 | Subtotal, significant, non-major | 2.00 |
| 12-2895 | Non-significant | 4.60 |
| 12-2993 | Subtotal, all other | 6.60 |
| 12-3000 | Total: Mission Area 3 | |
| 12-3001 | Development/modernization/enhancement | 0.50 |
| 12-3002 | Steady State | 0.00 |
| 12-3003 | Subtotal, IT Costs | 7.10 |
| 13-0000 | Mission Area 4: Nuclear Materials | |
| 13-2000 | All other IT systems | |
| 13-2015 | GLTS | 0.60 |
| 13-2025 | SSD | 0.10 |
| 13-2886 | Subtotal, significant, non-major | 0.70 |
| 13-2895 | Non-significant | 1.50 |
| 13-2993 | Subtotal, IT all other | 2.20 |
| 13-3000 | Total: Mission Area 4 | |
| 13-3001 | Development/modernization/enhancement | 0.00 |
| 13-3002 | Steady State | 0.00 |
| 13-3003 | Subtotal, IT Costs | 2.20 |
| 14-0000 | Mission Area 5: Nuclear Waste Program | |
| 14-2000 | All other IT systems | |
| 14-2015 | CRADAL | 0.60 |
| 14-2886 | Subtotal, significant, non-major | 0.60 |
| 14-2895 | Non-significant | 0.00 |
| 14-2993 | Subtotal, IT all other | 0.60 |
| 14-3000 | Total: Mission Area 5 | |
| 14-3001 | Development/modernization/enhancement | 0.00 |
| 14-3002 | Steady State | 0.00 |
| 14-3003 | Subtotal, IT Costs | 0.60 |
| 99-3000 | All Mission Areas | |
| 99-3001 | Development/modernization/enhancement | 0.50 |
| 99-3002 | Steady State | 0.60 |
| 99-3003 | Total, All Mission Areas | 15.10 |

## Data on IT Infrastructure and Office Automation

| | | |
|---|---|---|
| 01-1010 | Major IT Infrastructure System - ADAMS | |
| 01-1011 | Development/modernization/enhancement | 0.00 |
| 01-1012 | Steady State | 2.10 |
| 01-1013 | Subtotal, IT costs | 2.10 |
| 01-1014 | Appropriation/Funding Sources | |
| 01-1014-01 | Salaries and Expenses | 2.10 |
| 01-1014-02 | Inspector General | 0.00 |
| 01-1017 | Subtotal, funding sources | 2.10 |
| 01-2000 | All other IT systems | |
| 01-2015 | PC Refresh | 3.50 |
| 01-2025 | Next Generation Network | 6.30 |
| 01-2035 | NUDOCS | 2.60 |
| 01-2045 | FTS | 4.00 |
| 01-2055 | WITS | 1.00 |
| 01-2065 | NIH Timesharing | 1.00 |
| 01-2075 | Year 2000 Resolution | 0.00 |

| | | |
|---|---|---|
| 01-2886 | Subtotal, significant, non-other | 18.40 |
| 01-2895 | Non-significant | 16.90 |
| 01-2993 | Subtotal, IT all other | 35.30 |
| 01-3000 | All Infrastructure Systems | |
| 01-3001 | Total Development/modernization/enhancement | 0.00 |
| 01-3002 | Steady State | 37.40 |
| 01-3003 | Subtotal, IT Costs | 36.80 |

## Data on IT Architecture and Planning

| | | |
|---|---|---|
| 01-2000 | Significant, non-major | 0.00 |
| 01-2886 | Subtotal, significant, non-major | 0.00 |
| 01-2895 | Non-significant | 1.30 |
| 01-2993 | Subtotal, IT all other | 1.30 |
| 01-3000 | All IT Architecture and Planning | |
| 01-3001 | Total Development/modernization/enhancement | 0.00 |
| 01-3002 | Steady State | 0.00 |
| 01-3003 | Subtotal, IT Costs | 1.30 |

## IT Resources Summary

| | | |
|---|---|---|
| 99-3000 | Mission Area, Infrastructure, and Architecture Totals: | |
| 99-3001 | Development/modernization/enhancement | 0.50 |
| 99-3002 | Steady State | 2.70 |
| 99-3003 | Subtotal, All IT costs | 53.80 |

Planned from last Year's Budget
Difference

## CAPITAL ASSET PLAN AND JUSTIFICATION

Agency: Nuclear Regulatory Commission
Account Title: Salaries and Expenses
Identification Code: 31-0200-0-1-276
Program Activity: Reactor Program
Name of project: REACTOR PROGRAM SYSTEM (RPS)
Check one: New Project ___ Ongoing project _X_
Was the project approved by an Executive Review Committee? Yes_X_ No___
Is this project information technology Yes _X_ No___
For information technology projects only:
Is this project a financial management system? Yes ___ No_X_
Was this project approved by an agency Investment Review Board? Yes_X_ No___

## PART I: SUMMARY OF SPENDING FOR PROJECT STAGES

(Dollars in Millions)

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | TOTAL |
|---|---|---|---|---|---|---|
| Planning:* | | | | | | |
| Budget authority | 0 | 0 | 0 | 0 | 0 | 0 |
| Outlays | 0 | 0 | 0 | | | 0 |
| Full acquisition: | | | | | | |
| Budget authority | 1.1 | 0.7 | 0.4 | 0.4 | 0.1 | 2.7 |
| Outlays | 0.9 | 0.9 | 0.3 | | | 2.1 |
| Total, sum of stages (excludes maintenance): | | | | | | |
| Budget authority | 1.1 | 0.7 | 0.4 | 0.4 | 0.1 | 2.7 |
| Outlays | 0.9 | 0.9 | 0.3 | | | 2.1 |
| Maintenance: | | | | | | |
| Budget authority | 0.1 | 0.2 | 0.4 | 0.4 | 0.4 | 1.5 |
| Outlays | 0.0 | 0.3 | 0.4 | | | 0.7 |

*(Planning and some developmental activities took place prior to FY 1997. CPIC analysis conducted in FY 1997 cost approximately $35,000.)



A/2

## PART II: JUSTIFICATION AND OTHER INFORMATION

### A. Justification

The Reactor Program System (RPS) is being developed to fulfill program requirements that have evolved over the past several years. The initial problems to be fixed were highlighted in 1995 with both the staff's and GAO's findings relative to the lack of diagnostic capability displayed by the NRC relative to information contained in inspection program documents, primarily inspection reports.

RPS is expected to satisfy increasing and critical requirements for improved information management and analytical capabilities associated with reactor oversight. NRC needs a system that collects information once, at the source, and integrates information for both inspections and licensing in one location which can be correlated and analyzed against facility characteristics. RPS will provide this capability along with an integrated methodology for planning, scheduling, conducting, reporting, and analyzing inspection, licensing and regulatory activities. The system will also provide an analytical capability that will permit the linking, trending and analysis of plant performance information on an ongoing basis, so that plant performance characteristics can be better monitored and cause-effect relationships can be identified in advance. This will include automating relationships and searches so that inspection findings, event follow-up, and cause codes can be correlated with facility characteristics and other program information to effectively compare plant performance with the norm, and to better identify early causes for concern.

The information includes inspection, licensing, plant performance assessment, events and emergency issues tracking, safety issues management, allegations management and other regulatory issues. RPS will provide information that is consistent, reliable, and readily accessible to approximately 1,300 staff in NRC headquarters and regional offices. When completed, RPS will replace 10 legacy systems and will provide a seamless interface with five other systems. RPS is designed to fit within the agency's current client/server and local area network infrastructure and be accessible via agency workstations using commercial-off-the-shelf software.

NRC conducted a Capital Planning and Investment Control (CPIC) cost-benefit analysis for this project, identifying the project objective, assumptions, four alternatives, benefit comparison, cost comparison, risk comparison, sensitivity analysis, and sponsor recommendation.

RPS Support for OMB Investment Criteria:

1. *Support core/priority mission functions that need to be performed by the Federal government.*

RPS will provide for information management and analytical capabilities directly in support of core/primary mission functions dealing with reactor regulation. Functions supported include inspection and licensing activities for reactors, plant performance assessment, events and emergent issues tracking, safety issues management, allegations management and other regulatory areas. RPS will provide the necessary information management capability for the effective and efficient planning, scheduling, resource allocation, reporting and analysis of these programs, which is essential to their effective performance.

2. *Be undertaken by the requesting agency because no alternative private sector or governmental source can efficiently support the function.*

The nature of reactor regulatory activities and their associated information management and analysis needs are such that no alternative private sector or governmental source can efficiently support the function that RPS is intended to perform. This conclusion was reached after carefully considering the functions of the 10 legacy systems that RPS will replace.

3. *Support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial, off-the-shelf technology.*

RPS is automating areas which have undergone some form of business process redesign and where new policy has, or is being established. Processes to date which have undergone redesign and which are being automated through RPS include the redesign and standardization in the inspection reporting process (as documented in Inspection Manual Chapter 0610), the tracking of inspection follow-up, the development and integration of the Plant Issues Matrix (PIM), and the analysis and assessment of requirements associated with Plant Performance Review (PPR). Other areas which are undergoing reassessment include job task analysis for inspectors, job task analysis for project managers and licensing commitment tracking. RPS is being designed to fit within NRC's current information technology infrastructure and will be accessible via agency-standard PC workstations using commercial-off-the-shelf (COTS) software for greater flexibility and ease of maintenance in the future.

## B. Program management

1. Is there a program manager and contracting officer devoted to the project?

Development of this system is being sponsored by and funded through the NRC's Office of Nuclear Reactor Regulation (NRR), working in partnership and close coordination with the NRC's four regional offices and with the Office of the Chief Information Officer (OCIO). Michael MacWilliams is the overall program manager, providing the business knowledge for this system. William Usilton, from OCIO, is the technical program manager. Charles E. Fitzgerald, Director, Comprehensive Information Systems Support Consolidation (CISSCO) program staff, is responsible for designing and achieving integrated systems development and life cycle management and for management of the agency's interagency agreement with GSA/FEDSIM. The contracting officer is Keith Sandridge, GSA/FEDSIM.

2. Will an Integrated Project Team be established to assist with the management of the project?

An Integrated Project Team has been established to oversee progress and resolve questions and issues arising during RPS development. This team reports directly to NRR and OCIO management and has included a business and technical contact for each of the system's components. The team also includes a representative from each region to address regional deployment issues. Periodic Project Team and component meetings are held to review progress, and to identify and correct problems early on.

## C. Acquisition strategy

1. In developing the acquisition strategy, consider ways to manage the procurement risk.

The NRC managed the procurement risk by selecting GSA FEDSIM's multiple-award, indefinite quantity IT services contract, competing its work among the contractors qualified to work under the contract. Given the enterprise-wide standards and scope of the CISSCO contract, statements of work normally specify only functional requirements. In response, the contractor proposes optimal technical solutions, giving specific milestones and schedules and estimated costs. A rigorous project management system is used to track progress, deliverables, and costs for each phase of the system life cycle. A robust quality assurance plan has been developed and is cooperatively managed by NRC, GSA, and contractor staff.

2. Specify whether the acquisition will be accomplished via a single contract or several contracts.

The acquisition will be accomplished through a single contract, as described in response to questions 3 and 4.

3. Summarize the acquisition strategy. Describe the use of competition to make "best value" source selections. How will competition be sustained throughout the acquisition life cycle?

4. Identify the type of contract selected and explain why it was chosen.

NRC's CISSCO contract is the agency's mandatory-for-consideration and preferred contract for IT/IM support. CISSCO support services are provided by the Computer Sciences Corporation through a single major task order awarded in August 1996 following competition among the GSA/FEDSIM multiple-award, indefinite quantity IT services contractors. Through this single contract, designed and established for agencywide use, the NRC obtains an enterprise-wide perspective and integration of IT/IM projects, standardized tools and life-cycle management methodologies, and systems development, integration, maintenance, and operations services. The CISSCO contractor provides written responses to written NRC requests for each requirement, and proposes technical solutions with estimated schedules and costs.

**D. Financial basis for selecting the project**

1. Summarize the analysis of full life-cycle costs/total costs of ownership; results of cost/benefit analyses, including return on investment; and any tangible returns that benefit the agency but are difficult to quantify. For information technology, address replaced system savings and savings recovery schedule.

2. Describe analysis of alternative options and identify any underlying assumptions. Provide the estimate of risks, such as Y2K, i.e., rationale for "most likely" versus "most optimistic" acquisition goals.

(The following answers Questions 1 and 2.)

The financial basis for selecting the project was based on a Cost-Benefit-Risk Analysis completed for the RPS project in January 24, 1997 as part of the Capital Planning and

Investment Control (CPIC) process. Four alternatives ranging from the "Status Quo" to various degrees of automation were considered as part of the analysis. Alternative 3 was selected and approved by NRC management. Alternative 3 was determined to yield about $4.7 million in cost savings and the cost avoidance of additional FTE required to support analytical support requirements. The executive summary of the analysis follows.

**Assumptions for the analysis**

The system development activities funded in FY 1997 will be completed.

Regardless of the RPS alternative implemented, the Safety Information Network (SINET) on the NIH mainframe will be used by other NRC organizations through the end of FY 2000. To realize the total estimated cost savings of an RPS alternative which allows NRR to discontinue the use of SINET, all other NRC use of SINET and the need to maintain it at NIH must be discontinued by the end of FY 2000. (NOTE: Use of SINET will end prior to the beginning of FY 2000)

**Alternatives**

**Alternative 1** - With the Status Quo alternative, NRR would implement only those parts of the system completed by the end of FY 1997, (i.e., RPS capability for inspection planning/reporting/analysis, inspection follow-up, and open item tracking would be implemented in the regions.)

**Alternative 2** - Building upon the Status Quo, NRR would implement a PC-based (non client-server) workload scheduling/staff assignment capability in the regions and develop interfaces to the events and allegation tracking systems.

**Alternative 3** - NRR would develop and deploy all functions provided in Alternative 2 in headquarters and the regions in a fully integrated client-server environment. The alternative would also incorporate safety issues tracking and full interface to the enforcement action tracking system.

**Alternative 4** - NRR would implement the same capability as Alternative 3, plus fully integrate reactor licensing activities into the system.

## Benefit comparison

Benefit categories and the alternatives' ratings (where A = High and C = Low) are shown in the table below:

### SUMMARY TABLE FOR NON-QUANTIFIABLE BENEFITS

| Description of Non-Quantifiable Benefits | Comparison of Alternatives (A is best result, C is least desirable, duplicate scores allowed) | | | |
|---|---|---|---|---|
| | Alt.1 Status Quo | Alt.2 | Alt.3 | Alt.4 |
| 1. More Consistent Data from Single-Source Entry | B | B | A | A |
| 2. More Efficient Sharing of Information | C | C | A | A |
| 3. Better Analysis Capabilities for Licensing | C | C | C | A |
| 4. Better Analysis Capabilities for Inspections | B | B | A | A |
| 5. Faster and more Efficient Reporting Capabilities | B | B | A | A |
| 6. More Flexible Ad hoc Reporting | C | B | A | A |
| 7. More Accurate and Timely Fee Data | C | C | A | A |
| 8. Better Data Integrity | C | B | A | A |
| 9. Better Integration of Licensing and Inspection Information | C | C | C | A |
| 10. Better Information for Decision Making by Management | C | C | B | A |
| **OVERALL BENEFIT SCORE** | C | C+ | A- | A |

As summarized above, using Alternative 1 (Status Quo) as a baseline, the other Alternatives were rated as follows:

- Alternative 2 provides improvement (for regions only) in the two benefit categories, More Flexible Ad hoc Reporting and Better Data Integrity, due to the additional capabilities and integration of information previously provided through separate systems.

- Alternative 3, due to the full integration of previously separate information sources and access being provided to regions and headquarters, delivers a decision support system,

e.g., providing the capability to access data and information in inspection and licensee performance reports and compare it with information available in facility characteristic and facility performance databases.

- Alternative 4, by integrating the licensing information, improves upon decision support system delivered by Alternative 3.

**Cost comparison**

A seven year life cycle (FY 1998 - FY 2004) was used to cost alternatives. Estimated undiscounted dollar costs and FTEs are shown in the table below. The last row in the table shows the estimated dollar cost and FTE savings for Alternatives 2, 3, and 4 when compared with Alternative 1 (Status Quo).

**COST AND SAVINGS SUMMARY**
**(UNDISCOUNTED DOLLARS AND FTE FOR FISCAL YEARS 1998 - 2004)**
(Dollars In Thousands)

| | Alternative 1 Status Quo | | Alternative 2 | | Alternative 3 | | Alternative 4 | |
|---|---|---|---|---|---|---|---|---|
| Expense Category | $K | FTE | $K | FTE | $K | FTE | $K | FTE |
| 1. Non-Recurring, One Time Cost | 355 | 2.2 | 964 | 4.0 | 1,210 | 7.1 | 1,420 | 7.6 |
| 2. Recurring Cost (Client-Server Operations and Maintenance) | 3,185 | 11.2 | 3,535 | 11.2 | 4,565 | 25.8 | 4,565 | 25.5 |
| 3. Recurring Cost (Non-Client-Server) | 9,541 | 199.5 | 7,121 | 192.5 | 2,599 | 119.2 | 2,054 | 77 |
| 4. Total Cost (Sum of Rows 1, 2 & 3) | 13,081 | 212.9 | 11,620 | 207.7 | 8,374 | 152.1 | 8,039 | 110.1 |
| 5. Cost Savings Over Alternate 1 (Status Quo) | 0 | 0 | 1,461 | 5.2 | 4,707 | 60.8 | 5,042 | 102.8 |

- Estimated non-client-server recurring cost savings for Alternative 2 are divided equally between mainframe system-related and data entry/data quality-related activities.

- Estimated non-client-server recurring cost savings for Alternative 3 are primarily (about 67%) mainframe operations, maintenance and timesharing costs with another 20%

being data entry/data quality-related. Over half the estimated FTEs saved ("costs avoided" rather than staff reductions) are associated with inspection analysis activities with 27% being associated with data entry/data quality activities.

- The reductions in estimated non-client-server recurring costs and FTE levels for Alternative 4 result from the same savings realized in Alternative 3 plus additional savings due to the reductions in manual licensing analysis activities.

**Risk comparison**

The table below shows the risk categories and the alternatives' rankings.

**RISK RATINGS**

| Category of Risk | Score (1 = low, 5 = high) | | | |
|---|---|---|---|---|
| | Alternative 1 Status Quo | Alternative 2 | Alternative 3 | Alternative 4 |
| Mission Impact | 4 | 3 | 2 | 1 |
| Volatility of Requirement | 5 | 5 | 2 | 1 |
| Scope of Project | 2 | 2 | 3 | 3 |
| Technical Risk | 2 | 3 | 4 | 4 |
| Management Consensus | 2 | 2 | 3 | 3 |
| Type of Procurement | 4 | 3 | 2 | 2 |
| Total Risk Scores | 19 | 18 | 16 | 14 |

- **Alternative 1 (Status Quo)** was judged to have a high Mission Impact risk because it doesn't provide the integrated information environment necessary for NRR to support the agency mission. It was judged to have high risk in Volatility of Requirements since its capabilities will be "frozen" at the end of 1997. This alternative would continue to have a NRR manpower system maintained by a DOE National lab.

- **Alternative 2**, similar to Alternative 1, was judged to have a high risk in Volatility of Requirements due to its limited capabilities to respond to new, but currently undefined analysis requirements. Maintenance of the NRR manpower system for headquarters would be transferred in-house; however, the new, PC-based, separate manpower system would be maintained in the regions.

- **Alternatives 3 and 4** were judged to have roughly equivalent risk. Both push the envelope in terms of project scope and technical risk associated with client-server environment with which neither NRR nor OCIO has had much experience. Both alternatives received a rating of 3 because there is no management consensus that other offices will move their SINET applications from the mainframe after NRR does. Compared to Alternative 3, Alternative 4 was judged to be slightly less risky in the Mission Impact and Volatility of Requirements, due to the increased access and capability associated with having licensing information integrated into RPS in the latter alternative.

Given that possible scores or ratings for each alternative could have ranged from 6 to 30, differences in estimated risks between the four alternatives are not significant.

**Sensitivity analysis**

The one key assumption requiring analysis involved costs for mainframe support and usage FY 2001 - FY 2004. While NRR's discontinued use of SINET under Alternatives 3 and 4 will reduce the mainframe workload by approximately 60 to 70% during this period, the mainframe costs will only decrease by about 15% due to the high fixed costs ($635,000 per year) associated with processing and data storage if other offices continue to use SINET.

If SINET is not shut down after FY 2000, estimated (undiscounted) net life cycle cost savings for Alternatives 3 and 4 would decline (from the estimates shown in Row 3 in the COST AND SAVINGS SUMMARY table) to $2,167,000 and $2,502,000, respectively.

Cost estimates for "Year 2000 modifications" were not subjected to sensitivity analysis. These costs were estimated to be $180,000 for Alternatives 1 and 2 and $100,000 for Alternatives 3 and 4.

**Sponsor recommendation**

The sponsor (Office of Nuclear Reactor Regulation) recommends Alternative 4. This alternative would collect inspection and licensing information once, at the source, and would make it available in a single location accessible by all headquarters and regional management and staff.

As an example of RPS's value, it would provide commonality and linkage of inspection-related information now contained in separate, unconnected data bases and systems (inspection reports, event reports, inspection follow-up, Plant Issues Matrix (PIM), and Plant Performance Review (PPR), Inspection findings, event follow-ups, and cause codes would be correlatable with facility characteristics and other program information allowing NRR to more effectively compare a specific plant's performance with the norm, and to better identify early causes for concern. Such an analytical capability will reduce the need for contractor support and additional manual FTE effort required to support this level of comprehensive analysis.

**E. Adherence to architecture and infrastructure standards (IT projects only)**

1. Describe how the project is compliant with the agency's information technology architecture and technical infrastructure.

RPS will be fully compliant with the NRC's Information Technology Architecture, the agency's Data Naming Standards and Conventions, and the agency's Consolidated Data Model. RPS was designed to fit within the agency's client-server and LAN infrastructure and accessible via agency-standard microcomputer. RPS and its associated components are designed using client-server technology and agency's approved COTS products.

2. Identify standards for information exchange and resource sharing.

RPS and its associated components has been designed from a geographically indifferent perspective with a uniform user interface focused on the job to be done. A basic premise of the system is that there will be central maintenance of common files, with a single point of data entry and sharing of information so that data can be entered once and used throughout any process where needed. Where possible, inherent data quality design is being installed up-front to preclude the entry of invalid or inaccurate information and the resulting problems and inefficiencies.

3. Describe adherence to government-wide standards, where applicable (such as Y2K).

All COTS packages acquired by the NRC are Year 2000 compliant. RPS and its associated components are designed using agency's approved COTS products when feasible.

4. Identify use of commercial-off-the-shelf (COTS) versus custom; justify custom components.

NRC has develop some custom code so that the system can cost-effectively support agency business processes. The objectives of RPS is to provide for the effective and efficient integration and analysis of information associated with NRR's programs conducted in headquarters and regions. These programs include inspection, licensing, plant performance assessment, events and emergent issues tracking, safety issues management, allegation management and other reactor regulatory activities. These specific activities are not supported by COTS.

## PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

### A. Description of performance-based system

The RPS project team is utilizing Microsoft Project and Lotus as the management control tools for scheduling and tracking performance against plan. Another system is being used to track project budget for each individual task and component. Cost reports for these are accumulated and tracked against budget plans. Routine meetings are held with the project team, including the business and technical leads and the component contacts, to discuss costs, deliverables and schedule performance and to identify potential problem areas. Management is briefed on an ongoing basis to resolve problem areas that may arise. This approach has worked to date without using an Earned Value Approach due to the relatively small size and measurable nature of the majority of tasks the contractor has performed. However, an Earned Value Project Management Approach was implemented for tasks starting in FY 1998.

### B. Original baseline

1. Original cost and schedule goals

(Dollars In Millions)

| | FY1997 | FY1998 | FY1999 | FY2000 | FY2001 | Total |
|---|---|---|---|---|---|---|
| OBLIGATION | $1.1 | $0.7 | $0.4 | $0.4 | $0.1 | $2.7 |
| COSTING PLAN | $0.9 | $0.9 | $0.4 | $0.4 | $0.1 | $2.7 |

RPS is being designed and developed in a modular approach tailored to fit the regulatory programs it will support. At the same time, an enterprise approach has been taken with a global view of the entire RPS system so that the overall design, process model, data model and associated tables and naming conventions are in place and fit within the overall agency enterprise design.

Primary system design, development and deployment milestones follow:

| | |
|---|---|
| Overall system conceptualization and design | Completed |
| Requirements determination, design and engineering for Inspection Planning and Reporting | Completed |
| CPIC analysis | Completed |
| Development and integration of Inspection Planning and Reporting modules | Q1/1998 |
| Deployment of Inspection Planning and Reporting | Q2/1998 |
| Requirements determination, design and engineering for Licensing and Other Planning | Q3/1998 |
| Complete development of Licensing and Other Planning components | Q2/1999 |
| Deployment of Licensing and Other Planning modules | Q3/1999 |
| Complete development and deployment of any remaining parts including interfaces with other agency systems | Q1/2001 |

As discussed in Part II A., "Justification," RPS is expected to satisfy increasing and critical requirements for improving information management and analytical capabilities associated with reactor oversight. The system is expected to support a number of agency program business areas to include: Compliance Management, Licensing, and the Identification and Assessment of Safety Concerns. There are two project goals for this system. The primary project goal of RPS supports the Nuclear Reactor Safety mission by providing a comprehensive, timely and accurate integration of inspection, licensing and other reactor regulation information, and the associated analytical capability to more effectively evaluate plant performance. The secondary project goal is to provide for information management services for the reactor program which yield higher levels of efficiency and reduced longer-term costs. The specific output measures used to measure these two project goals are described below:

RPS Project Goal 1: Support the Nuclear Reactor Safety mission by providing a comprehensive, timely and accurate integration of inspection, licensing and other reactor regulation information and the associated analytical capability to more effectively evaluate plant performance.

FY 1998 Output Measures:

- Percent of inspectors, technical reviewers and project managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS

information routinely in performing their responsibilities. This number should increase progressively and should be measured against the population affected by the various RPS components being implemented in accordance with the schedule presented in Part III, Section C.

- Percent of managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS information for the purposes of performing management functions pertaining to programs within their purview.

- The integration of information supporting inspection, licensing and other regulatory programs as measured by the percent of data entities used in the management and operation of Nuclear Reactor Regulation programs which are maintained and accessible in RPS in an "open architecture" environment.

FY 1999 Output Measures:

- Percent of inspectors, technical reviewers and project managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS information routinely in performing their responsibilities. This number should increase progressively and should be measured against the population affected by the various RPS components being implemented in accordance with the schedule presented in Part III, Section C.

- Percent of managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS information for the purposes of performing management functions pertaining to programs within their purview.

RPS Project Goal 2: Provide for information management services for the reactor program which yield higher levels of efficiency and reduced longer-term costs.

FY1998 Output Measures:

- Number of current older systems replaced by RPS and associated savings and other benefits. The current goal is the replacement of 10 older legacy systems. Progress on their replacement should be commensurate with the implementation schedule of the various RPS Component presented in the Baseline Schedule in Part III, Section C.

- Levels of "single entry" and sharing of information, and commensurate reductions in the maintenance of duplicative data. This measure will be based on the percent of data elements entered once and shared throughout the entire RPS spectrum, compared to all data elements in the database.

FY1999 Output Measure:

- Number of current older systems replaced by RPS and associated savings and other benefits. The current goal is the replacement of 10 older legacy systems. Progress on their replacement should be commensurate with the implementation schedule of the various RPS Component presented in the Baseline Schedule in Part III, Section C.

## C. Current baseline

1. Cost and schedule goals

(Dollars In Millions)

| | FY1997 | FY1998 | FY1999 | FY2000 | FY2001 | Total |
|---|---|---|---|---|---|---|
| OBLIGATION | $1.1 | $0.7 | $0.4 | $0.4 | $0.1 | $2.7 |
| COSTING PLAN | $0.9 | $0.9 | $0.4 | $0.4 | $0.1 | $2.7 |

RPS is being designed and developed in a modular approach tailored to fit the regulatory programs it will support. At the same time, an enterprise approach has been taken with a global view of the entire RPS system so that the overall design, process model, data model and associated tables and naming conventions are in place and fit within the overall agency enterprise design. By mid 1999, RPS and other client-server applications will replace the functionality provided to agency by the SINET system which is currently deployed at NIH using IDMS software.

Primary system design, development and deployment milestones follow:

| | Planned | Completed |
|---|---|---|
| Overall system conceptualization and design. | FY 1997 | FY 1997 |
| Requirements determination, design and engineering for Inspection Planning and Reporting. | FY 1997 | FY 1997 |
| CPIC analysis. | FY 1997 | FY 1997 |
| Development of Inspection Planning module. | Q1/1998 | Q1/1998 |
| Deployment of Inspection Planning module. | Q2/1998 | Q2/1998 |
| Integration of Inspection Planning and Item Reporting modules. | Q1/1998 | Q4/1998 |
| Development of Item Reporting module. | Q1/1998 | Q4/1998 |
| Deployment of Item Reporting module. | Q2/1998 | Q4/1998 |
| Requirements determination, design and engineering for Licensing and Other Planning. | Q3/1999 | Q4/1998 |
| Complete development of Licensing and Other Planning Components. | Q1/2000 | |
| Deployment of Licensing and Other Planning modules. | Q2/2000 | |
| Complete development and deployment of any remaining Parts including interfaces with other agency systems. | Q1/2001 | |

Although there has been some schedule deviation for the completion and deployment of two of the RPS components, these schedule changes did not impact performance goals or the overall milestones projected. The Licensing and Other Planning module has been rescheduled to incorporate best practices, additional benchmarking and a new workload management approach. The schedule deviations will not impact the budget or effect the agency's Year 2000 efforts.

2. FY 1998 Performance goals

As discussed in Part II A., "Justification," RPS is expected to satisfy increasing and critical requirements for improving information management and analytical capabilities associated with reactor oversight. The system is expected to support a number of agency program business areas to include: Compliance Management, Licensing, and the Identification and Assessment of Safety Concerns. There are three project goals for this system. The primary

project goal of RPS supports the Nuclear Reactor Safety mission by providing a comprehensive, timely and accurate integration of inspection, licensing and other reactor regulation information, and the associated analytical capability to more effectively evaluate plant performance. The secondary project goal is to provide for information management services for the reactor program which yield higher levels of efficiency and reduced longer-term costs. A third project goal has been added to ensure there are no significant deviations from cost, schedule and performance goals. The specific output measures used to measure these project goals are described below:

RPS Project Goal 1: Support the Nuclear Reactor Safety mission by providing a comprehensive, timely and accurate integration of inspection, licensing and other reactor regulation information and the associated analytical capability to more effectively evaluate plant performance.

FY 1998 Output Measures:

- Percent of inspectors, technical reviewers and project managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS information routinely in performing their responsibilities. This number should increase progressively and should be measured against the population affected by the various RPS components being implemented in accordance with the baseline schedule.

  Target: Percentage should increase progressively and measured against the population affected by the various RPS components being implemented, 30 percent for FY 1998.

| | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| FY 1998 Milestones | 0% | 10% | 20% | 30% |
| FY 1998 Actuals | 0% | 14% | 18% | 27% |

- Percent of managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS information for the purposes of performing management functions pertaining to programs within their purview.

  Target: Percentage should increase progressively and measured against the population affected by the various RPS components being implemented, 40 percent for FY 1998.

| | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| FY 1998 Milestones | 0% | 10% | 25% | 40% |
| FY 1998 Actuals | 0% | 21% | 28% | 53% |

- The integration of information supporting inspection, licensing and other regulatory programs as measured by the percent of data entities used in the management and operation of Nuclear Reactor Regulation programs which are maintained and accessible in RPS in an "open architecture" environment.

  Target: Percentage of data entities used in the management and operation of NRR programs which are maintained and accessible in RPS in an "open architecture" environment, 50 percent for FY 1998.

| | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| FY 1998 Milestones | 0% | 40% | 40% | 50% |
| FY 1998 Actuals | 0% | 45% | 45% | 60% |

FY 1999 Output Measures

RPS Project Goal 1: Support the Nuclear Reactor Safety mission by providing a comprehensive, timely and accurate integration of inspection, licensing and other reactor regulation information and the associated analytical capability to more effectively evaluate plant performance.

**NOTE: The usage of RPS modules increased from 221 users in the fourth quarter of FY98 to 414 users during the first quarter of FY99. First quarter actuals exceed the projected fourth quarter milestone goals. Neither of the following two measures was reported on after the first quarter in FY 1999.**

Output Measures:

- Percent of inspectors, technical reviewers and project managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS information routinely in performing their responsibilities. This number should increase progressively and should be measured against the population affected by the various RPS components being implemented in accordance with the baseline schedule.

Target: Percentage should increase progressively and measured against the population affected by the various RPS components being implemented, 35 percent for FY 1999.

FY 1999 milestones:

| | |
|---|---|
| 1st Quarter | 30 percent |
| 2nd Quarter | 30 percent |
| 3rd Quarter | 35 percent |
| 4th Quarter | 35 percent |

FY 1999 actuals

| | | |
|---|---|---|
| 1st Quarter | 49 percent | (See note above) |

- Percent of managers in Nuclear Reactor Regulation programs (headquarters and regions) who access RPS or use RPS information for the purposes of performing management functions pertaining to programs within their purview.

  Target: Percentage should increase progressively and measured against the population affected by the various RPS components being implemented, 60 percent for FY 1999.

  FY 1999 milestones

| | |
|---|---|
| 1st Quarter | 50 percent |
| 2nd Quarter | 50 percent |
| 3rd Quarter | 55 percent |
| 4th Quarter | 60 percent |

  FY 1999 actuals

| | | |
|---|---|---|
| 1st Quarter | 66 percent | (See note above) |

- **(New Measure)** The Inspection Reporting (IR) and Analysis Module (AM) of RPS were deployed on September 28, 1998. Actual usage of RPS increased from 221 users through September 30, 1998 to 414 users by December 31, 1998. Since the FY 99 percentage goals listed above have already been exceeded, and no new RPS modules are planned for deployment in FY 99, the actual number of users by category will be reported. The fourth quarter FY98 is shown as a baseline.

Target: Usage should increase by about 15 individuals per quarter during FY99.

| RPS users | FY98 QTR 4 | FY99 QTR 1 | FY99 QTR 2 | FY99 QTR 3 | FY99 QTR 4 |
|---|---|---|---|---|---|
| Admin personnel | 77 | 139 | 106 | 117 | NA |
| Inspectors | 79 | 176 | 214 | 228 | NA |
| Managers | 42 | 66 | 70 | 72 | NA |
| Other | 23 | 33 | 37 | 47 | NA |
| Total | 221 | 414 | 427 | 464 | NA |

RPS Project Goal 2: Provide for information management services for the reactor program which yield higher levels of efficiency and reduced longer-term costs.

FY 1998 Output Measures:

- Number of current older systems replaced by RPS and associated savings and other benefits. The current goal is the replacement of 10 older legacy systems. Progress on their replacement should be commensurate with the implementation schedule of the various RPS components.

  Target: Replacement of 10 legacy systems with RPS components.

| | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| FY 1998 Milestones | 0 | 4 | 4 | 5 |
| FY 1998 Actuals | 0 | 5 | 5 | 7 |

- Levels of "single entry" and sharing of information, and commensurate reductions in the maintenance of duplicative data. This measure will be based on the percent of data elements entered once and shared throughout the entire RPS spectrum, compared to all data elements in the database.

  Target: Percent of data elements entered once and shared throughout the entire RPS spectrum, compared to all data elements in the database, 50 percent for FY 1998.

| | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| FY 1998 Milestones | 0% | 40% | 40% | 50% |
| FY 1998 Actuals | 0% | 45% | 45% | 55% |

FY 1999 Output Measure:

- Number of current older systems replaced by RPS and associated savings and other benefits. The current goal is the replacement of 10 older legacy systems. Progress on their replacement should be commensurate with the implementation schedule of the various RPS components, 10 in FY 1999.

  Target: Replacement of 10 legacy systems with RPS components.

| | 1st Quarter | 2nd Quarter | 3rd Quarter | 4th Quarter |
|---|---|---|---|---|
| FY 1999 Milestones | 7 | 7 | 7 | 10 |
| FY 1999 Actuals | 7 | 7 | 7 | NA |

The rescheduling of Licensing and Other Planning will delay the replacement of the final legacy systems until FY 2000.

RPS Project Goal 3: Demonstrate a return on investment to the agency from the RPS project.

FY 1998 and FY 1999 Output Measure:

- Develop demonstrable returns on investment to the agency.

  Target:
  No significant deviations in the cost, schedule and performance goals for the RPS project (as defined by the Clinger-Cohen Act of 1996).

Output Measure:

- Develop demonstrable returns on investment to the agency.

Target: No significant deviations in the cost, schedule and performance goals for the RPS project (as defined by the Clinger-Cohen Act of 1996).

| | | |
|---|---|---|
| FY 1999 milestone | No deviations | |
| FY 1999 actual | 1st Quarter | No deviations |
| | 2nd Quarter | No deviations |
| | 3rd Quarter | No deviations |
| | 4th Quarter | NA |

**D. Variance from current baseline**

1. Variance in cost
   None

2 Variance in schedule
As noted above, the Licensing and Other Planning module has been rescheduled to incorporate best practices, additional benchmarking and a new workload management approach. The schedule deviations will not impact the budget or effect the agency's Year 2000 efforts.

3. Variance in performance
   None

**E. Latest revised estimate**

1. Cost
   No change.

2. Schedule goals
   The Licensing and Other Planning module has been rescheduled, with deployment planned for the second quarter FY 2000.

3. Performance goals
   No change

**F. Corrective actions**
None

## CAPITAL ASSET PLAN AND JUSTIFICATION

Agency: Nuclear Regulatory Commission
Account Title: Salaries and Expenses
Identification Code: 31-0200-0-1-276
Program Activity: Management and Support
Name of project: AGENCYWIDE DOCUMENTS ACCESS AND MANAGEMENT SYSTEM (ADAMS)
Check one: New Project___ Ongoing project _X_
Was the project approved by an Executive Review Committee? Yes _X_ No___
Is this project information technology Yes _X_ No___
For information technology projects only:
Is this project a financial management system? Yes___ No _X_
Was this project approved by an agency Investment Review Board? Yes _X_ No___

## PART I: SUMMARY OF SPENDING FOR PROJECT STAGES

(Dollars in millions)

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | TOTAL |
|---|---|---|---|---|---|---|
| Planning:* | | | | | | |
| Budget authority | 0 | 0 | 0 | 0 | 0 | 0 |
| Outlays | 0 | 0 | 0 | 0 | 0 | 0 |
| Full acquisition: | | | | | | |
| Budget authority | 2.0 | 7.0 | 4.4 | 0.0 | 0.0 | 13.4 |
| Outlays | 1.5 | 6.7 | 4.2 | 1.0 | 0.0 | 13.4 |
| Total, sum of stages (excludes maintenance): | | | | | | |
| Budget authority | 2.0 | 7.0 | 4.4 | 0.0 | 0.0 | 13.4 |
| Outlays | 1.5 | 6.7 | 4.2 | 1.0 | 0.0 | 13.4 |
| Maintenance: | | | | | | |
| Budget authority | 0.0 | 0.0 | 0.0 | 2.6 | 2.1 | 4.7 |
| Outlays | 0.0 | 0.0 | 0.0 | 2.6 | 2.1 | 4.7 |

*(Planning activities took place before FY 1997. CPIC analysis conducted in FY 1997 cost approximately $35K.)

## PART II: JUSTIFICATION AND OTHER INFORMATION

### A. Justification

Effective management of information is critical to NRC performing its mission. Most of the important information is in documents. The Commission's policies, decisions, and bases for regulatory actions depends on these documents. Today, the NRC operates in a predominantly paper-based environment. For many years, NRC has been struggling with a blizzard of documents through which we filter and search to perform our jobs. NRC plans to develop and implement a core Agencywide Documents Access and Management System (ADAMS) to meet NRC's current and future programmatic needs.

NRC's FY 1999 Performance Plan includes a key Information Goal: "Ensure that accurate information is available as needed to achieve the agency's strategic goals." One of the performance indicators for this goal is the level of satisfaction with the accuracy and availability of information in NRC's primary systems. Through implementation of ADAMS we will achieve a substantial increase in the level of NRC staff satisfaction with the accuracy and availability of a key category of information -- the information in agency documents.

ADAMS is an enterprise system that provides cradle-to-grave document management. The system will support document creation or capture, workflow management, records management, and search and retrieval by both NRC staff and the public. ADAMS will replace the agency's Nuclear Document System (NUDOCS) -- an aging, microfiche-based, legacy document indexing system that has limited full text search capabilities, runs on a Data General minicomputer and relies heavily on customized software. ADAMS will also replace numerous other agency document and text management systems. ADAMS will run on the agency's local area network and, to the extent possible, will capitalize on the availability of off-the-shelf software to deliver primary system functions.

ADAMS Support for OMB Investment Criteria:

1. *Support core/priority mission functions that need to be performed by the Federal government.*

ADAMS supports the creation or capture, distribution, retrieval, and dissemination of documents related to NRC's core business functions, such as the licensing and regulatory oversight of nuclear reactor operations and other activities involving regulation of nuclear materials and nuclear waste. Access to these documents by both NRC staff and the public is

absolutely essential to carrying out the mission of the agency. Among all possible information technology (IT) projects, ADAMS was given the highest priority by internal customers, including a review board of senior program managers, during an IRM strategic planning process that was completed in 1993.

2. *Be undertaken by the requesting agency because no alternative private sector or governmental source can efficiently support the function.*

ADAMS supports agencywide document creation, workflow, docketing, records management, and both internal and public information dissemination and access. As part of the ADAMS project, NRC explored both government and commercial sources of document management products. The NRC performed an intensive search to identity potential government off-the-shelf products (GOTS) that could meet our needs. This search included a FEDWORLD search via the Internet, use of the Defense Technical Information Center to identify Department of Defense-funded projects, and a search of other Internet sources including the Software Development Center of the US Army. This search yielded no product that could effectively meet NRC requirements without major new investment. Through this process, we also identified several other agencies involved in development of ADAMS-like systems. NRC staff visited the Department of Energy (DOE) to review their search of GOTS document systems and to learn about DOE's development of a similar system that was in an early phase and not yet available. We also reviewed 200 COTS products that might provide either full or partial functionality required in ADAMS. Although no single product met all of our requirements, we concluded that the integration of several of these products could serve as the basis of ADAMS with minimal customization. We are, therefore, proceeding with this COTS-based strategy.

3. *Support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial, off-the-shelf technology.*

As part of the ADAMS project, the agency has extensively analyzed its document and records management processes and conceptually redesigned these processes to simplify them and take advantage of current and emerging technology available in off-the-shelf products. Unlike its predecessor system, ADAMS addresses the entire document management workflow as well as the records management requirements of the agency. Implementation of the ADAMS concept will result in significant reengineering of NRC's information management function.

NRC conducted a Capital Planning and Investment Control (CPIC) cost-benefit analysis of the replacement for the existing document management system, identifying the project objective, assumptions, four alternatives, a cost comparison, benefit comparison, risk comparison, sensitivity analysis, and sponsor recommendation. For the past two years, NRC has been identifying requirements and developing a conceptual design for ADAMS. These requirements, including an assessment of several pilot projects, formed the basis of the CPIC analysis. In that analysis, several alternatives to ADAMS were examined. The first alternative, continuing with the status quo (patching the existing document management system, using the existing workflow processes, and relying on paper-based recordkeeping systems), produced the highest risk in the Mission Impact category. One alternative, a simple replacement for the existing document management system, would give staff more efficient document search capability but wouldn't allow electronic tracking for work-in-progress or double as an agency recordkeeping system. Another alternative, ADAMS without an electronic recordkeeping capability, would cost more than the recommended alternative because of the costs of space required to store paper records.

In the selected alternative, documents would be captured upon creation and stored electronically in one central location, thus ensuring the integrity and completeness of the document collection. Everyone would work from a single electronic copy of a document, thus providing the capability for collaborative review and tracking of work-in-progress electronically. Documents would be distributed electronically, eliminating substantial paper duplication and making documents available for review or concurrence more quickly. Staff could make fast and complete full text searches and view electronic copies of the documents at their workstations.

ADAMS will be a centralized electronic document repository that will be acceptable to the National Archives and Records Administration (NARA) as NRC's official electronic recordkeeping system. NARA's acceptance of the system will help NRC comply with the Paperwork Reduction Act and the Electronic Freedom of Information Act. ADAMS will make documents more readily available to the public, and will reduce the time it takes for NRC staff to respond to public, licensee, and congressional requests.

Within NRC, the Offices of Nuclear Material Safety and Safeguards and Nuclear Reactor Regulation are streamlining their primary regulatory activities (materials licensing and reactor licensing and inspection, respectively). Without ADAMS, the proposed solutions (i.e., new processes and automated systems) would have required that these offices develop their own independent version of ADAMS.

ADAMS provides the infrastructure to realize significant improvements in staff productivity during document preparation, one of the primary activities of the agency. ADAMS provides the infrastructure to meet new requirements (e.g., should NRC assume some DOE regulatory functions) and the flexibility to cope with future changes in mission-required activities. Most importantly, ADAMS will provide agency managers with the assurance that, in the future, NRC's document and record collections will be more complete and accurate.

**B. Program management**

1. Is there a program manager and contracting officer devoted to the project?

Since ADAMS is an agencywide application and is part of the infrastructure, the Office of the Chief Information Officer (OCIO) is sponsoring the project. The program manager for ADAMS is Lynn Scattolini, Director, Information Management Division, OCIO. Ms. Scattolini is managing and coordinating agencywide efforts for this major change to the agency's document management and record keeping processes including activities in other offices, interface with NARA, etc. Daniel J. Graser is the technical project manager for ADAMS. Charles E. Fitzgerald, Director, Comprehensive Information Systems Support Consolidation (CISSCO) program staff, is responsible for designing and achieving integrated systems development and life cycle management and for management of the agency's interagency agreement with GSA/FEDSIM. The contracting officer is Keith Sandridge, GSA/FEDSIM.

2. Will an Integrated Project Team be established to assist with the management of the project?

An integrated project team has been operating since 1994 when requirements collection began for this initiative. Task Managers for all ADAMS-related activities are centralized under the leadership of Ms. Scattolini. The agency technical and records and document management staff is augmented by CISSCO contract administration support under the direction of Mr. Fitzgerald. Additional procurement and acquisition expertise, security, and financial management are provided from directly within the OCIO organization. Technical liaison is conducted with other operating units within OCIO for network, end-user support, and records management. Agency operating units are represented through a formal mechanism -- NRC's Information Technology Business Council -- and through representation on an ADAMS Partners Council. In addition, ADAMS focus groups of office representatives are in place to work on functional aspects of the project, such as electronic information exchange and end-user training. .

## C. Acquisition strategy

1. In developing the acquisition strategy, consider ways to manage the procurement risk.

The NRC managed the procurement risk by selecting GSA FEDSIM's multiple-award, indefinite quantity IT services contract, competing its work among the contractors qualified to work under the contract. Given the enterprise-wide standards and scope of the CISSCO contract, statements of work normally specify only functional requirements. In response, the contractor proposes optimal technical solutions, giving specific milestones and schedules and estimated costs. A rigorous project management system is used to track progress, deliverables, and costs for each phase of the system life cycle. A robust quality assurance plan has been developed and is cooperatively managed by NRC, GSA, and contractor staff. The contractor proposes COTS software products to meet functional requirements and custom coding is limited.

2. Specify whether the acquisition will be accomplished via a single contract or several contracts.

The acquisition will be accomplished through a single contract, as described in response to questions 3 and 4.

3. Summarize the acquisition strategy. Describe the use of competition to make "best value" source selections. How will competition be sustained throughout the acquisition life cycle?

4. Identify the type of contract selected and explain why it was chosen.

NRC's CISSCO contract is the agency's mandatory-for-consideration and preferred contract for IT/IM support. CISSCO support services are provided by the Computer Sciences Corporation through a single major task order awarded in August 1996 following competition among the GSA/FEDSIM multiple-award, indefinite quantity IT services contractors. Through this single contract, designed and established for agencywide use, the NRC obtains an enterprise-wide perspective and integration of IT/IM projects, standardized tools and life-cycle management methodologies, and systems development, integration, maintenance, and operations services. The CISSCO contractor provides written responses to written NRC requests for each requirement, and proposes technical solutions with estimated schedules and costs. As a systems integrator, the CISSCO contractor usually proposes solutions involving

various commercial-off-the-shelf products that are consistent with NRC's technical architectures and infrastructure.

Other acquisition sources and contracts are considered as well as CISSCO. These include new NRC contracts, multi-agency contracts, and government-wide IT acquisition programs. These vehicles, however, do not usually provide the enterprise-wide perspective, economies, or assurances that solutions will conform to all NRC standards.

**D. Financial basis for selecting the project**

1. Summarize the analysis of full life-cycle costs/total costs of ownership; results of cost/benefit analyses, including return on investment; and any tangible returns that benefit the agency but are difficult to quantify. For information technology, address replaced system savings and savings recovery schedule.

2. Describe analysis of alternative options and identify any underlying assumptions. Provide the estimate of risks, such as Y2K, i.e., rationale for "most likely" versus "most optimistic" acquisition goals.

   (The following answers Questions 1 and 2.)

The sponsor estimated and compared benefits, costs, and risks for four alternatives.

Staff analysis concluded that the agency could realize a significant increase in staff efficiency with the implementation of the full capabilities of the proposed ADAMS project. Staff estimated that, by reducing inordinate amounts of time searching for and copying documents, and maintaining local files, ADAMS could improve staff efficiencies by 17%, thereby freeing up staff for more productive activities. In addition, ADAMS annual operating costs would be lower than the status quo after about five years of operations. The future operating cost savings and potential staff efficiencies, together with other important benefits identified in the Benefit Comparison section below, were judged to outweigh the near term investment that would be required.

**Assumptions for the analysis**

The agency will develop and implement agencywide document management rules that everyone will have to follow. The rules will cover such things as standardized author-generated document descriptions and protocols for document routing and concurrence.

The agency will develop and implement regulations and resolve issues necessary to obtain submissions from external sources in an agency-specified electronic format. The cost estimates included in the analysis are based on the assumption that beginning in FY 2000, 70% of all externally generated pages will be received in an electronic format that requires no additional processing by the NRC.

ADAMS will be a "this-day-forward" system. It will start collecting newly prepared documents from the day it becomes operational. The project will not include conversion of existing documents (created prior to ADAMS implementation) into ADAMS. Individual NRC offices will have to budget for any existing documents they decide to convert.

**Alternatives**

**Alternative 1** - Continue with the **Status Quo**, patching the NUDOCS hardware and software as necessary. Continue with existing workflow processes (e.g., for documents in progress - use of combination of hardcopy and electronic routing, use of the telephone and e-mail to track the status, multiple versions in circulation during preparation). Continue to rely on predominately paper-based recordkeeping systems managed and maintained by numerous NRC staff.

**Alternative 2** - Replace NUDOCS with a system giving staff at their workstations the capability to conduct full-text search of newly created documents (and certain documents that are currently available in full-text in NUDOCS) and to retrieve images of the document. The staff would be able to search on the current limited set of data fields, e.g., bibliographic citations such as author, date, and title, for existing documents located in NUDOCS and the NRC's Public Document Room's (PDR) Bibliographic Retrieval System (BRS). Only completed documents which had been processed by the central document processing facility would be in the document repository; work-in-progress would be circulated in the same combination of hardcopy and electronic routing as today. Recordkeeping systems would be the same as with the Status Quo.

**Alternative 3** - ADAMS without Records Management would replace NUDOCS and provide the same capabilities for searching NUDOCS and the PDR's BRS as Alternative 2. Unlike Alternative 2, in Alternative 3 documents would be "captured" by the central repository upon creation. For these and the final versions of documents in the repository, there would be a single electronic copy of each document from which everyone could work. Alternative 3 would include integrated software that, together with procedures that would have to be developed, would allow staff to electronically distribute, route, and track the status of any

documents created after ADAMS has been implemented. This latter feature, workflow management capability plus having a single electronic copy, would greatly facilitate collaborative preparation of documents. These two features provide the potential for document version control and traceability necessary for authenticating official records.

**Alternative 4** - In addition to the capabilities provided in Alternative 3, Alternative 4 would have a fully integrated software package that would allow the agency to maintain and retire its official records electronically and to discontinue most of the existing paper-based recordkeeping systems.

**Benefit comparison**

The most significant benefit and major component of the business case for ADAMS is the potential for significant improvements in staff productivity and efficiency. Virtually every NRC employee is maintaining local paper-based files and retrieving materials from those files. Thus, ADAMS could save some fraction of work time for almost every NRC staff person. The efficiencies that might be realized (estimated by adding "non-productive" fractions of each individual's workday and assuming that the total time could be applied to more productive activities) are estimated to be 17% for the full implementation of ADAMS (i.e., Alternative 4) and 11% for implementing just the document management capabilities (i.e., Alternative 3).

In addition to staff efficiencies, the sponsor evaluated other benefits expected from implementing ADAMS. Benefit categories and the alternatives' ratings (where A = High and C = Low) are shown in the table below:

## SUMMARY TABLE FOR NON-QUANTIFIABLE BENEFITS

| Description of Non-Quantifiable Benefits | Comparison of Alternatives (A is best result, C is least desirable, duplicate scores allowed) | | | |
|---|---|---|---|---|
| | Status Quo | Alternative 2 | Alternative 3 | Alternative 4 |
| *1. More Effective Approach to Addressing Common Agency Document Management and Workflow Management Needs* | C | C | B | B |
| *2. Increased Integrity of Information* | C | C | B | A |
| *3. Improved Search Capability Resulting in Quicker Access to Documents* | C | B | A | A |
| *4. Streamlined Document Management* | C | C | B | A |
| *5. Provides Staff with Ability to Reuse Document Text* | C | B | A | A |
| *6. More Efficient Document Workflow Processes* | C | C | A | A |
| *7. Streamlined Records Management* | C | C | C | A |
| *8. Positions Agency for Compliance with Federal Laws and Regulations* | C | B | B | A |
| *OVERALL BENEFIT SCORE* | C | C+ | B | A |

As summarized above, using Alternative 1 (Status Quo) as a baseline, the other Alternatives were rated as follows:

- Alternative 2, by giving staff access to newly created documents at their desktop (workstation), provides improvement over the Status Quo in three areas: quicker access to documents, ability to reuse document text (e.g., for electronic cut-and-paste, or as attachments to work in progress), and allowing staff to disseminate more information to the public in a timely manner.

- Alternative 3 provides more powerful technical capabilities in the same benefit categories noted for Alternative 2 plus better ability to reuse document text. Alternative 3 also provides the infrastructure for implementing more efficient document workflow processes. This would allow staff to use automation to collaborate on a document's creation, and electronically route, and track the status of, documents for review, concurrence and signature. Other advantages which Alternative 3 provides over

Alternative 2 result from documents being entered into the repository upon creation. This "automatic capture" provides the staff with more timely access to and more knowledge about the availability of works-in-progress. It also results in a repository with more integrity than one that depends on staff to forward a finalized document. Alternative 3 does not provide full benefits in those categories dependent upon having streamlined records management. However, it does offer more potential for determining authenticity of a given document when compared to Alternative 2.

- Alternative 4 provides improvement in all of the potential benefits categories. The "capturing" of documents at creation significantly improves the integrity of the document collection and leads to the logical next step of maintaining the official agency records in electronic format. When records are available electronically, the labor effort required to collect, package, inventory, transfer, and dispose of paper records can be greatly reduced. Alternative 4 did not receive a "perfect score" because it does not provide for the backfit of existing documents in NUDOCS and in local and specialized document collections.

**Cost comparison**

Costing guidelines were as follows:

- A seven year life cycle (FY 1998 - FY 2004) is used. This period provides for up to two years of system implementation followed by five years of system operation.
- Sunk costs are excluded.
- Costs are projected for system development and operational efforts. Efficiencies expected to accrue from savings in staff time due to lower search time, maintaining paper files, etc., were not costed.
- The operational costs of the Status Quo are added to the costs for Alternatives 2, 3, and 4 during the implementation period for these alternatives to reflect the parallel expenditures that will occur during this period.
- No inflation factors are included in the cost estimates.

The incremental life cycle costs (FY 1998 - FY 2004) for each alternative as compared to the lowest cost (Status Quo alternative) are summarized below:

| Alternatives | Life Cycle Costs (Present Value) | |
|---|---|---|
| | Total | Incremental |
| Alternative 1 - Status Quo | $45.2M | N/A |
| Alternative 2 - NUDOCS Replacement | $45.8M | $0.6M |
| Alternative 3 - ADAMS without Records Management | $57.0M | $11.8M |
| Alternative 4 - ADAMS with Records Management | $55.2M | $9.9M |

- Estimated life cycle costs of Alternative 1 (Status Quo) and Alternative 2 (NUDOCS Replacement) are about the same. The latter's higher non-recurring cost are offset by lower operations and maintenance cost compared to the former.

- Compared to Alterative 2, Alternative 3 (ADAMS without Records Management) additional non-recurring costs include the following: $3M for workstation licenses, $2.2M in hardware, and $1M for development.

- Estimated life cycle costs of Alternative 3 are $1.8 million higher than Alternative 4 (ADAMS with Records Management) due to the continuing recurring costs for contracts, supplies, space, and storage necessary to support the current paper-based recordkeeping system.

- Estimated life cycle costs of Alternative 4 are $9.9 million higher than those of Alternative 1. Although ADAMS annual costs are projected ultimately to be lower than the Status Quo, the lower costs are not fully realized until FY 2002 when savings in costs of contractor support and space associated with records holdings kick in.

**Risk comparison**

The table below shows the risk categories and the alternatives' rankings.

## RISK RATINGS

| Category of Risk | Score (1 = low, 5 = high) | | | |
|---|---|---|---|---|
| | Alternative 1 Status Quo | Alternative 2 NUDOCS Replacement | Alternative 3 ADAMS w/out Records Mgmt | Alternative 4 ADAMS with Records Mgmt |
| Mission Impact | 5 | 4 | 3 | 2 |
| Volatility of Requirement | 2 | 2 | 4 | 4 |
| Scope of Project | 1 | 2 | 4 | 4 |
| Technical Risk | 5 | 3 | 4 | 4 |
| Management and Financial Consensus | 3 | 3 | 5 | 5 |
| Type of Procurement | 2 | 2 | 2 | 2 |
| Total Risk Scores | 18 | 16 | 22 | 21 |

- **Alternative 1** (Status Quo) has the highest risk in the Mission Impact category. For example, the staff does not have confidence that the agency has on file all official records. Finding and retrieving documents from NUDOCS is time consuming. Both of these conditions make the agency vulnerable to a crisis requiring a quick and thorough search for regulatory information. The NUDOCS system has a high technical risk in that the software/hardware configuration is no longer supported by the vendor. Alternative 1 has low risk in those categories associated with "project development," such as Volatility of Requirements and Scope of Project.

- **Alternative 2** has a lower risk in the Mission Impact category than Alternative 1 primarily because the NUDOCS replacement system will allow document search and retrieval at staff workstations and remove the technical risk associated with continuing to live with the maintenance problems associated with NUDOCS. In other categories, the risks of Alternatives 1 and 2 were rated the same.

- **Alternatives 3 and 4** were rated as relatively high risks in four categories. Each has uncertainties associated with implementation and deployment that will not be resolved until design has been completed. Both alternatives would require multiple new network application server computers and the capability to link with the network e-mail system. Both will be deployed in a client-server environment with which NRC has had little experience. Both require large up-front budget expenditures making them vulnerable in this constrained budget climate. Alternative 3 was judged to have higher

risk than Alternative 4 due to document and record collection integrity issues resulting from not having an integrated, automated recordkeeping capability.

**Sponsor recommendation**

The sponsor recommends Alternative 4. ADAMS provides quick, easy access and retrieval from more accurate and complete document and record collections. ADAMS provides the infrastructure to realize significant improvements in staff productivity during document preparation, one of the primary activities of the agency. Capture of the document at creation together with integrated software to be purchased and procedures to be developed allows the agency move to an electronic recordkeeping system for maintaining and disposing of official records.

ADAMS will make appropriate NRC documents more easily accessible to the public and it will help staff respond to outside requests in a more timely manner.

ADAMS provides a document management functionality required by NRC initiatives such as the Office of Nuclear Reactor Regulation's Reactor Program System.

ADAMS provides the infrastructure and functionality to reduce significantly staff reliance on and dollar resources spent on independent, local paper-based and PC-based document and file systems.

ADAMS provides the infrastructure to meet new requirements (e.g., one possibility is NRC assumption of some Department of Energy regulatory functions) and the flexibility to cope with future changes in mission-required activities.

**E. Adherence to architecture and infrastructure standards (IT projects only)**

1. Describe how the project is compliant with the agency's information technology architecture and technical infrastructure.

ADAMS will be fully compatible with the NRC's Information Technology Architecture or will have formal waivers for any non-compliance. Specifically, ADAMS plans to conform to all NRC IT Standards in NRC's Technical Reference Model. ADAMS is coordinating its data standards with the agency's Consolidated Data Model and will comply with all relevant data naming and representation standards.

2. Identify standards for information exchange and resource sharing.

ADAMS will support electronic information exchange (EIE), on a voluntary basis, with NRC's external customers. The strategy for accomplishing EIE is under development. NRC is evaluating the need for a waiver from FIPS Digital Signature standards to implement commercially available signaturing products for use by our licensees in electronic submission of regulatory documents

3. Describe adherence to government-wide standards, where applicable (such as Y2K).

All COTS packages acquired by the NRC are year 2000 compliant. As indicated above, NRC is evaluating the need for a waiver from the FIPS Digital Signature standard to use the RSA algorithm for digital signaturing.

4. Identify use of commercial-off-the-shelf software (COTS) versus custom; justify custom components.

NRC has acquired two commercial-off-the-shelf software (COTS) products (Filenet Corporation's Panagon software suite and Provenance Corporation's Foremost software) for which interfaces are in place to provide the document management, work flow, imaging, and records management functionality for ADAMS users. Additionally, NRC has acquired a COTS package for network performance modeling. NRC will develop some custom code so that the system can cost-effectively support agency business processes. An example is custom code that, when a user initiates a request to ADAMS to print a retrieved document, the system directs the print job to the device that can best handle the job based on its characteristics, such as the number of pages of the job. The custom interfaces will be implemented using Filenet's Panagon IDM Toolkit using 32-bit COM (Microsoft Component Object Model) objects that will carry forward to future upgrades of Panagon with little or no modification.

## PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

### A. Description of performance-based system

The ADAMS project team (NRC staff and the contractor's managers) are utilizing Microsoft Project™ as the management control tool for schedule and cost performance monitoring. The baseline project plan and underlying task order plans are populated by the contractor with resource estimates. A monthly update to the schedule is provided that indicates resources expended and percentages of tasks completed. The software is then used by NRC staff to generate a budget summary report, top level milestone report, monthly cash flow report, Gantt, and earned value reports (among others). This is an earned-value project management system.

### B. Original baseline

1. Original costs and schedule goals

**(Dollars In Millions)**

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | TOTAL |
|---|---|---|---|---|---|
| OBLIGATION | $ 2.0 | $ 7.0 | $ 3.7 | 0 | $ 12.7 |
| COSTING PLAN * | $ 1.5 | $ 6.7 | $ 3.5 | $1.0 | $ 12.7 |

** Assumes timely submission of contractor bills.*

The NRC has completed the overall acquisition by issuing the CISSCO contract. The Design task order and the Hardware and Software Acquisition task order to establish the Developer suite and test bed have been issued. The Engineering task order is ready for contractor pricing and is expected to be completed by mid-October 1997.

Deployment, training, NUDOCS conversion, electronic interface, and policy and procedure development task orders are expected to be completed by October 30, 1997.

| | |
|---|---|
| Complete design and engineering | June 1998 |
| Complete headquarters deployment | March 1999 |
| Complete regional deployment | June 1999 |
| Begin receipt of external electronic submissions | June 1999 |
| Complete conversion of existing document index data | July 1999 |

2. Original performance goals

As discussed in Part II A., "Justification," NRC's information goal is to "ensure that accurate information is available as needed to achieve the agency's strategic goals." One of the performance indicators for this goal is the level of customer satisfaction with the accuracy and availability of information in NRC's primary systems. Another indicator is the percentage of high-level data entities in the agency's primary systems that are entered once for all systems to access. Through implementation of the ADAMS system, we believe it will be a possible to achieve a significant positive impact on both of these indicators.

First, we aim to achieve a substantial increase in the level of satisfaction with the accuracy and availability of information in the agency's core document management system. The project performance goal for ADAMS is an increase in the level of NRC staff satisfaction with the availability of information in agency documents keyed to the results of the baseline measure that will be determined by a survey to be completed in FY 1998. The specific increase will be determined after the baseline has been established. This goal will be achieved six months after ADAMS is fully deployed and employees have been trained to use it.

Second, all documents will be stored once and will be available for access by other systems. The performance measure in this case is that all other systems development in a client-server environment that are capable of interface or integration with ADAMS will be able to access ADAMS for its documents.

The risk of not meeting performance plan goals was not specifically addressed in the NRC CPIC analysis for the selected ADAMS alternative. Risks were assessed and reported for mission impact, volatility of requirement, scope, technical risk, management and financial consensus, and type of procurement. The selected alternative has the lowest risk ("2") of all evaluated options in the area of mission impact, including the current status quo that has the highest ("5"). ADAMS will greatly increase confidence that the agency has all of its official records on file. Conversely, an assessment of anticipated return was made for alignment with

strategic plan, mission effectiveness, operational efficiency, customer needs and organizational impact. In the area of operational efficiency, the selected alternative rated the maximum score for demonstrating cost reductions in data replication and data accessibility. In the area of customer needs, the selected alternative rated the maximum score for demonstrating direct impact on NRC's external customers. In the area of organizational impact, the selected alternative rated the maximum score for delivering agencywide benefit to multiple offices and regions.

The key programmatic assumptions used to determine the performance goals were as follows:

- The agency will develop and implement agencywide document management rules that everyone will have to follow. The rules cover such things as standardized author-generated document descriptions and protocols for document routing and concurrence.

- The agency will develop and implement regulations and resolve issues necessary to obtain submissions from external sources in an agency-specified electronic format. The cost estimates included in the analysis are based on the assumption that beginning in FY 2000, 70 percent of all externally generated pages will be received in an electronic format that requires no additional processing by the NRC.

- ADAMS will be a "this-day-forward" system. It will start collecting newly prepared documents from the day it becomes operational. The project will not include conversion of existing documents (created before ADAMS implementation) into ADAMS.

## C. Current baseline

1. Cost and schedule goals

The NRC completed the overall acquisition through a GSA/FEDSIM task order issued in August 1996. Based on a functional requirements analysis completed in FY 1996, the software was selected and agency licenses for production deployment were procured in December 1997. The Developers suite and test bed environment were acquired and installed on schedule in November 1997, with 50 end-users participating in using the software. The Design task order was issued in May 1997. The hardware design was completed on schedule in June 1998; the software design was rescheduled to September 1998 to give the NRC sufficient time to assess whether it should use a substantially different new release of the vendor's software. The Systems Engineering and Deployment task order, covering software development, integration,

testing, and development of training materials was issued in August 1998. Completion of this work was rescheduled from November 1998 to February 1999; however, an expedited deployment schedule will still allow the NRC to meet its target date of June 1999 for deployment of ADAMS to all agency staff. An electronic interface task order was issued in February 1998. The task order for conversion of two legacy systems was put in place in June 1998.

| | |
|---|---|
| Complete design | September 1998 |
| Complete engineering | February 1999 |
| Complete headquarters deployment | June 1999 |
| Complete regional deployment | June 1999 |
| Begin receipt of electronic submissions | June 1999 |
| Complete conversion of existing document index data | July 1999 |

Projected maintenance costs ("steady-state" as defined in OMB Circular A-11, Part 3, Exhibit 42 - July 1998) increased slightly in FY 2000 and 2001 over the initial estimate. The estimates developed in the CPIC analysis (conducted in 1997) yielded projections of $1.3M per year. During budget formulation (April 1998), a decision was made to increase operational support to facilitate and ease end-user transition to the electronic environment. This caused an increase of approximately $0.4M and $0.2M in FY 2000 and 2001 respectively and has been added to the project's maintenance funding levels.

2. Performance goals

As NRC's Strategic and Performance Plans have evolved over the last 12 months, the original information goal ("Ensure that accurate information is available as needed to achieve the agency's strategic goals.") has been replaced by an Information and Streamlining Goal ("Apply information technology to streamline processes, improve information delivery, and support scientific computing and information needs."). The ADAMS project will have a significant impact in helping to achieve both this goal and the agency's Public Confidence goal ("Inspire public confidence by providing the public, those we regulate, and other stakeholders in the national and international community with clear and accurate information about, and a meaningful role in, our regulatory process.").

ADAMS Project Goal 1: Improve staff access to NRC documents.

Output Measure:

- Level of staff satisfaction with the agency document management system based on customer survey. FY 1998 baseline for the existing document management system (NUDOCS) is 3.42.

  FY 1999 Target:
  Not applicable.

  FY 2000 Target:
  Improve staff satisfaction level with the new document management system (ADAMS) to 3.75.

ADAMS Project Goal 2: Improve public access to NRC documents.

Output Measure:

- Percent of newly created and received unclassified documents routinely made available to the public via the Internet with a standard Web browser.

  FY 1999 Target:
  Not applicable.

  FY 2000 Target:
  95% of newly created and received unclassified documents.

ADAMS Project Goal 3: Establish ADAMS as a National Archives and Records Administration (NARA) approved electronic recordkeeping system.

Output Measure:

- Progress in establishing ADAMS as a NARA approved electronic recordkeeping system.

  FY 1999 Target:
  Send agency records disposition schedules to NARA by January 1999.

Obtain NARA approval of agency disposition schedules and of ADAMS as an official electronic recordkeeping by October 1, 1999.

FY 2000 Target:
Not applicable.

ADAMS Project Goal 4: Demonstrate a return on investment to the agency from the ADAMS project.

Output Measure:
- Develop demonstrable returns on investment to the agency.

FY 1999 Target:
No significant deviations in the cost, schedule and performance goals for the ADAMS project (as defined by the Clinger-Cohen Act of 1996).

FY 2000 Target:
No significant deviations in the cost, schedule and performance goals for the ADAMS project (as defined by the Clinger-Cohen Act of 1996).

**D. Variance from current baseline**

1. Variance in cost

The variance in cost from the current project baseline, excluding maintenance, is $.760M, representing a 5.5% increase. The project variances are due to a change in the architecture of ADAMS and adjusting project costs to reflect the actual COTS and DBMS software and hardware, and the software development required vs. that originally planned for the project in 1997. The variance in cost from the current operations and maintenance baseline is $0.9M in FY00 and $0.6M in FY01. The original strategy for the ADAMS project was to maximize the functions of commercial, off-the-shelf (COTS) software. Two years into the project has proven that we required significantly more customization, with associated application maintenance costs, than originally planned to meet NRC's needs. Additionally, the FY00 operations and maintenance costs include $312K in costs to procure disaster recovery hardware, unaccounted for in the original CPIC analysis.

2 Variance in schedule

The variance in schedule from the current baseline of the 42 month project design, development, and installation of ADAMS represents a five month delay (8.4%) in delivery of all components of the ADAMS project. The variance is a result of NRC adopting a strategy of reducing risk and the need to hire more contractor staff by developing and delivering software that provided functionality in modules and reusing contractor staff to develop those software modules; i.e. contractor staff who worked on release 1 were redeployed to develop release 2 and release 3 software modules. This is in contrast to the original approach of developing and delivering all software modules concurrently. Additional reasons for the variance in schedule are a result of extra time needed to correct some of the index data prior to performing migration and a delay in establishing the target operational environment to receive the migrated data.

3 Variance in performance

The variance in schedule from the current baseline will extend the time for NRC to meet its performance goal of ADAMS being our official recordkeeping system by three months. The delay is needed for NRC to phase in the development and installation of the ADAMS records management software (release 3)

**E. Latest revised estimate**

1. Cost and schedule goals

In order to reduce risk, NRC revised its initial strategy and adopted a plan to develop and deliver ADAMS software components in modules rather than all of the software functionality at one time. Currently, the software component of ADAMS that provides every employee with document management and workflow functionality has been delivered and installed at every regional employee's desktop, and will be installed at headquarters by the end of August 1999. Release 2.1, which delivers an external Web based version of the document management software, and enables placing publicly available documents in electronic form on NRC's external Web site, has been delivered and is undergoing acceptance testing. It will be installed on only a small number of workstations. Release 2.2, which provides for electronic document distribution, is nearing completion, and also will be installed on a handful of workstations. Finally, Release 2.3, which involves the refinement of a gateway between the document

management and records management software, is under development, and is scheduled for installation on the desktops of NRC's records custodians in December 1999.

| ADAMS PROJECT UPDATE | |
|---|---|
| Complete design | September 1998 |
| Complete engineering of document management & workflow software (release 1) | February 1999 |
| Complete headquarters deployment of Release 1 | August 1999 |
| Complete regional deployment of Release 1 | July 1999 |
| Begin receipt of electronic submissions (pilot) | August 1999 |
| Complete conversion of existing document index data | October 1999 |
| Delivery and installation of public access software (release 2.1) | September 1999 |
| Delivery and installation of electronic document Distribution software (release 2.2) | September 1999 |
| Delivery and installation of records management (release 2.3) | December 1999 |

Projected final project costs are estimated at $13.4M by the end of FY 1999. Maintenance costs are estimated at $2.6M in FY 2000 and $2.1M in FY 2001.

| | | FY 1997 | FY 1998 | FY 1999 | FY 2000 | TOTAL |
|---|---|---|---|---|---|---|
| | OBLIG-ATION | $ 2.0 | $ 7.0 | $ 4.4 | 0 | $ 13.4 |
| | COST-ING PLAN * | $ 1.5 | $ 6.7 | $4.2 | $1.0 | $ 13.4 |

2. Performance goals

No change.

## F. Corrective actions

No additional corrective actions are planned. The delays reflected in "D" are primarily based on a decision to develop and deliver ADAMS functionality in modules rather than to develop and deliver all software modules concurrently.

## CAPITAL ASSET PLAN AND JUSTIFICATION

Agency: Nuclear Regulatory Commission
Account Title: Salaries and Expenses
Identification Code: 31-0200-0-1-276
Program Activity: Management and Support
Name of Project: Agency-Wide Financial and Resource Management System (STARFIRE)
Check One: New Project ___ Ongoing Project _X_
Was the project approved by an Executive Review Committee? Yes _X_ No____
Is this project information technology Yes _X_ No_____
For information technology projects only:
Is this project a financial management system? Yes _X_ No _____
Was this project approved by an agency Investment Review Board? Yes _X_ No _____

### PART I: SUMMARY OF SPENDING FOR PROJECT STAGES
(Dollars in Millions)

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | TOTAL |
|---|---|---|---|---|---|---|
| Planning: | | | | | | |
| Budget authority | 0.5 | | | | | 0.5 |
| Outlays | 0.4 | 0.1 | | | | 0.5 |
| Full acquisition: | | | | | | |
| Budget authority | | 6.0 | 1.3 | 1.1 | 0.0 | 8.4 |
| Outlays | | 2.7 | 4.4 | 1.3 | 0.0 | 8.4 |
| Total, sum of stages (excludes maintenance): | | | | | | |
| Budget authority | 0.5 | 6.0 | 1.3 | 1.1 | 0.0 | 8.9 |
| Outlays | 0.4 | 2.8 | 4.4 | 1.3 | 0.0 | 8.9 |
| Maintenance: | | | | | | |
| Budget authority | 0.0 | 0.0 | 1.0 | 1.2 | 1.2 | 3.4 |
| Outlays | 0.0 | 0.0 | 1.0 | 1.2 | 1.2 | 3.4 |

## PART II: JUSTIFICATION AND OTHER INFORMATION

### A. Justification

NRC's existing financial and mixed financial/administrative systems do not meet all of the agency's future requirements. An agency project team documented a significant and immediate need for a new and integrated Agency-wide Financial and Resource Management System (STARFIRE). The project team's report, "Agency-Wide Financial Management System Development Plan" (March 1997), provides the foundation for the STARFIRE business case.

The current mix of aging systems fall significantly short in meeting the functional requirements of the agency and its program managers. The Office of the Inspector General has also noted NRC's financial system deficiencies in the annual audit of financial statements. Modification of existing systems to provide the necessary information to meet current requirements would prove more costly than the STARFIRE project and would not provide the added business process efficiencies anticipated through this modernization initiative. Achieving the Government Performance and Results Act of 1993 requirement for integration of budget planning and performance measurement is also not feasible under NRC's existing information systems.

STARFIRE Support for OMB Investment Criteria:

1. *Support core/priority mission functions that need to be performed by the Federal government.*

The *Principles for Budgeting for Capital Asset Acquisitions* contained in the Office of Management and Budget's (OMB) Capital Planning Guide have been addressed for the STARFIRE initiative under NRC's Systems Development and Life-Cycle Management (SDLCM) methodology. Under SDLCM, a needs analysis was completed, from both functional and technical perspectives. In addition, a formal project charter and project management plan was developed. As required by the Clinger-Cohen Act of 1996, NRC has designed and implemented a Capital Planning and Investment Control (CPIC) process for maximizing the value and assessing and managing the risks of information technology investments. STARFIRE has had two CPICs conducted and approved (the first encompassed the core financial and related optional modules, while the second included fundamental human resources to support the labor cost functionality of the system).

The overarching goal of STARFIRE is to eliminate the need for multiple financial tracking systems, ultimately resulting in a unified financial management system that will serve as the single, authoritative source of financial and resource information. This integrated system will improve the efficiency and effectiveness of financial and resource management in the agency. STARFIRE will provide for an automated and integrated approach to conduct agency-wide financial and resource functions, including core accounting, budget formulation, travel management, property, funds control, cost accounting, payroll, debt management/fee billing, labor cost distribution, automated procurement, and performance measurement. The system will comply with Government-wide laws, regulations, and guidance.

STARFIRE will provide key support to NRC managers and staff conducting the agency programs in pursuit of excellence, as delineated in the budget and NRC's Performance Plan. STARFIRE is linked to the Performance Plan's Information and Streamlining Goal to "apply information technology to streamline processes, improve information delivery, and support scientific computing and information needs," which underlies the overarching general goal to carry out the NRC regulatory program efficiently and effectively.

2. *Be undertaken by the requesting agency because no alternative private sector or governmental source can efficiently support the function.*

Private sector alternatives are not applicable or available for federal financial management program implementation initiatives such as STARFIRE. The responsibility for managing NRC's appropriated funds and program activities clearly rests with the NRC. Though federal budget and accounting practices and requirements are in many ways quite different from those of the private sector, a commercial market has developed to provide government agencies with a variety of off-the-shelf software products and implementation services to meet financial management program needs. In addition, there is some opportunity for agencies to work with one another through "cross-servicing" arrangements. The NRC considered cross-servicing, however cross-servicing options would not provide a means for achieving STARFIRE's "single-source" system approach and would obstruct an objective to integrate financial and other program information within the NRC's technical and systems infrastructure.

3. *Support work processes that have been simplified or otherwise redesigned to reduce costs, improve effectiveness, and make maximum use of commercial, off-the-shelf technology.*

STARFIRE is an enterprise system which will contain integrated program budget and cost information. It will replace the many fragmented, incomplete and costly financial systems

currently in use in the agency. This system will reside on agency infrastructure, and be accessible by all NRC personnel. Acquisition and deployment of STARFIRE has been focused on following a best-practices approach, utilizing commercial off-the-shelf (COTS) with as little customization as possible. This approach will assure work processes receive sufficient examination to maximize the automation advantages available through STARFIRE.

**B. Program Management**

1. Is there a program manager and contracting officer devoted to the program?

A dedicated Project Team has been established to assure the successful implementation of STARFIRE. Full-time team members have been assigned from key functional areas within the NRC. This team is led by a Project/Business Manager from the Office of the Chief Financial Officer (OCFO). A Technical Manager and Contracting Officer's Technical Representative has been assigned from the Office of the Chief Information Officer. Other dedicated supporting team members provide a broad and diverse perspective on this initiative. A Contracting Officer and Contracts Specialist have been assigned to STARFIRE acquisitions.

2. Will an Integrated Project Team be established to assist with the management of the project?

In addition to the central STARFIRE team, NRC has established a number of Applications Teams to focus on specific components of the system: Core and Cost Accounting/Debt Management, Transition and Training, Executive Information and Reporting, Payroll/Human Resources, Labor Cost Distribution, Performance Measurements, Travel, Procurement, and Budget Formulation. Team members from throughout the agency have been carefully chosen to assure success of the project.

Since its inception, senior managers have been heavily involved in STARFIRE. Providing timely, accurate and critical financial and resource information to NRC managers is one of the system's primary objectives. Accordingly, management has and continues to fully participate in the development process. A formal project charter has been developed which delineates the membership and roles of the managerial structure overseeing STARFIRE: Team Members, Team Managers (Project, Business, Technical), Executive Sponsor, Steering Committee and Executive Council. Communication between these tiers of the project's organizational structure is frequent and effective.

## C. Acquisition Strategy

1. In developing the acquisition strategy, consider ways to manage the procurement risk.
2. Specify whether the acquisition will be accomplished via a single contract or several contracts.
3. Summarize the acquisition strategy. Describe the use of competition to make "best value" source selections. How will competition be sustained throughout the acquisition life cycle?
4. Identify the type of contract selected and explain why it was chosen.

NOTE: On July 23, 1999, the contract for the core financial management system was terminated for default by the NRC due to functionality failures of the COTS software. See Part III for additional information.

The underlying STARFIRE software suite is comprised of COTS components, which are fixed-price in nature and were acquired under the GSA schedule program. Implementation services have been acquired through a labor-hour arrangement. Past performance and vendor capability are an important aspect to the acquisition strategy. The selected COTS provider has extensive experience in the public sector and the core system has received federal financial management system certification. Ancillary system components (i.e., travel, automated procurement) are also COTS in nature. Integration services, including conversion of selected existing data, will also be provided under this contract.

Software to implement STARFIRE's labor cost distribution functionality (payroll, time and labor, core personnel processing) has been acquired under a separate contract. The selected software modules are widely used and well-proven in both the public and private sectors. Past performance is a critical factor in assuring successful implementation and integration of this software. Accordingly, NRC considers past performance as a key evaluation factor in selecting support for this aspect of the project, and is currently contracting for this effort. The Office of Federal Procurement Policy's (OFPP) *Guide to Best Practices for Past Performance* is being incorporated in NRC's acquisition of implementation services. Past performance evaluation factors include:

- Quality of Services
- Timeliness of Performance
- Cost Control
- Business Practices
- Customer Satisfaction

- Key Personnel Past Performance

The framework/system for evaluating past performance contained within the OFPP guide provides NRC with an excellent foundation for weighing implementation proposals. Specific experience and past performance in the federal environment is also of importance and will receive the appropriate level of attention in the evaluation of proposals. The selected software modules are widely used and well-proven in both the public and private sectors.

Other acquisition strategies were considered during the early planning phase for STARFIRE but were determined to not be as advantageous to the agency in several respects, including cost, risk and schedule. These included modification of existing systems, complete custom development, COTS products not on the GSA Schedule and customization of COTS products. In light of the agency requirements, CFO Council guidance, cost considerations, value to the agency, best practice considerations and aggressive schedule for the project, these alternatives were ruled out.

Implementation of STARFIRE has been planned with minimal, if any, modification to the basic software itself. NRC prefers and intends to alter business processes where necessary to avoid these modifications. This in turn will reduce short-term and long-term costs, enable more stringent configuration management and take full advantage of future product enhancements that might otherwise be more difficult to implement in a customized environment.

**D. Financial Basis for Selecting the Project**

1. Summarize the analysis of full life-cycle costs/total costs of ownership; results of cost/benefit analyses, including return on investment; and any tangible returns that benefit the agency but are difficult to quantify. For information technology, address replaced system savings and savings recovery schedule.

2. Describe analysis of alternative options and identify any underlying assumptions. Provide the estimate of risks, such as Y2K, i.e., rationale for "most likely" versus "most optimistic" acquisition goals.

   (The following answers Questions 1 and 2.)

Two cost-benefit-risk analyses were performed in planning for STARFIRE. The initial analysis encompassed the core accounting system and its related financial/resource systems. This analysis was later supplemented with a review of the costs and benefits related to the

essential ("Basic") human resources system (HRIS) component needed to support the achievement of STARFIRE's complete functional objectives (namely, labor cost distribution). In both instances, alternatives (including Status Quo) were identified and costed out, resulting in NRC selecting not only the lowest cost alternative, but also those which are expected to deliver the most benefit to the agency.

**Assumptions for the analysis**

Alternatives 2 and 3 involved the competitive acquisition of COTS financial management products using the General Services Administration (GSA) Financial Management Systems Software (FMSS) Multiple Award Schedule (MAS) program that is mandatory for obtaining core accounting systems.

STARFIRE will utilize the agency's existing/planned hardware and software infrastructure, and other new capabilities such as document and workflow processing, and electronic signaturing being implemented under other agency initiatives.

COTS products will only be customized to meet regulations or requirements of the NRC Executive Council.

The payroll module would be implemented concurrently with the Basic HRIS, thereby eliminating any costs associated with the interface of the current payroll system.

Initially human resource processing will be centralized. However, a framework for subsequent distribution of selected human resource processing functions to provide managers with critical, decision-making data and tools is expected to be in place once full HRIS is deployed, under a separate project.

The NRC will comply with the federal government and agency policy governing human resources systems and other related management laws.

NRC's Office of Human Resources will maintain the agency's detailed organization tables.

**Alternatives**

The initial CPIC included an analyses of three alternatives as follows:

**Alternative 1 - Status Quo System.** NRC would continue to maintain the existing OCFO financial management systems and approximately 100 office automated, semi-automated, and manual systems, without any functional upgrades or enhancements. Modifications would be limited to those required to make the systems Year 2000 compliant, and other maintenance modifications that may be required to keep the systems operational.

**Alternative 2 - COTS Software using SYBASE for Database Management.** NRC would implement a COTS-based solution which utilizes SYBASE for the database management functions (NRC currently owns a license for the SYBASE relational database management system). This would entail the purchase of a suite of software from a single vendor. This suite would include a module that will meet the Core financial requirements, and other modules for as many other processes and requirements that the NRC determines can be met cost effectively by the selected vendor. When necessary to meet remaining requirements, the NRC would either purchase COTS-based solutions from other vendors or build custom applications. The existing NRC financial systems, including approximately 100 automated, semi-automated, and manual systems, would be eliminated after an initial transition period is completed. The NRC would also implement a management policy requiring that all financial and resource needs be satisfied through STARFIRE, its associate components, and interfaced systems.

**Alternative 3 - COTS Software using ORACLE for Database Management.** NRC would implement a COTS-based solution which utilizes ORACLE for the database management functions, and custom development when required, to support the same requirements as those identified in Alternative 2.

The second analysis (implementation of basic human resources, payroll, and time and labor) focused on the following two alternatives:

**Alternative 1a - Status Quo.** Maintain the existing payroll and relevant human resources systems and interface them as necessary with STARFIRE. No functional upgrades or enhancements will be made that are not a direct need and result of the interface requirements or needed to achieve Year 2000 compliance, or to comply with changes in legislation and other mandated-type requirements.

**Alternative 2a - Implementation of COTS Software for Basic HRIS.** Implement COTS software purchased under STARFIRE to replace payroll and core human resources processing functionality currently handled by legacy systems.

**Other Alternatives Considered**

**Modification of Existing Systems.** The current systems do not meet all of the NRC's current informational needs. In an August 26,1996, survey conducted by the chair of the Financial Managers Council, offices noted that only minimal information needs were being met. In addition, the Office of the Inspector General has noted financial system deficiencies regarding interfaces with payroll in the annual audit of the financial statements. It would be difficult and costly to modify the current systems to provide the data required in today's environment, especially since there are a number of financial and mixed financial/administrative systems in use in the agency outside the core financial system that use different software and hardware for a variety of purposes ranging from budget planning to contract/project management. In addition, the vendor of NRC's current financial system is developing a new client/server version of the system, therefore, the mainframe version in use at NRC is near the end of its useful life.

**Custom Development.** Market surveys determined that there were COTS systems available to meet many of the agency's needs. In addition, the CFO Council Financial Systems Committee guidance advises agencies to use COTS products. Furthermore, custom software could not be developed and deployed within the agencies aggressive implementation schedule.

**COTS Systems Not on the GSA Schedule.** NRC is following the JFMIP-prescribed procedures for evaluating the software systems that are available through the GSA schedule. Nine different vendors have software packages that have successfully completed GSA's software capabilities verification test to ensure the systems comply with the core financial management functional requirements set forth in Section C of the FMSS solicitation and other Government Accounting Manuals referenced in the solicitation. An initial market survey indicated that at least one of these products would satisfy a large percentage of the agency's requirements. However, if the NRC had determined that none of the systems offered by these nine vendors would satisfy the agency's unique requirements after issuing a Letter of Interest to all vendors and evaluating the responses, then the agency could have requested a waiver to allow the NRC to procure from an alternate source. Typically, agencies that have received waivers have paid the vendor to customize their software to meet the Joint Financial Management Improvement Program, Core Financial System Requirements, which is a lengthy and expensive process. In addition, it becomes the agency's responsibility to insure that these requirements are being properly met and continually updated as requirements change.

**Custom Modifications of COTS Systems.** When Federal agencies buy commercially developed financial software, they traditionally modify that software to meet "unique agency

requirements." This practice has been very costly, and complicated, especially when vendors upgrade or release new versions of the software. Private sector experience has shown that instead of raising the costs of operations and systems maintenance, businesses should modify or improve their business practices in order to reduce or eliminate the need for systems modifications, and therefore eliminate the need for custom modifications by the vendor. Additionally, on June 9, 1997, the NRC Office of the Inspector General issued a Special Evaluation Report (97E-10), Evaluation of the Best Practices for Developing and Implementing an Integrated Financial Management System, and one of the best practices cited in this report is "minimizing software modification."

Other alternatives were considered and discussed with management prior to the approval to proceed with the purchase of COTS software.

**Benefit comparison**

The following non-quantifiable benefits associated with implementation of the chosen STARFIRE alternatives (2 and 2a) were identified:

- Better management control by integrating financial/resource planning and execution data.
- More accountability for expenditures through implementation of cost accounting and performance measures.
- More consistent data from single-source entry.
- More timely and efficient sharing of information.
- Better data integrity.
- Support the collection of labor cost information.
- Easier compliance with new and changing federal laws and regulations.
- Support for fully distributed human resources.
- Process improvements from adopting recognized best practices.
- Better analysis capabilities for management decision making.

The baseline performance goals for STARFIRE have been established and will be monitored to assure achievement of these added benefits as they can have substantive positive business impacts on the NRC.

## Cost comparison

The potential cost savings associated with Alternative 2 were significant. Alternative 3 provided lower life cycle cost savings because it included significant additional expenditures to acquire ORACLE products and build STARFIRE in a different relational database management system operating environment. In both alternatives, major savings accrued because of efficiencies that can be realized in processing and applications maintenance. The NRC also will realize savings by reallocating FTE that become available due to STARFIRE efficiencies and using these FTE to perform financial management functions previously performed by support contractors.

Cost comparisons were developed for alternatives analyzed under both STARFIRE CPICs. Non-recurring (i.e., one-time software purchases, Y2K fixes) and recurring (i.e., timesharing, maintenance) costs were computed. The following life-cycle discounted costs were projected in STARFIRE's CPICs:

| Alternative | Cost Estimate | FTE Estimate |
|---|---|---|
| Alternative 1 - Status Quo | $25.9M | 570 |
| Alternative 2 - SYBASE Core | $18.1M | 547 |
| Alternative 3 - Oracle Core | $23.7M | 550 |
| Alternative 1a - Status Quo | $8.7M | 78 |
| Alternative 2a - Basic HRIS | $4.6M | 78 |

## Risk Comparison

The STARFIRE project management plan established a process to manage two key facets of risk: assessment and control. Risk mitigation activities are planned to reduce the occurrence of risks. Four categories of risk are associated with implementing STARFIRE alternatives. Each category was rated for each alternative with the following results :

## RISK RATINGS

| Category of Risk | Score (1=low, 5=high) | | | | |
|---|---|---|---|---|---|
| | Alternative 1 Status Quo | Alternative 2 SYBASE Core | Alternative 3 Oracle Core | Alternative 1a Status Quo | Alternative 2a Basic HRIS |
| Mission Risk | 4 | 2 | 2 | 5 | 1 |
| Financial Risk | 2 | 3 | 4 | 2 | 3 |
| Project Execution Risk | 2 | 4 | 5 | 3 | 4 |
| Operation and Acceptance Risk | 2 | 3 | 3 | 1 | 2 |
| Total Risk Scores | 10 | 12 | 14 | 11 | 10 |

- **Alternative 1** had a moderate degree of overall risk, but a high degree of mission risk. The lack of timely and accurate resource information in the current environment would continue to impact management decision-making about how to best deploy available resources to effectively support the agency mission.

- **Alternative 2** had a slightly higher overall risk than Alternative 1, primarily because it had a higher risk for project execution and will require several million dollars in investment funding.

- **Alternative 3** had the highest overall risk, primarily because of its higher execution risk associated with integrating ORACLE software into a predominantly SYBASE environment and the greater phase-up investment funding.

- **Alternative 1a** has a slightly higher risk score than **Alternative 2a**. The mission risk category is significantly higher than the other alternative because the complexity inherent in the current operating environment makes it difficult, if not impossible, to modify the software to comply with new mandated requirements. Alternative 2a is slightly higher risk in three of the four risk categories, however, its low mission risk results in the lower overall rating.

### E. Adherence to architecture and infrastructure standards (IT projects only)

1. Describe how the project is compliant with the agency's information technology architecture and technical infrastructure.

2. Identify standards for information exchange and resource sharing.

3. Describe adherence to government-wide standards, where applicable (such as Y2K).

4. Identify use of commercial-off-the-shelf software (COTS) versus custom; justify custom components.

Since its inception, the technical requirements of STARFIRE have been given priority consideration. NRC's established Technical Reference Model (TRM) was provided to potential software vendors during the initial software solicitation phase of the project. The TRM contains the NRC's architecture and infrastructure environment. Products not adhering to the TRM were appropriately noted and costed-out during the review of software proposals. Technical interface requirements are documented to detail information on data that will be passed between STARFIRE and other NRC systems (either way), identify data edit requirements for completing the interfaces and provide information for error reports. Other technical aspects, such as certifying Year-2000 compliance and having the ability to run under NRC's existing and future operating systems were also carefully considered in the evaluation of proposals and products. "Portability" of data and information to other COTS applications throughout the NRC's desktop computing environment (e.g., Corel Quattro Pro spreadsheet and Microsoft Access database programs) was included in the evaluation and has been demonstrated, which will help further ensure that unique office-specific data manipulation and reporting needs can be met without software modification, thus enabling the STARFIRE to achieve an important deployment goal: minimize customization.

The STARFIRE software suite is composed of COTS products. The core accounting module of the system has been certified by the General Services Administration for federal financial management. Other Modules included in the suite (human resources/time and labor, travel management, automated procurement) are commercially available and are in widespread use throughout the government and/or private industry.

## PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

### A. Description of performance-based system

The STARFIRE project team has been utilizing the Microsoft Project software program to control the project's schedule. Cost monitoring is being accomplished through the use of spreadsheets and accounting reports. A detailed project management plan and Gantt chart has been established to depict the numerous tasks and subtasks necessary to complete the project and to baseline the resources and time allocations to complete each step. This document will be refined as the project phases are initiated. From this tool, milestone status reports can be generated.

Performance-based service contract (PBSC) approaches have been incorporated in the STARFIRE project including:

- Workload analysis;
- Use of process-oriented requirements;
- Competitive acquisition methods; and
- Use of existing industry (and federal) performance standards.

### B. Original baseline

1. Original cost and schedule goals

**(Dollars in Millions)**

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | TOTAL |
|---|---|---|---|---|---|---|
| OBLIGATION | $ 0.0 | $6.0 | $ 1.3 | $ 1.1 | $ 0.0 | $ 8.4 |
| COSTING PLAN | $ 0.0 | $ 2.7 | $ 4.4 | $ 1.3 | $ 0.0 | $ 8.4 |

As indicated, the project management plan contains the complete schedule of the actions and steps required for STARFIRE. Following NRC's SDLCM methodology will also enable viewing this initiative by the following categorizations: Requirements Design, Acquisition of Resources, Design, Engineering, Deployment and Servicing.. Significant functional milestones in the STARFIRE schedule are as follows:

| | |
|---|---|
| Core components | FY 1999 |
| Labor cost component | FY 2000 |
| Complete system | FY 2001 |

2. Original performance goals

STARFIRE's project charter and related background materials detail several specific goals and objectives such as high functionality, geographic indifference, improved data quality and decision support, intuitive user interface ("friendliness"), etc. As indicated in the charter, financial and programmatic success largely hinge upon STARFIRE's ultimate utility: enabling the agency to function in a more efficient and effective manner. Though the relationship/linkage between STARFIRE and the NRC Strategic Plan and Performance Plan has already been established, an investment of this magnitude warrants additional performance goals:

STARFIRE Project Goal 1: Reduction in NRC resources required to maintain financial and related resource information systems. Demonstrate a return on investment to the agency from the STARFIRE project.

Output Measure:

- Staff and dollar savings projected through the STARFIRE planning process are obtained.

STARFIRE Project Goal 2: Agency program managers have ready access to current financial and performance information.

Output Measure:

- Percent of Program managers able to obtain and utilize financial and performance data in their day-to-day decision-making.

STARFIRE Project Goal 3: Elimination of fragmented agency and office financial and related systems.

Output Measure:

- Number of agency legacy systems replaced by a single integrated system that NRC program offices can rely on for resource and program management information.

STARFIRE Project Goal 4: Increase user/customer satisfaction.

Output Measure:

- Deficiencies cited in past information/systems surveys are eliminated. Level of satisfaction to be measured with customer survey. Benchmark already established.

## C. Current baseline

1. Cost and schedule goals

(Dollars in Millions)

| | FY1998 | FY1999 | FY2000 | FY2001 | FY2002 | FY2003 | FY2004 | TOTAL |
|---|---|---|---|---|---|---|---|---|
| OBLIGATION | $5.4 | $1.9 | $1.6 | $0.3 | * | * | * | TBD** |
| COSTING PLAN | $0.8 | $4.2 | $2.5 | $1.4 | $0.3 | * | * | TBD** |

* Since the NRC contract for its core financial management system was recently terminated on July 23, 1999, there was not sufficient time to develop realistic cost estimates for out year obligations.

** The total amount of obligations thru FY 2001 is estimated to be $9,182K. The project total will be determined after realistic out-year estimates have been developed.

| | |
|---|---|
| Labor cost component, Cost Accounting, and Travel | FY 2000 |
| Core accounting components | FY 2003 |
| Complete system | FY 2004 |

2. Performance goals
Same as Original.

**D. Variance from current baseline**

1. Variance in cost
The major factor in the cost variance is associated with terminating the contractor responsible for the core accounting module of the STARFIRE system. The contract was terminated on July 23, 1999. This core accounting module included core accounting, budget formulation, procurement, travel management, and cost accounting, as well as the associated interfaces and training. The increase in the project is mainly associated with retaining the existing accounting system and having to contract separately for the cost accounting and travel management modules and the interfaces necessary for the integrated system. Two modules, budget formulation and procurement, have been deferred for consideration until FY 2003. NRC plans to use the existing accounting system until FY 2003.

2. Variance in schedule
The agency will continue with the STARFIRE project, but will complete the project in two phases. The first phase will include using the existing accounting system and interfacing it with a Human Resources, Time and Labor, Payroll, Cost Accounting, and Travel modules. It is planned for this system to be operational by the end of FY 2000. The second phase, which will commence in the next two to three years, will involve the procurement and integration of a core accounting, budget formulation, and procurement modules. The acquisition of these modules will not commence until market surveys indicate that the desired functionality is available and operating successfully.

The NRC's existing system will be retained until a new, client server based COTS system can be procured. Acquisition of the new core financial management system will be initiated only after the overall STARFIRE implementation strategy has been reassessed and after market surveys indicate that the desired functionality is available and operating successfully. The NRC plans to reprocure a commercial off-the-shelf, client server based core financial management system in FY 2002.

3. Variance in performance
Not applicable.

## E. Latest revised estimate

1. Cost and schedule goals
   Not applicable.

2. Performance goals
   Not applicable.

## F. Corrective actions

The termination of the contract for the core financial management system modules has caused the NRC to re-think its strategy for deployment of the STARFIRE system. Until a new core financial management system can be procured, the NRC will retain its existing system. This system will be interfaced with the basic human resources, payroll, and time and labor system that is now being implemented to support labor cost functionality. This approach will provide a substantial portion of the cost information needed by NRC managers.

Ancillary systems will be deployed in a phased approach. While the Current Baseline includes estimates for travel management and cost accounting, these estimates will be refined as additional, more accurate cost information is obtained. The current plan calls for interfacing these modules with the existing core financial system. The budget formulation and automated procurement modules will be delayed until the new core accounting module is purchased.