

May 18, 2000

The Honorable Joseph I. Lieberman  
United States Senate  
Washington, D.C. 20510-6250

Dear Senator Lieberman:

I am pleased to respond to your letter of April 6, 2000, requesting information on the status of the Nuclear Regulatory Commission's (NRC's) compliance with the Clinger-Cohen Act of 1996. The NRC is compliant with both the spirit and the letter of the Act. The Commission's answers to the six specific questions you asked us to address are enclosed.

Sincerely,

*/RA/*

Richard A. Meserve

Enclosure: As stated

May 18, 2000

The Honorable Fred Thompson  
United States Senate  
Washington, D.C. 20510-6250

Dear Senator Thompson:

I am pleased to respond to your letter of April 6, 2000, requesting information on the status of the Nuclear Regulatory Commission's (NRC's) compliance with the Clinger-Cohen Act of 1996. The NRC is compliant with both the spirit and the letter of the Act. The Commission's answers to the six specific questions you asked us to address are enclosed.

Sincerely,

*/RA/*

Richard A. Meserve

Enclosure: As stated

1. ***Please provide the name and official title of the individual currently serving as Chief Information Officer (CIO). If the individual is serving in an "acting" capacity, please explain the steps you are taking to finalize an appointment to this position.***

The current Acting CIO, Stuart Reiter, was competitively selected as Deputy CIO in June 1999. Mr. Reiter has been serving as Acting CIO from that time to the present. The Commission intends to make a formal appointment in the near future.

- 1.a. ***Since CCA enactment in February 1996, how many individuals have served in the CIO position for the Nuclear Regulatory Commission, and what were the periods of their service?***

Two individuals have served as CIO at the NRC. In February, 1997, the Commission competitively selected Mr. A. J. Galante for the position of CIO. Mr. Galante retired from Government service in June 1999. Mr. Stuart Reiter, the Deputy CIO, has served as the Acting CIO since that date.

- 1.b. ***Does the CIO have a direct reporting relationship to you? If not, to whom does the CIO directly report on a day-to-day basis?***

The CIO reports directly to me.

- 1.c. ***Is the CIO a member of formal executive-level strategic planning, budget, and program-area process redesign committees, groups, or councils established in the Nuclear Regulatory Commission?***

- (1) ***What are the responsibilities of the CIO on these committees and groups?***

The CIO is one of three members of the NRC's Executive Council (EC). The EC is composed of the Executive Director for Operations (EDO), the CIO and the Chief Financial Officer (CFO). The EC's draft Charter defines its purpose as follows:

Make corporate decisions or recommendations on matters that significantly affect agency strategic plans and related policies and programs and/or resources.

Ensure that program and resource planning and implementation are closely coordinated and integrated.

Facilitate the agency Strategic Planning Process.

Facilitate communications between the EDO, the CIO, and the CFO.

**(2) Has the CIO made, or played a vital role in making, strategic business decisions for the department/agency? Please provide several noteworthy examples.**

Yes. The EC reviews the agency's budget submission, provides direction and review on strategic planning activities, and reviews the status of all major programmatic initiatives. As one of the three members of the EC, the CIO has played a vital role in the following strategic agency initiatives:

The EC provided ongoing guidance and eventual approval of NRC's first and subsequent Performance Plan as required by the Government Performance and Results Act of 1994 (GPRA). The EC has served as a champion of improvements in strategic and performance planning.

The CIO, working with agency stakeholders, created NRC's Information Technology (IT) Capital Planning and Investment Control (CPIC) process. As part of the process, an agencywide IT Business Council was created to perform investment reviews.

The CIO contributed to planning and the initiation of work on NRC's new financial management system, STARFIRE. When fully implemented, we expect STARFIRE to play a key role in the agency's ability to implement performance-based management as required by the GPRA.

The CIO sponsored the initiation and implementation of NRC's new Agencywide Documents Access and Management System (ADAMS). ADAMS is intended to provide the agency with electronic records management, workflow processing, improved search and retrieval, and improved public access to documents.

The CIO participated in the initiation of a comprehensive evaluation of the efficiency and effectiveness of NRC support services. Arthur Andersen's report identified a number of actions NRC could take to improve efficiency and effectiveness in the management support function.

The CIO sponsored a major business process redesign using the Adams Document Management System to convert the NRC Public Document Room to a more cost-effective and timely electronic reading room. When implemented, the new system will improve the ease of access to the information made available to the public, and make the information available in a shorter time than the traditional reading room could.

The CIO is working closely with the CFO and EDO to plan and implement a cost accounting system at the NRC as part of the STARFIRE project. This system will strengthen compliance with Federal Accounting Standards and improve the ability to implement performance-based management.

The CIO, CFO, and EDO decided to terminate a financial management applications systems contract that was part of the STARFIRE project when the

contractor failed to meet system delivery requirements. The modular contracting strategy employed by the project allowed other components of the system to continue while this component is being restarted.

**1.d. What, if any, additional duties or responsibilities does the official designated as Nuclear Regulatory Commission CIO have other than information resources management?**

Other than participation in the EC, information resources management (IRM) is the full-time responsibility of the CIO.

**1.e. Do the component organizations that comprise the Nuclear Regulatory Commission also have designated CIOs? If so, (1) how are they selected, (2) to whom do they report, and (3) how is their decisional authority defined by agency policy?**

The NRC has no independent "component organizations." The CIO is responsible for oversight of IRM functions in all NRC offices.

**1.f. In accordance with CCA, has your CIO provided annual reports to you on improvements in information resources and technology management capabilities? If so, please provide copies.**

Yes, the CIO provides an annual report on improvements in information resources and technology management capabilities. Copies are attached in Appendix A.

**1.g. What percentage of Nuclear Regulatory Commission total information management and technology expenditures are controlled or approved by the Nuclear Regulatory Commission CIO?**

As a member of the EC, the CIO approves all information management and technology expenditures. The CIO directly controls a budget of \$31.5M (FY 2000); this figure is 57% of the total IT budget authority of \$55.5M in that year.

**2. Has the Nuclear Regulatory Commission implemented complete and comprehensive IT capital planning and investment management processes, as required by CCA section 5122(a) and (b)? If not, what remains to be done and what is the focus of current efforts?**

Yes, the NRC has implemented a complete and comprehensive IT capital planning and investment management process as documented in NRC Management Directive 2.2 "Capital Planning and Investment Control," dated May 27, 1999. A copy is attached in Appendix B.

**2.a. Please provide the Committee with the Nuclear Regulatory Commission definition for what constitutes an IT investment for purposes of this CCA section.**

For purposes of NRC's IT Capital Planning and Investment Control process, an IT investment is a financial activity which creates a capital asset to provide IT functionality, as IT is defined in the Paperwork Reduction Act. Ongoing operating expenses, services that do not create capital assets (e.g., long distance telephone charges), and routine software maintenance are not included. Expenditures less than NRC's minimum threshold for software capitalization (currently set by the CFO at \$50,000) are not considered in this process.

**2.b. Approximately how much, and what percentage, of the Nuclear Regulatory Commission total IT budget is subject to the IT capital planning and investment management processes established in your department/agency (including, as always, its major components)?**

All IT investments as defined in Item 2.a. above are subject to the processes. The remaining portion of the IT budget is operating expenses. The capital portion of the budget is approximately \$28.9M or 52% of the total IT budget authority in FY 2000.

**2.c. Please identify the Nuclear Regulatory Commission top ten investment initiatives (in terms of total acquisition dollars) that were approved by the IT capital planning and investment approval process and are currently in development or acquisition. Also, for each of these initiatives, please (1) describe how the Nuclear Regulatory Commission assessed cost, risk, and return on investment in winning approval (2) provide a 1-page exhibit that summarizes the cost, risk, and return on investment data that were used for the investment decision, and (3) how confident are you in the quality of these data for decision-making?**

Table 1 below lists the top 10 investments and their estimated total acquisition costs. A 1-page summary of cost, risk, and return on investment is attached in Appendix C. Before the CCA, we estimated the cost of hardware, software, and development, but we did not include associated costs for softer items, such as modifying procedures, coordinating with stakeholders, infrastructure integration, training, and other items. As we accumulate experience with the new process, we are improving our ability to characterize associated costs fully. We believe that our decision process enables the NRC to prioritize potential investments on the basis of their ability to support the agency's mission or to achieve efficiencies. Through our "lessons learned" post-implementation analyses, we expect to further improve our ability to characterize associated project costs fully and further improve the value of these data for decisionmaking. The CCA brought with it a new discipline of assessing the total cost of a project.

**Table 1  
Top Ten IT Investments**

<b>Investment</b>	<b>Total Acquisition Cost (\$M)</b>
Agency Documents Access and Management System (ADAMS)	13.40
STARFIRE Resource Management System	8.40
PC Refresh	8.00
Reactor Program System (RPS)	2.70
General License Tracking System (GLTS)	0.68
Enforcement Action Tracking System (EATS)	0.49
Agency Training System (ATS)	0.37
Performance Indicators (PI)	0.30
Operator Licensing Tracking System (OLTS)	0.28
Automated Performance Measures Project (APMP)	0.25

**2.d. *If the NRC uses an executive management level IT capital planning and investment control group (e.g, investment review board, IT investment committee, etc.), does this group recommend or does it make final IT funding decisions for the Nuclear Regulatory Commission? If the group does not make the final decisions, who does?***

Final decisionmaking authority rests with the five presidential-appointed Commissioners. Operationally, the Chairman approves project initiation for investments of \$3 million and above. The EC approves project initiation for investments over \$500,000 and less than \$3 million. The CIO approves investments less than \$500,000. The Information Technology Business Council (ITBC), composed of Senior Executive Service (SES) managers from across the agency's major business offices, review investments and advise the CIO and the EC as a whole. The CIO may ask for EC review of investments of less than \$500,000 that are otherwise critically important to the agency.

- 2.e. What means has your agency provided, in accordance with CCA section 5122 (b) (6), for senior management personnel to obtain timely information on the progress of information system investments? (1) To what extent do these means include a system of milestones, in terms of cost, capability of the system to meet scheduled requirements, timeliness, and quality? (2) How confident are you that the data being used for measuring progress are accurate, reliable, and up-to-date?**

CCA section 5122 (b) (6) requirements are built into the NRC's CPIC process. For a project to win approval, the sponsor must commit to detailed milestones for schedule, performance, and cost. Once an investment proposal has been approved and enters the "project" phase, OCIO staff continue to monitor the project's status. Each project's spending plan is monitored on a quarterly basis and corrective action is recommended as warranted. The project is approved for a baseline budget. When the sponsor believes that the project may exceed that budget by 5 percent, he or she must return to the CIO and/or the EC to request additional approvals. The CIO and/or the EC may grant additional funding approval, request changes to the project, or terminate the project.

Operational experience indicates that the data are accurate and reliable. NRC's CPIC process has approved 32 IT investments. Of those, 7 have reached completion on time and within budget (5-percent ceiling), and 3 ongoing projects have received EC approval to exceed the 5-percent ceiling, but none has reached the 10-percent cost overrun ceiling. The remaining 22 projects are on schedule and within budget, but are not yet complete. A small number of projects have had to make midcourse adjustments because of changing environments or new requirements. In one case, a contractor was not able to deliver a promised module of our STARFIRE financial system. The process facilitated timely cancellation of the contract to minimize the financial impact to the agency. Because of the project's modular acquisition strategy, other components of the project are proceeding and continue to satisfy scheduled milestones.

- 2.f. *Has the Nuclear Regulatory Commission, as required by CCA section 5127, identified in its strategic information resources management plan any and all major IT acquisition programs -- or any phase or increment of such programs -- that have significantly deviated from the cost, performance, or schedule goals established for the program? (1) If so, which major IT acquisition program(s)? If not, why not? (2) Whether or not your agency has identified such significant deviations in its strategic ARM plans, how does your agency define, for purposes of CCA section 5127, (i) "major IT acquisition program" and (ii) "significant deviation"?***

As defined below, no "significant deviations" from cost, performance, or schedule goals have occurred in periods covered by previous ARM plans. We are continuing to monitor the effect of the cancelled module of the STARFIRE project described in Item 2(e) to determine if this will result in a significant deviation. The NRC defines a "major IT investment" as "[a]n NRC IT investment that requires special management attention because of its cost, risk, or critical importance to the NRC mission or because of its significant role in the administration of NRC programs, finances, property, or other resources." All investments reviewed by the EC are potentially major investments. The CIO advises the EC as to whether the investment should be

considered major and the EC makes the decision. To identify “significant deviations,” we maintain an internal threshold of 5% variance in cost, schedule, or progress toward meeting performance goals. This early warning threshold provides the NRC an opportunity to correct problems in a project before they reach our threshold for external reporting of 10% variance. The CIO and the EC identify potential significant deviations in schedule and performance to the Commission, which makes the final decision on whether the schedule and/or performance variations merit reporting as significant deviations. The reporting of significant deviations is integrated with NRC’s performance management process and significant IT deviations appear in NRC’s performance report.

- 3. As you are aware, CCA requires that executive agencies measure how well IT is being used to support their programs. For each of the top ten investment initiatives (in terms of total acquisition dollars) currently in either development, acquisition, or operation in the Nuclear Regulatory Commission, please provide specific data on realized and expected benefits to major operational or programmatic goals outlined in your latest Government Performance and Results Act strategic plan or annual performance plan. Also include the same type of data for any other investments, currently in development, acquisition, or operation, that you consider critically important.**

The current draft NRC strategic plan organizes our programmatic goals into Strategic Arenas (Nuclear Reactor Safety, Nuclear Materials Safety, Nuclear Waste Safety, and International Nuclear Safety Support). Additionally, we have formulated Corporate Management Strategies to promote efficiency and effectiveness of NRC operations.

The strategic goals of the NRC are as follows:

Prevent radiation-related deaths and illnesses, promote the common defense and security, and protect the environment in the use of civilian nuclear reactors.

Prevent radiation-related deaths and illnesses, promote the common defense and security, and protect the environment in the use of source, byproduct, and special nuclear material.

Prevent significant adverse impacts from radioactive waste to the current and future public health and safety and the environment and promote the common defense and security.

Support U.S. interests in the safe and secure use of nuclear materials and in nuclear nonproliferation.

The corporate management strategies are as follows:

Employ innovative and sound business practices.

Sustain a high-performing, diverse workforce.

Provide proactive information management and information technology services.

Communicate strategic change.

The first three strategic goals are supported by four performance goals:

Maintain safety, protection of the environment, and the common defense and security.

Increase public confidence.

Make NRC activities and decisions more effective, efficient, and realistic.

Reduce unnecessary regulatory burden on stakeholders.

The table below summarizes the linkage of each of the top 10 IT investments to NRC's strategic goals, performance goals, and management strategies.

**Table 2**  
**IT Investments Support the Agency Strategic Plan**

<b>Investment</b>	<b>Linkage to Agency Strategic Plan</b>
Agency Documents Access and Management System (ADAMS)	ADAMS is intended to contribute to the reactor and materials safety goal by increasing the number of regulatory documents that are available electronically and that are electronically searchable, thereby improving the technical staff's access to safety information. ADAMS is intended to contribute to the agency's public confidence performance goal by improving the accessibility to documents available to the public and decreasing the elapsed time between the creation of the document and its availability to the public. ADAMS is intended to promote the performance goal to reduce unnecessary regulatory burden on our licensees by allowing them the option of submitting regulatory documents electronically. ADAMS is intended to promote the efficiency and effectiveness performance goal by reducing staff requirements for the file center, providing more efficient search techniques for the staff, and replacing as many as 50 duplicate document management and tracking systems.

Investment	Linkage to Agency Strategic Plan
STARFIRE Resource Management System	<p>STARFIRE is expected to directly impact the agency's effectiveness and efficiency performance goal by improving the linkage of budgeting and planning information, by integrating performance management measurements into the financial system, and by implementing cost accounting disciplines that should improve our decisionmaking by tracking the total cost of our activities and their relation to the agency's mission. STARFIRE is expected to support the corporate management strategy to employ innovative and sound business practices.</p>
PC Refresh	<p>The goal of the PC Refresh program is to provide appropriate agency staff with personal computers that are capable of running ADAMS and STARFIRE. Its contribution to agency goals is indirect but important.</p>
Reactor Program System (RPS)	<p>RPS supports key business functions of Reactor Inspection and Reactor Licensing that directly impact the agency's safety and public health goal. The system collects information that can be correlated against facility characteristics with an analytical capability that permits the linking, trending, and analysis of plant performance data for better safety monitoring and to identify cause and effect relationships before they impact safety. RPS' primary linkage is to the Reactor Safety strategic goal. RPS contributes to the Public Confidence performance goal by facilitating the consistency and availability of reactor safety data.</p> <p>RPS contributes to the effectiveness and efficiency performance goal by combining 10 separate, overlapping programs into a single, efficient, and easily maintainable system.</p>

Investment	Linkage to Agency Strategic Plan
General License Tracking System (GLTS)	<p>General License Devices contain small amounts of nuclear material and are designed to be inherently safe. Once acquired, the owners are considered general licensees and take on responsibility for transfer and disposal of the devices. Loss of accountability for these devices could occur because of a loss of knowledgeable licensee personnel, loss of warning labels or illegible warning labels, and the fact that the licensee loses an awareness that radioactive material is present. A contributing factor to licensees losing accountability is the lack of contact between licensees and NRC. GLTS will implement a registration program that will provide an efficient and effective method of providing contact with licensees of general devices that the Commission believes to pose a higher health and safety risk. This improved capability will contribute to both the safety and materials safety strategic goal and to the public confidence performance goal.</p>
Enforcement Action Tracking System (EATS)	<p>The Enforcement business function supports the agency's materials and reactor safety and public health goals by obtaining prompt correction of violations and conditions adverse to safety, deterring future violations, and encouraging improvement of licensee performance. The EATS is vital to managing major enforcement actions and assesses the effectiveness and uniformity of all actions, ensuring that cases are received, reviewed, and executed in a timely manner. EATS additionally supports NRC's effectiveness and efficiency performance goals by replatforming enforcement computing from an expensive mainframe system to a component of an existing cost-effective PC-LAN-based system.</p>

Investment	Linkage to Agency Strategic Plan
Agency Training System (ATS)	<p>Training and development of NRC staff is critical in order to support the mission-related need to obtain new knowledge, skills, and competencies to meet the NRC's organizational, occupational, and individual performance expectations and recruitment goals. While supporting this critical requirement to implement both reactor and materials safety goals, ATS directly impacts the efficiency and effectiveness performance goal by retiring three legacy systems and avoiding the costs of planned interfaces to those systems. The ATS project will support the agency's training management needs through direct use of Commercial Off-The-Shelf (COTS) functionality in our PeopleSoft HR system. ATS supports the corporate management strategy to sustain a high-performing, diverse workforce.</p>
Performance Indicators (PI)	<p>A key strategic initiative in the NRC is to revise the Reactor Oversight Process in a manner that will continue to ensure safety, but will decrease the unnecessary regulatory burden on licensees. As part of this initiative, NRC, licensees, and stakeholders reached consensus on a number of Reactor Performance Indicators that have safety implications. Quantitative thresholds for concern were established and the level of regulatory oversight will be appropriately adjusted so that plants that operate safely may receive less oversight than those that are not operating within thresholds. This system accepts data from licensees and analyzes the data using publicly accepted algorithms to assess levels of concern. The data and the analysis are made publicly available so that the public will be informed of the operating experience of plants and will understand NRC's basis for regulatory oversight actions. The system supports our reactor safety strategic goal and the public confidence performance goal.</p>
Operator Licensing Tracking System (OLTS)	<p>NRC is charged in the Atomic Energy Act of 1954 with the responsibility of issuing licenses to the operators of nuclear power plants and test/research reactors. OLTS is vital to managing the issuance of approximately 400 new licenses per year and the maintenance of 5,000 existing licenses. This project corrects a number of technical problems, improves the user interface, and integrates with RPS. OLTS directly supports the reactor safety strategic goal.</p>

Investment	Linkage to Agency Strategic Plan
Automated Performance Measures Project (APMP)	APMP mines data from the RPS and other databases to provide automated updates of operating plan and performance plan metrics, as well as program plans for licensing, inspection, performance assessment, and license renewal. This activity supports the effectiveness and efficiency performance goal and improves our ability to comply with GPRA reporting requirements.

**3.a. As required by section 5123 of CCA, please provide the Committee with a copy of your last three annual reports on progress in achieving goals for improving the efficiency and effectiveness of Nuclear Regulatory Commission operations and, as appropriate, its delivery of services through the effective use of information technology.**

NRC's first annual report on improving efficiency and effectiveness of NRC operations and delivery of services through the effective use of information technology, dated December 9, 1999, is contained in the CIO Stakeholder Report provided as Appendix D.

**4. Since enactment of CCA, has the Nuclear Regulatory Commission, in accordance with CCA section 5123, (1) analyzed its missions and (2) based on the analysis, revised its mission-related processes and administrative processes, as appropriate, before making significant investments in IT to be used in support of the performance of those missions?**

The NRC has undertaken a comprehensive review of its mission, which has resulted in a new Strategic Plan discussed in Item 3 above. As part of the CPIC process at the NRC, sponsors of each proposed investment are required to demonstrate how the investment supports the revised Strategic Plan and to explain how the project enables business process improvement. As demonstrated below, most projects have addressed process improvement before automation was applied.

- ***For the top ten investment initiatives identified in 2(c) above, briefly summarize these analysis efforts and the revisions made to your Nuclear Regulatory Commission mission-related processes and administrative processes that are to be supported by these top ten IT investments.***

**Table 3  
NRC Process Improvements Supported Through CPIC**

<b>Investment</b>	<b>Process Improvement Accomplishments</b>
Agency Documents Access and Management System (ADAMS)	ADAMS was planned as an agency-wide process improvement tool. A task force from all mission and support offices identified requirements that would enable the staff to create, manage, and retire documents electronically. The system has vast process improvement potential through implementation of electronic workflow processing. The system will improve the staff's access to information. The administrative process of records management has been dramatically redesigned and improved. The process of disseminating information to the public is expected to achieve significant gains as information becomes available on a much more timely basis.
STARFIRE Resource Management System	STARFIRE will improve agency practices across the board. By implementing a cost accounting system, we will know the full cost of our activities and make more informed decisions. STARFIRE will implement "employee self-service" for many administrative processes.
PC Refresh	The goal of the PC Refresh program is to provide appropriate agency staff with personal computers that are capable of running ADAMS and STARFIRE. Its contribution to process improvement is indirect but important. PC Refresh changed the planning process for PC upgrades. In the past, computers were "refreshed" at a certain age; typically each year the oldest 20 percent of computers were upgraded. PC Refresh changed the paradigm to tie upgrades directly to application requirements so that upgrades were targeted for specific business needs.

<b>Investment</b>	<b>Process Improvement Accomplishments</b>
Reactor Program System (RPS)	RPS has been a key tool for implementing strategic change at the NRC. RPS enables the agency to execute its Revised Reactor Oversight Process (RROP), which measures licensee performance and prioritizes regulatory effort on issues having the highest safety impact. RPS is utilized in conjunction with the RROP, which has replaced the Systematic Assessment of Licensee Performance process.
General License Tracking System (GLTS)	GLTS was created to respond to an improved process for communicating with the agency's general licensees. It implements a new registration process that provides improved oversight of general licensees.
Enforcement Action Tracking System (EATS)	EATS improved the cost-effectiveness of the enforcement process by replatforming enforcement computing from an expensive mainframe system to a component of an existing cost-effective PC-LAN-based system.
Agency Training System (ATS)	The ATS provides logistical implementation of a process improvement that merges the agency's Nuclear Technology Training programs with its other staff training programs. The resulting process efficiencies allowed the agency to retire three automated custom systems and implement the revised process on COTS software.
Performance Indicators (PI)	A key strategic initiative in the NRC is to revise the Reactor Oversight Process in a manner that will continue to ensure safety but decrease the regulatory burden on licensees. As part of this initiative, NRC, licensees, and stakeholders reached consensus on a number of reactor Performance Indicators that have safety implications. Quantitative thresholds for concern were established and the level of regulatory oversight will be appropriately adjusted so that plants that operate safely may receive less oversight than those that are not operating within thresholds. This system accepts data from licensees and analyzes the data on the basis of publicly accepted algorithms to assess levels of concern. The data and the analysis are made publicly available so that the public will be informed of the operating experience of plants and will understand NRC's basis for regulatory oversight actions.

Investment	Process Improvement Accomplishments
Operator Licensing Tracking System (OLTS)	This project was designed to improve the efficiency of the operator licensing process by retiring a mainframe data system and incorporating the process into the RPS client/server framework for improved efficiency and data integrity.
Automated Performance Measures Project (APMP)	APMP automates parts of our new process of performance management for compliance with GPRA reporting requirements.

**5. What progress has Nuclear Regulatory Commission made, and what obstacles still remain, in implementing modular contracting, in accordance with CCA section 5202?**

**(a) What criteria does Nuclear Regulatory Commission use for determining whether a modular contracting approach is appropriate or not?**

The NRC has achieved limited success in modular contracting. Sponsors are directed to address procurement strategy in their capital planning and investment control analysis and the management review gives preference to modular approaches.

The primary determinant of the viability of modular contracting is whether a development project can be broken into discrete functional elements for which benefits of implementation and operations will exceed costs.

**(b) Since CCA's enactment, what percentage of Nuclear Regulatory Commission major IT systems investments have used modular contracting? Also, please indicate which systems and the dollar value of the contracts.**

Two of the three systems identified to the Office of Management and Budget as major NRC systems, the Reactor Programs System (RPS) and the financial/resource system (STARFIRE), have used modular contracting. Such contracting has allowed the RPS to be implemented in an orderly fashion. STARFIRE modules were also under different contracts. The core accounting module contract was canceled when it was realized that the estimated cost and schedule could not be met. The modular strategy allowed the NRC to continue development of other STARFIRE modules in spite of the problems with the Core Accounting module. Another module, Cost Accounting, was initially deferred. A product for this latter module is expected to be selected in the near future. As explained above, ADAMS, the third major system, did not lend itself to modular development and implementation.

The estimated acquisition costs for the three major systems are as follows: ADAMS, \$13.4M; STARFIRE, \$8.4M; RPS, \$2.7M.

**(6) Approximately how much did Nuclear Regulatory Commission obligate through contract actions for IT products or services during each of the following fiscal years: 1997, 1998, and 1999?**

**1. For each of the three fiscal years, what percentage of the total dollars were obligated by (1) issuing orders under existing indefinite delivery, indefinite quantity (IDIQ) contracts (such as government-wide contracts (GWACs), federal supply schedule contracts, etc.) and (2) awarding new contracts or issuing modifications to those contracts?**

**Obligations for IT products/services during for Fiscal Years (FY) 1997-1999:**

FY 1997 = \$53.6M  
 FY 1998 = \$57.0M  
 FY 1999 = \$51.9M

**Percentage Distribution Between IDIQ/Interagency Contracts and NRC Contracts**

Fiscal Year	GWAC/ Interagency (\$M)	GWAC/ Interagency (%)	NRC Contracts (\$M)	NRC Contracts (%)
1997	26.9	50	26.7	50
1998	26.2	46	30.8	54
1999	32.0	62	19.9	38
Total	85.1	52	77.4	48

Attachments:

- Appendix A: Annual Reports on Improvements in Information Resources and Technology
- Appendix B: NRC Management Directive 2.2
- Appendix C: Cost Benefit and Risk Data for Top Ten IT Investments
- Appendix D: 1999-2000 Stakeholder Report

## **Appendix A**

### **Annual Reports on Improvements in Information Resources and Technology**

**Appendix B**

**NRC Management Directive 2.2**

**“Capital Planning and Investment Control”**

## **Appendix C**

### **Cost Benefit and Risk Data for Top Ten IT Investments**

PROJECT TITLE: Agencywide Documents Access And Management System (ADAMS)  
 SPONSORING OFFICE: Office of the Chief Information Officer  
 DESCRIPTION: Documents Management, Workflow, Official Records System

Alternative 1: Status Quo (NUDOCS - Limited search capability, paper-based official records)  
 Alternative 2: Mod NUDOCs - Add full text search for new documents  
 Alternative 3: New System - Document management plus workflow capability  
 Alternative 4: New System - Alternative 3 plus electronic records management

**COSTS, BENEFITS, AND RISKS**

Criteria	Alt 1 Status Quo	Alt 2	Alt 3	Alt 4 Sponsor's Recommendation
Life Cycle Costs* (\$M)	\$49.7	\$50.1	\$61.8	\$59.5
Benefits - Grade Distribution**	A = 0 B = 0 C = 8	A = 0 B = 3 C = 5	A = 3 B = 4 C = 1	A = 7 B = 1 C = 0
Risk Scores *** (Lower score less risky)	18	16	22	21

Notes: \* Non-recurring plus 5 years of recurring  
 \*\* For example: On grade range of A,B, or C, Alternative 1 received a "C" for all 8 of the benefit categories  
 \*\*\* Sum of 6 risk categories, rated on a 1 to 5 scale

PROJECT TITLE: Agencywide Financial and Resource Management System (STARFIRE)  
 SPONSORING OFFICE: Office of the Chief Financial Officer  
 DESCRIPTION: Develop system to automate and integrate agencywide financial and resource functions, including core accounting, cost accounting, payroll, and labor cost distribution

NOTE: There were two capital planning and investment control analyses conducted for STARFIRE. The first (Alternatives 1, 2, and 3) addressed financial functions, and the second (Alternatives 1a and 2a) addressed moving payroll and associated core human resources (CHR) to the PeopleSoft environment and integrating them with the financial functions.

**COSTS AND RISKS**

Alternative	Life Cycle Cost * (Discounted \$M)	Risk Scores ** (Lower score less risky)
Alt 1 - Status Quo Financial Systems	\$25.9	10
Alt 2 - New system using SYBASE environment	\$18.1	12
Alt 3 - New System using Oracle environment	\$23.7	14
Alt 1a - Status Quo payroll/core human resources (CHR)	\$8.7	11
Alt 2a - Move payroll/CHR to PeopleSoft environment	\$4.6	10

Notes \* Non-recurring plus 5 years of recurring  
 \*\* Sum of 4 risk categories, rated on a 1 to 5 scale

**BENEFITS -- Associated with Sponsor’s Recommended Alternative 2 and Alternative 2a:**

- 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 decisionmaking.

PROJECT TITLE: PC Refresh  
 SPONSORING OFFICE: Office of the Chief Information Officer  
 DESCRIPTION: Replacement of desktop computers agencywide

Alternative 1: Status Quo - Continue 15% per year replacement  
 Alternative 2: Replace 20% per year  
 Alternative 3: Replace 30% per year  
 Alternative 4: Replace as new major applications require

**COSTS, BENEFITS, AND RISKS**

Criteria	Alt 1 Status Quo	Alt 2	Alt 3	Alt 4 Sponsor's Recommendation
Life Cycle Costs* (\$M)	\$7.0	\$7.5	\$8.3	\$7.9
Benefits - Grade Distribution**	A = 0 B = 0 C = 7	A = 0 B = 7 C = 0	A = 7 B = 0 C = 0	A = 4 B = 3 C = 0
Risk Scores*** (Lower score less risky)	17	14	8	11

Notes: \* Costs over 2 fiscal years. Lower procurement costs of lower replacement rates are offset somewhat by higher maintenance costs  
 \*\* For example: On grade range of A,B, or C, Alternative 1 received a "C" for all 7 of the benefit categories  
 \*\*\* Sum of 5 risk categories, rated on a 1 to 5 scale

PROJECT TITLE: Reactor Program System (RPS)  
 SPONSORING OFFICE: Office of Nuclear Reactor Regulation  
 DESCRIPTION: System that consolidates and integrates numerous individual legacy reactor regulation applications and systems

Alternative 1: Status Quo - continue existing, non-integrated legacy systems  
 Alternative 2: Integrate 25 % of existing systems  
 Alternative 3: Integrate 50% of existing systems  
 Alternative 4: Full integration of existing systems

**COSTS, BENEFITS, AND RISKS**

Criteria	Alt 1 Status Quo	Alt 2	Alt 3	Alt 4 Sponsor's Recommendation
Life Cycle Costs* \$M	\$13.1	\$11.6	\$8.4	\$8.0
Benefit Rating** (Avg of A,B, C)	C	C+	A-	A
Risk Scores*** (Lower score less risky)	19	18	16	14

Notes: \* Non-recurring plus 5 years of operations  
 \*\* Average of 10 benefit categories  
 \*\*\* Average of 6 risk categories, rated on a 1 to 5 scale

PROJECT TITLE: General License Tracking System (GLTS)  
 SPONSORING OFFICE: Office of Nuclear Material Safety and Safeguards  
 DESCRIPTION: Used for annual registration of 6,000 general licensees and maintains information on 47,000 licensees, licensed devices, and vendors

Alternative 1: Status Quo - Use existing system, General License Data Base (GLDB)  
 Alternative 2: Enhance GLDB  
 Alternative 3: New System (PowerBuilder and Sybase)  
 Alternative 4: Adapt State of Virginia System State's X-Ray Registration System  
 Alternative 5: Adapt International Atomic Energy Agency's Universal Licensing System (RAIS)  
 Alternative 6: New System (Visual Basic and MS SQL Server 7.0)

**COSTS , BENEFITS, AND RISKS**

Criteria	Alt 1 Status Quo	Alt 2	Alt 3 Sponsor's Rec.	Alt 4	Alt 5	Alt 6
Life Cycle Cost *	\$18.6	\$5.8	\$2.1	\$2.6	\$2.6	\$2.3
Benefits** Quant. (Avg)	3	2	1	1	1	1
Benefits*** Non- Quant. (Avg)	2.8	1.7	1.1	1.1	1.1	1.2
Risk**** (Avg)	1.5	1.2	2.5	2.2	2.0	2.2

Notes: \* Non-recurring plus 5 years recurring  
 \*\* Rated 1= High, 2 = Medium, or 3 = Low for 3 benefit categories  
 \*\*\* Rated 1 = High, 2 = Medium, or 3 = Low for 15 benefit categories  
 \*\*\*\* Rated 1 = High, 2 = Medium, or 3 = Low for 10 risk categories

PROJECT TITLE: Enforcement Action Tracking System (EATS)  
 SPONSORING OFFICE: Office of Enforcement  
 DESCRIPTION: EATS is the agency's primary system for tracking NRC's pending enforcement actions

Alternative 1: Renovate EATS to use combination of PC, Web, and paper-based, manual components

Alternative 2: Rehost EATS - Move from time-sharing facility to in-house client/server environment

Note: Status Quo is not Y2K compliant and, therefore, is not considered to be a viable alternative.

**COSTS AND RISKS**

Criteria	Alt 1 Status Quo	Alt 2 Sponsor's Recommendation
Life Cycle Cost* (\$K)	\$102	\$575
Risk Scores ** (Lower score less risky)	13	15

Notes: \* Non-recurring plus 5 years of recurring

\*\* Risk range 1= Low, 2 = Medium, 3 = High, average of 8 risk categories

**BENEFITS**

Benefit Category	Comparison of Alternatives	
	Alt 1: Renovate	Alt 2: Rehost
1. Ability to decommission mainframe-based SINET (5-year cost of almost \$4M) *	Yes	Yes
2. Ability to comply with the recommendations of the recent General Accounting Office (GAO) Report (GAO/HEHS-97-51) by integrating data among EATS, AMS, and OIMIS.	No	Yes
3. Ability to integrate EATS with the Reactor Program System (RPS).	No	Yes
4. Ability to reduce Office of Enforcement labor-intensive activities.	No	Yes
5. Ability to reduce data entry effort with the use of drop-down boxes.	No	Yes

Note: \*EATS is one of several systems that must be rehosted or terminated in order to decommission SINET (the safety information network) and realize maximum savings.

PROJECT TITLE: Agency Training System (ATS)  
 SPONSORING OFFICE: Office of Human Resources  
 DESCRIPTION: Replace the current ATS (three systems on different hardware), which maintains records of all employee training

Alternative 1: Modify current ATS to interface with agency's PeopleSoft Human Resources (HR) environment

Alternative 2: Rehost ATS - transfer to the PeopleSoft HR environment

**COSTS AND RISKS**

Criteria	Alt 1	Alt 2 Sponsor's Recommendation
Life Cycle Cost * (\$K)	\$740	\$500
Risk Scores ** (Lower score less risky)	31	14

Notes: \* Non-recurring plus five years recurring

\*\* Sum of 8 risk categories, rated on a 1 to 5 scale

**BENEFITS**

Benefit Category	Comparison of Alternatives	
	Alt 1:	Alt 2:
1. Ability to integrate ATS with the PeopleSoft HR System .	No	Yes
2. Ability to reduce timeshare costs and provide more expedited service.	No	Yes
3. Ability to reduce data entry effort by consolidating three systems to one.	No	Yes
4. Ability to introduce users to basic employee self-service and responsibility and accountability for their own data.	No	Yes

PROJECT TITLE: Performance Indicators (PI)  
 SPONSORING OFFICE: Office of Nuclear Reactor Regulation  
 DESCRIPTION: Develop automated system that uses reactor performance data to support agency's regulatory oversight decisions

Alternative 1: Status Quo - Continue to manually generate summary information  
 Alternative 2: Develop new system that integrates external Web (to receive data from licensees) with internal NRC databases

**COSTS, BENEFITS, AND RISKS**

Criteria	Alt 1 Status Quo	Alt 2 Sponsor's Recommendation
Life Cycle Cost * (\$K)	\$550	\$460
Benefits ** (Avg ) (Lower score greater benefits)	3	1
Risk Score *** (Avg) (Lower score less risky)	2.8	2

Notes: \* Non-recurring plus 4 years recurring costs  
 \*\* Average of 6 benefit categories, rated on a 1 to 5 scale  
 \*\*\* Average of 4 risk categories, rated on a 1 to 5 scale

PROJECT TITLE: Operator Licensing Tracking System (OLTS)  
 SPONSORING OFFICE: Office of Nuclear Reactor Regulation  
 DESCRIPTION: Develop system that maintains and tracks approximately 5,000 reactor operator licenses

Alternative 1: Renovate OLTS to make it Y2K compliant  
 Alternative 2: Rehost OLTS from mainframe to in-house client/server environment that supports the office's other major systems

Note: Status Quo is not Y2K compliant and, therefore, is not considered to be a viable alternative.

**COSTS AND RISKS**

Criteria	Alt 1	Alt 2 Sponsor's Recommendation
Life Cycle Cost * (\$K)	\$435	\$442
Risk Scores ** (Lower score less risky)	13	9

Notes: \* Non-recurring plus 5 years of recurring costs  
 \*\* Total score for 7 risk categories, rated on a 1 to 5 scale

**BENEFITS**

Benefit Category	Alt 1	Alt 2
1. Ability to remove OLTS from mainframe, thereby allowing NRC to shut down those operations *	No	Yes
2. Ability to integrate OLTS with the Reactor Program System (RPS), the primary reactor regulatory support system	Yes	Yes
3. Ability to reduce the office's labor-intensive activities	No`	Yes
4. Ability to reduce data entry effort with use of drop-down list boxes	No	Yes

Note: \* OLTS is one of several systems which use the mainframe and therefore must be terminated or rehosted in order to cease mainframe operations and realize maximum savings

PROJECT TITLE: Automatic Performance Measures Project (APMP)  
 SPONSORING OFFICE: Office of Nuclear Reactor Regulation (NRR)  
 DESCRIPTION: Develop an application for uniform reporting of Regional and Headquarters-based activities that support the reactor-related annual Operating Plan

Alternative 1: Status Quo - Continue with manually developed reports with each organization's using different formats and data sources

Alternative 2: Develop an application for uniform, consistent reporting from data residing in the reactor client server environment

**COSTS**

Criteria	Alt 1: Status Quo	Alt 2: Sponsor's Recommendation
Life Cycle Cost: 7 years (\$K)	\$7	\$360

**BENEFITS**

A key success factor for NRR is information management and the best way to obtain this capability is through a systematic approach so that management is not overwhelmed with unnecessary, conflicting, or irrelevant information. This approach must stress information that is timely and accurate and available in a useable, readable format. Quality, not quantity, is critical. NRR needs information derived from the same source, in a consistent format, that integrates information for both inspections and licensing. The result is better information for decisionmaking by management. The APMP will significantly decrease NRC's reliance on manual effort to assimilate the information used in its decisionmaking process by providing timely access to relevant inspection and licensing information through increased automation and by improving the consistency and prioritization of plant performance information.

The APMP will provide the ability to analyze regulatory and administrative information for all aspects of the NRR program, which would be a significant benefit to the agency. The APMP will have access to data from sites and regional offices as well as Headquarters. This capability would also reduce the current burden on staff and management to compile, review, and report information which is needed to evaluate the effectiveness of regulatory programs.

**RISKS**

This project does not involve up-front system development activities normally associated with a data processing application, so risks are minimal. We anticipate the first reports will be available within a month of the start of the project. This project can be incorporated into the Office of the Executive Director for Operations (OEDO) reporting project or terminated at any time with little or no loss in investment. There is some risk involved in developing reports for performance metrics that change. While this is a risk, reports from this system may lead to the modification of existing metrics or to the development of new ones after analyzing the data based on current metrics. Also, the project will use a modular approach to prevent significant programming changes in the advent of the OEDO performance measurement system or STARFIRE.

The risk of the status quo is the continued development of reports in various non-standard formats from different databases resulting in incompatible, inconsistent, and sometimes incorrect data.

## **Appendix D**

### **1999-2000 Stakeholder Report**