Audit Report

OFFICE OF THE INSPECTOR GENERAL

NEXT GENERATION TARGET CONTROL SYSTEM

Report No. 95-230 June 9, 1995

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Acronyms

JPO	Joint Program Office
NGTCS	Next Generation Target Control System
OSD	Office of Secretary of Defense
RFP	Request for Proposal
TCS	Target Control System
T&E	Test and Evaluation
TASC	The Analytical Sciences Corporation

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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June 9, 1995

MEMORANDUM FOR DIRECTOR FOR TEST, SYSTEMS ENGINEERING AND EVALUATION

SUBJECT: Audit Report on the Next Generation Target Control System (Report No. 95-230)

We are providing this final report for your review and comment. This audit resulted from a complaint to the DoD Hotline concerning the cost-effectiveness of plans for the Next Generation Target Control System. Comments on a draft of this report were considered in preparing the final report.

DoD Directive 7650.3 requires that all recommendations and potential monetary benefits be resolved promptly. We request that the Director, Test, System Engineering, and Evaluation, provide a copy of the Next Generation Target Control System Cost and Operational Effectiveness Analyses, when complete, and provide comments on monetary benefits in response to the final report. We request that management provide the comments by August 9, 1995.

We appreciate the courtesies extended to the audit staff. Questions on the audit should be directed to Mr. Raymond A. Spencer, Audit Program Director, at (703) 604-9070 (DSN 664-9070) or Ms. Nancee K. LaBute, Audit Project Manager, at (703) 604-9520 (664-9520). See Appendix F for the report distribution. The audit team members are listed inside the back cover.

Robert J. Lieberman
Assistant Inspector General
for Auditing

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Office of the Inspector General, DoD

Report No. 95-230 **June 9, 1995**
(Project No. 4AB-5053)

NEXT GENERATION TARGET CONTROL SYSTEM

EXECUTIVE SUMMARY

Introduction. The DoD Hotline received a complaint regarding the Military Departments' plan to purchase the Next Generation Target Control System to replace existing DoD target control systems. The Next Generation Target Control System is a tri-Service non-major Defense acquisition program. The Central Test and Evaluation Improvement Plan will fund the engineering and manufacturing development for the system. The Air Force is the lead Military Department and the Joint Program Office at Eglin Air Force Base, Florida, manages the program. The Joint Program Office estimated the Program costs to be $ * to design, develop, and test the system.

Objectives. Our objective was to evaluate the allegations concerning the Next Generation Target Control System Program and to determine whether the Program is the most cost-effective solution to meet the target control system needs of the Department of Defense.

Audit Results. The audit substantiated 12 of the 23 allegations. Appendix A of this report addresses each of the 23 allegations and the results of our review. Specifically, the Military Departments are preparing to develop, test, purchase, and field a target control system that will be more cost-effective than enhancing the current systems. However, the new $ * million target control system will have capabilities that will not be utilized in the test and evaluation or training communities and will cost more than needed.

The audit identified material management control weaknesses. The Air Force did not implement necessary management controls for the Next Generation Target Control System development to assure the procurement of a cost-effective system. The Joint Program Office did not effectively implement the self evaluation aspects of the DoD management control program. Management controls assessed are summarized in Part I of this report.

Revalidating the number of flight missions in the test plan, removing unnecessary Military Specifications and Standards, and dropping an Air Force exclusive device from the solicitation could reduce program costs by $20 million. Appendix D contains a summary of potential benefits related to this audit.

Summary of Recommendations. We recommend that the Director, Test, Systems Engineering and Evaluation, direct the Program Manager, Next Generation Target Control System, to complete a Cost and Operational Effectiveness Analysis on design alternatives, redefine the tri-Service requirements to accurately reflect capabilities, negotiate and execute Memoranda of Agreement with the Military Departments, and reword the Request for Proposal to ensure a tailored development to meet user needs.

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In addition, we recommend that the unnecessary Military Specifications and Standards be removed from the Request for Proposal, the number of flight tests be revalidated, and the Advanced Medium Range Air-to-Air Missile Track and Destruct Device requirement be revalidated.

Management Comments. Management comments to the draft report were generally responsive but did not fully comply with the requirements of DoD Directive 7650.3. The Director, Test, Systems Engineering and Evaluation, generally concurred with the recommendations and his comments were considered responsive. However, we request that the Director, Test, Systems Engineering and Evaluation, provide a copy of the Cost and Operational Effectiveness Analyses when complete and comment on monetary benefits. Those comments are requested by August 9, 1995. Part II of the report contains the full discussion of management's comments and Part IV contains the complete text of comments.

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Part I - Introduction

Background

Allegations. The DoD Hotline received a complaint regarding the Air Force plan to issue a request for proposal for the Next Generation Target Control System (NGTCS) to replace existing DoD target control systems (TCS). The complaint involved allegations regarding the cost of the program, its utility in today's downsizing defense environment, and the stringent requirements being levied on the system. The complainant also identified concerns that the Military Departments have recently spent money to upgrade the existing systems and that the current cost of the expendable target control element in the target is significantly less expensive than the one envisioned for the NGTCS. The complainant stated that the goal of the NGTCS was to provide a Global Positioning System with over-the-horizon capability and to make the DoD test ranges compatible. The complainant questioned the validity of the compatibility requirement and suggested that a modification of the existing TCS would be a more cost-effective solution to user requirements than the development of NGTCS. Appendix A of this report addresses each of the 23 allegations and the results of our review.

The NGTCS Joint Program Office (JPO) was scheduled to release the Engineering and Manufacturing Development Request for Proposal (RFP) under Solicitation F08626-95-R-0002 in July 1994. During June 1994, we received the letter concerning the development of NGTCS. As a result of the receipt of this complaint, we began an audit of the Program and requested that the Director, Test, Systems Engineering and Evaluation, postpone issuing the NGTCS RFP pending the completion of our review. He complied with our request and we appreciate that responsiveness.

Next Generation Target Control System. The NGTCS is a tri-Service, non-major Defense acquisition program. The Air Force is the lead Military Department and NGTCS Joint Program Office located in the Range and Airbase Systems Program Office, Eglin Air Force Base, Florida, manages the Program. The Central Test and Evaluation Improvement Plan will fund the Engineering and Manufacturing Development contract. The program development costs are estimated to exceed $ * . The individual Military Departments will fund follow-on production contracts at an estimated cost of $ * .

Objectives

The audit objective was to evaluate the allegations concerning the NGTCS Program and to determine whether NGTCS is the most cost-effective solution to meet the target control system needs of the DoD. We assessed the validity of

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the allegations and the appropriateness of developing the NGTCS instead of enhancing the current target control systems. The audit also evaluated the adequacy of management controls related to the objective.

Scope and Methodology

We conducted the program audit from July through December 1994 and reviewed data dated from March 1989 through October 1994. To accomplish the objective, we:

o reviewed the 23 allegations to determine their validity;

o examined the NGTCS Draft Request for Proposal No. F08626-95-R-0002; and

o evaluated program cost estimates, tri-Service requirements, and NGTCS test plans.

In addition, we reviewed program documentation and discussed with user personnel the existing TCS and the proposed NGTCS to determine:

o the deficiencies in the current TCS that will be replaced by the NGTCS,

o the cost-effectiveness of enhancing the current TCS as an alternative to developing NGTCS, and

o the validity of the system requirements.

We conducted the audit in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD, and accordingly included such tests of management controls as we deemed necessary. The audit did not rely on computer-processed data or statistical sampling procedures. Appendix E lists the organizations visited or contacted during the audit.

Management Controls

We evaluated management controls related to the effectiveness of the review process and the adequacy of information provided in support of major milestones and program reviews for the NGTCS development. The DoD Directive 5000.1, "Defense Acquisition," February 23, 1991; DoD Instruction 5000.2, "Defense Acquisition Policies and Procedures," February 23 1991; and DoD Manual 5000.2-M, "Defense Acquisition Management Documentation and Reports," February 23, 1991, specify those controls and procedures. We also

assessed implementation of the requirements of DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987, including performance of vulnerability assessments and management control reviews.

A material management control weakness existed since the Program Office did not implement the necessary management controls to adequately monitor the NGTCS development effort to assure the procurement of a cost-effective system. Recommendations 3 and 4 in this report, if implemented, will correct this weakness.

We reviewed the Office of Secretary of Defense (OSD) and Air Force implementation of the DoD management control program as it pertained to the audit objectives. The OSD, the Air Force, and the NGTCS Program Office had neither identified the NGTCS as an assessable unit nor had identified management control weaknesses attributable to the NGTCS development effort. A copy of this report is being provided to the senior OSD and Air Force management control program officials.

Prior Audits and Other Reviews

Neither the General Accounting Office nor the Inspector General, DoD, have issued reports directly related to NGTCS.

Part II - Finding and Recommendations

Procurement of the Next Generation Target Control System

The Military Departments are preparing to develop, test, purchase, and field a target control system that will be more cost-effective than enhancing the current systems. However, the new $ * target control system will have capabilities that will not be utilized in the test and evaluation or training communities. This condition is occurring because the Program Office overstated basic system requirements and by-passed some DoD acquisition guidelines and policies. As a result, the system could cost more than necessary. The Central Test and Evaluation Program could put $20 million of funds to better use by restructuring the Request for Proposal to ensure compliance with user needs and DoD acquisition policies.

Background

The DoD Test and Evaluation (T&E) community is required to provide increasingly complex support for the evaluation of new weapon systems. The Military Departments have test scenarios for both land and water that involve high performance, full and subscale aerial targets, and large numbers of surface targets. The test scenarios require testers to present multiple target configurations of surface and aerial targets in an electronically dense environment. The T&E community considers its current Target Control Systems (TCS) to be inadequate for current test and evaluation scenarios and future requirements.

The three principal existing TCS are the Army's Drone Formation Control System, White Sands Missile Range, New Mexico; the Navy's Integrated Target Control System, Naval Air Warfare Center-Weapons Division, Point Mugu, California; and the Air Force's Gulf Range Drone Control Upgrade System at the Air Force Development Test Center Gulf Range, Tyndall Air Force Base, Florida. The Navy TCS consists of six radar units that use ground-based time and space position information that is considered obsolete. The Army's single multilateration, ground-based Time Space Position Information system has 20-year-old technology. The Air Force TCS consists of two multilateration, ground-based systems that are similar but not interchangeable. They were designed in-house and use 15-year-old technology.

These existing Military Department systems perform similar functions but have limitations. The limitations consist of vertical accuracy, the number of targets and vehicles they can track and control, and the range of operation. In addition, existing TCS have little interoperability, commonality, or interchangeability.

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The Next Generation Target Control System will replace the existing Integrated Target Control System, the Drone Formation Control System, and the Gulf Range Drone Control Upgrade System and provide the testing community a target control system with commonality and future target interoperability. In test scenarios, the NGTCS places full-scale and subscale aerial and surface targets in realistic scenarios for weapon system evaluation. It will be a tri-Service system, compatible and interoperable between test ranges and targets.

The Joint Commanders Council/T&E (previously the Multi-Service Test Investment Review Committee), Air/Land Targets Oversight Panel identified TCS as a key activity for commonality and interoperability between the DoD test and training ranges. Developing a tri-Service TCS to satisfy the DoD requirement is considered both necessary and cost-effective. Interoperability of the Military Department TCS will minimize the need for additional peculiar ground support equipment, minimize personnel for operations and maintenance, and reduce production cost due to quantity buys for the NGTCS control stations and the expendable transponders. In addition, the establishment of a tri-Service single depot will reduce hardware and software operations and maintenance and inventory cost and establish configuration control.

The Next Generation Target Control System Program

The NGTCS Program Office was preparing to issue a Request for Proposal for an Engineering and Manufacturing Development contract without establishing controls to manage the NGTCS Program effectively. The Program Office did not exercise effective controls over the Program to assure that requirements were not overstated, design alternatives were cost-effective, the procurement was structured toward an approach that could be tailored to individual user needs, the flight test plan was effective, and compliance with current DoD initiatives was assured.

The Engineering and Manufacturing Development contract will provide the design, development, fabrication, integration, and testing of a target control system. The contract will integrate NGTCS with the current targets, missiles, and aircraft and demonstrate the new system's compatibility with future targets. The contract will also deliver several configurations of NGTCS at an estimated cost of $ * . See Appendix B for a detailed description of the NGTCS system.

Several cost and effectiveness studies have been completed on the NGTCS program. See Appendix C for details of the NGTCS cost estimates. The studies assessed each TCS in each Military Department using:

* Source selection and For Official Use Only information removed.

- o compliance versus requirements,
- o an importance weight for each factor, and
- o an overall matrix for each Military Department.

The Analytical Sciences Corporation (TASC) completed "NGTCS Life-Cycle Cost-Effectiveness Study" in June 1992. The acquisition and 10 years of operations and maintenance for NGTCS were estimated to cost $ * . Enhancing the existing TCS was estimated to cost $ * .

After this study, the scope of the NGTCS Program changed to include missile tracking with Global Positioning System, creation of a land and shipboard deployable system, and development of new target interface units. In addition, the number of ranges for NGTCS installation was increased. TASC updated the NGTCS Life-Cycle Cost to include these changes in June 1994. The results of the new estimate increased the cost of the NGTCS acquisition and 10 years of operation and maintenance to $ * . The estimated cost of enhancing the existing systems increased to $ * .

Requirements

The NGTCS target control capability requirements in the specifications of the RFP were not representative of the actual need. In defining the requirements, the thresholds and goals were never determined. The system-level operational and support requirements for the NGTCS were based on target control capability requirements submitted by each Military Department and documented in the "Tri-Service Requirements for the Next Generation Target Control System," March 26, 1993. The Navy submitted a requirement to control as many as 18 Navy subscale aerial targets simultaneously or as many as 18 total Navy targets of any type and mix, with a future capability for as many as 24 targets. The Air Force requirement was for 8 aerial targets or 12 ground targets. The Army requirement was to simultaneously track and control 36 ground targets and as many as 6 aircraft.

The NGTCS draft request for proposal was released for industry comments February 4, 1994. The 18 target full control-capability requirement for subscale targets was identified as high risk and a potential cost driver.

In 1994, the NGTCS Program Office requested that the Navy revalidate the 18 target requirement. Our discussions with Navy personnel confirmed that the 18 target requirement was no longer valid. It represented testing requirements of the 1980s that in the 1990s were considered impractical from an affordability perspective. Today's test missions will include the use of validated simulations and models for the higher density aerial target requirements.

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The draft RFP was revised for release in August 1994; however, it still required simultaneous control of 18 subscale aerial targets.

Request for Proposal Specifications

The specifications in the NGTCS draft RFP were based on requirement inputs from the T&E community. The more limited technical requirements for training applications were viewed as subsumed within the T&E requirements.

When the NGTCS draft solicitation was released for contractor comment, it contained only a minimal definition of the specifications for the system architecture that will host the software. It illustrated a central processor with little guidance on functional allocation. The concept of a large central computer able to execute maximum functions concerned those users who have limited requirements. The cost of the system with these capabilities would be disproportionately high in regard to user needs. For example, the Navy training ranges use the majority of production transponders. These ranges also represent the bulk of follow-on production procurement of the NGTCS fixed and deployable system control elements. However, the Navy training community only requires the TCS to be capable of controlling two to four targets operating simultaneously. For users of NGTCS that have less stringent requirements for quantity of targets controlled, it may be more cost-effective to structure the procurement specifications toward a modular approach that can be tailored to the individual user's needs.

Next Generation Target Control System Alternatives

Beginning in 1992, cost estimates analyzed the costs associated with the development of NGTCS as opposed to the enhancement of the existing TCS systems. However, a Cost and Operational Effectiveness Analysis was not conducted on the tradeoffs involved in developing the NGTCS itself. Cost and Operational Effectiveness Analyses are intended to aid decisionmakers in judging whether or not any proposed alternative to the system is worth the cost. Several components of the NGTCS should be analyzed to identify the possible development alternatives to ensure that the requirements are met at the lowest cost. These components include, but are not limited to, encryption of data, both target and telemetry; the control element and transponder; the datalink; and the system software.

Transponder Cost

One of the two areas of risk concern for the program is the development of a common transponder to satisfy NGTCS requirements at an affordable cost for an expendable device. One objective of NGTCS is to reduce the Life-Cycle Cost of satisfying tri-Service target control capability and mission requirements. However, several potential problems with the transponder development may not allow this objective to be met. Currently, the Army and the Air Force transponders cost approximately $ * each. The Navy is currently paying $ * for its transponders and hoping to achieve a lower cost in the next procurement contract. The Military Departments have estimated that they will purchase a total of * transponders during the first 10 years of NGTCS operations, and the Navy will purchase 65 percent of these.

The NGTCS Requirements Document establishes a production cost goal for the NGTCS transponder not to exceed the cost of the current Air Force transponder, with adjustment for inflation. Some contractors responding to the Draft RFP indicated that additional NGTCS requirements could increase the transponder cost by more than * percent of the cost goal. The MITRE Corporation completed Independent Cost Estimate also estimated that transponder costs could be significantly higher than the goal.

The JPO reported to the Office of Secretary of Defense that as a result of the contractor responses to the draft RFP, the transponder cost goal was achievable. The documentation that we obtained did not support this statement. Our review of the response was that the cost is achievable for many of the intended platforms; however, a higher cost will apply to the more high dynamic platforms. The JPO stated that it did not have any other documentation to support its report.

An additional problem with this expendable item is the Navy size requirement for the transponder. The primary sub-scale target in Navy use, the BQM-74, does not have room to accommodate a transponder any larger than the form, fit, and function of the AN/DKW-3. The Navy has stated that it cannot relax this size requirement. However, industry responses have expressed concerns that the minimum relay-to-target range requirement cannot be accomplished in the frequencies under consideration in an AN/DKW-3 form and fit.

Memoranda of Agreement

The Program Management Plan for the NGTCS, February 1994, states that technical support to the Program Office will be provided by a NGTCS Technical Team Memorandum of Agreement, signed by the directors of the major ranges. In addition, it requires the Program Office to develop a memorandum of agreement with the Military Departments for manpower support to the Program Office and the Military Departments to provide

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Government-furnished property to the development contract; range interface definition; and range facility and site preparation support, test resources, and base support during the site integration and test program. An additional requirement is for a Memorandum of Agreement to address the individual Military Department cost to be completed before the release of the RFP.

As of November 1994, the Military Departments had not signed Memoranda of Agreement regarding NGTCS. Several drafts had been prepared, but none had been executed.

Test Support Cost Estimate

The NGTCS JPO conducted a cost estimate for the testing of the system. The estimate included the cost associated with a total of 163 missions of Developmental Test and Evaluation and operation and maintenance during the testing. The Navy testing will have 68 missions and last for 12 months. The Air Force testing will have 55 missions and last for 10 months, and the Army testing will have 40 missions and last for 8 months. These estimates were developed in base-year 1992 dollars and inflated to then-year dollars. The table shows the cost per Military Department by the fiscal year of expenditure.

NGTCS Test Support Cost Estimate
(in millions)

	FY 1997	FY 1998	FY 1999	Total
Navy	$*.	$*	$0.0	$*
Air Force	0.0	*	0.**	
Army	0.0	*	*	*
Total	$ *	$ *	$ *	$ *

During our review, some users questioned the necessity and cost associated with the large number of tests planned.

The JPO estimated that a reduction in the test plan for NGTCS from 163 flight tests to 63 will result in savings of $7 million. Also, these reductions will reduce the associated test and evaluation program schedule and eliminate the need for $4 million in FY 2000 funding, thereby realizing a total savings of $11 million from reduced testing.

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Secretary of Defense Initiative

The Secretary of Defense issued a memorandum "Specifications and Standards - A New Way of Doing Business," June 29, 1994. The memorandum states, "moving to greater use of performance and commercial specifications and standards is one of the most important actions that DoD must take to ensure we are able to meet our military, economic, and policy objectives in the future." The memorandum further states that performance specifications shall be used when purchasing new systems and only to rely on the use of military specifications and standards as a last resort, with an appropriate waiver.

The NGTCS Program requires full military specifications and standards for the procurement. More than 80 Military Specifications and Standards are in the draft Engineering and Manufacturing Development Solicitation. Engineering and manufacturing development and production phases each have Military Specifications and Standards requirements.

The Secretary of Defense gave relief from this policy change for ongoing solicitations during the 180 days following the issue date of the memorandum. The NGTCS solicitation was not released within the 180-day grace period; therefore, more reliance on commercial-off-the-shelf components would be in compliance with the new initiative and would be more cost-effective. The JPO estimated that reducing the Military Specifications and Standards from 80 to 27 could result in a cost savings of $2 million.

Advanced Medium Range Air-to-Air Missile Track and Destruct Device

The Engineering and Manufacturing Development contract contains a specification for the development and testing of an Advanced Medium Range Air-to-Air Missile Track and Destruct Device that will only be used by the Air Force. During our review, some users questioned the necessity of this Air Force-exclusive item being in the NGTCS Engineering and Manufacturing Development contract. By eliminating this Air Force-exclusive item from the NGTCS contract, the JPO has estimated that $7 million can be eliminated from the tri-Service program.

Conclusion

Since the Office of Secretary of Defense determined that interoperability for the Military Department's TCS is necessary, the NGTCS development appears to be more cost-effective in the long-term than enhancing the existing systems.

However, the draft NGTCS RFP would not result in the development and procurement of a TCS that is cost-effective and responsive to user needs. Our review identified concerns for program cost growth, validity of requirements, specification definition, the lack of the performance of a Cost and Operational Effectiveness Analysis, costs associated with the transponder, and the lack of Memoranda of Agreement.

In addition, reducing the aggressive test plan from 163 flight tests to 63, reducing the Military Specifications and Standards from 80 to 27, and eliminating the Air Force-exclusive Advanced Medium Range Air-to-Air Missile Track and Destruct Device from the Engineering and Manufacturing Development contract could reduce costs by $20 million.

We briefed the Director, Test, Systems Engineering and Evaluation, on our observations in October 1994. We identified and discussed these initial areas of concerns regarding the NGTCS Program. As a result, he directed that steps be taken immediately to address these concerns. Subsequently, the Central Test and Evaluation Investment Plan Program Manager and the Test and Evaluation Resources Committee provided active oversight and conducted a thorough Program Management Review of the NGTCS Program. This review resulted in immediate corrective action being taken on each of our areas of concern.

Recommendations, Management Comments, and Audit Responses

On April 21, 1995, the Director, Test, System Engineering, and Evaluation, Office of the Under Secretary of Defense for Acquisition and Technology provided comments to our recommendations. We changed the final report based on the comments received. The Director, Test, Systems Engineering, and Evaluation, generally concurred with the recommendations and stated that the updated Program Management Plan and revised Request for Proposal alleviates the negative concerns of the hotline complaint. The Director did not specifically comment on the potential monetary benefits. We request comments from the Director, Test, Systems Engineering, and Evaluation, on the estimated monetary benefits associated with Recommendations 5, 6, and 7. If you nonconcur with the estimated monetary benefits or any part thereof, you must state the amount you nonconcur with and the basis for your nonconcurrence. Estimates of potential monetary benefits are subject to resolution in accordance with DoD Directive 7650.3 in the event of nonconcurrence or failure to comment.

The following discussion is a synopsis of comments to our recommendations accompanied by our response. The complete text of comments is in Part IV.

We recommend that the Director, Test, Systems Engineering and Evaluation, direct the Program Manager, Next Generation Target Control System Program, to:

1. Redefine the tri-Service requirements to accurately reflect capabilities that represent user needs.

Director, Test, System Engineering, and Evaluation, Comments. The Director stated that this action had been completed. The Military Departments have reevaluated their requirements and reduced the number of subscale aerial targets to be simultaneously controled from 18 to 12. The NGTCS Program Manager will continue to monitor requirements during the program.

2. Reword the Next Generation Target Control System Request for Proposal to ensure the development will be structured toward an approach that can be tailored to variable needs.

Director, Test, System Engineering, and Evaluation, Comments. The Director stated that this action had been completed. The NGTCS Request for Proposal has been restructured toward an approach that can be tailored to variable needs. The users of NGTCS that have less stringent requirements will be able to purchase less expensive modules to meet their needs and the test community can obtain more robust modules to satisfy their more complex test and evaluation scenarios.

3. Complete a Cost and Operational Effectiveness Analysis on design alternatives for the program.

Director, Test, System Engineering, and Evaluation, Comments. The Director stated that this action is in process. The NGTCS Program Office is reformatting the cost information into a formal Cost and Operational Effectiveness Analyses and is to provide this information before contract award.

Audit Response. We consider the corrective actions taken and planned to be responsive to the recommendation. However, we request that the Director provide us a copy of the Cost and Operational Effectiveness Analyses when it is complete.

4. Negotiate and execute the Memoranda of Agreement with the Military Departments.

Director, Test, System Engineering, and Evaluation, Comments. The Director stated that this action was completed. The Memoranda of Agreement with the Military Departments have been signed.

5. Revalidate the number of flight missions required to evaluate the Next Generation Target Control System requirements.

Director, Test, System Engineering, and Evaluation, Comments. The Director stated that this action was completed. The NGTCS Program Manager has developed a reduced flight test program that the Central Test and Evaluation Investment Plan Program Manager has accepted.

Audit Response. We consider the corrective actions taken and planned to be responsive to the recommendation. However, we request that the Director comment on the potential monetary benefits.

6. Remove unnecessary Military Specifications and Standards from the solicitation.

Director, Test, System Engineering, and Evaluation, Comments. The Director stated that this action was completed. The number of Military Specifications and Standards have been reduced from 80 to 4.

Audit Response. We consider the corrective actions taken to be responsive to the recommendation. However, we request that the Director comment on the potential monetary benefits.

7. Revalidate the necessity to include the cost of the Advanced Medium Range Air-to-Air Missile Track and Destruct Device in the Engineering and Manufacturing Development contract.

Director, Test, System Engineering, and Evaluation, Comments. The Director stated that this action was completed. The Central Test and Evaluation Investment Plan Program Manager transferred the responsibility for developing the Advanced Medium Range Air-to-Air Missile Track and Destruct Device from NGTCS to a different program office.

Audit Response. We consider the corrective actions taken and planned to be responsive to the recommendations. However, we request that the Director comment on the potential monetary benefits.

Part III - Additional Information

Appendix A. Results of Review of Allegations

We substantiated 12 of 23 allegations concerning the NGTCS Program. The results of our review of each allegation follow.

Allegation 1. The Aeronautical Systems Center System Program Office, Eglin Air Force Base, Florida, is preparing to release a Request for Proposal on the Next Generation Target Control System (NGTCS) in July 1994.

Substantiated. As of the receipt of the letter, June 1994, the NGTCS Joint Program Office located in the Range and Airbase Systems Program Office, Eglin Air Force Base, was planning to issue the RFP for Engineering and Manufacturing Development in July 1994. Subsequently, the release date was put on hold pending the completion of our audit.

Allegation 2. The NGTCS will replace existing test range ground stations and unmanned target vehicle control systems.

Substantiated. The NGTCS Engineering and Manufacturing Development effort will replace the Navy's Integrated Target Control System at the Naval Air Warfare Center-Weapons Division, Point Mugu; the Army's Drone Formation Control System at White Sands Missile Range; and the Air Force's Gulf Range Drone Control Upgrade System at the Air Force Development Test Center Gulf Range. Follow-on production contracts will replace existing target control systems at additional sites.

Allegation 3. The NGTCS system is estimated to cost between $30 million and $100 million for the development phase.

Substantiated. The NGTCS Joint Program Office estimates are based on a life-cycle cost-effectiveness study performed by the Analytic Sciences Corporation. Currently, funding for the NGTCS development is estimated at $ * .

Allegation 4. Follow-on production costs to make additional range ground stations compatible are estimated to be approximately $100 million and annual target control element costs approximately $30 million.

Unsubstantiated. Each Military Department will fund the follow-on production contracts for additional configurations of NGTCS. The estimated follow-on production costs for the Air Force are $ * , the Army $ * , and the Navy $ * . Total estimated follow-on production costs equal $ * .

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The Joint Program Office has estimated that the Military Departments will procure * transponders during the first 10 years of NGTCS use. The current cost goal for the NGTCS transponder is $ * . This goal would equate to annual target control element costs of $ * (* x $ * /* =$ *). Therefore, the transponders would cost $ * each to reach the $ * alleged cost (* x $ * / *=$ * .)

Allegation 5. The users of the target control systems have voiced serious concern over the cost of the program.

Substantiated. Discussions with the test and evaluation community did indicate concern over the cost growth and affordability of the NGTCS Program. In 1992, the estimated cost of NGTCS acquisition and 10 years of Operation and Maintenance was $ * (FY 1992 dollars). In June 1994, this estimate increased to $. * .

Allegation 6. The utility of the system in today's downsizing Defense environment is questioned.

Unsubstantiated. We did not find evidence that substantiated this allegation. The T&E community will be required to provide increasingly complex support for the evaluation of new weapon systems. The current Target Control Systems are considered to be unable to cope with current test and evaluation scenarios and are inadequate to meet future requirements. The existing systems incorporate technology that is from 15 to 25 years old. These systems have limitations and deficiencies and have limited interoperability, commonality, or interchangeability.

Allegation 7. Concerns have also been expressed regarding the stringent requirements (gold plating) being levied on the system that will have no utility to the majority of users and test and training missions.

Substantiated. The NGTCS target control capability requirements in the specifications of the RFP were not representative of the actual need. The majority of the users of NGTCS would have no use for these capabilities. The system-level operational and support requirements for the NGTCS were based on target control capability requirements submitted by each Military Department. The Navy submitted a requirement to control as many as 18 Navy subscale aerial targets simultaneously or as many as 18 total Navy targets of any type and mix, with a future capability for as many as 24 targets. The Air Force requirement was for 8 aerial targets and the Army requirement was to simultaneously track and control 36 ground targets and as many as 6 aircraft. The Navy training community does not have a requirement for large target arrays at extreme ranges. They require the TCS to be capable of controlling only two to four targets operating simultaneously.

* Source selection and For Official Use Only information removed.

Allegation 8. An example of "gold plating" the requirements is the NGTCS specification for the system to be able to simultaneously control 18 airborne targets to a range of 350 nautical miles with a relay.

Substantiated. Requirements for the number of aerial targets to control simultaneously was based on testing scenarios of the 1980s and had not been down-graded to reflect today's test scenarios. During our audit our discussions with Navy personnel confirmed that the 18 target requirement was no longer valid.

Allegation 9. The NGTCS specification contains a Navy requirement to control targets to a range of 350 nautical miles. The Navy can theoretically operate to that range; however, the Army range at White Sands is only 60 nautical miles and the Air Force range at Tyndall AFB is only 120 nautical miles.

Substantiated. The 350 nautical mile requirement was not an Army or an Air Force requirement. The Navy's long-range control requirement was based on the requirement for fleet ship exercises around sea ranges to be further from shore and for low-altitude presentations.

Allegation 10. Both the Army and the Air Force users have stated a requirement to only control a maximum of four aerial targets at a time.

Unsubstantiated. The Army requirement is to simultaneously track and control 36 ground targets and as many as 6 aircraft. The Air Force requirement was for 8 aerial targets or 12 ground targets.

Allegation 11. It is obvious that for testing purposes that the requirements are far in excess of that required.

Substantiated. The Navy's requirement to control 18 aerial targets has been determined to be in excess of the actual need.

Allegation 12. If the Navy has a training requirement for such large target arrays at such extreme ranges, then a more cost-effective solution is obviously the use of computer simulation to test man-machine interface and the decisionmaking process.

Unsubstantiated. The Navy training community does not have a requirement for large target arrays at extreme ranges. They require the TCS to be capable of controlling only two to four targets operating simultaneously. The higher requirements are for the Navy T&E community.

Allegation 13. Actual missile flyouts and end game performance can be adequately evaluated using existing or upgraded ranges without abandoning the entire existing range systems.

Unsubstantiated. The relative effectiveness evaluation conducted by the Analytical Science Corporation determined that the existing systems were only from 59 to 84 percent effective in meeting requirements. The enhanced systems were from 88 to 97 percent effective and performed well but fell short of the NGTCS performance and do not provide for a common or interoperable system.

The Office of Secretary of Defense determined that interoperability of the TCS will be cost-effective. Interoperability will minimize the need for additional peculiar ground support equipment, minimize personnel for operations and maintenance, and reduce production cost for both NGTCS control stations and the transponders.

Allegation 14. Both the Army White Sands Missile Range, New Mexico, and the Air Force Gulf Range at Tyndall Air Force Base, Florida, have recently undergone computer upgrades.

Substantiated. Our review confirmed that the Army and the Air Force have recently undergone computer upgrades to their TCS systems. NGTCS design, development, test, and deployment to the Army and the Air Force will not be until at least FY 2000. These interim upgrades are necessary to continue to meet mission requirements until NGTCS is fielded. These upgrades do not provide the enhanced capabilities that the NGTCS will.

Allegation 15. The Navy shortly will be upgrading its ranges to provide additional capability.

Substantiated. The Navy is also upgrading the TCS to replace obsolete equipment that cannot be supported until the NGTCS arrives. As in Allegation 14, this upgrade is a "keep alive" program and does not provide the enhanced capabilities the NGTCS will.

Allegation 16. Current costs of the majority of the airborne control elements used in aerial targets are significantly less expensive than that envisioned for the NGTCS program ($ * for the BQM-74 versus $ * for NGTCS).

Unsubstantiated. Currently, the Army and the Air Force transponders cost approximately $ * each. The Navy is currently paying $ * per transponder. The cost goal for the NGTCS transponder is $ * ; however, the NGTCS transponders will also have Global Positioning System, relay, encryption, and inertial-aiding enhancements that the current transponders do not have.

Allegation 17. Tri-Service programs, such as the QF-4 aerial target program and the AIM-120 Advanced Medium Range Air-to-Air Missile Warhead Replacement Tactical Telemetry program, are just completing full-scale development or have just entered low-rate production. Together

* Source selection and For Official Use Only information removed.

the programs cost approximately $100 million and are based on the use of the existing Air Force and Army range control systems. Under the NGTCS program, those systems would be scrapped.

Unsubstantiated. During the review, the Joint Program Office stated that the QF-4 aerial target and Warhead Replacement Tactical Telemetry Program systems will not be scrapped because of NGTCS. The tri-Service QF-4 will utilize an existing transponder, which will become unsupportable in approximately 5 years due to obsolete parts, to operate until the NGTCS transponder is available. The Warhead Replacement Tactical Telemetry Program requirement to provide telemetry and a command destruct capability for the Advanced Medium Range Air-to-Air Missile will be unchanged by NGTCS.

Allegation 18. The genesis of the NGTCS Program was to be able to provide Global Positioning System over-the-horizon capability to our test ranges and to make all ranges compatible.

Substantiated. The development of NGTCS is to replace the existing TCS and to provide the T&E community with a TCS Global Positioning System over-the-horizon capability, commonality, and future target interoperability. It will be a tri-Service system compatible and interoperable between test ranges and targets and those operational ranges that also use test targets.

Allegation 19. The Global Positioning System capability is a valid requirement; however, it can be done as a modification to existing control systems for a fraction of the forecasted NGTCS cost.

Unsubstantiated. The Global Positioning System capability is only one of several capabilities not available on the current TCS systems that will be a part of the NGTCS. We were unable to find evidence that any current system could be upgraded with Global Positioning System "for a fraction of the cost" of NGTCS.

Allegation 20. Both Army and Air Force ranges are currently compatible.

Partially Substantiated. The Army and the Air Force TCS have a degree of commonality; however, they are not interoperable.

Allegation 21. Navy range compatibility, if this is a valid requirement, could be done with a simple modification to the target control element.

Unsubstantiated. The Office of Secretary of Defense considered interoperability to be both necessary and cost-effective. A simple modification to the target control element will not make the Navy TCS interoperable with the Army and the Air Force TCS. It will also not help the Navy to meet its current or future T&E requirements.

Allegation 22. In reality, target vehicles are not flown from one range to the other. Each vehicle goes through an extensive preparation phase prior to launch at the respective range.

Substantiated. Target vehicles are not flown from one range to the other. The statement is substantiated; however, the goal of the interoperability requirement was not to enable targets to be flown from one range to another. The goal was to reduce DoD test costs and still maintain the required test capability. The NGTCS Life-Cycle Cost analysis showed that commonality or interoperability would reduce DoD target operating costs. Interoperability will minimize the need for additional peculiar ground support equipment, minimize personnel for operations and maintenance, and reduce production cost due to quantity buys for both the NGTCS control stations and the expendable transponders. In addition, the establishment of a tri-Service single depot will reduce hardware and software operations and maintenance and inventory cost and establish configuration control.

Allegation 23. A modification to the existing ranges is a more cost-effective solution to the military's requirements.

Unsubstantiated. Since interoperability for the Military Departments' TCS has been determined to be necessary by the Office of Secretary of Defense, the NGTCS development appears to be more cost-effective in the long-term than enhancing the existing systems. However, the release of the current NGTCS RFP will not result in the development and procurement of a TCS that is cost-effective and compliant with user needs.

Appendix B. The Next Generation Target Control System Configurations

The Engineering and Manufacturing Development contract will deliver the following configurations of the NGTCS.

Fixed Site System. Fixed site systems will be developed, integrated, and contractor tested for each Military Department's major T&E ranges. A fixed site configuration is required at each Military Department's major T&E ranges to verify system performance under each range's most demanding target scenarios and with the unique targets and the unique environment of each range. Fixed site configurations will be installed at White Sands Missile Range, New Mexico; Point Mugu, California; and Tyndall Air Force Base, Florida.

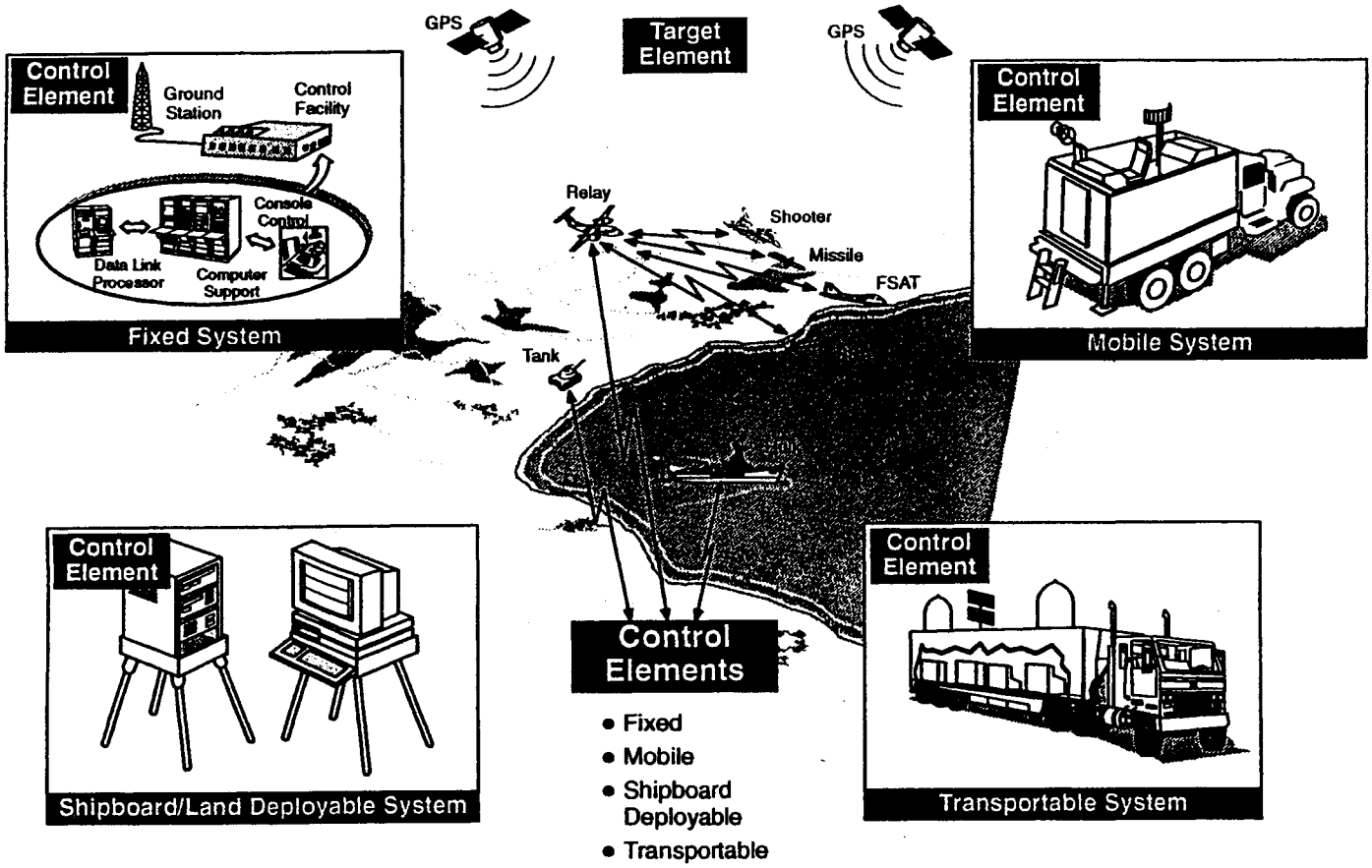
Transportable System. A transportable configuration will contain two consoles and will be in a shelter. The shelter will be transportable and self-contained for worldwide deployment. A transportable site delivered under this contract will be used to demonstrate and verify NGTCS functional capability before the Government's decision to install the fixed sites in permanent facilities. After testing, the transportable will be used as a test bed for demonstration and validation of future system configuration changes.

Mobile System. A mobile site will contain two consoles and be in a self-propelled, unsheltered van. It will be utilized for line-of-sight control of full-scale or damaged targets during landing. The Air Force and the Army will each receive a mobile system under this contract for use in landing full-scale and damaged targets during the NGTCS test and evaluation programs at each of their major T&E ranges.

Deployable System. The shipboard deployable configuration will contain one console and will operate in the shipboard, open ocean environment, or on land. One deployable site will be delivered to Point Mugu for use in control and tracking of targets on-board or off-board ships.

In addition, target transponders required to support the NGTCS test and evaluation program will be procured under the Engineering and Manufacturing Development contract. The quantity of transponders to be procured is 24 for Point Mugu, 24 for White Sands Missile Range, and 12 for Tyndall Air Force Base.

NGTCS, NEXT GENERATION TARGET CONTROL SYSTEM



Configurations of the Next Generation Target Control System

Appendix C. Program Cost and Effectiveness Estimates

The Central Test and Evaluation Improvement Program, sponsored by the Office of the Under Secretary of Defense, Deputy Director of Test and Evaluation, tasked the NGTCS JPO to evaluate the relative merits of the NGTCS as compared to other alternatives. The JPO did not have the manpower resources to accomplish this tasking so the JPO selected TASC to conduct the study along with members of the JPO. The combined JPO and contractor team produced "NGTCS Life-Cycle Cost-Effectiveness Study," June 17, 1992, and an updated version March 31, 1993. This study considered two options to be technically viable in meeting target control system requirements: To enhance the in-place Military Department-unique systems or to develop a universal system that meets all Military Department requirements (NGTCS). The scope of the study was to develop a rough order-of-magnitude life-cycle cost estimate for existing systems, enhanced systems, and the NGTCS, and to determine the system effectiveness of the TCS options to include near and far-term requirements, and to perform cost-effectiveness comparisons of the TCS options. Also included were the costs associated with the operation and maintenance of the existing systems.

The following definitions applied to the study.

o Existing Systems: Current Target Control System as presently configured.

o Modernized Systems: Current TCS plus improvements necessary to keep system operational or extend its useful life.

o Enhanced Systems: Military Department-unique TCS that meets individual near- and far-term capability requirements without regard to commonality or interoperability with other Military Department ranges.

o NGTCS: A universal TCS that satisfies individual Military Department TCS requirements and promotes inter-Service compatibility, interoperability, and commonality.

The results of the Life-Cycle Cost Study dated June 1992 are shown in Table C-1.

Table C-1. Life-Cycle Cost Summary
June 1992
FY 1992 Millions

	Existing	Enhanced	NGTCS
Acquisition	$ 0	$* $ *	*
O&M/10-Year Cost	*.	*	*.
Total	$ *.	$ *	$ *.

The NGTCS acquisition cost is $ * higher than enhancing the existing systems; however, the 10-year operations and maintenance of NGTCS is $ * less. Overall, the cost between enhancing the existing systems and procuring the NGTCS is $ *

Effectiveness Summary. The effectiveness evaluation of each TCS alternative was conducted using the NGTCS statement-of-requirements document. The estimating team assessed each TCS in each Military Department using:

- o compliance versus requirements,
- o an importance weight for each factor, and
- o an overall matrix for each Military Department.

The NGTCS was assigned 100 for full compliance. The results of the relative effectiveness metric are shown in Table C-2.

Table C-2. Target Control Systems
Effectiveness Assessment Summary*

Military Dept.	Existing Systems	Enhanced Systems	NGTCS
Army	74	88	100
Navy	60	92	100
Air Force	85	98	100

*Rounded

The analysis showed that the enhanced systems performed well but fell short of the NGTCS performance and do not provide for a common/interoperable system.

* Source selection and For Official Use Only information removed.

The Analytical Science Corporation Report, March 1993. In March 1993, the Analytical Science Corporation updated its Life-Cycle Cost estimate to include the costs associated with NGTCS software not being rewritten in ADA as required. The results suggested that the NGTCS option having all software coded in ADA provided slightly more effectiveness than the enhanced option for roughly the same life-cycle cost. The NGTCS option, which uses existing TCS code without converting to ADA, had both lower acquisition and Operations and Maintenance costs than the enhanced option. The savings were estimated to be $ * .

The study concluded that NGTCS is the only option possible to achieve the needed range interoperability, test efficiency, and transportability, and to meet all Military Department target control system requirements.

The Analytical Science Corporation Report, June 1994. Subsequent to the TASC report of 1993, the scope of the NGTCS program changed to include missile tracking with Global Positioning System, creation of a land and shipboard deployable system, and development of new target interface units. In addition, the number of candidate ranges for NGTCS installation was increased. In June 1994, TASC updated the Life-Cycle Cost estimate to assess the impact of program changes.

The results of the new estimate showed the cost associated with the existing systems to be $ * , an increase of $ * ; the enhanced systems to be $ * , an increase of $ * ; and the cost of NGTCS to be $ * , an increase of $ * . The following figure shows NGTCS Program cost growth for each estimate discussed.

* Source selection and For Official Use Only information removed.

* * * * * * * * * * *

The Next Generation Target Control System Cost Growth 1992 through 1994

* Source selection and For Official Use Only information removed.

Production Cost Summary

The individual Military Departments will fund the follow-on production contracts for additional configurations of NGTCS. Production cost estimates for fixed site systems were based on the unit costs presented in the TASC report and the unit quantities specified by each Military Department. The estimated follow-on production costs are shown in Table C-3.

Table C-3. NGTCS Production Cost Summary (FY 1992 $ Millions)

Range	Cost			
	Air Force	Army	Navy	Total
Eglin Air Force Base	$.*	$0.0	$0.0	
Tyndall Air Force Base	.*	0.0	0.0	
White Sands Missile Range	0.0	.*	0.0	
Army Transportables	0.0	.*	0.0	
AFWTF - Puerto Rico	0.0	0.0	.*	
NWC - China Lake, CA	0.0	0.0	.*	
PMRF - Barking Sands, HI	0.0	0.0	.*	
NWC - Point Mugu, CA	0.0	0.0	.*	
VC-6 - Damneck, VA	0.0	0.0	.*	
Total	$.*	$.*	$.*	$.*

Independent Cost Estimate

MITRE Corporation completed an independent cost estimate in September 1994 based on the requirements in the August 1994 version of the NGTCS Specification. MITRE Corporation considered costs incurred before FY 1995 to be sunk costs and excluded those costs from the Independent Cost Estimate. The estimate provides acquisition costs only, not operations and maintenance costs. The estimate also includes installation and test costs. The equipment costed is 3 fixed sites; 3 moveable sites (transportable, mobile, deployable); 83 target/relay transponders; peculiar support equipment; data, common support equipment, and interim contract support; and spares. The equipment not costed

* Source selection and For Official Use Only information removed.

is system acceptance-dedicated drone flights and additional equipment or modifications to make the system operational. The results of the MITRE Corporation Independent Cost Estimate were a low estimate of $ * to a high of $ * for the acquisition of NGTCS.

Appendix D. Summary of Potential Benefits Resulting From Audit

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
1.	Economy and Efficiency. Will avoid expenditure of unnecessary funds.	Nonquantifiable because benefits depend on future OSD actions.
2.	Economy and Efficiency. Will avoid expenditure of unnecessary funds.	Nonquantifiable because benefits depend on future OSD actions.
3.	Management Control and Program Results. Will improve management of the NGTCS Program.	Nonquantifiable because benefits depend on future OSD actions.
4.	Management Control. Will improve management of the NGTCS Program.	Nonmonetary.
5.	Economy and Efficiency. Will avoid expenditure of unnecessary funds.	Funds put to better use. $11 million for FYs 1997 through 2000 for Central Test and Evaluation Investment Program Research, Development, Test and Evaluation funds.

Recommendation Reference	Description of Benefit	Amount and/or Type of Benefit
6.	Economy and Efficiency. Will avoid expenditure of unnecessary funds.	Funds put to better use. $2 million for FYs 1995 through 2000 for Central Test and Evaluation Investment Program Research, Development, Test and Evaluation funds.
7.	Economy and Efficiency. Will avoid the expenditure of unnecessary funds.	Funds put to better use. $7 million for FYs 1995 through 2000 for Central Test and Evaluation Investment Program Research, Development, Test, and Evaluation funds.

Appendix E. Organizations Visited or Contacted

Office of the Secretary of Defense

Director, Test, Systems Engineering and Evaluation, Arlington, VA
Deputy, Director, Test Facility Resources, Arlington, VA

Department of the Army

U.S. Army White Sands Missile Range, NM
U.S. Army Program Management, Instrumentation, Test and Training Systems, Orlando, FL

Department of the Navy

Director, Navy Test and Evaluation and Technical Requirements, Arlington, VA
Naval Air Systems Command, Arlington, VA
Program Executive Officer, Aerial Targets, Arlington, VA
Naval Air Warfare Center, Weapons Division, CA

Department of the Air Force

Deputy Assistant Secretary of the Air Force (Contracting), Arlington, VA
Air Force Systems Command, Eglin Air Force Base, FL
Air Force Test and Evaluation Directorate, Arlington, VA
Range and Airbase Systems Program Office, Eglin Air Force Base, FL
Air Force Development Center Gulf Range, Tyndall Air Force Base, FL

Non-Government Organizations

MITRE Corporation, Reston, VA
The Analytic Sciences Corporation, Reading, MA

Appendix F. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
  Director, Defense Logistics Studies Information Exchange
Under Secretary of Defense (Comptroller)
  Deputy Under Secretary of Defense (Comptroller/Management)
  Deputy Under Secretary of Defense (Comptroller/Program/Budget)
Director, Test, Systems Engineering and Evaluation
Deputy Director, Test Facilities and Resources

Department of the Army

Assistant Secretary of the Army (Financial Management)
Auditor General, Department of the Army
Instrumentation Development Directorate, Army White Sands Missile Range

Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Auditor General, Department of the Navy
Naval Air Warfare Center - Weapons Division

Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force
Air Force Systems Command, Eglin Air Force Base
Range and Airbase Systems Program Office, Eglin Air Force Base

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Director, National Security Agency
  Inspector General, National Security Agency

Non-Defense Federal Organizations

Office of Management and Budget
Technical Information Center, National Security and International Affairs Division, General Accounting Office
Chairman and ranking minority member of each of the following congressional committees and subcommittees:
- Senate Committee on Appropriations
- Senate Subcommittee on Defense, Committee on Appropriations
- Senate Committee on Armed Services
- Senate Committee on Governmental Affairs
- House Committee on Appropriations
- House Subcommittee on National Security, Committee on Appropriations
- House Committee on Government Reform and Oversight
- House Subcommittee on National Security, International Affairs, and Criminal Justice, Committee on Government Reform and Oversight
- House Committee on National Security

Part IV - Management Comments

Director, Test, Systems Engineering, and Evaluation, Comments

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON DC 20301-3000

ACQUISITION AND TECHNOLOGY

APR 21 1995

MEMORANDUM FOR DIRECTOR, ACQUISITION MANAGEMENT DIRECTORATE, OFFICE OF THE INSPECTOR GENERAL

SUBJECT: Draft Audit Report on the Next Generation Target Control System (NGTCS), Project No. 4AB-5053

We have reviewed the draft audit report which you provided to us by your 21 February 1995 letter. Our detailed comments are included in the attachment for your consideration.

Should you decide to complete work on this audit and issue a final report, I recommend that the information be updated to reflect the NGTCS project status as of the end of the audit period, December, 1994. In addition, the final report should recognize the active oversight provided by the CTEIP Program Manager and the Test and Evaluation Resources Committee, and the work by the NGTCS Program Office in defining the issues and developing suitable alternatives.

Should you need additional information or clarification of our comments, please contact our program manager for the CTEIP, Mr. Richard W. Pace at (703) 578-8222.

John A. Burt
Director, Test, Systems
Engineering, and Evaluation

Attachments
As stated

COMMENTS ON RECOMMENDATIONS
AND ALLEGATIONS
(pages 13-14 and 16-21 of Draft Report)

RECOMMENDATIONS:

1. "Redefine the tri-Service requirements to accurately reflect capabilities that represent user needs".

Completed: The Services have revaluated their requirements for the November 1994 PMR. The program manager will continue to monitor Service requirements during program development.

2. "Rework the Next Generation Target Control System Request for Proposal to ensure the development will be structured toward an approach that can be tailored to variable needs".

Completed: This has been accomplished as a result of the November 1994 PMR and is in the Request for Proposal. It allows the training community to purchase basic, less expensive modules to control single or dual targets, while at the same time the test community can obtain the more robust interconnection of the basic modules to satisfy the more demanding test and evaluation scenarios.

3. "Complete a Cost and Operational Effectiveness Analysis on design alternatives for the program".

In process: During the November 1994 PMR the NGTCS program manager was directed to reformat the previously calculated cost information into a formal COEA and to provide this information prior to contract award (currently scheduled for Summer 1995). In accordance with definitions within DoD5000.2, the life cycle cost and effectiveness study is essentially equivalent to a COEA except that the COEA is performed by the user.

4. "Negotiate and execute the Memorandums of Agreement with the Military Departments".

Completed: The Army signed their MOA in Oct 94, the Air Force signed theirs in Nov 94 and the Navy signed their MOA in Dec 94.

5. "Revalidate the number of flight missions required to evaluate the Nest Generation Target Control System requirements".

Completed: The CTEIP program manager directed the NGTCS program manager to develop a reduced flight test program to validate operation of the NGTCS. This new flight test program was briefed to and accepted by the CTEIP program manager during the first week of Dec 94.

6. "Remove Military Specifications and Standards from the solicitation that are not in compliance with the Secretary of Defense's memorandum, "Specifications and Standards - A New Way of Doing Business", June 29, 1994".

Completed: In Dec 94 NGTCS program manager indicated the number of specifications had been reduced to 18. Subsequently, the number of specifications has been further reduced to four;safety, ADA, 1553 Bus, and Navy integration.

7. "Revalidate the necessity to include the cost of the Advanced Medium Range Air-to Air Missile Track and Destruct Device in the Engineering and Manufacturing Development contract".

Completed: This Air Force requirement is embedded in the current Air Force target control system. This capability must be maintained when the Air Force transitions to the NGTCS. However, during the Dec 94 post-PMR meeting, the CTEIP program manager transferred responsibility for developing the AMRAAM track and destruct device from the NGTCS, to the GPS RAJPO. The NGTCS program manager retains responsibility for incorporating the AMRAAM track and destruct device now being developed through the GPS RAJPO.

ALLEGATIONS:

We generally concur with the DoD IG evaluation of the 23 allegations contained in the anonymous complaint regarding the military plan to purchase the NGTCS. We do not however,fully except the specific language in the evaluations. The updated Program Management Plan and subsequent RFP alleviates the negative concerns of the anonymous complaint.

Audit Team Members

This report was prepared by the Acquisition Management Directorate, Office of the Assistant Inspector General for Auditing, Department of Defense.

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Nancee K. LaBute
Mary Ann Hourclé