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)
Unique Project Identifier: 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:

a. Is this project a financial management system? Yes___ No _X_

b. Does this project implement electronic transactions or recordkeeping covered by the Government Paperwork Elimination Act (GPEA)? Yes _X_ No___

PART I: SUMMARY OF SPENDING FOR PROJECT STAGES

Data represents all segments and phases of the project

(Dollars in millions)

	FY97	FY98	FY99	FY00	FY01	FY02	TOTAL
Planning:*							
Budget authority	0	0	0	0	0	0	0
Outlays	0	0	0	0	0	0	0
Full acquisition:							
Budget authority	2.0	7.0	4.4	0.3	0.0	0.0	13.7
Outlays	1.5	6.7	4.2	1.3	0.0	0.0	13.7
Total, sum of stages (excludes maintenance):							
Budget authority	2.0	7.0	4.4	0.3	0.0	0.0	13.7
Outlays	1.5	6.7	4.2	1.3	0.0	0.0	13.7
Maintenance:							
Budget authority	0.0	0.0	0.2	2.4	2.2	2.3	7.1
Outlays	0.0	0.0	0.2	2.4	2.2	2.3	7.1

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

X/2

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

1. How does this investment support the agency's mission and strategic goals and objectives?

The NRC's mission is to regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment.

Effective management of information is critical to NRC performing its mission and most of the important information is in documents. The Commission's policies, decisions, and bases for regulatory actions depend 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.

ADAMS is an enterprise system that provides cradle-to-grave document management. The system will support document creation or capture, dissemination, 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 will help NRC accomplish it's strategic goals in support of its mission primarily by inspiring public confidence. ADAMS will provide 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 program. In addition, ADAMS will apply information technology to help streamline NRC's business processes and improve information delivery.

2. Is this investment included in the agency's annual performance plan?

NRC's Performance Plan includes an information and streamlining goal: "Apply information technology to streamline processes, improve information delivery and support scientific computing and information needs." 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.

3. How does this investment support a core or priority function of the agency?

ADAMS supports the creation or capture, storage and retrieval, records management 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.

4. Are there any alternative sources, in the public or private sectors, that could perform this function? If so, explain why the agency did not select one of these alternatives.

ADAMS supports agencywide document creation, 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 identify 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.

5. How will this investment reduce costs or improve efficiencies?

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 versions 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. Have you assigned a program manager and contracting officer to this project? If so, what are their names?

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. Wil Madison 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. How do you plan to use an Integrated Project Team to manage this 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, records management 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

Explain how your acquisition strategy will manage or mitigate project risks by answering the following questions:

1. **Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned , explain how they are related to each other, and how each supports the project performance goals.**

The acquisition of ADAMS will be accomplished through a single contract. The NRC will manage 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. **For each planned contract, describe:**
   - a. **What type of contract you will use (e.g., cost reimbursement, fixed-price, etc.)**
   - b. **The financial incentives you plan to use to motivate contractor performance (e.g., incentive fee, award fee, etc.)**
   - c. **The measurable contract performance objectives.**
   - d. **How you will use competition to select suppliers.**
   - e. **The results of your market research**
   - f. **Whether you will use COTS products or custom-designed products.**

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. The current CISSCO contract does not include financial incentives nor measurable contract performance objectives.

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 and custom coding is limited as much as possible.

Other acquisition sources and contracts were considered in addition to CISSCO. These include new NRC contracts, purchase orders, 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. Alternatives analysis and risk management

1. **Did you perform a life-cycle cost analysis for this investment? If so, what were the results?**

2. **Describe what alternatives you considered and the underlying assumptions for each.**

3. **Did you perform a benefits/cost analysis or return on investment analysis for each alternative considered? What were the results of each (Describe any tangible returns that will benefit your agency even if they are difficult to quantify).**

4. **For IT, explain replaced system savings and savings recovery schedule.**

(The following narrative addresses the first 4 questions in this section)

In order to determine the bases for selecting the ADAMS project alternative, the sponsor, the Office of the Chief Information Officer (OCIO), conducted a cost-benefit-risk analysis as part of the Capital Planning and Investment Control (CPIC) process 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 analyses:

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 electronic formats that require 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 desktops (workstations), 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 significantly reduce staff reliance 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.

5. Describe your risk assessment and mitigation plan for this project.

The risk assessment and mitigation plan for the ADAMS project include a modular development approach, the use of proven COTS products, frequent contractor reporting requirements, use of a structured work breakdown approach, the assignment of a single program manager who has responsibility for the entire program, direct daily involvement of the OCIO technical lead, and one dedicated project team throughout the development and implementation processes. In addition, the NRC also created a structure for regular interaction with internal stakeholders through working with designated contacts and user working groups in each office, providing regular status reports to agency executive management throughout the system life cycle, participating in office sponsored user group meetings, and creating a special "help desk" staff to provide support and assist offices in transitioning to an electronic document management environment.

E. IT modernization and architecture (IT projects only)

1. Does this project support your agency's current architecture or is it part of a modernization initiative?

ADAMS will be fully compatible with the NRC's Information Technology Architecture. Specifically, ADAMS will conform to all NRC IT Standards in NRC's Technical Reference Manual. ADAMS has coordinated its data standards with the agency's Consolidated Data Model.

2. Explain how this project conforms to:

a. your agency's IT architecture (current or target, as applicable)

b. your agency's technology infrastructure

c. the Federal Enterprise Architecture Framework (FEAF), if used for this project. If the project does not follow the FEAF, explain the reason for the decision and discuss the framework used.

ADAMS has been designed to fit within the agency's client-server and LAN infrastructure and is accessible via agency-standard microcomputers. ADAMS and all of its components have been designed using client-server technology and agency-approved COTS products. As stated in response to question 1, ADAMS will conform to NRC IT Standards in NRC's Technical Reference Manual (TRM) and the TRM is compliant with the FEAF.

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, imaging, and records management functionality for ADAMS users. Additionally, NRC has acquired a COTS package for network performance modeling. NRC has developed 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 are 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.

F. IT Security (IT projects only)

Demonstrate that the security for this project:

a. includes security controls for components, applications, and systems that are consistent with your agency's IT architecture;

The ADAMS System Security Plan was produced by contractors who have been working with NRC OCIO Computer Security Staff for six years in production of these plans, which ensures consistency. This style of plan is based on NRC's publication, NUREG/BR-0166, guidance which has been in place since 1992. NUREG/BR-0166

is based directly on the Department of Commerce Worksheets which were modeled from OMB Bulletin 90-08.

b. is well-planned;

The ADAMS System Security Plan follows a preset format: Introduction, System Identification, Sensitivity of Information Handled, System Security Measures, and Additional Comments. This makes it a user-friendly reference, even for first-time reviewers.

c. manages risks;

In the System Security Measures section, Risk Assessment/Management and Security Controls are discussed. Further explanation is given to such areas as "Rules of Behavior", "Operational and Technical Controls", as well as those "Complimentary Controls Provided by Support Systems".

d. protects privacy and confidentiality; and

The System Security Plan's subsection entitled General Description of Sensitivity, states that"...the confidentiality of ADAMS data is considered to be a significant security concern, and protective requirements in this area are rated High."

ADAMS COTS software can granularly control access down to the document level. The document profile (index data) for a document to be entered into ADAMS has a required sensitivity rating which must be determined and entered or the document will be disallowed. Sensitivity levels range from whether the document may be available to the public down to "restricted". Further control may be employed on documents which are specifically designated by being in library segments only available to predetermined select groups of personnel who are also required to use additional passwords for library access.

e. explains any planned or actual variance from NIST security guidance.

No variance from NIST security guidance is noted since none was found after careful review.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or recordkeeping:

a. Briefly describe the transaction or recordkeeping functions

ADAMS has been established as NRC's official recordkeeping system for all record series in which an analysis showed that it is cost-effective to maintain collections of records in electronic in lieu of paper form. This covers virtually all of the programmatic record collections of the agency and some of its administrative record collections. The software that NRC employs conforms to DOD standards that have been endorsed by the NARA.

b. Explain how this investment relates to your agency's GPEA plan.

ADAMS will use the technology, processes, and procedures of NRC's electronic information exchange program (EIE) to allow for two-way voluntary electronic submission of documents to the NRC and between NRC and its stakeholders. A production electronic information exchange (EIE) system is being developed to accommodate electronic document submittals required under 10CFR Part 50, including document exchange between the NRC and its licensees, vendors, the general public, and other entities. The production EIE system, which is currently in a pilot phase, provides for electronic authentication (electronic signature) methods to verify the identity of the sender and the integrity of electronic content. The production EIE system is expected to be expanded to accommodate other types of submittals eligible for electronic submission to the NRC. In addition, the production EIE system will provide document retrieval capability integrated with ADAMS.

ADAMS is an electronic information system which is a vital component of a multi-tiered NRC's public information strategy. ADAMS is appropriate for public users who are familiar with NRC's documentation and who, by virtue of their interest and/or occupation, require frequent and regular access to NRC's documents. ADAMS allows expanded public access to all NRC's publicly-available documents via the Internet. The system permits full text searching and provides the ability to view document images, download files, and print locally. In late 2000, it also will provide the ability for the public to order copies of NRC documents on-line. The methods used for ADAMS search and retrieval by the public are the same as those being used by NRC staff for management of agency documents.

The ADAMS project will be compliant with GPEA by October 21, 2003.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Description of performance-based management system (PBMS):

1. Describe the performance-based management system that you will use to monitor contract or project performance.

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, and Gantt reports.

B. Original baseline (OMB-approved at project outset):

NOTE: The material in B.1. and B.2 was submitted as the "original baseline" in the agency's FY 1998 300B.

1. What are the cost and schedule goals for this project?
[What are the major project milestones or events? When will each occur? What is the estimated cost to accomplish each one?]

(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. What are the measurable performance benefits or goals for this project? [What are the project performance objectives?]

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 (applicable only if OMB approved the changes):

1. What are the cost and schedule goals for this project?
[What are the major project milestone events and the estimated costs to accomplish each one?]

NOTE: The material in C.1. and C.2. was submitted as "actual" in the agency's FY 2001 300B.

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

2. What are the measurable performance benefits or goals for this project? [What are the project performance objectives?]

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 on a scale of 1.0 to 5.0.

FY 1999 Target:

Not applicable.

FY 2000 Target:

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

FY 2000 Status:

Staff survey has been deferred until the set of tasks to improve the new document management system as outlined in the ADAMS Assessment and Action Plan, has been implemented.

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.

FY 2000 Status:

The target has been achieved.

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:

See status.

FY 2000 Status:

NARA's approval of ADAMS as an electronic recordkeeping system is done by approval of our records disposition schedules. We have received approval of approximately 10% of our schedules to date. Approval of our remaining schedules is currently being delayed due to a public comment regarding NARA's existing rules for transferring permanent records to NARA. We expect NARA to resolve this issue and approve our remaining schedules in the first quarter, FY 2001.

FY 2001 Target:

Obtain NARA approval for the remaining records disposition schedules after resolution of issues related to public comment.

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).

FY 2000 Status:

No significant deviations in the cost and schedule goals for the ADAMS project as defined by the Clinger-Cohen Act of 1996. The ADAMS performance goal for return on investment is not stated in a quantitative manner that would provide a percentage calculation. Instead, the table presented in section D.3., Performance variance, of this report, characterizes the status of achieving this performance goal.

D. Actual Performance and Variance from OMB-approved baseline (Original or Current):

1. Actual cost and schedule performance.

a. What work you planned to accomplish and how much you budgeted to complete the work.

b. What work you actually accomplished and how much you actually spent.

ADAMS PROJECT UPDATE	Planned	Actual
Complete design	September 1998	September 1998
Complete engineering of document management & workflow software (release 1)	February 1999	February 1999
Complete headquarters deployment of Release 1	August 1999	August 1999
Complete regional deployment of Release 1	July 1999	July 1999
Begin receipt of electronic submissions (pilot)	August 1999	March 2000
Complete conversion of existing document index data	October 1999	October 1999* (see note)
Delivery and installation of public access software (release 2.1)	September 1999	October 1999
Delivery and installation of electronic document Distribution software (release 2.2)	September 1999	September 1999
Delivery and installation of records management	December 1999	Delivered August 2000**.

*The existing document database conversion was completed. However, the legacy systems that contained this data (NUDOCS & BRS) are still being used by both NRC staff and the public for search and retrieval of the information while we complete the tuning of the new ADAMS legacy databases. We expect to open the ADAMS legacy databases in the second quarter of FY01.

**The records management software was initially delivered and tested in January 2000. The NRC did not accept the software and it was returned to the contractor to correct deficiencies. The software was redelivered in August 2000 as part of a maintenance release. Agencywide installation of the maintenance release is scheduled to begin in January 2001 and installation of the records management software will occur for selected staff in January 2001 as well.

ADAMS PROJECT COSTS (Dollars in Thousands)*

	FY97	FY98	FY99	FY00	FY01	FY02	TOTAL

Current Baseline (Obligated)	2,000	7,024	4,462	0	0	0	13,486
Actual Project Costs	2,000	7,024	4,462	278.4	0	0	13,764.4
NOTE: Delta between current baseline and actual is 2%.							

* Excludes unanticipated business continuity costs (i.e., extension of unplanned operations of two legacy systems through Quarter 1, FY2001) of $145.5K and $28.6K in FY 2000 and 2001, respectively.

ADAMS MAINTENANCE & OPERATIONAL COSTS (1) (Dollars in Thousands)

	FY97	FY98	FY99	FY00	FY01	FY02	TOTAL
Current Baseline (Obligated)	0	0	203	2,600	2,100	3,225	8,128
Actual and Projected Maintenance and Operational Costs	0	0	203	2,436	2,212	2,254	7,105
NOTE: Delta between current baseline and actual is 12% lower than budgeted. (1) "Steady state" as defined in OMB Circular A-11, Part 3, Exhibit 42 - July 1998.							

2. Cost and schedule variance. If either the work accomplished or costs incurred vary from your baseline goals by more than 10%, explain:

a. The variance between planned and actual costs or planned and actual schedule, expressed as a percentage of the baseline goal.

The variances between the actual and the current baselines for project costs and for maintenance and operational costs were less than 10%.

b. The reason for the variance.

N/A

3. Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. If not, explain the reason for the variance.

As stated earlier, the ADAMS project has 4 performance goals:

1) Improve staff access to NRC documents;
2) Improve public access to NRC documents;

3) Establish ADAMS as a National Archives and Records Administration (NARA) approved electronic recordkeeping system; and
4) Demonstrate a return on investment to the agency from the ADAMS project.

The ADAMS performance goal for return on investment is not stated in a quantitative manner that would provide a percentage calculation. The following table characterizes the status of achieving the objectives identified in the ADAMS Capital Planning and Investment Control analysis. These performance goals are described in the following 7 objectives.

ADAMS Objectives	Status in Achieving Objectives
(1) Ensure the integrity of document repository by capturing documents intended for ADAMS once, at their source, as they are electronically created or received by the agency.	Objective achieved
(2) Reduce the cost of reproducing and distributing documents and speed the delivery of documents through electronic, rather than paper, distribution and dissemination.	Objective partially achieved. The net cost of reproduction and distribution of documents has been reduced by 4.6% since deployment of ADAMS. All externally generated documents are being electronically distributed within 8 - 10 hours of receipt rather than days and publicly available documents are being electronically disseminated within 5 working days rather than weeks. However, some categories of documents continue to be distributed in paper.
(3) Manage document workflow processes more efficiently.	Objective not achieved. Capability placed on hold by senior management to focus on implementing more important ADAMS components -- will be reconsidered in FY 2001.

(4) Discontinue the need for individual organizational units to invest their resources and dollars in local document management applications with limited functionality by implementing an enterprise wide document management capability.	Objective partially achieved. ADAMS is an enterprise wide document management system installed on the desktop of every NRC employee. The NRC has not invested in any additional local systems since the inception of ADAMS. However, the agency still has a document tracking requirement that is unmet due to the deferment of the workflow component of ADAMS.
(5) Eventually eliminate the time, effort, and space now spent filing, maintaining, destroying or retiring hardcopy by establishing ADAMS as electronic recordkeeping system in lieu of paper.	Objective partially achieved. Schedules submitted to NARA for review, some approved and some in process. NRC declared ADAMS as its official recordkeeping system in April 2000 but will not be able to file electronic backlog until records management software is installed during the second quarter, FY2001.
(6) Reduce time spent creating documents by storing them electronically for subsequent re-use (cut and paste).	Objective achieved. ADAMS currently has 87K documents available in electronic form for subsequent re-use.
(7) Reduce the time and effort staff spends in searching for and retrieving documents by providing immediate access to full text image at user's desktop.	Objective partially achieved. Staff can search by document descriptors and title and can retrieve image of documents at desktop. Problem with full text searching will be resolved in the second quarter, FY2001 release.

In addition, ADAMS has provided the added benefit of positioning the NRC to comply with a number of Federal laws and regulations that govern the management and dissemination of its records. ADAMS is the focus point for NRC compliance with the Government Paperwork Elimination Act (GPEA) by providing the capability for NRC's external stakeholders to submit documents electronically in lieu of paper. As an electronic recordkeeping system, it improves NRC's capability for documenting its activities and for retaining adequate documentation of such activities in accordance with the Federal Record Act. On-line, immediate access to NRC documents also facilitates NRC's compliance with provisions of the Paperwork Reduction Act of 1995, OMB Circular A-130 and the Electronic FOIA Act with regard to making information available to the public in a timely manner in electronic form.

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10% or more, explain:

A. What you plan to do to correct project performance.

The agency conducted a preliminary assessment of ADAMS four months after it declared ADAMS as its official recordkeeping system. This has resulted in the issuance of an ADAMS Assessment Action Plan with a structured set of tasks to address agency challenges in transitioning from a paper-based to an electronic environment and improving the ADAMS system.

The ADAMS Plan includes a separate challenge area for NRC to chart a long-term course on its future use of electronic management technology. The use of workflow will be reconsidered in FY 2001 as part of that analysis. Until the analysis is conducted, it is unknown whether the capability will be adopted in the future.

Improvement in public access through the elimination of CITRIX will come through moving to a current Web-based version of the vendor's COTS software.

B. What effect your action will have on overall project cost, schedule and performance.

It is unclear whether the agency will adopt a workflow capability in the future and it is premature at this juncture to estimate the cost of doing so.

The costs of moving to the current versions of the vendor's software, which will improve performance, reduce the need for custom code, and eliminate the need for CITRIX for remote access, is included as part of the operations and maintenance cost reported for ADAMS in this submission.

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)
Unique Project Identifier: 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:

a. Is this project a financial management system? Yes __ No_X_
b. Does this project implement electronic transactions or recordkeeping covered by the Government Elimination Act (GPEA)? Yes_X_ No__

PART I: SUMMARY OF SPENDING FOR PROJECT STAGES

(Dollars in Millions)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002 & beyond	TOTAL
Planning:*							
Budget authority	0	0	0	0	0	0	0
Outlays	0	0	0	0			0
Full acquisition:							
Budget authority	1.1	0.7	0.4	0.4	0.1	0.0	2.7
Outlays	0.9	0.9	0.3	0.4			2.5
Total, sum of stages (excludes maintenance):							
Budget authority	1.1	0.7	0.4	0.4	0.1	0.0	2.7
Outlays	0.9	0.9	0.3	0.4			2.5
Maintenance:							
Budget authority	0.1	0.2	0.4	0.4	0.4	0.4	1.9
Outlays	0.0	0.3	0.4	0.4			1.1

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

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

(1) How does this investment support your agency's mission and strategic goals and objectives?

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 reactor 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. This will include automating relationships and searches so that inspection findings, inspection 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 RPS data base includes inspection and licensing information, plant performance indicators, inspection follow-up items, safety issue data, allegation data and other reactor regulatory data. 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 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.

(2) Is this project is included in your agency's annual performance plan.

Yes.

(3) How does this investment support a core or priority function of your agency?

RPS supports a 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 indicators, follow-up issues tracking, safety issues management, allegations management and other reactor regulatory areas.

(4) Are there any alternative sources, in the public or private sectors, that could perform this 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.

(5) How will this investment reduce cost or improve efficiencies?

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 have undergone 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. It will reduce hardware and software maintenance cost for the 10 legacy systems that it will replace. It is saving over $800K per year by allowing the agency to end support of IDMS/R at NIH. IDMS/R was used to support SINET, which was operational until November 1999. It will improve efficiencies by providing easy access to the necessary management information for the effective and efficient planning, scheduling, resource allocation, reporting and analysis of these programs, which is essential to their effective performance.

B. Program management

1. *Is there a program manager and contracting officer devoted to the project? If so, what are their names?*

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. *How do you plan to use an Integrated Project Team to manage this 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

Explain how your acquisition strategy will manage or mitigate projects risks by answering the following questions:

1. *Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned, explain how they are related to each other, and how each supports the project performance goals.*

The acquisition will be accomplished through a single contract.

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. *For each planned contract, describe:*

   a. *What type of contract you will use (e.g., cost reimbursement, fixed-price, etc.).*
   b. *The financial incentives you plan to use to motivate contractor performance (e.g., incentive fee, award fee, etc.).*
   c. *The measurable contract performance objectives*
   d. *How you will use competition to select suppliers.*
   e. *The results of your market research*
   f. *Whether you will use COTS products or custom-designed products.*

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.

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. The current CISSCO contract does not include any unique contractor incentives nor specify any measurable contract performance objectives. 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. Research indicated that the proposed RPS solution was reasonable, affordable and feasible. 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.

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. Most of the applications software is written using PowerBuilder.

NRC has developed 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. The RPS data base includes inspection and licensing information, plant performance indicators, inspection follow-up items, safety issue data, allegation data and other reactor regulatory data. These specific activities are not supported by COTS.

D. Alternative analysis and risk management

1. *Did you perform a life-cycle cost analysis for this investment? If so, what were the results?*
2. *Describe what alternatives you considered and the underlying assumptions for each*
3. *Did you perform a benefits/costs analysis or return on investment analysis for each alternative considered? What were the results for each? (Describe any tangible returns that will benefit your agency even of they are difficult to quantify.)*
4. *For IT, explain replaced system savings and savings recovery schedule.*
5. *Describe your risk assessment and mitigation plan for this project.*

The following answers questions 1 through 5.

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 in 1997 with an understanding that if goals of Alternative 3 were met, that the approval to incorporate the headquarters licensing function (Alternative 4) would be revisited. Alternative 4 was approved by NRC management in 1998 after RPS phase 1 was completed. 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.

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 ended in November 1999.)

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. (NOTE: Use of SINET ended in November 1999.)

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) recommended 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. RPS would provide the capability for inspection reports, Plant Issues Matrix (PIM), and Plant Performance Review (PPR), Inspection findings, inspection follow-ups, and cause codes to be correlated 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.

The risk assessment and mitigation plan for this project included a modular development approach, frequent contractor reporting, use of structured work breakdown approach, the assignment of a single project manager who was assigned responsibility for the whole project and direct involvement of the OCIO technical lead.

E. IT modernization and architecture (IT projects only)

1. *Does this project support your agency's current architecture or is it part of a modernization initiative?*

2. *Explain how this project conforms to:*
   a. *Your agency's information technology architecture (current or target, as applicable)*
   b. *your agency's technology infrastructure*
   c. *the Federal Enterprise Architecture Framework (FEAF), if used for this project. If the project does not follow the FEAF, explain the reason for the decision and discuss the framework used.*

The following answers questions 1 and 2.

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.

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.

RPS is compliant with the NRC's Technical Reference Manual (TRM) and the TRM is compliant with the FEAF.

F. IT Security (IT projects only)

Demonstrate that the security plan for this project:

1. *Includes security controls for components, applications, and systems that are consistent with your agency's IT architecture;*
2. *Is well-planned;*

3. *Manages risks;*
4. *Protects privacy and confidentiality; and*
5. *Explains any planned or actual variance from NIST security guidance.*

The NRC contracted with the General Services Administration who had Troy Systems developed a comprehensive Business Continuity and Security Plan for RPS. This 100+ page plan was completed and RPS was certified in September 1998. It should be noted that there is no classified data in RPS. There is a small amount of information which is not releasable to the public such as information on unannounced inspections of operating nuclear reactors. There are no variances from NIST security guidance.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or recordkeeping:

a. Briefly describe the transaction or recordkeeping functions; and
b. Explain how this investment relates to your agency's GPEA plan.

The following answers questions a and b.

The RPS data base includes inspection and licensing information, plant performance indicators, inspection follow-up items, safety issue data, allegation data and other reactor regulatory data. Data from the RPS data base is currently posted on the NRC external Web. The performance indicator data alone had over 25,000 visitors per week during the period from April to June 2000. This project will be compliant with GPEA by October 2003.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

B. Description of performance-based management system (PBMS):

1. *Describe the performance-based management system that you will use to monitor contract or project performance.*

The RPS project team is utilizing Microsoft Project, Lotus and Visio 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.

B. Original baseline (OMB-approval at project outset):

Using the format of your selected PBMS, provide the following:

1. *What are the cost and schedule goals for this segment or phase of the project? [What are the major project milestones or events? When will each occur? What is the estimated cost to accomplish each one?]*

2. *What are the measurable performance benefits or goals for this segment or phase of this project?*
   [What are the project performance objectives?]

Original cost goals:

(Dollars in Millions)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002 & beyond	TOTAL
Planning:*							
Budget authority	0	0	0	0	0	0	0
Outlays	0	0	0	0			0
Full acquisition:							
Budget authority	1.1	0.7	0.4	0.4	0.1	0.0	2.7
Outlays	0.9	0.9	0.3	0.4			2.5
Total, sum of stages (excludes maintenance):							
Budget authority	1.1	0.7	0.4	0.4	0.1	0.0	2.7
Outlays	0.9	0.9	0.3	0.4			2.5
Maintenance:							
Budget authority	0.1	0.2	0.4	0.4	0.4	0.4	1.9
Outlays	0.0	0.3	0.4	0.4			1.1

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

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. The overall goal of the project is to met the development schedule at or below the budget authority outlined in the above table. As shown in the outlays row, RPS is within budget. In November 1999, RPS and other client-server applications replaced the functionality provided to agency by the SINET system which was deployed at NIH using IDMS software.

Original schedule goals

	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	Q4/1999
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.	Q2/2001	

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, a new workload management approach and integration with STARFIRE, the agency's new time and labor reporting system. The schedule deviations did not impact the budget or effect the agency's Year 2000 efforts.

FY 1998 Performance goals

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 reactor 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 FY 1999 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	128
Inspectors	79	176	214	228	256

Managers	42	66	70	72	85
Other	23	33	37	47	54
Total	221	414	427	464	523

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 - 2001 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, 7 in FY 1999 and 10 in 2001.

Target: Replacement of 10 legacy systems with RPS components.

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
FY 1999 Milestones	7	7	7	7
FY 1999 Actuals	7	7	7	7

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
FY 2000 Milestones	7	7	7	7
FY 2000 Actuals	7	7	7	7

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
FY 2001 Milestones	7	10	10	10
FY 2001 Actuals				

The rescheduling of Licensing and Other Planning will delay the replacement of the final legacy systems until FY 2001.

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

FY 1998 - 2001 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	No deviations
FY 2000 milestone	No deviations	
FY 2000 actual	1st Quarter	No deviations
	2nd Quarter	No deviations
	3rd Quarter	No deviations
	4th Quarter	No deviations
FY 2001 milestone	No deviations	
FY 2001 actual	1st Quarter	
	2nd Quarter	
	3rd Quarter	
	4th Quarter	

B. Current baseline (applicable only if OMB approved the changes)

Using the format of your selected PBMS, provide the following:

3. *What are the cost and schedule goals for this segment or phase of the project? [What are the major project milestone events and the estimated costs to accomplish each one?]*

4. *What are the measurable performance benefits or goals for this segment or phase of this project? [What are the project performance objectives?]*

No changes to the baseline have been requested or approved by OMB.

D. Actual Performance and Variance from OMB-approved baseline (Original or Current):

1. *Actual cost and schedule performance. Using the information from your PBMS explain:*

   a. *What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.*
   b. *What work you actually accomplished and how much you actually spent.*

2. *Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain:*

   a. *The variance between planned and actual costs or planned and actual schedule. Expressed as a percentage of the baseline goal.*
   b. *The reason for the variance.*

3. *Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. IF not, explain the reasons for the variance.*

The following answers questions 1 through 3.

All work will be completed within the original budget. As noted above, the Licensing and Other Planning module has been rescheduled to incorporate best practices, additional benchmarking, a new workload management approach and to interface with the agency's new time and labor system STARFIRE. RPS software development will be completed by the project end date of Q1 2001, but full implementation cannot occur until STARFIRE is deployed. If the deployment of STARFIRE is delayed beyond March 2001, PCRITS will be modified to interface with LOP to insure deployment of LOP in March 2001. The schedule deviations will not impact the budget and did not effect the agency's Year 2000 efforts. All performance goals will be met.

E. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:

a. *What you plan to do, if anything, to correct project performance.*
b. *What effect your action will have on overall project cost, schedule and performance benefits.*

All work will be completed within the schedule and budget No corrective actions are needed or expected.

Planning, Budgeting and Acquisition of Capital Assets OMB Exhibit 300B, STARFIRE

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)
Unique Project Identifier: 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:

a. Is this project a financial management system? Yes _X_ No___
b. Does this project implement electronic transactions or record keeping covered by the Government Paperwork Elimination Act (GPEA)? Yes_X_ No___

BACKGROUND: In Fiscal Year 1998, the NRC awarded a contract for an agency-wide integrated financial management and resource management system called STARFIRE. It was to be comprised of ten separate modules, plus an executive information system and data warehouse. The modules included human resources, time and labor, payroll, cost accounting, travel management, core accounting, debt management/fee billing, budget formulation, procurement, and property.

On July 23, 1999, the contract with the vendor supplying the core accounting system as well as the STARFIRE modules for cost accounting, travel management, debt management/fee billing, budget formulation, and procurement was terminated by the NRC due to failures of the commercial off-the-shelf (COTS) core accounting software functional requirements. As part of the termination settlement, the NRC received the GELCO, Inc. "Travel Manager" software that was to be the travel management module of the terminated contract. The termination of the core financial management system contract required the NRC to rethink its strategy for the deployment of the STARFIRE system.

With the concurrence of the agency's Executive Council, the STARFIRE system implementation has been downsized in an effort to focus on the modules of the project which are immediately most important to the agency. The project has been focused on the modules for human resources, time and labor, payroll, cost accounting, and travel. The remaining modules initially part of STARFIRE, such as core accounting, procurement, and budget formulation, have been postponed and a determination on future procurement will be made after FY 2002 with implementation beyond FY 2003. Any decision to proceed with these remaining modules will be dependent upon a future and separate Capital Planning and Investment Control (CPIC) analysis. Therefore, the 300B report has been

revised to reflect new baselines for cost and schedule associated only with the five modules of the downsized system. Note that the agency has had to contract with several vendors to accomplish what was initially proposed to be accomplished by the terminated contractor. This has resulted in increased costs and an extended schedule. The actual costs and schedule presented in Part III, *D.*, of this OMB Exhibit 300B are intended to establish a new baseline for the STARFIRE project. Also, the NRC will incur costs of "business continuity" to continue operating existing systems until the new system becomes an installed operational system. The cost for continued operation of the existing PAYPERS system, until it is replaced by the new HRIS component, resulted in continuity costs of $1.7M for FY 2000 and is estimated to cost $0.9M in FY 2001.

The following table summarizes the anticipated funding needed to complete the downsized STARFIRE project.

PART I: SUMMARY OF SPENDING FOR PROJECT STAGES

(Dollars in Millions)

	FY 1997	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	TOTAL
Planning:							
Budget authority	0.5	0	0	0	0	0	0.5
Outlays	0.4	0.1	0	0	0	0	0.5
Full acquisition:							
Budget authority	0	6.0	2.1	2.0	0	0	10.1*
Outlays	0	2.7	3.2	3.0	2.3	0.5	11.7
Total, sum of stages (excludes maintenance):							
Budget authority	0.5	6.0	2.1	2.0	0	0	10.6*
Outlays	0.4	2.8	3.2	3.0	2.3	0.5	12.2
Maintenance:							
Budget authority	0	0	0	0.2	0.4	0.6	1.2*
Outlays	0	0	0	0.2	1.1	1.7	3.0

*In order to continue at the projected outlay level, NRC plans to place additional funding on the STARFIRE project in fiscal years 2001 and 2002.

The data are for the revised project including the termination costs associated with the Core Accounting module and its other accompanying modules. The project now includes only implementation of software modules for Human Resources, Time and Labor, Payroll, Cost Accounting, and Travel.

PART II: JUSTIFICATION AND OTHER INFORMATION

A. Justification

(1) How does this investment support your agency's mission and strategic goals and objectives?

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.

This system supports the agency mission and goals by making available human capital and financial information to NRC managers to help them effectively and efficiently implement NRC programs. The current mix of aging systems falls 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.

(2) Is this investment included in your agency's annual performance plan.

Yes.

(3) How does this investment support a core or priority function of your agency?

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. By providing for a single point of data entry, 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, human capital, and other resource functions, including travel management, cost accounting, payroll, labor cost distribution and human resources. 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 NRC's Strategic Plan and Performance Plan. STARFIRE is linked

to the Performance Plan's corporate management strategy to employ inovative and sound business practices by strenghtening "our financial systems and processes to ensure that our financial assets are adequately protected consistent with risk and that our financial information is better integrated with decision-making." This strategy underlies the performance goals to make the NRC activities and decisions more efficient and effective, and to increase public confidence.

(4) Are there any alternative sources, in the public or private sectors, that could perform this function?

We are not aware of any private sector alternatives available for the performance of federal financial management. However, even though the federal budget, accounting practices and requirements are in many ways quite different from those of the private sector, the commercial market has developed a variety of off-the-shelf software products and implementation services to meet financial management program needs for federal agencies. 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 the agency's goal of providing an "integrated, single-source" system approach and would obstruct an objective to integrate financial and other program information within the NRC's technical and systems infrastructure.

(5) How will this investment reduce cost or improve efficiencies?

The modules currently being implemented will replace many of the fragmented, incomplete and costly financial systems currently in use within the agency. These modules will reside on agency infrastructure, and some modules will 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 software with as little customization as possible. This approach will assure work processes receive sufficient examination to maximize the automation advantages available through STARFIRE. Also, the system has an emphasis on a single point-of-origin entry, capturing information once thereby

eliminating costly duplicate entry. It will also provide improved financial information for program managers to use in deciding what program to implement.

B. Program management

1. *Have you assigned a program manager and contracting officer to this project? If so, what are their names?*

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 central team is led by a Project/Business Manager, John E. Bird, from the Office of the Chief Financial Officer (OCFO). A Technical Manager and Contracting Officer's Technical Representative, George M. Mathews III, has been assigned from the Office of the Chief Information Officer. Also, a Contracting Officer, Sharon D. Stewart has been assigned to support this effort. Other dedicated supporting team members provide a broad and diverse perspective on this initiative.

2. *How do you plan to use an Integrated Project Team to manage this project?*

NRC has established a central STARFIRE team and a number of full-time Applications Teams to focus on specific components of the system: Cost Accounting, Transition and Training, Payroll/Human Resources/Time and Labor, and Travel. Each of these teams coordinate with the central team. Team members from throughout the agency have been carefully chosen to assure success of the project.

Since its inception, selected senior managers have been heavily involved in STARFIRE. 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), Steering Committee and Executive Council. Communication between these tiers of the project's organizational structure is frequent and effective.

C. Acquisition strategy

Explain how your acquisition strategy will manage or mitigate projects risks by answering the following questions:

1. Will you use a single contract or several contracts to accomplish this project? If multiple contracts are planned, explain how they are related to each other, and how each supports the project performance goals.

Planning, Budgeting and Acquisition of Capital Assets OMB Exhibit 300B, STARFIRE

The STARFIRE project initially intended to obtain all envisioned modules in one integrated package from one vendor. Because one of the modules was core accounting, we were required to obtain the software only from JFMIP approved vendors under the General Services Administration (GSA) Financial Management System Software (FMSS) schedule. When we solicited bids from the GSA FMSS schedule, no vendor had all the desired modules in one integrated package. All were required to interface their product with other vendor products to achieve the desired results. Therefore, STARFIRE required the products of several vendors to be implemented under one contract and still would have to separately purchase other software to complete all desired functionality. However, with the termination of the core financial management system contract, the NRC has had to initiate standalone contracts for the acquisition of COTS software and implementation services that were included as part of the original, single contract. We currently have five contracts in place for implementing the downsized STARFIRE project including: two for acquisition of software, and three for implementation services.

The purchased software, along with the software received as part of the termination settlement, is being integrated and interfaced with the agency's existing core financial system by the implementation contractors. When implemented, the software will partially meet the initial project goals by providing staff and dollar savings. However, meeting all of the initial goals will be dependant on the implementation of the remaining modules that will be addressed after FY 2002.

2. *For each planned contract, describe:*

   a. *What type of contract you will use (e.g., cost reimbursement, fixed-price, etc.).*
   b. *The financial incentives you plan to use to motivate contractor performance (e.g., incentive fee, award fee, etc.).*
   c. *The measurable contract performance objectives*
   d. *How you will use competition to select suppliers.*
   e. *The results of your market research*
   f. *Whether you will use COTS products or custom-designed products.*

The underlying STARFIRE software is comprised of COTS components, which are fixed-price in nature and were acquired under the GSA schedule program. It is primarily the third party software proposed in the original, terminated contract, which was awarded through competition among GSA schedule contractors. The cost accounting software was selected after a thorough analysis comparing software capabilities with agency needs. Implementation services, including conversion of selected existing data, have been acquired competitively through cost reimbursement contracts using various GSA schedules. Past performance and vendor capability were an important aspect to the acquisition strategy. The NRC had not used incentive type contracts for the purchase of software or implementation services.

Software to implement STARFIRE's labor cost distribution (payroll, time and labor, core human resources processing), cost accounting and travel functionality has been acquired using COTS products. The selected COTS providers have extensive experience in the public sector and the software modules are widely used and well-proven in both the public and private sectors, except for the time and labor, and payroll modules which are fairly new to the public sector. Past performance is a critical factor in assuring successful implementation and integration of this software. Accordingly, NRC considered past performance as a key evaluation factor in selecting support for this aspect of the project. The Office of Federal Procurement Policy's (OFPP) *Guide to Best Practices for Past Performance* was incorporated into NRC's acquisition of implementation services. Past performance evaluation factors included:

- 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 provided NRC with an excellent foundation for weighing implementation proposals. Specific experience and past performance in the federal environment is also of importance and received the appropriate level of attention in the evaluation of proposals.

D. Alternative analysis and risk management

1. *Did you perform a life-cycle cost analysis for this investment? If so, what were the results?*
2. *Describe what alternatives you considered and the underlying assumptions for each*
3. *Did you perform a benefits/costs analysis or return on investment analysis for each alternative considered? What were the results for each? (Describe any tangible returns that will benefit your agency even if they are difficult to quantify.)*
4. *For IT, explain replaced system savings and savings recovery schedule.*
5. *Describe your risk assessment and mitigation plan for this project.*

The following answer pertains to questions 1 through 5.

Two Capital Planning and Investment Control analyses were performed in planning for STARFIRE. They included a life-cycle cost analysis and a benefits/costs analysis. 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 alternatives, but also those which are expected to deliver the most benefit to the agency.

Implementation of STARFIRE has been planned with minimal modification to the basic software itself. NRC 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.

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 where appropriate electronic signature, that are being implemented under other agency initiatives.

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

The payroll module would be implemented concurrently with the Basic HRIS, thereby eliminating the costs associated with interfacing with existing systems.

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

Planning, Budgeting and Acquisition of Capital Assets OMB Exhibit 300B, STARFIRE

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 tc 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 associated 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) focused on the following two alternatives:

Alternative 1a - Status Quo. Maintain the existing 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 core human resources processing functionality currently performed by legacy systems.

Other Alternatives Considered

Modification of Existing Systems. The current systems only minimally meet all of the NRC's current information needs. In an August 26,1996, survey conducted by the NRC's 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 varied software and hardware for a variety of purposes.

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; and, agencies are prohibited from developing their own core accounting system. Furthermore, custom software could not be developed and deployed within the agency's aggressive implementation schedule.

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 system 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."

Software will only be modified to bring it into compliance with Federal laws and regulations or for Executive Council approved changes.

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 and operating environment than that currently used by the agency. 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.

The risk assessment and mitigation plan for this project includes weekly meetings with staff and contractor reporting, use of structured work breakdown approach, the assignment of a single project manager who was assigned responsibility for the entire project, and weekly meetings with agency top management to facilitate steering, guidance and information transfer.

E. IT modernization and architecture (IT projects only)

1. *Does this project support your agency's current architecture or is it part of a modernization initiative?*

2. *Explain how this project conforms to:*
   a. *Your agency's information technology architecture (current or target, as applicable)*
   b. *your agency's technology infrastructure*
   c. *the Federal Enterprise Architecture Framework (FEAF), if used for this project. If the project does not follow the FEAF, explain the reason for the decision and discuss the framework used.*

The following answers questions 1 and 2.

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, and is compliant with the FEAF. 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 was included in the evaluation and this has been demonstrated with the modules we are currently implementing. This will help further ensure that unique office-specific data manipulation and reporting needs can be met with minimal software modification, thus enabling STARFIRE to achieve an important deployment goal: minimize customization.

The STARFIRE software is composed of COTS products. STARFIRE will be fully integrated and/or interfaced with the NRC's existing core accounting system (FFS). The

system is designed to fit within the agency's client-server and LAN infrastructure and accessible via agency-standard microcomputer.

F. IT Security (IT projects only)

Demonstrate that the security plan for this project:

1. *Includes security controls for components, applications, and systems that are consistent with your agency's IT architecture;*
2. *Is well-planned;*
3. *Manages risks;*
4. *Protects privacy and confidentiality; and*
5. *Explains any planned or actual variance from NIST security guidance.*

Development of an in-depth security plan is underway. It will address the following: risk assessment, computer security plan, disaster recovery (contingency) plan, and certification of the STARFIRE system.

All security controls will be consistent with NRC architecture, will manage risk and protect privacy and confidentiality, and will adhere to NIST security guidelines.

G. Government Paperwork Elimination Act (GPEA) (IT projects only)

If this project supports electronic transactions or record keeping:

a. *Briefly describe the transaction or record keeping functions; and*
b. *Explain how this investment relates to your agency's GPEA plan.*

The following answers questions a and b.

The STARFIRE data base will include human resources information on all NRC employees, travel authorization and voucher information, and labor-cost distribution information. The information in these systems is not routinely released to the public. Financial information, however, will be posted to the Treasury FFS system electronically consistent with the terms of the NRC/Treasury cross-service agreement. This project will be compliant with GPEA.

PART III: COST, SCHEDULE, AND PERFORMANCE GOALS

A. Description of performance-based management system (PBMS):

1. Describe the performance-based management system you will use to monitor contract or project performance.

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 (OMB-approval at project outset):

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project? [What are the major project milestones or events? When will each occur? What is the estimated cost to accomplish each one?]

Original cost and schedule goals

Background: The following "original cost and schedule goals" were developed for the entire STARFIRE system. Since the contract for the core financial management system was terminated, the project has been downsized to include the software modules for human resources, time and labor, payroll, cost accounting, and travel. As stated in the Exhibit 300B accompanying the FY 2001 budget request, resources identified in the "original" cost and resource goals will be focused on completion of the modules included in the downsized project. Therefore, subsequent reports will focus on cost and schedule variances associated with those modules currently being implemented. The remaining modules will be the subject of a future and separate CPIC and OMB Exhibit 300B.

Planning, Budgeting and Acquisition of Capital Assets OMB Exhibit 300B, STARFIRE

(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 were as follows:

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

2. What are the measurable performance benefits or goals for this segment or phase of this project?
[What are the project performance objectives?]

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, and intuitive user interface ("friendliness"). 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.

(Since the STARFIRE system implementation was downsized after termination of the core accounting system contract, revised goals have been developed for the downsized project. These goals are presented in paragraph *D.3.* below.)

C. ***Current baseline (applicable only if OMB approved the changes):***

Using the format of your selected PBMS, provide the following:

1. What are the cost and schedule goals for this segment or phase of the project? [What are the major project milestone events and the estimated costs to accomplish each one?]

The following costs and schedules were submitted as a part of the agency's FY 2001 budget submission.

(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 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.

HRIS component, Cost Accounting, and Travel	FY 2000
Core accounting components	FY 2003
Complete system	FY 2004

2. *What are the measurable performance benefits or goals for this segment or phase of this project? [What are the project performance objectives?]*

Revised performance goals for the downsized STARFIRE project are presented in paragraph *D.3.* below.

D. Actual Performance and Variance from OMB-approved baseline (Original or Current):

Background: With the termination of the core financial management contract and the loss of the single system integration contractor, fact-of-life adjustments were made to the system implementation which impact both cost and schedule. The following financial table and schedule depict the current estimated cost and schedule and are intended to establish a new baseline for the downsized STARFIRE project.

The following new baseline (Actual Cost Estimate from the table titled STARFIRE Cost Update) shows a substantial increase in costs and time. The increases over the current baseline "costing plan" estimate ($9.2M) in paragraph *C.1.* above is primarily attributable to the loss of economies of scale due to the termination of the single contract under which the entire system was to be integrated. The downsized project has required five separate contracts to purchase software and implementation services. Additionally, the current system modules are taking more effort and longer to implement because issues associated with the software applications' functionality and performance are greater than originally anticipated.

Planning, Budgeting and Acquisition of Capital Assets OMB Exhibit 300B, STARFIRE

1. *Actual cost and schedule performance. Using the information from your PBMS explain:*

   a. *What work you planned (scheduled) to accomplish and how much you budgeted to complete the work.*

   b. *What work you actually accomplished and how much you actually spent.*

The following responds to both parts *1.a.* and *1.b.*

STARFIRE Schedule Update

COMPONENT	CURRENT BASELINE	REVISED SCHEDULE
HRIS (Human Resources, Time and Labor, and Payroll)	FY 2000	FY 2001
Cost Accounting	FY 2000	FY 2001
Travel	FY 2000	FY 2002
Core Accounting	FY 2003	*
Complete System	FY 2004	

* These components have been deferred and will be evaluated as new projects subject to a future Capital Planning and Investment Control (CPIC) business case analysis with any implementation beyond FY 2003.

STARFIRE Cost Update **(Dollars in Millions)**

Planning, Budgeting and Acquisition of Capital Assets OMB Exhibit 300B, STARFIRE

	FY1998	FY1999	FY2000	FY2001	FY2002	TOTAL
CURRENT COSTING PLAN	$0.8	$4.2	$2.5	$1.4	$0.3	$9.2*
ACTUAL COST EST.	$0.8	$3.4	$4.4	$2.7	$0.4	$11.7*

* Includes cost of downsized STARFIRE project. Excludes cost of postponed modules (See background).

The "current" schedule called for implementation of the HRIS component (basic human resources, time and labor, and payroll), cost accounting, and travel by the end of FY 2000.

The installation of all software and the set-up of the HRIS component, i.e., modules for basic human resources, time and labor, and payroll, has been completed. A pilot test of the software applications was suspended on August 12, 2000 pending resolution of performance and functional problems with the application software. A number of the problems are due to inadequate federalization of an otherwise highly regarded private sector software product. The implementation contractor is applying additional resources and has intensified their efforts, working closely with the software vendor, to resolve the software problems. This effort is scheduled to continue well into the first quarter of FY 2001.

The schedule for the cost accounting component included the assessment and purchase of COTS software and the set-up of the software within the agency infrastructure by the end of FY 2000. Work on this module is on schedule. The software has been purchased and a cost accounting model and interfaces with existing systems were completed by the end of FY 2000. However, to fully utilize the functionality of this system will require data from the time and labor module, now scheduled for March 2001.

The travel management system was originally scheduled for agency-wide implementation in FY 2000. This was moved to FY 2002. Administrative tables were built for two NRC organizational units. A pilot test was initiated with those two units at the start of FY 2001.

Based upon the "current baseline" costing plan submitted last year, the estimated cost for work through the end of FY 2000 was $7.5M out of the total estimated cost of $9.2M. The actual cost currently expended through the end of FY 2000 is $8.6M out of an "actual cost estimate" total of $11.7M.

2. *Cost and schedule variance. If either the actual work accomplished or costs incurred vary from your baseline goals by 10 percent or more, explain:*

a. The variance between planned and actual costs or planned and actual schedule. Expressed as a percentage of the baseline goal.

The cost and schedule variances are identified in section 1, above. The cost variance between the current costing plan and the actual cost estimate totals is an increase of 27.2% ($2.5M).

b. The reason for the variance.

The implementation schedule for the HRIS component, which was scheduled for implementation by the end of FY 2000, has been delayed to mid FY 2001. The delay is due primarily to performance problems with the software in the NRC environment and functional deficiencies in the payroll module. A parallel test of the software was suspended on August 12, 2000. Performance and functional problems are being corrected. The parallel test is scheduled to resume in November 2000 with the agency-wide implementation being phased in over a three month period beginning in January 2001.

The schedule for testing the cost accounting model has been extended into FY 2001 to be consistent with the rollout of the labor cost component as it will require significant data from the time and labor module.

Due to a somewhat more complex administrative set-up than anticipated and the concentration of resources on other STARFIRE modules, a decision was made to initiate a limited pilot test of the travel module in FY 2001 and delay full, agency-wide implementation. After assessing the results of the pilot test in mid FY 2001, a decision will be made on how the FY 2002 agency-wide implementation will proceed.

The "current baseline" costing plan submitted last year was developed before the end of the fiscal year and shortly after the termination of the core accounting system contract. The estimates for software acquisition and implementation proved to be conservative. Also, the contract termination settlement costs of $450K was not anticipated at the time the last report was developed; and, as mentioned in the background of this Section, the downsized project has required five separate contracts to purchase and then implement the COTS modules. Additional costs are associated with the loss of efficiencies which were anticipated with using a single contractor to provide and implement the software modules into a fully integrated, agency-wide financial management system. The single contractor advantages were lost with NRC's termination of its contract for the core accounting system. The increased costs ($2.5M) are primarily due to the need to offset the contract termination cost and to apply additional resources and intensify the efforts to isolate and correct the software performance problems and to correct the functional deficiencies of the payroll module.

3. *Performance variance. Explain whether, based on work accomplished to date, you still expect to achieve your performance goals. IF not, explain the reasons for the variance.*

The original OMB Exhibit 300B for the STARFIRE project identified four measurable project goals. However, since the STARFIRE project has been downsized, goals 3 and 4 are no longer applicable. Goal 1 is still applicable in that staff and dollar savings are anticipated, but those savings are expected to be smaller than originally projected. Goal 2 will be achieved to the extent that program managers will be able to obtain cost information through the cost accounting module. In addition to achieving goals 1 and 2 at a reduced level, two additional goals have been established for the downsized project

The performance goals for the downsized project are:

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 as compared to current operating costs are obtained.

STARFIRE Project Goal 2: Agency program managers have ready access to current cost information.

Output Measure:

- Percent of program managers able to obtain and utilize cost information in their day-to-day decision-making.

STARFIRE Project Goal 3: Increased user/customer satisfaction over current processes and systems.

Output Measure:

- Level of satisfaction to be measured with customer survey.

STARFIRE Project Goal 4: Meet FASAB-4 standard.

Output Measure:

- The deficiency noted in the NRC's FY 1999 financial statement relative to systems is eliminated.

STARFIRE Project Goal 5: Make the process for initiating, approving, and closing out travel authorizations more efficient.

Output Measure:

- Implement an automated, single point of data entry travel system within the agency.

With the two year implementation schedule slippage, the projected useful life of the downsized system can be expected to be through FY 2006 instead of through FY 2004 as previously estimated.

The dollar savings from Goal 1 and the level of customer satisfaction for Goal 3 are anticipated to be lower than originally projected. To fully achieve the original goals would require financial and resource information from modules that are not included in this downsized project. Achievement of Goal 2 will be limited to providing managers with cost information that is contained in the cost accounting module.

F. Corrective actions:

If actual work accomplished or costs incurred to date vary from the planned baseline goals by 10 percent or more, explain:

a. What you plan to do, if anything, to correct project performance.
b. What effect your action will have on overall project cost, schedule and performance benefits.

While the schedule for system implementation has increased, the NRC process for implementation of the STARFIRE system has been effective. Due to close management of the project early on, the agency was able to terminate a contract for software that was not mature enough to be used for the core accounting process. We have also been able to identify weaknesses with other COTS products being implemented and have been able to correct problems before deployment throughout the agency, thus avoiding a situation that could have had a significant negative impact during implementation.

The NRC will continue to aggressively oversee the implementation of the STARFIRE project using its existing project management plan. The existing management plan will continue to be used to monitor progress and identify software and implementation problems early-on so that corrective action can be taken. Additional management action will focus on timely resolution of identified problems.