Audit Report

OFFICE OF THE INSPECTOR GENERAL

PROCUREMENT OF THE TARGET HOLDING MECHANISM, TANK GUNNERY, FROM TECHNICAL SYSTEMS, INCORPORATED

Report No. 95-204

May 26, 1995

Department of Defense

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Acronyms

TACOM	Tank-automotive and Armaments Command
THM/TG	Target Holding Mechanism, Tank Gunnery
TSI	Technical Systems, Incorporated

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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ARLINGTON, VIRGINIA 22202-2884

May 26, 1995

MEMORANDUM FOR AUDITOR GENERAL, DEPARTMENT OF THE ARMY

SUBJECT: Audit Report on the Procurement of the Target Holding Mechanism, Tank Gunnery, From Technical Systems, Incorporated (Report No. 95-204)

We are providing this final report for information and use. This report is the fourth in a series of reports in response to congressional concerns regarding procurement of the target holding mechanism, tank gunnery.

A draft of the report was provided to management. Because the report contains no recommendations, comments were not required, and none were received.

We appreciate the courtesies extended to the audit staff. If you have any questions on this audit, please contact Ms. Kimberley A. Caprio, Audit Program Director, at (703) 604-9248 (DSN 664-9248) or Ms. Victoria C. Hara, Audit Project Manager, at (703) 604-9228 (DSN 664-9228). Copies of the report will be distributed to the organizations listed in Appendix F. The audit team members are listed inside the back cover.

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Report No. 95-204 (Project No. 3CD-5026.03)

May 26, 1995

Procurement of the Target Holding Mechanism, Tank Gunnery, From Technical Systems, Incorporated

Executive Summary

Introduction. Responsibility for the two procurements discussed in this report and personnel associated with the procurements are now assigned to the Army Tank-automotive and Armaments Command (the Command).

Audit Objectives. The overall audit objectives were to determine:

o the adequacy of the contract award process of the target holding mechanism, tank gunnery;

o the Army responsiveness to requests for equitable price adjustment from target holding mechanism, tank gunnery, contractors;

o the impact on training and readiness of target holding mechanism, tank gunnery, shortages; and

o the adherence to DoD regulations by acquisition officials.

An additional audit objective was to evaluate the management controls over the procurement of the target holding mechanism, tank gunnery. The review of the procurement for the target holding mechanism, tank gunnery, was limited to contracts awarded to Technical Systems, Incorporated. This report discusses the adequacy of contract award process, the Army responsiveness to a request for equitable price adjustment, the Army adherence to DoD regulations, and management controls as they applied to those specific objectives.

Audit Results. The contract award process of the target holding mechanism, tank gunnery was inadequate. The Command inappropriately awarded two firm-fixed-price contracts to Technical Systems, Incorporated. The Command certified a flawed technical data package. As a result, the Command issued 411 notices of revision that impacted contract DAAA09-89-C-0254 and 40 notices of revision that impacted contract DAAA09-93-C-0091. Also, the Command was not responsive to a request for equitable price adjustment from Technical Systems, Incorporated. As a result, the contractor submitted a certified claim. See the finding in Part II for details.

Summary of Recommendations. Recommendations made in Report No. 95-146, "Procurement of the Target Holding Mechanism, Tank Gunnery, From Action Support Service Corporation," March 13, 1995, address the issues in this report. Therefore, we are not including recommendations in this report. See Appendix B for details.

Management Comments. The Army did not comment on a draft of this report. Because this report contains no recommendations, written comments were not required.

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Part I - Audit Results

Audit Background

This report is the fourth in a series of reports responding to congressional concerns on procurements of the target holding mechanism, tank gunnery (THM/TG). The report discusses two procurements from Technical Systems, Incorporated (TSI), Grand Rapids, Michigan. The organization involved with the THM/TG at Army Armament, Munitions, and Chemical Command, Rock Island, Illinois, became the Armament and Chemical Acquisition and Logistics Activity assigned to Tank-automotive and Armaments Command (TACOM), formerly the Tank-Automotive Command, Warren, Michigan. TACOM awarded two contracts to TSI for THM/TGs: contract DAAA09-89-C-0254 and contract DAAA09-93-C-0091. We will refer to those contracts as contract 0254 and contract 0091.

This report discusses the contract award process, configuration management of the THM/TG, and TACOM responsiveness to the TSI request for an equitable price adjustment.

Contractor History. B.E.I. Holdings, Incorporated, purchased TSI stock on March 21, 1991. Prior to that date, TSI was owned by Larizza Industries.

Purpose of THM/TGs. The THM/TG is an electro-mechanical-hydraulic device that raises or lowers an attached target. THM/TGs are available in two versions: portable, radio controlled, with a receiver, and not portable, not radio controlled, without a receiver. The THM/TG is used to train active-duty, Reserve, and National Guard tank gunners.

Congressional Interest in THM/TG Procurements. We received letters from two senators and two congressmen expressing concerns about the THM/TG procurements. The concerns included:

o unusual numbers of errors in the technical data packages,

o excessive delays or failures in correcting errors in the technical data packages,

o unusual delays in processing requests for equitable price adjustments from contractors, and

o potential shortages in the supply of THM/TGs that may affect readiness.

The congressional concerns identified a pattern of potential problems in the contract award and administration process, configuration management, and readiness of the THM/TG.

Audit Objectives

This report discusses the contract award process, the adequacy of the technical data packages, the Army responsiveness to a request for equitable price adjustment, and the Army adherence to DoD regulations as they apply to TSI.

The overall audit objectives were to determine:

- o the adequacy of the contract award process for the THM/TG,
- o the Army responsiveness to requests for equitable price adjustments from THM/TG contractors,
- o the impact on training and readiness of THM/TG shortages, and
- o the adherence to DoD regulations by acquisition officials.

An additional audit objective was to evaluate management controls over the procurement of THM/TGs and implementation by management of the management control program as it applies to the objectives. The review of the procurement for the THM/TG was limited to two contracts awarded to Technical Systems, Incorporated.

This report discusses the contract award process, the adequacy of the technical data packages, the Army responsiveness to a request for equitable price adjustment, the Army adherence to DoD regulations, and management controls as they apply to those specific objectives. See Appendix A for a discussion of the audit scope and methodology and the management control program. See Appendix B for a summary of prior coverage related to the audit objectives.

Procurement of Target Holding Mechanisms, Tank Gunnery

TACOM inappropriately awarded two contracts to build THM/TGs to TSI. TACOM also provided TSI with flawed technical data packages. In addition, TACOM was not responsive to the TSI request for an equitable price adjustment. Those conditions occurred because TACOM:

- o certified flawed technical data packages,
- o did not control subsequent configuration revisions, and
- o did not provide TSI with a decision on the request for an equitable price adjustment by the self-imposed decision date.

As a result of the technical data packages being flawed when certified, TACOM revised the technical data packages for the two contracts with 343 revisions on contract 0254 and 32 revisions on contract 0091. The flawed technical data packages and lack of control over the subsequent revisions led to delays in delivery. A lack of responsiveness by TACOM to the TSI request for equitable price adjustment resulted in TSI submitting a certified claim.

Contract Award Considerations

TACOM knew, or should have known, that a reasonably detailed specification for the THM/TG, a portion of the technical data package, did not exist. TACOM inappropriately awarded two firm-fixed-price contracts to TSI to build THM/TGs. The lack of a reliable technical data package contributed to an average delay of 436 days in delivery on the first contract and an average delay of 211 days in delivery on the second contract.

Application of a Firm-Fixed-Price Contract. Federal Acquisition Regulation 16.202-2, "Application," states that a firm-fixed-price contract is suitable for acquiring supplies or services on the basis of reasonably detailed specifications. Specifications are part of a technical data package.

Type of Contracts Awarded for THM/TG. The deficiencies with the technical data packages coupled with the large number of revisions made the technical data packages unsuitable for firm-fixed-price procurements.

Contract 0254. A March 20, 1989, business clearance memorandum stated that under full and open competition, TSI was the low bidder and would be awarded contract 0254. Between November 20, 1987, the as-of date of the technical data package, and April 28, 1989, when the contract was awarded, TACOM had made 120 revisions to the technical data package.

Contract 0091. A November 30, 1992, business clearance memorandum stated that under full and open competition, TSI was the low bidder and would be awarded contract 0091. Between December 30, 1991, the as-of date of the technical data package, and December 18, 1992, when the contract was awarded, TACOM had made 119 revisions to the technical data package.

Reliability of the Certified Technical Data Packages and Effect of Revisions

TACOM provided flawed technical data packages for two competitive firm-fixed-price contracts to build THM/TGs. TACOM did not control subsequent configuration revisions and their related documentation. As a result, TACOM did not provide the contractor with a reliable technical data package at contract award and did not control revisions subsequent to award.

Purpose of Technical Data Packages. A technical data package defines and documents an engineering design of a product to allow for duplication of the product. An inaccurate or incomplete technical data package results in additional Government contract administration costs and Government engineering costs to process revisions needed to correct the technical data package. An inaccurate or incomplete technical data package can also result in contract terminations and in additional costs to reprocure the product. For the contractor, an inaccurate or incomplete technical data package can result in an improperly prepared proposal, an increased contractor learning curve, an inferior product, delayed deliveries, and the need to request equitable price adjustments to cover increased production costs.

Management of Technical Data Packages. MIL-STD-973, "Configuration Management," applies to DoD organizations and contractors who are tasked with configuration management. Configuration management should ensure an adequate and reliable technical data package by controlling revisions to products and their related documentation and recording and reporting information needed to manage the product effectively, including the status of proposed revisions and implementation status of approved revisions.

Army "Technical Data Package Review Guidelines" require that prior to procurement, all known design deficiencies be eliminated from the technical data package and that the technical data package be reviewed and certified as adequate for procurement purposes. The technical review is to ensure, among other things, that design problems and needed corrections are identified.

Inspector General, DoD, Assessment of Technical Data Packages. An Inspector General, DoD, engineer and auditors evaluated revisions to the THM/TG technical data packages provided by TACOM to TSI.

Engineer Review of Revisions. The engineer reviewed revisions to evaluate and identify revisions that significantly affected the ability of TSI to meet contract schedules. The engineer concluded that revisions resulted in serious deficiencies in the technical data package for contract 0254, which resulted in production delays to the contractor.

The opinion of the engineer was based solely on the content of the revision and did not consider the effect of the revision in the context of the contractor's schedule. Therefore, the impact could be greater than or less than that indicated, depending on the revision and the manufacturing schedule of the contractor.

In the following tables, each revision was categorized as having major impact, minor impact, or no impact. A revision determined to have major impact could result in a schedule delay greater than 2 weeks. A revision determined to have minor impact could result in a schedule delay of up to 2 weeks. Revisions determined to have no impact would not individually affect contractor cost or schedule. Although each revision had no individual impact, the aggregate of the revisions would impair the ability of TSI to meet the delivery schedule.

Contract 0254. The engineer reviewed a statistical sample of 176 of the 297 revisions to the THM/TG technical data package received by TSI to evaluate after contract award. Table 1 summarizes and categorizes the 176 revisions reviewed.

Table 1. Categories of Notices of Revision to the Technical Data Package for Contract 0254

Types of Notices of Revision	Number of Notices of Revision	Impact of Notices of Revision		
		Major	Minor	None
Administrative	93	0	6	87
Dimension, tolerance, and specification	31	1	9	21
Drawings	3	1	1	1
Material	14	0	0	14
Parts	25	1	3	21
Testing	0	0	0	0
Value engineering change proposal	0	0	0	0
Other	10	1	4	5
Total	**176**	**4**	**23**	**149**

Based on our statistical sample for contract 0254, we projected that seven revisions had major impact to the contract. Those seven revisions could

have resulted in a delay of more than 98 days to the production schedule, because each revision could result in a schedule delay of more than 14 days (2 weeks). Additionally, we projected that TSI also had to contend with 38 revisions with minor impact. Each of the 38 revisions could result in a schedule delay of up to 2 weeks.

We projected another 252 revisions that individually had no impact. Although each individually had no impact, the 252 notices of revision received by TSI to evaluate after contract award constituted a significant impact on the contractor because they could cause the contractor to lose confidence in the reliability of the technical data package.

The 297 revisions received by TSI to evaluate on contract 0254 after contract award constituted a significant impact on the contractor. As a result, performance on the contract was more difficult than necessary.

Contract 0091. The engineer reviewed all 26 revisions to contract 0091 received by TSI and evaluated the impact of the revisions on contract 0091 after contract award. Table 2 summarizes and categorizes the 26 revisions we reviewed.

Table 2. Categories of Notices of Revision to the Technical Data Package for Contract 0091

Types of Notices of Revision	Number of Notices of Revision	Impact of Notices of Revision		
		Major	Minor	None
Administrative	12	0	0	12
Dimension, tolerance, and specification	3	0	2	1
Drawings	0	0	0	0
Material	2	0	0	2
Parts	0	0	0	0
Testing	2	0	1	1
Value engineering change proposal	0	0	0	0
Other	7	0	0	7
Total	**26**	**0**	**3**	**23**

We determined that no revisions had major impact to the contract. The contract did have three revisions with minor impact. Each of the three revisions could result in a schedule delay of up to 2 weeks. Another 23 revisions individually had no impact.

Auditor Review of Components. The auditors reviewed revisions by component to evaluate problems with configuration management. We reviewed revisions to five components of the THM/TG on contract 0254 and two components of the THM/TG on contract 0091.

Contract 0254. We reviewed 246 revisions to 5 components of contract 0254. The components we reviewed were the hit sensor, receiver, battery box, electronic control unit, and visual hit indicator lamp. Although TACOM approved all revisions, TACOM did not send TSI 12 mandatory revisions to two of the components.

Hit Sensor. We identified 63 revisions that were approved to the hit sensor component. TSI received 53 of the 63 approved revisions. The 10 revisions not received were nonmandatory. The original technical data package provided by TACOM included a vague hit sensor head test procedure. TACOM subsequently clarified the required test procedure and stated the output required from the test that would be necessary to accept or reject the hit sensor. Without that revision, the test would not accurately determine whether or not the hit sensor was functional. Even with the revised test procedure, the overall performance and sensitivity of the hit sensors could not be determined.

The Government-designed hit sensor had numerous complaints about reliability and repairability from THM/TG users. Primarily, the hit sensor was not watertight, had inconsistent hit detection, had a cover that was not properly secured, and was expensive. The revised hit sensor was field tested and proved more reliable. TACOM approved the revised hit sensor, and the revision should have been incorporated if a savings to the Government would have resulted. TSI did not incorporate the revised hit sensor because TSI purchased the production material for the hit sensor before TACOM revised the hit sensor.

Receiver. We identified 10 approved revisions to the receiver, 7 of which were mandatory. TSI received six of the revisions, but did not receive three mandatory revisions. TACOM originally provided TSI with a technical data package that included errors that could cause delays in ordering parts. TACOM approved the corrections to the technical data package on June 14, 1989, 47 days after contract award. TACOM, however, did not provide the revised technical data package to TSI until July 11, 1989, 74 days after contract award.

Battery Box. We identified 32 approved revisions to the battery box, 9 of which were mandatory. TSI received the 9 mandatory revisions and one nonmandatory revision, but did not receive 22 nonmandatory revisions. TACOM did not send the 21 revisions to change the battery box from steel to plastic to TSI. The original technical data package required a steel battery box, which was sealed and watertight. However, when hydrogen gases from the battery accumulated in the steel battery box, the box would explode, creating a safety hazard. The addition of a vent collar allowed the gas to escape, but the battery box lost its watertightness. The 21 revisions recommended changing the battery box from steel to plastic. Using a plastic battery box would vent gas, which would prevent an explosion. In addition,

using a plastic battery box prevented other explosions caused when cables contacted the steel box. The plastic boxes were also more readily available and more economical. TACOM stated that the revisions to the battery box requiring a change from steel to plastic were to be incorporated only if a cost savings to the Government would result.

Electronic Control Unit. We identified 113 revisions that TACOM approved to the electronic control unit for contract 0254. TSI received 98 of the 113 approved revisions. Of the 15 revisions that TACOM did not send to TSI, 9 revisions were mandatory.

The original technical data package incorrectly required a 9.1 volt diode for the circuit card included in the electronic control unit. The engineering change proposal revised the diode from 9.1 volts to 6.2 volts. Without that revision, the incorrect diode would be used on the circuit card and the card would not function properly. The TACOM Configuration Control Board approved the revision to the technical data package on February 21, 1990. TACOM did not send the required revision to TSI until May 1, 1990, 69 days after it was approved and 368 days after contract award.

Visual Hit Indicator Lamp. We identified 33 revisions to the visual hit indicator lamp. Seven nonmandatory revisions were not received by TSI. The original technical data package specified a finish that reacted with the brass and the aluminum/magnesium parts of the housing and harmed the housing.

Contract 0091. We also reviewed 22 revisions to the technical data package approved by TACOM. The revisions were to two components of the THM/TG, the electronic control unit and the receiver.

Electronic Control Unit. We identified 13 revisions to the electronic control unit. TSI received 8 of 13 approved revisions to the electronic control unit. TACOM did not send TSI five nonmandatory revisions. TACOM sent TSI one revision that was not approved by the Configuration Control Board for incorporation into the TSI contract. One of the nonmandatory revisions that TACOM did not send to TSI was to increase the size of the holes in a bracket. The original technical data package TACOM provided to TSI included a bracket with the wrong size holes in it. A snap-in card guide was required to be inserted into the bracket holes during assembly. The original specified holes in the bracket were too small to receive the card guide. As a result, when contractors attempted to snap-in the card guide, it often broke.

Receiver. We identified nine revisions that TACOM made to the receiver for contract 0091. Eight of the nine revisions were nonmandatory. TACOM sent TSI one revision that was not approved for contract 0091 by the Configuration Control Board as a mandatory revision. TSI also received four of the eight approved nonmandatory revisions. TACOM submitted three revisions to TSI to add new frequencies for the receiver crystals to the technical data package. TACOM did not approve the corrections to the

technical data package until October 19, 1993, 305 days after contract award. TACOM provided the revision to TSI on November 8, 1993, 325 days after contract award.

TACOM Configuration Control of the THM/TG

TACOM procurement and configuration management did not maintain adequate tracking procedures for revisions to the technical data packages. Procurement and configuration management lacked control over the technical data packages provided to TSI. TACOM could not demonstrate that it knew what revisions were provided to TSI or what was formally or informally accepted by TSI on the contracts.

Configuration Control of the Technical Data Packages. TACOM did not properly control configuration of the THM/TG. TACOM procurement officials and TACOM configuration management officials did not coordinate their efforts on contracts 0254 and 0091. We reviewed supporting documentation at TACOM; Army Armaments, Research, and Development Center; and TSI.

Contract 0254. TACOM included a Basic Preproduction Evaluation Contract Clause (the clause) in contract 0254. TACOM advised prospective offerers before contract award that the engineering drawings and specifications included in the technical data package were prepared and checked in accordance with accepted engineering practices and had been used for manufacturing in the past. However, TACOM stated that use of the technical data package would not ensure total compliance with all assembly and performance requirements of contract 0254.

The clause required the contractor to perform a detailed review of all technical data to identify any discrepancies, errors, omissions, or deficiencies in the technical data that might impact production or impact performance as established in the specification. The contractor was also to propose corrections.

In addition, the contractor agreed to accept, without increase in contract price or delay in delivery, any change in technical data that both the Government and the contractor considered to be essential. TSI separately priced performance of the clause at $1,000 in its proposal.

Based on supporting documentation, we determined the following:

o The Configuration Control Board approved 343 revisions to the TSI technical data package. The 343 revisions consisted of 244 mandatory revisions and 99 nonmandatory revisions.

o Of the 343 approved revisions, the Configuration Control Board approved 19 revisions during the solicitation period and approved 324 revisions that were sent after contract award.

o The contractor received 248 approved revisions. TSI also received 68 revisions that were not approved for the contractor by the Configuration Control Board.

o The contractor did not receive 95 revisions that were approved by the Configuration Control Board.

o The Government cost to process the 343 revisions approved for incorporation into the TSI technical data package was $519,501 (37 percent) of the original contract price, $1,395,027.

o TSI also submitted at least six revisions to the TSI technical data package by letter format that were approved by TACOM without Configuration Control Board approval. The letter format revisions were not processed as revisions, waivers, or deviations, and the technical data package was not changed. Consequently, other contractors did not benefit from those revisions, and the costs for the revisions were not tracked by TACOM.

o By April 23, 1991, TACOM and TSI agreed that nonmandatory revisions would no longer be sent to TSI for evaluation.

Contract 0091. TACOM did not include a Basic Preproduction Evaluation Contract Clause in contract 0091. Based on supporting documentation, we determined the following:

o The Configuration Control Board approved 32 revisions to the TSI technical data package after contract award. The 32 approved revisions consisted of one mandatory revision and 31 nonmandatory revisions.

o Of the 32 approved revisions, all were approved after contract award.

o The contractor received 20 approved revisions. TSI also received eight revisions that were not approved by the Configuration Control Board.

o The contractor did not receive 12 revisions that were approved by the Configuration Control Board.

o The Government cost to process the 32 revisions approved for incorporation into the TSI technical data package was $78,860 (18 percent) of the original contract price, $446,625.

o TSI submitted at least two revisions to the TSI technical data package by letter format that were approved by TACOM without Configuration Control Board approval. The letter format revisions were not processed as revisions, waivers, or deviations, and the technical data package was not changed. Consequently, other contractors did not benefit from those revisions, and the costs for the revisions were not tracked by TACOM.

Adequacy of Contract Management. TACOM procurement was unable to provide a complete and accurate list of revisions to the technical data packages applicable to the TSI contracts. On August 16, 1993, we met with TACOM procurement and requested a listing of THM/TG revisions sent to TSI for each contract. We reviewed the contract files and developed the lists independently, using source documentation that included the amendments to the solicitations, modifications to the contract, and the actual letters sent to TSI requesting review and potential incorporation of revisions to the technical data package.

Maintaining Adequate Control Logs. The contracting officer did not maintain adequate control logs from 1989 through 1994 that documented revisions to the technical data packages applicable to the contracts. The control logs did not identify the following by change to the technical data packages:

- o the purpose of the revision,
- o whether the revision was mandatory or nonmandatory,
- o whether and when the revision was submitted to the contractor,
- o whether and when the revision was accepted or rejected by the contractor,
- o whether the revision was incorporated into the contract, and
- o the estimated cost, if any, to incorporate the revision into the contract.

TACOM should establish and implement control logs that document revisions to the technical data package applicable to an individual contract. At a minimum, the control logs should identify the revisions to the technical data package; whether the revision is mandatory or nonmandatory; whether and when a revision was submitted to the contractor; whether and when the revision was accepted or rejected by the contractor; whether the revision has been incorporated into the contract; and the estimated cost to incorporate the revision into the contract.

Identifying Engineering Change Proposals. TACOM could not identify the revisions applicable to the TSI procurements. On August 18, 1993, we requested from TACOM configuration management personnel a listing of THM/TG engineering revisions from 1988 through August 13, 1993, applicable to the TSI procurements. TACOM configuration management personnel had to physically search configuration management files from 1988 through 1993 to develop the requested list. Our list of engineering revisions was reconciled with TACOM on February 2, 1995.

Management Oversight of Contractor Performance

TSI was a capable manufacturer with prior experience on military contracts. Nevertheless, TSI required more time than the contract specified to produce the first article on contract 0254 and to deliver THM/TGs on both contracts, partially due to Government delays in processing revisions.

Contract 0254 Technical Performance. In 1988, when TSI submitted its offer to produce THM/TGs, TSI had not manufactured a THM/TG, but had produced items for military applications such as a flare/chaff dispenser and system tester for missile launchers.

The contract required TSI to deliver a first-article test report by February 1, 1990, 279 days after contract award. Between contract award and February 1, 1990, TSI received 133 revisions. On May 18, 1990, TACOM extended delivery of the first-article test report to November 8, 1990.

On December 4, 1990, TACOM requested that TSI show cause why TSI did not deliver the first-article test report by the scheduled delivery date. When TSI responded to TACOM on December 18, 1990, TSI cited the inability of TACOM to process the revisions to the technical data package in a timely manner. On March 1, 1991, TACOM again extended delivery of the first-article test report to July 10, 1991.

TSI obtained first-article approval on October 24, 1991, 909 days after contract award. Between April 28, 1989, the contract award date, and October 24, 1991, TSI received 293 revisions. The initial TSI delivery of THM/TGs was November 1, 1991. The Government accepted final shipment of THM/TGs under contract 0254 on July 31, 1992. Final shipment occurred more than 508 days after the original scheduled final shipment date of March 11, 1991. Between April 28, 1989, contract award, and July 31, 1992, final shipment of THM/TGs, TSI received 297 revisions to the technical data package.

Contract 0091 Technical Performance. On October 12, 1992, when TSI submitted its offer to produce THM/TGs, TSI had completed final shipment under the earlier contract, contract 0254, only 73 days before. The second contract, contract 0091, did not require a first-article test.

Under contract 0091, TSI was required to make its first shipment of THM/TGs on July 30, 1993, 224 days after contract award. Between December 18, 1992, contract award, and the date the first shipment of THM/TGs was to occur, TSI received 14 revisions.

The Government accepted final shipment of THM/TGs under contract 0091 on April 29, 1994, 497 days after contract award. Final shipment occurred 242 days after the original scheduled final shipment date of August 30, 1993. Between December 18, 1992, contract award, and April 29, 1994, final shipment of THM/TGs, TSI received 26 revisions to the technical data package.

TACOM Responsiveness to A Request for Equitable Price Adjustment

TACOM was not responsive to the request for equitable price adjustment from TSI. TACOM did not follow established procedures in processing the TSI claim. As a result, TSI submitted a certified claim.

Equitable Price Adjustment. The contracting officer may make changes to a contract within the general scope of that contract. If the changes cause an increase or decrease in the cost of or the time required for performance of the contract, the contracting officer will make a reasonable adjustment in the contract price, the delivery schedule, or both. The contracting officer should also modify the contract. Contracting officers are required to negotiate equitable adjustments in the shortest practicable time.

On March 16, 1993, TSI submitted a request for equitable price adjustment under contract 0254 for $1.2 million, based on a defective technical data package. TSI requested that TACOM respond to the request for equitable price adjustment by May 16, 1993, 61 days after the date of the request.

o TACOM received the TSI request for equitable price adjustment on March 19, 1993.

o TACOM acknowledged the TSI request for equitable adjustment on May 20, 1993, 62 days after receipt of the TSI request for equitable price adjustment. TACOM stated that it would be impossible to meet the date requested by TSI and requested an extension to July 30, 1993, 134 days after receipt of the request for equitable price adjustment.

o TACOM internally requested a cost and price analysis of the TSI request for equitable adjustment on May 20, 1993, 62 days after TACOM received the TSI request for equitable price adjustment.

o TACOM requested an audit and technical evaluation on May 25, 1993, 67 days after TACOM received the TSI request for equitable price adjustment. TACOM requested that the audit report and technical evaluation be completed by July 9, 1993.

o TSI certified its request for equitable price adjustment on July 12, 1993, to the Defense Contract Audit Agency. On July 14, 1993, TSI sent TACOM the TSI certification that was provided to the Defense Contract Audit Agency. The TSI certification changed the request for equitable price adjustment to a claim.

Contractor Disputes. United States Code, title 41, "Contract Disputes Act of 1978," sections 601-613, as amended by the Administrative Disputes Resolution Act, establishes procedures and requirements for asserting and resolving claims subject to the Contract Disputes Act of 1978.

Federal Acquisition Regulation 33.211, "Contracting Officer's Decision," requires the contracting officer to decide on a contractor's claim within 60 days. If a decision is not possible, then the contracting officer should, within 60 days, state when a decision will be issued.

TACOM Responsiveness to Contractor Claim. TACOM received the certified claim after July 14, 1993, but does not have a record of when the TSI letter sending the certification was received. TACOM did not acknowledge receipt of the certified claim.

o On July 23, 1993, the results of the Defense Contract Audit Agency audit report became available. The audit report questioned $535,614 (46 percent) of $1.2 million of the claimed amount.

o On September 8, 1993, the results of the technical evaluation became available.

o On September 21, 1993, TSI responded to the results of the audit report and revised the claim to $885,251.

o On January 4, 1994, TACOM requested a legal opinion on entitlement.

o On January 19, 1994, the legal opinion on entitlement was provided to the contract specialist.

o On January 26, 1994, the contracting officer requested an engineering analysis of the claim and requested a reevaluation of the price analysis and pricing report.

o On March 21, 1994, TACOM sent TSI a list and an analysis of engineering changes and the TACOM position on entitlement.

o On April 21, 1994, TSI responded to the March 21, 1994, TACOM letter.

Management Oversight of Contractor Claim. We could not document management oversight of responsiveness to contractor claims. We did not locate any mechanism that tracked whether and when the contractor was notified that the claim was received; whether and when the audit, technical evaluation, and legal review were requested; and whether and when a decision was made and the contractor was notified of the decision. TACOM should establish and implement procedures for management oversight of responsiveness to contractor claims. The procedures should require milestones to be set for notifying the contractor that the claim was received; for requesting audit, technical evaluations, and legal review; and for establishing a decision date.

Resolution of Contractor Claim. As of March 30, 1995, more than a year and a half since the TSI request for equitable price adjustment became a claim, resolution of the TSI claim was still pending.

Conclusion

TACOM inappropriately awarded two firm-fixed-price contracts. The technical data packages used in the procurements were seriously flawed, and thus, were not suitable for firm-fixed-price contracts. The contract type placed the maximum risk, and full responsibility for all costs and resulting profit or loss, on TSI. TACOM should have awarded a cost-type contract or fixed the technical data packages before award.

The flawed technical data packages and lack of control over subsequent revisions contributed to TSI delays. On contract 0254, final shipment occurred 508 days after final shipment was originally scheduled. On contract 0091, final shipment occurred 242 days after final shipment was originally scheduled.

Government policy is to try to resolve all contractual issues by mutual agreement at the contracting-officer level. TACOM, however, did not formulate a response to the TSI claim within a reasonable time.

Recommendations for Corrective Action

We did not include our recommendations in this report because they are the same as the recommendations in Report No. 95-146, "Procurement of the Target Holding Mechanism, Tank Gunnery, From Action Support Service Corporation," March 13, 1995.

Part II - Additional Information

Appendix A. Scope and Methodology

Scope

Audit Period, Standards and Locations. We performed this economy and efficiency audit from June 1993 through March 1995 in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD. Accordingly, we included tests of internal controls that were considered necessary. We reviewed the procurement process for the THM/TG at TACOM and TSI. Appendix E lists the organizations visited or contacted during the audit.

Data Reviewed and Use of Computer-Processed Data. Contract 0254 was for the procurement of 335 THM/TGs and spares, valued after modifications at $1,468,656. For a chronology of contract 0254, see Appendix C. Contract 0091 was for the procurement of the 112 THM/TGs, valued after modifications at $448,295. For a chronology of contract 0091, see Appendix D. We reviewed the solicitations, preaward documents, notices of revision to the technical data packages, pertinent laws and regulations, and other related documentation dated from 1988 to 1995. We developed an accurate computer-processed data base to perform the audit. The data base was verified against source documentation and Army Armament Research, Development, and Engineering Center documents.

Methodology

Universe Development. To review configuration management, we identified 411 revisions that impacted contract 0254 and 40 revisions that impacted contract 0091.

Contract 0254. Of the 411 revisions that impacted the contract, TACOM approved 343 revisions for the contract. In addition, TACOM sent TSI 68 revisions that were not approved by configuration management for the TSI contract.

We identified a universe of 297 revisions* received by TSI after contract award to evaluate. We statistically selected 176 revisions received by TSI to evaluate after contract award.

*For the purpose of this count, multiple sheets, parts lists, and quality assurance provisions for one drawing within an engineering change proposal constitute one revision.

Contract 0091. Of the 40 revisions that impacted the TSI contract, TACOM approved 32 revisions for the TSI contract. In addition, TACOM sent TSI eight revisions that were not approved by configuration management for the TSI contract.

We identified a universe of 26 revisions received by TSI to evaluate after contract award. We reviewed all of the revisions received by TSI after contract award.

Use of Technical Staff. Personnel from the Quantitative Methods Division and the Technical Assessment Division, Office of the Inspector General, DoD, provided support for this audit. On contract 0254, the Quantitative Methods Division assisted in the development of the sample of revisions reviewed and the statistical projections based on the sampled data. All the revisions were reviewed on contract 0091. An engineer from the Technical Assessment Division evaluated the accuracy and completeness of revisions to the technical data packages applicable to both contracts.

Statistical Sampling Procedures

Sample Plan. The sampling plan encompasses the following areas.

Sampling Purpose. The purpose of the statistical sampling plan was to estimate separately the number of revisions received by TSI that had major impacts and minor impacts on the TSI schedule. The audit definitions of "major impact" and "minor impact" are given in the Technical Data Package Reliability section in Part I of this report.

Universe Represented. The audit universe was defined as all revisions received by TSI from TACOM from 1989 to 1992. The universe from which the statistical sample was drawn included 297 revisions. The unit audited was a specific drawing revision.

Sampling Design. A stratified sample design was used to project each impact result. We selected a statistical sample of 176 revisions.

Sampling Results. The statistical projections of the sample data are as follows.

	95-Percent Confidence Intervals		
	Lower Bound	Point Estimate	Upper Bound
Revisions with major impact	3	7	11
Revisions with minor impact	29	38	48

We are 95-percent confident that from 3 to 11 of the 297 revisions had major impacts on TSI schedule. The unbiased point estimate, 7 revisions, is the most likely single value for the number of such revisions with major impacts.

Also, we are 95-percent confident that from 29 to 48 of the 297 revisions had minor impacts on the schedule. The unbiased point estimate, 38 revisions, is the most likely single value for the number of such revisions with minor impacts.

Management Control Program

DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987, requires DoD organization to implement a comprehensive system of management controls that provides reasonable assurance that programs are operating as intended and to evaluate the adequacy of controls.

Scope of Review of Management Control Program. The audit evaluated management controls applicable to laws, regulations, and procedures for the acquisition of and configuration management of the THM/TG. In addition, we evaluated management controls applicable to TACOM responsiveness to a request for equitable adjustment from TSI. Specifically, we reviewed TACOM compliance with the Federal Acquisition Regulation; with MIL-STD-973, "Configuration Management;" and with pertinent Army regulations. Our review was limited to the guidance as it was implemented with regard to the contracts that TACOM awarded to TSI. We also reviewed TACOM's self-evaluation of applicable management controls.

Adequacy of Management Controls. Management controls were adequate in that the audit identified no material management control weaknesses.

Appendix B. Summary of Prior Audits and Other Reviews

General Accounting Office. General Accounting Office Report GAO/NSIAD-92-23 (OSD Case No. 8891), "Improvement Needed in Technical Data Management," February 25, 1992, states that data quality problems inhibit contractors from competing for Government work or from completing the work after a contract is awarded. The General Accounting Office report makes no recommendations that involve issues in this report.

Inspector General, DoD, Reports. Three reports relating to this audit have been issued by The Inspector General, DoD.

Report No. 95-146. Report No. 95-146, "Procurement of the Target Holding Mechanism, Tank Gunnery, From Action Support Service Corporation," March 13, 1995, states that TACOM awarded a firm-fixed-price contract to build THM/TGs to a contractor with financial difficulties, no employees, and no other contracts, who was working out of a garage. TACOM terminated the contract for default for a failure to perform. In addition, TACOM certified a flawed technical data package. As a result, 804 revisions impacted the contract. Also, TACOM was not responsive to the Action Support Service Corporation request for equitable price adjustment. As a result, the contractor submitted a claim to the Armed Services Board of Contract Appeals. We made the same recommendations to TACOM that were made in Inspector General, DoD, Report No. 95-030, "Procurement of the Target Holding Mechanism, Tank Gunnery, From Combined Arms Technical Systems," November 16, 1994 (see summary of those recommendations on the next page).

The Deputy Assistant Secretary of the Army (Procurement) and the Commander, TACOM, nonconcurred with the finding and recommendations. TACOM stated that management oversight already exists through current procurement policies, procedures, and regulations and, therefore, establishing procedures is not necessary. Management also has oversight over the contractor's claims. TACOM stated that the technical data package was adequate for a firm-fixed-price contract. In addition, TACOM nonconcurred that control logs were needed to document changes to the technical data package applicable to an individual contract.

We disagreed with TACOM's comments, because TACOM knew that the technical data package needed substantial revision. The technical data package was not based on a reasonably definite and detailed specifications and, therefore, was not suitable for a firm-fixed-price procurement. TACOM issued a contract to a financially weak contractor, approved a technical data package that required 797 revisions, and did not respond to the contractor's request for an equitable price adjustment. As a result, Action Support Service Corporation's appeal to Armed Services Board of Contract Appeals for an equitable price adjustment was based on its being provided a flawed technical data package.

TACOM nonconcurred that procedures were needed to require that notices of revision to the technical data package not exceed 5 percent. The entire THM/TG data package was updated in August 1994, which should resolve the concerns of the audit. We accepted the response.

Report No. 95-030. Report No. 95-030, "Procurement of the Target Holding Mechanism, Tank Gunnery, From Combined Arms Technical Systems," November 16, 1994, states that TACOM awarded a firm-fixed-price contract to build THM/TGs to a contractor with financial difficulties, no prior experience, limited accounting controls, and limited technical skills. TACOM terminated the contract for default for a failure to perform. In addition, TACOM certified a flawed technical data package. As a result, 720 revisions impacted the contract. Also, TACOM was not responsive to requests from Combined Arms Technical Systems for equitable price adjustments. As a result, the contractor submitted a claim to the Armed Services Board of Contract Appeals. We recommended that TACOM:

o establish and implement procedures to provide management oversight of contracts involving contractors experiencing financial or technical performance difficulties,

o establish and implement procedures to require that outstanding revisions to the technical data package do not exceed 5 percent of the number of drawings before the solicitation is issued,

o establish and implement contract control logs documenting revisions to the technical data package applicable to an individual contract, and

o establish and implement procedures to provide management oversight of responsiveness to contractor claims.

The Deputy Assistant Secretary of the Army (Procurement) and the Commander, TACOM, nonconcurred with the finding and recommendations, stating that the review was limited to one contract, and the results of the review should be specific to that contract. We responded that although the report does address only one contract, the audit project covers six other contracts and three solicitations from 1985 through 1994. Report No. 95-146 has a similar finding and recommendations. We responded that we believe that the problems identified in Reports No. 95-030 and 95-146 are systemic to THM/TG procurements at TACOM using technical data packages. Report 95-030 is in the mediation process.

Report No. 94-170. Report No. 94-170, "Quick-Reaction Report on the Audit of the Target Holding Mechanism, Tank Gunnery Procurement," July 27, 1994, states that the sole-source and competitive solicitations for the THM/TG lacked reliable technical data packages. In addition, TACOM improperly issued the sole-source solicitation. As a result, both solicitations may result in production delays, delinquent deliveries, and requests for equitable price adjustments. Also, the sole-source solicitation unnecessarily restricted competition. TACOM did not evaluate the use of commercial target holding mechanisms, which might have eliminated the need for development of a

prototype. As a result, a $587,382 cost-plus-fixed-fee contract was awarded, which reduces the chances for procurement of commercial target holding mechanisms. We recommended that TACOM cancel the sole-source and competitive procurements and withhold any new requests for proposals until all the issues pertaining to the technical data packages are resolved. We also recommended that TACOM determine whether requirements can be met with commercial target holding mechanisms before allowing further prototype development or production. The Army resolved the issues on the technical data package and concurred with the report recommendations.

Appendix C. Chronology of Procurement Action Involving Contract DAAA09-89-C-0254

Date	Event
Dec. 2, 1988	TACOM issued a competitive solicitation to manufacture 142 THM/TGs and spares.
Jan. 3, 1989	Original bid closing date.
Jan. 24, 1989	The solicitation was amended five times from December 1988 to January 1989 to incorporate revisions, extend the bid closing date, and waive the first article requirement for spares.
April 28, 1989	TACOM awarded the contract to TSI for $1,395,027 for THM/TGs and spares.
July 1, 1990	First article due from TSI. (First article testing and approval ensures that the contractor can furnish a product that conforms to all contract requirements for acceptance.) Number of days since contract award: 429.
Dec. 4, 1990	TACOM notified TSI that by not delivering the first article, TSI had not performed under the contract. Number of days since contract award: 585.
Dec. 18, 1990	TSI responded to TACOM that the Government caused the delay by not expeditiously processing the engineering revisions. Number of days since contract award: 599.
April 10, 1991	TSI notified TACOM that B.E.I. Holdings, Incorporated purchased TSI on March 21, 1991. Number of days since contract award: 712.
June 18, 1991	TACOM authorized TSI to acquire all components and to commence production prior to first article in order to accelerate the delivery schedule. Number of days since contract award: 781.
July 1, 1991	TSI agreed to accelerate the delivery schedule. That and the prior changes resulted in an increase of the contract value to $1,468,656. Number of days since contract award: 794.
Oct. 24, 1991	TSI received first article approval. Number of days since contract award: 909.

Appendix C. Chronology of Procurement Action Involving Contract DAAA09-89-C-0254

Date	Event
Nov. 1, 1991	Government accepted the first TSI shipment of THM/TGs under the contract. Number of days since contract award: 917.
July 31, 1992	TSI delivered the final THM/TGs for the contract. Number of days since contract award: 1,190.
March 16, 1993	TSI submitted an equitable price adjustment based on defective specifications and delay in handling corrections to the defective specifications. TSI requested a decision by May 16, 1993 (61 days). Number of days since contract award: 1,418.
March 19, 1993	TACOM received the TSI request for equitable price adjustment. Number of days since contract award: 1,421.
May 20, 1993	TACOM notified TSI of receipt of the request for equitable adjustment. TACOM extended the decision date to July 30, 1993 (133 days from TACOM receipt of the TSI request for equitable price adjustment). Number of days since contract award: 1,483.
May 25, 1993	TACOM requested a technical evaluation 67 days after TACOM received the TSI request for equitable price adjustment. Number of days since contract award: 1,488.
July 12, 1993	TSI certified the request for equitable price adjustment. Number of days since contract award: 1,536.
July 23, 1993	The Defense Contract Audit Agency audit of the request for equitable price adjustment questioned $535,614 (46 percent) of the $1,152,719 requested by the contractor. Number of days since contract award: 1,547.
Sept. 21, 1993	TSI responded to the results of the audit report and revised the claim to $885,251. Number of days since contract award: 1,607.
Jan. 4, 1994	TACOM requested a legal opinion on entitlement. Number of days since contract award: 1,712.
Jan. 19, 1994	TACOM legal opinion was provided to the contract specialist. Number of days since contract award: 1,727.

Appendix C. Chronology of Procurement Action Involving Contract DAAA09-89-C-0254

Date	Event
Jan. 26, 1994	TACOM requested an engineering analysis of the claim and requested a reevaluation of the price analysis and pricing report. Number of days since contract award: 1,734.
March 21, 1994	TACOM sent TSI a list of engineering changes, an analysis of the engineering changes, and the Army position on entitlement. Number of days since contract award: 1,788.
April 21, 1994	TSI responded to the March 21, 1994 TACOM letter. Number of days since contract award: 1,819.

Appendix D. Chronology of Procurement Action Involving Contract DAAA09-93-C-0091

Date	Event
July 23, 1992	TACOM issued a competitive solicitation to manufacture 112 THM/TGs.
Oct. 13, 1992	Original bid closing date.
Oct. 23, 1992	The solicitation was amended four times from August 1992 to October 1992 to change the standard industrial classification code to incorporate engineering change proposals and extend the bid closing date.
Dec. 18, 1992	TACOM awarded the contract to TSI for $446,625.
Jan. 22, 1993	TSI reviewed the technical data package and stated that three groups of problems existed: drawings were illegible, drawings contained errors, and TSI needed to request authorization for use of modifications to the technical data package that were previously approved by letters on contract 0254. Number of days since contract award: 35.
July 21, 1993	TSI requested a 120-day delivery extension because of Government-caused delays associated with weld procedure approvals. Number of days since contract award: 215.
July 30, 1993	Government accepted the first TSI shipment of THM/TGs under the contract. Number of days since contract award: 224.
Aug. 23, 1993	The contract was amended four times from December 1992 to August 1993 to incorporate property clauses, incorporate revisions, add a clause to the contract, cancel modification P00003 to the contract, and revise the delivery date. Number of days since contract award: 248.
Aug. 23, 1993	TACOM extended the delivery schedule ending date from August 30, 1993, to November 29, 1993 (91 days). Number of days since contract award: 346.
April 29, 1994	TSI delivered the final THM/TGs for the contract. Number of days since contract award: 497.

Appendix E. Organizations Visited or Contacted

Office of Secretary of Defense

Under Secretary of Defense for Acquisition and Technology, Washington, DC

Department of the Army

Secretary of the Army, Washington, DC
Assistant Secretary of the Army (Research, Development, and Acquisition), Washington, DC
Army Materiel Command, Alexandria, VA
  Army Tank-automotive and Armaments Command, Warren, MI
    Army Armament Research, Development, and Engineering Center, Picatinny Arsenal, NJ

Other Defense Organizations

Defense Contract Audit Agency, Alexandria, VA
  Northeastern Region, Detroit, MI
Defense Logistics Agency, Alexandria, VA
  Defense Contract Management Area Operations, Grand Rapids, MI

Non-Defense Federal Organization

Small Business Administration, Washington, DC

Non-Government Organizations

Technical Systems, Incorporated, Grand Rapids, MI

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, Defense Procurement
Deputy Under Secretary of Defense (Acquisition Reform)
Assistant to the Secretary of Defense (Public Affairs)

Department of the Army

Deputy Assistant Secretary of the Army for Procurement
Assistant Secretary of the Army (Research, Development and Acquisition)
Commander, Army Materiel Command
  Commander, Tank-automotive and Armaments Command
    Commander, Army Armament, Research, Development, and Engineering Center
Auditor General, Department of the Army

Department of the Navy

Assistant Secretary of the Navy (Financial Management and Comptroller)
Auditor General, Department of the Navy

Department of the Air Force

Assistant Secretary of the Air Force (Financial Management and Comptroller)
Auditor General, Department of the Air Force

Other Defense Organizations

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Director, National Security Agency
  Inspector General, National Security Agency
Inspector General, Central Imagery Office
Commander, Defense Contract Management Area Operations Grand Rapids

Non-Defense Federal Organizations and Individuals

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 of National Security, Committee and 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

Honorable Robert Graham, U. S. Senate
Honorable Connie Mack, U. S. Senate
Honorable Newt Gingrich, U. S. House of Representatives
Honorable J. Dennis Hastert, U. S. House of Representatives

Audit Team Members

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