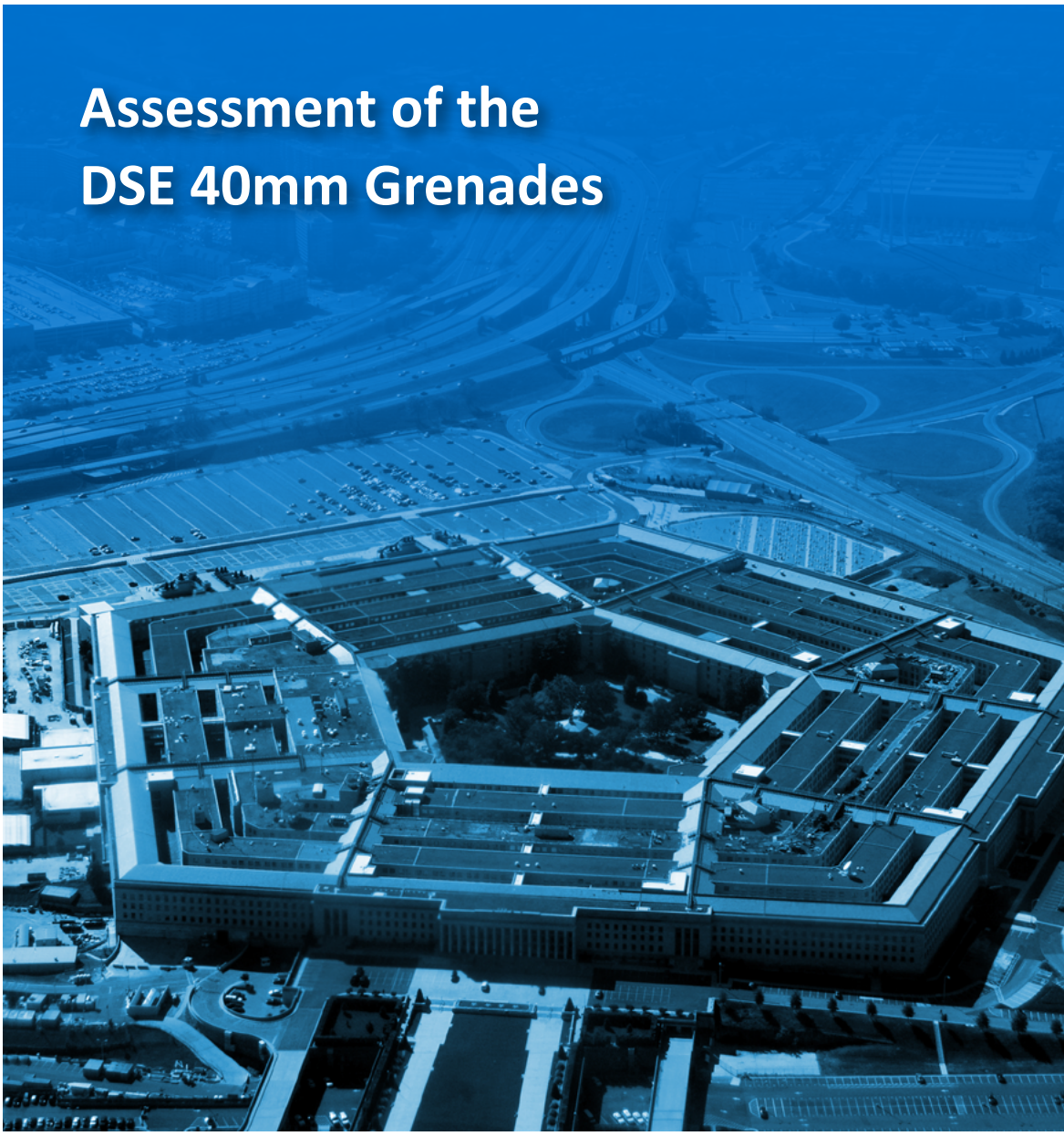
Report No. DODIG-2013-122

INSPECTOR GENERAL

Department of Defense

AUGUST 22, 2013

Assessment of the DSE 40mm Grenades



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Results in Brief

Assessment of the DSE 40mm Grenades

August 22, 2013

Objective

Our assessment focused on the reliability and quality control procedures for 40mm grenades procured by DoD from DSE, Inc. Specifically, we assessed the quality management systems employed by DSE Systems, LLC., a division of DSE, Inc., for manufacturing the M550 fuze.

Findings

Our assessment of DSE Systems to the ISO 9001:2008 "Quality Management Systems - Requirements" identified 20 individual findings.

DSE Systems had the elements of an ISO 9001:2008 Quality Management System. However, we identified issues with DSE Systems' approach to the following quality assurance processes: control of nonconforming products, corrective action and preventive action, verification of purchased products, and production process controls. Upon addressing the assessment findings and meeting remaining contractual requirements imposed in starting a new facility production line, DSE Systems should continue to be successful. Project Manager, Maneuver Ammunition Systems' proper emphasis on strict adherence of contractual safety requirements coupled with DSE Systems pursuit of process improvement should ensure the continued success of the M550 fuze.

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Findings Continued

For the M550 fuze, we evaluated the reliability and found that the contract specifications and imposed testing ensures its safe operation. DSE Systems manufacturing processes include several inspection and validation points. These inspection and validation points reduce the risk of nonconforming material or product being delivered to the customer.

Recommendations

We recommend that:

1. Project Manager, Maneuver Ammunition Systems ensure rigorous compliance to ISO 9001 standards at DSE Systems and future 40mm grenade contractors and ensure that the findings identified within this report and past quality assurance audits are mitigated and resolved.

2. Project Manager, Maneuver Ammunition Systems apply the necessary resources, such as technical and quality assurance expertise, to ensure that DSE Systems and future 40mm grenade contractors adhere to the contractually required Quality Management Systems processes and implement preventive action process measures that promote product reliability.

3. Defense Contract Management Agency increase its onsite performance of inspections and verifications until all the corrective actions have been implemented.

Results in Brief

Assessment of the DSE 40mm Grenades

Management Comments

Project Manager, Maneuver Ammunition Systems agreed with the recommendations and findings within the report. Additionally, Project Manager, Maneuver Ammunition Systems noted on May 2013, DSE, Inc., announced the closure of its facilities and on July 3, 2013, announced the sale of its assets to their competitor, AMTEC Corp, Janesville, Wisconsin. Because of these events, Project Manager, Maneuver Ammunition Systems and the Army Contracting Command are working on the novation of the DSE contract.

DoD IG Response

The DoD IG acknowledges the closure of DSE, Inc., and the comments from the Program Manager, Maneuver Ammunition Systems' are responsive. No further response is required.

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22350-1500

MEMORANDUM FOR PROGRAM EXECUTIVE OFFICE AMMUNITION
PROJECT MANAGER, MANEUVER AMMUNITION SYSTEMS

SUBJECT: Assessment of the DSE 40mm Grenades (Report No. DODIG-2013-122)

We performed this assessment in response to U.S. Representative John Tierney's letter dated February 11, 2011, requesting that the DoD Office of the Inspector General (OIG) conduct an assessment of the reliability and quality control procedures for 40mm grenades procured from DSE, Inc.

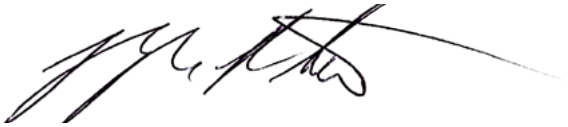
We assessed Project Manager, Maneuver Ammunition Systems operations, conducted pre-assessment of DSE Systems, a subsidiary of DSE, Inc., reviewed the M550 fuze first article acceptance test and conducted a full quality assurance assessment of DSE Systems using the Quality Management System standard ISO 9001:2008. We also assessed the reliability and quality management system used in the manufacturing of the M550 fuze.

We found DSE Systems had elements of an ISO 9001:2008 Quality Management System, however; our assessment did identify 20 findings. The findings indicated DSE Systems needs to improve its approach to the following quality assurance processes: control of nonconforming products, corrective action and preventive action, verification of purchased products, and production process controls. However, DSE Systems manufacturing processes include several inspection and validation points, which reduce the risk of nonconforming material or product being delivered to the customer. Finally, we evaluated the reliability of the M550 fuze produced by DSE Systems and found that the contract specifications and required testing should ensure its safe operation.

The Army's program office responsible for procuring grenades, Project Manager, Maneuver Ammunition Systems, agreed with our findings and recommendations, and no further comments are required. Project Manager, Maneuver Ammunition Systems noted that in May 2013, DSE Inc. announced the closure of their production facilities and on July 3, 2013 the sale of its assets to AMTEC Corp. Project Manager, Maneuver Ammunition Systems and the Army Contracting Command are working with both contractors on the novation of the DSE, Inc. contract to name AMTEC Corp as the successor on the contract.

Project Manager, Maneuver Ammunition Systems needs to stay actively engaged with the Defense Contract Management Agency to ensure that issues cited in this assessment are not transferred to AMTEC Corp.

We appreciate the courtesies extended to the staff. Please direct questions to Al Dopita at (703) 699-0220 (DSN 664 0220), alois.dopita@dodig.mil. If you desire, we will provide a formal briefing on the results.



Randolph R. Stone
Deputy Inspector General
Policy and Oversight

cc:
Under Secretary of Defense for Acquisition, Technology, and Logistics
Auditor General of the Army

Contents

Introduction

Objectives

Our assessment focused on the reliability and quality assurance control procedures for 40mm grenades procured by DoD from DSE, Inc. Specifically, we assessed the quality management systems employed by DSE Systems, LLC, and a division of DSE, Inc., for manufacturing the M550 fuze against ISO 9001:2008, "Quality Management Systems-Requirements."[1]

Background

On February 11, 2011, U.S. Representative John Tierney requested the DoD Office of the Inspector General (OIG) conduct an investigation of the reliability and quality control procedures for 40mm grenades procured from DSE, Inc., which produces about 40 percent of the U.S. Army's 40mm grenades. The request was based on allegations that a major manufacturer of grenades had a series of quality control problems. In the request, Representative Tierney cited a former DSE Fuze subsidiary quality control manager's claim that the company had manufacturing problems and produced flawed fuzes for the 40mm grenades.

On February 16, 2011, the U.S. House of Representatives Committee on Oversight and Government Reform requested that the Army provide information on the alleged production defects and lack of quality control at DSE, Inc. The Army investigated these allegations and found that the M550 escapement used in the M918 training round shown in Figure 1 was nonconforming, and DSE failed to submit documentation of the nonconformance.[2] Although the required documentation was not submitted, a subsequent evaluation of the nonconforming condition by the government engineering organization determined that the condition would not affect the form, fit, function, or safety of any M918 training rounds that contained the nonconforming components.

On June 6, 2011, we announced this assessment in response to Representative Tierney's request and completed the physical assessment of DSE Systems on February 28, 2013. The quality assurance assessment of DSE Systems was delayed until February 2013

[1] ISO 9001:2008 "Quality Management Systems-Requirements," is an international standard adopted when developing, implementing, and improving the effectiveness of quality management systems.

[2] A nonconformance is a departure from a specified requirement for any characteristic (Mil-Std-1916, "DoD Preferred Methods for Acceptance of Product").

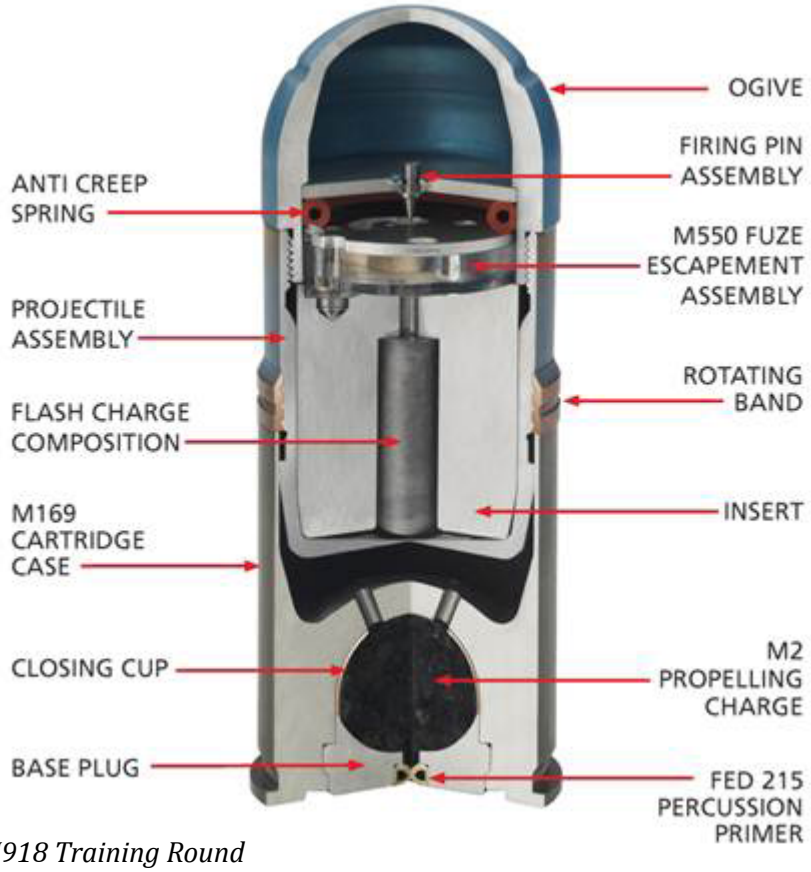


Figure 1. M918 Training Round
Courtesy of PM MAS

because DSE closed its original fuze production line at DSE Fuzing, Orlando, Florida, in June 2011 and moved all fuze manufacturing to DSE Systems, Gaffney, South Carolina. We elected to wait to assess DSE Systems until the First Article Acceptance Testing (FAAT) and two production lots of fuzes were completed, so that we would be able to assess the certified manufacturing line.

Contract Overview

The Army used a firm-fixed-price contract award to buy 40mm grenades and awarded the contracts to two small businesses, AMTEC Corporation and DSE Inc., which have 60 percent and 40 percent of the 40mm grenade contract value, respectively.

The Army awarded DSE a 40mm grenade contract in April 2005, which ran through 2009, and an additional contract in February 2010, with options through 2014. The contracts included the M918 training round, which uses the M550 escapement. The M550 escapement is also an integral part of the M550 fuze, which is used in the M433 tactical round shown in figure 2. Each contract requires DSE to produce 40mm grenades in accordance with the government-controlled technical data packages that

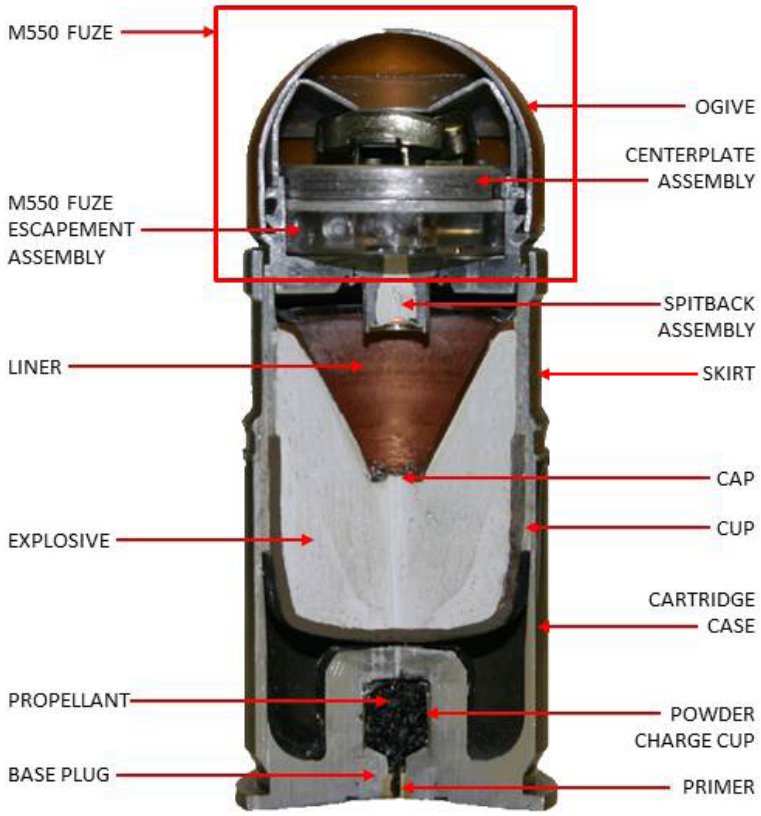


Figure 2. M433 Tactical Round
Courtesy of PM MAS

contain verification requirements. In addition, the contract also requires DSE to include provisions for audits of suppliers to verify compliance with process controls and contract quality assurance requirements.

On June 30, 2011, DSE closed its M550 fuze manufacturing line in Orlando, Florida, and moved it to its DSE Systems facility in Gaffney, South Carolina. The 40mm grenade contract requires that if a manufacturing line that produces an item in the technical data package is either idle for 90 days or moved, the contractor must recertify the production line and conduct a FAAT. DSE Systems completed their FAAT in December 2012. Subsequently, the Project Manager, Maneuver Ammunition Systems (PM MAS) and the Army Contracting Command approved production in February 2013.

Previous Audit Results

In May 2009, the Army conducted a comprehensive audit of the DSE Fuzing manufacturing facility in Orlando, Florida. DSE acquired this facility from Kaman Dayron in January 2008. The May 2009 audit found that DSE Fuzing needed to update its internal documents, including procedures and forms; implement an internal audit system;

implement an effective Statistical Process Control (SPC) system; implement a preventive and corrective action system; and establish an effective system for tracking the status of critical characteristics[3] with respect to defects.

In June 2009, the Army conducted a follow-up audit at DSE Fuzing to verify closure of findings. The Army audit report noted that although progress had been made to close several of the findings, an additional audit of the critical characteristic tracking and handling process was required.

In May 2011, the Army conducted a final audit at DSE Fuzing and identified several major findings. The findings identified an ineffective SPC system, inadequate control of suppliers, inadequate control of nonconforming material, and a lack of internal audits. The Army did not conduct a follow-up audit at this facility because DSE Fuzing closed on June 30, 2011, and moved all production to DSE Systems in Gaffney, South Carolina. The Army stated, "it is expected that the [findings] resulting from this audit will not be present at future audits at DSE Systems, Gaffney."

In August 2012, the Defense Contract Management Agency (DCMA) conducted a Quality Management System (QMS) audit at DSE Systems, Gaffney, SC. The audit identified several major findings across all of DSE Systems production lines. The findings included receiving inspection record documents that contained several changes without a justification for the change; no evidence of an approved SPC plan; SPC data that were not being collected and properly analyzed; no internal audits were conducted for 2012; and control of nonconforming material was inadequate. Based on the results of this OIG assessment and the previous audits noted above, several important issues have not been effectively mitigated.

[3] A characteristic that judgment and experience indicate must be met to avoid hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product (Mil-Std-1916, "DoD Preferred Methods for Acceptance of Product").

Assessment Process

We conducted our assessment of the reliability and quality management systems used in manufacturing the M550 fuze. Although the current contract requires DSE to maintain a quality assurance system in compliance with ISO 9001:2000, we conducted the assessment to ISO 9001:2008 because it is the latest version of the standard. We reviewed and assessed program office policy and documentation, contractual requirements, and DSE, Inc., policy and procedures. Because the manufacturing line was relocated, we conducted the assessment in four parts.

- We reviewed PM MAS operations on June 27, 2011.
- We conducted a pre-assessment of DSE Systems on August 22, 2011.
- We witnessed and reviewed the FAAT process on February 27, 2012.
- We conducted the quality assurance assessment of the DSE Systems M550 fuze manufacturing process on February 25 - 28, 2013.

We met with PM MAS to gain an overall understanding of the 40mm grenade program. PM MAS, under the Program Executive Office Ammunition, equips soldiers, mounted and dismounted, with all calibers of direct fire ammunition for the Army's current forces, Stryker forces, future forces, and other Services. PM MAS is the focal point for acquisition-related activities as well as system development, hardware production, and configuration management. We reviewed PM MAS operations to verify they were conducting oversight of the 40mm grenade contract requirements relating to quality assurance and performance verification.

We conducted a pre-assessment of DSE Systems to baseline its QMS and M550 fuze manufacturing processes, procedures, and controls used to ensure product quality and reliability. The team focused on the M550 fuze because of the Army's April 2010 M550 inspection report and technical assessment referenced in the March 2011 briefing to House Committee on Oversight and Government Reform, which found the M550 escapements used in the M918 training round contained nonconforming parts. Furthermore, the M550 escapement is an integral part of the M550 fuze, which is used on the M433 tactical round.

DSE Systems conducted its FAAT on February 27, 2012, to verify its M550 fuze production line and gain Government approval for full-rate production. We witnessed and reviewed the FAAT process, which included witnessing the PM MAS process for verifying the

unique M550 fuze part characteristics stipulated in the government-controlled technical data package and contract specifications. We also verified manufacturing and testing procedures for adequacy. Based on our FAAT observations, we issued a Notice of Concern (Appendix B) to the PM MAS on March 9, 2012, citing documentation inconsistencies among program office teams and DSE System noncompliance with ISO 9001:2008 clauses 7.5.1, "Control of Production and Service Provision," and 7.6, "Control of Monitoring and Measuring Equipment." The corrective actions taken in response to the notice of concern were verified during our final quality assurance assessment.

We delayed the final quality assurance assessment until the M550 fuze manufacturing line successfully completed FAAT and received production approval from PM MAS. On February 5, 2013, PM MAS granted DSE Systems approval to produce the M550 fuze. We waited until DSE Systems produced and tested at least two lots, which contain approximately 5,000 to 20,000 fuzes, of production fuzes before we conducted the assessment to allow DSE Systems to collect fuze manufacturing and quality assurance data.

We conducted the final ISO 9001:2008 QMS assessment at DSE Systems during February 25 - 28, 2013. The assessment focused on adherence to quality assurance requirements as outlined in its contract by verifying DSE Systems' compliance with ISO 9001:2008 requirements through a review of its internal processes, procedures, and records. In addition, we reviewed the Government oversight of DSE Systems production process and quality assurance procedures and identified findings and then categorized them to identify the systemic and overarching quality and reliability issues.

Assessment Results

We assessed DSE Systems to the ISO 9001:2008 quality assurance standard and identified 20 findings.

We categorized the findings by ISO 9001:2008 management section to identify potential areas of weakness in DSE Systems' QMS. We identified 17 of the 20 findings in the Product Realization and Measurement, Analysis, and Improvement sections as shown in Figure 3.

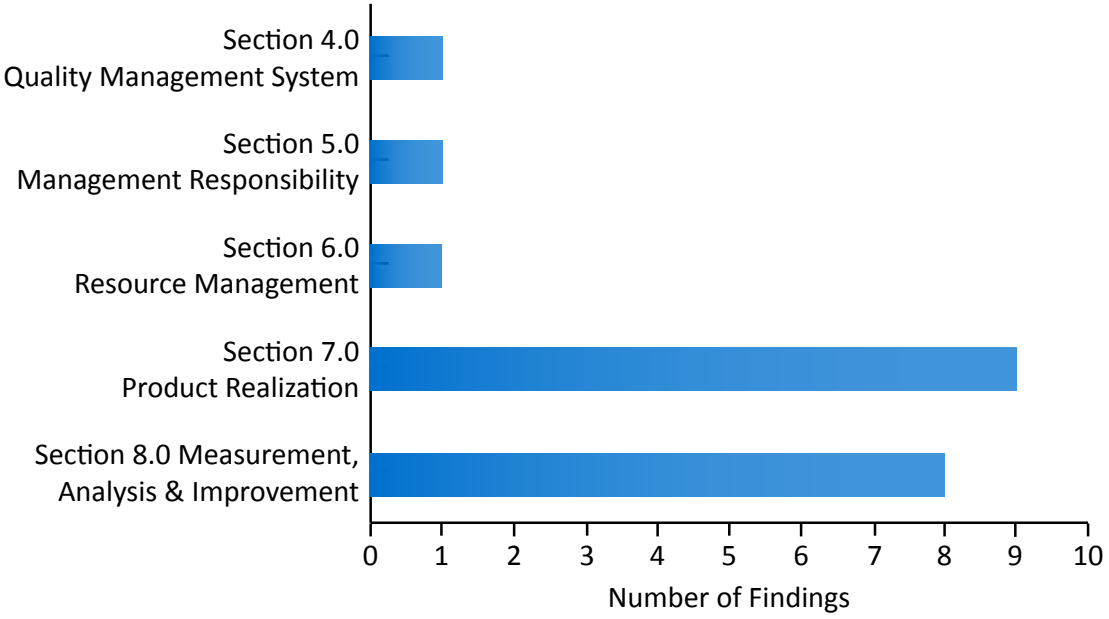


Figure 3. Findings by ISO 9001 Section

Based on our analysis of the finding and as depicted in Figure 3 we identified four areas of concern requiring DSE Systems management attention. These areas are:

- control of nonconforming products
- corrective and presentative actions
- verification of purchased product, and
- production process controls.

In addition to the four areas of concern, we also assessed the safety and reliability of the M550 Fuze and found that the contract specifications and imposed testing ensures its safe operation.

Control of Nonconforming Products

DSE Systems needs to improve its processes for identifying, segregating, and analyzing nonconforming products.

We identified instances where employees did not identify and segregate nonconforming products in accordance with company procedures and the ISO standard. For example, nonconforming products identified during the manufacturing process were segregated using red bins, even though the procedures indicate that they should be identified with a hold tag or reject tag. In the Quality Engineer's office, four nonconforming items did not contain the proper identification tag. The nonconforming product review and analysis process has deficiencies. Furthermore, DSE Systems did not always provide root cause analysis for product nonconformances, did not perform trend analysis for similar nonconformances, and did not ensure the material characteristics code for critical nonconformances were identified. Previous audits in 2009 and 2010 at DSE Fuzing and the audit in 2012 at DSE Systems also identified similar weaknesses in the company's ability to segregate and control nonconforming material, which indicates an ongoing systemic issue in this area.

The lack of adherence to documented processes for identifying, segregating, and analyzing nonconforming material increases the risk of nonconforming material entering or re-entering the manufacturing process flow and being delivered to the customer. In this particular case, a discrepant M550 fuze could result in early arming of the grenade, violating minimum standoff distance of 45 feet. However, required ballistic testing at both the fuze level and the cartridge level minimize this risk. To date there have been no verified early arming cartridges reported from the warfighter. In addition, proper identification and analysis of nonconforming products is essential to support an effective corrective and preventive action system.

Corrective and Preventive Actions

DSE Systems needs to improve its corrective and preventive action program.

DSE Systems has a corrective action program that was not fully implemented. DSE Systems did not provide definitions for short and long-term corrective actions, did not complete closeout of corrective action requests (CARs) within the required timeframe, or perform any follow-up on the corrective action effectiveness. In addition, DSE Systems did not define the roles and responsibilities of the Internal Quality Audit Corrective Action Board. DSE Systems had an internal audit program, but the DSE Systems personnel were not executing the defined internal audit schedule as planned and were not maintaining

internal audit records. When determining the internal audit schedule, the company did not consider criteria such as deteriorating quality or reliability of a product or system elements and SPC data.

The preventive action process receives inputs directly from the corrective action process and the internal audit and control of nonconforming product processes. We determined that DSE Systems had not fully implemented a preventive action program in accordance with its procedures. Deficiencies in DSE Systems' preventive action system included the following:

- Information from internal audits, CARs, nonconformances, and corrective actions from production was not analyzed or tracked for trending of recurring failures;
- Root cause analyses were not performed or used for the purposes of determining preventive actions; and
- SPC information or other analyses were not used by the quality assurance personnel to implement a preventive action program.

The purpose of corrective and preventive action processes is to improve product quality and reliability over time. DSE Systems' corrective and preventive action processes need improvement or they risk delivering nonconforming parts and materials to its customer. Furthermore, previous audits from DSE Fuzing in 2009 and DSE Systems in 2012 cited similar issues, such as no internal audits and a lack of a preventive and corrective action system. This indicates DSE Systems has not been able to fully implement an effective corrective and preventive action process and should immediately focus on improvement in this area.

Verification of Purchased Product

DSE Systems needs to improve its purchasing process, especially in the area of receiving inspection.

DSE Systems did not properly identify equipment used for inspection and did not identify the sampling plan for supplier-purchased products. We noted several examples where inspection records were missing the required information used to determine product acceptability, and where DSE Systems did not receive SPC data from suppliers in accordance with purchase order requirements. The receipt of all requested data, such as SPC data, and its thorough inspection helps ensure that only products conforming to requirements enter the manufacturing process flow.

In one instance, DSE Systems ordered and accepted parts from a supplier not on its approved supplier list. Upon notification of the deficiency during the assessment, DSE Systems initiated the supplier evaluation and approval process for this supplier. DSE's receiving process requires that a random sample be taken and tested. However, the purpose of an approved supplier list is to show ongoing evidence of the quality of a supplier's product. In this case, evidence was not presented, increasing the risk of nonconforming material being accepted and entering the manufacturing process flow.

Production Process Controls

The DSE Systems M550 fuze manufacturing process contains several quality checks and verifications that should minimize the risk of using or delivering nonconforming products.

A majority of the product verifications are driven by critical,[4] major,[5] and minor[6] product characteristics defined by contract and military specifications with most verifications performed using Government-validated acceptance inspection equipment. However, DSE Systems needs to improve its practices in the areas of measurement, inspection, and SPC data analysis.

DSE Systems collects SPC data on all contractually required critical and major product characteristics in accordance to Mil-Std-1916, "DoD Preferred Methods for Acceptance of Product," as stated in the technical data package and the contract. DSE Systems must ensure qualified personnel review SPC data in a timely manner and mitigate negative manufacturing trends. DSE Systems was not receiving SPC data from some vendors in accordance with purchase agreements, operators were not reviewing SPC data and data charts as required, and DSE's quality assurance organization was not staffed to operate an effective SPC program. The purpose of an SPC system is to identify out-of-family trends in dimensional or operational characteristics so production and quality issues can be identified and immediately addressed. Based on previous audit and current assessment evidence, DSE's SPC program continues to have issues, requiring closer attention by PM MAS and DCMA to ensure DSE's SPC program operates effectively.

[4] A characteristic that judgment and experience indicates must be met to avoid hazardous or unsafe conditions for individuals using, maintaining, or depending upon the product (Mil-Std-1916, "DoD Preferred Methods for Acceptance of Product").

[5] A characteristic, other than critical, that must be met to avoid failure or material reduction of usability of the unit of product for its intended purpose (Mil-Std-1916, "DoD Preferred Methods for Acceptance of Product").

[6] A characteristic, other than critical or major, whose departure from its specification requirement is not likely to reduce materially the usability of the unit of product for its intended purpose or whose departure from established standards has little bearing on the effective use or operation of the unit (Mil-Std-1916, "DoD Preferred Methods for Acceptance of Product").

Reliability

The M918 and M433 rounds are considered by PM MAS to be safe and reliable based on a review of test results and field failure data.

No injuries were reported during the 25 years of M918 and M433 rounds production. DSE has delivered 7.9 million M918 rounds, which use the M550 escapement and no incidents were reported during the consumption of 6.9 million of those rounds. DSE has delivered 0.75 million M433 rounds, which use the M550 fuze, and no incidents were reported during the consumption of 0.35 million of those rounds.

The contract requires DSE, Inc., to verify all safety critical characteristics that ensure the safe and reliable operation of the M550 Fuze, which are listed in technical data package and Mil-DTL-50869H, "Fuze, Point Initiating, Base Detonating (PIBD) – M550, Less Spitback Assembly; Loading, Assembling, and Packaging." The contractor demonstrates verification of these characteristics by submitting to the government the FAAT report, Critical Characteristic Control Plan, and Critical Plan of Action. DSE has submitted these documents to PM MAS, who reviewed and accepted the FAAT report and provided letters of conditional acceptance of the Critical Characteristic Control Plan and Critical Plan of Action predicated on additional data associated with starting production at the Gaffney, South Carolina facility. Based on the additional requirements imposed by the conditional acceptance letters from PM MAS, DSE Systems should complete the necessary verification of safety critical characteristics as required by the contract.

Additionally, DSE Systems verifies functionality, safety, and reliability of the M550 fuze by testing a sample of 50 fuzes from each lot. The testing is performed before any fuzes are installed into M433 rounds. To test the functionality, DSE Systems mounts the fuzes on test cartridges and shoots them at a soft target and then a hard target. The round must pass through the soft target placed at 45 feet away from the gun without detonating and then detonate on impact with the hard target placed at 100 feet away from the gun. The entire lot fails and is rejected if one fuze detonates on the soft target. This test of functionality reduces the risk of unsafe fuzes being placed on full-up rounds. At the time of this assessment, the two M550 fuze lots of approximately 3,700 and 6,300 fuzes produced by DSE Systems successfully passed functionality testing.

Conclusion

DSE Systems has all of the elements of the ISO 9001:2008 Quality Management System. It incorporated quality control and verification steps into its manufacturing processes, which aid in preventing the delivery of nonconforming products. Additionally, DSE Systems' performance of lot acceptance testing and the verification of major and critical characteristics, as required by the contract, facilitate process control and aid confidence in the delivered product.

However, several of the findings identified in this assessment are similar to issues identified in previous assessments conducted at DSE Fuzing. For instance, instituting an effective root cause and corrective system remained an issue, as was the proper segregation of nonconforming hardware to prevent comingling of hardware. Other standard quality assurance approaches used to increase product reliability, such as using SPC data and internal auditing to determine if operations are adhering to specified procedures, remained deficient. These items were cited as areas for improvement in all four quality audits assurance performed since 2009.

We did note improvement from assessment to assessment, but it is our position that DSE Systems needs to resolve the previous and current findings identified, use preventive and corrective action processes to continuously improve product reliability, and ensure that all personnel adhere to approved processes. In addition, PM MAS and DCMA should continue to take an active role in ensuring that DSE succeeds in meeting its quality assurance and performance goals. PM MAS needs to continue participating in audits and evaluating SPC data, so that DSE attains long-term corrective actions and attains the desired product reliability.

Recommendations

We recommend that:

1. Project Manager, Maneuver Ammunition Systems ensure rigorous compliance to ISO 9001 standards at DSE Systems and future 40mm grenade contractors and ensure that the findings identified within this report and past quality assurance audits are mitigated and resolved.

2. Project Manager, Maneuver Ammunition Systems continue to apply the necessary resources, such as technical and quality assurance expertise to ensure that DSE Systems and future 40mm grenade contractors adhere to the contractually required Quality Management Systems processes and implement preventive action process measures that promote product reliability.

3. Defense Contract Management Agency increase its onsite performance of inspections and verifications until all the corrective actions have been implemented.

Project Manager, Maneuver Ammunition Systems Comments

PM MAS agreed with the recommendations and findings. However, as a result of management comments, we modified the report to clarify the FAAT requirements and safety of the fuze.

PM MAS noted in its response that in May 2013, DSE announced the permanent layoff of its production employees and on July 3, 2013, announced the sale of its assets to their competitor, AMTEC Corp, Janesville, Wisconsin. As a result, PM MAS and the Army Contracting Command are working on the novation of the DSE contract. However, PM MAS remains dedicated to ensuring that the 40mm grenade contractors, comply with all the product technical requirements, quality requirements and the terms and condition of their contracts to include compliance with ISO 9001 standards. Furthermore, they will continue to actively engage with DCMA and others to ensure all necessary resources are applied to ensure current and future 40mm grenade producers adhere to all technical, contractual, and quality management system requirements.

DoD IG Response

The DoD IG acknowledges the closure of DSE, Inc., and comments from the Program Manager, Maneuver Ammunition Systems are responsive. No further response is required.

Appendix A

Scope and Methodology

We conducted this technical assessment from June 2011 through March 2013 in accordance with the Council of the Inspectors General on Integrity and Efficiency, "Quality Standards for Inspection and Evaluation." Those standards require that we plan and perform the assessment to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our assessment objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our assessment objectives.

Use of Computer-Processed Data

We did not use computer-processed data to perform this assessment.

Appendix B

Notice of Concern

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
4800 MARK CENTER DRIVE
ALEXANDRIA, VIRGINIA 22350-1500

March 9, 2012

MEMORANDUM FOR PROJECT MANAGER, MANEUVER AMMUNITION SYSTEMS

SUBJECT: Notice of Concern - - DSE Systems 40mm Grenade-M550 Fuze First Article Acceptance Test

We are issuing this Notice of Concern to inform you of the concerns we identified during the 40mm Grenade-M550 Fuze First Article Acceptance Test (FAAT) at DSE Systems, Gaffney, SC held February 27, 2012 to March 1, 2012. During the FAAT we identified concerns in how affectively DSE Systems is meeting ISO 9001:2008 requirements as stated in the contract. We also identified concerns in how the government inspection team documented their FAAT inspection results.

The DoD IG team identified two violations against ISO 9001:2008 Clause 7.5.1 which states "the organization shall plan and carry out production and service provisions under controlled conditions." It further clarifies the statement by indicating, controlled conditions shall include, as applicable the availability of work instructions as necessary, and the availability and use of monitoring and measuring equipment. The two violations were as follows:

1) The pressure test station procedure was missing when DSE personnel went to test the M550 Fuze Assembly pressure requirement, and
2) There was no test master at the pin engagement test machine to verify the machine was capable of detecting a nonconformance during the test of the part.

The DoD IG team identified three violations against ISO 9001:2008 Clause 7.6 which states "the organization shall determine the monitoring and measuring to be undertaken and the monitoring and measuring equipment need to provide evidence of conformity of product to determine requirements." It further clarifies this statement by indicating, where necessary to ensure valid results, measuring equipment shall have identification in order to determine its calibration status and be protected from damage and deterioration during handling, maintenance and storage. The three violations were as follows:

1) The gauge identification numbers on multiple gauges were difficult to read in order to verify the correct gauge was being used,
2) The Lexan fixture used to hold parts for inspection on the comparator was severely scratched which distorted the image on the comparator screen, and
3) The lines on some of the comparator overlay sheets are too light making them difficult to read.

Notice of Concern (cont'd)

These ISO 9001:2008 violations did not affect the outcome or validity of the test performed. However, if these violations go uncorrected they can lead to inaccurate or invalid test data. DoD IG recommends that the Project Manager, Maneuver Ammunition Systems address these concerns before the DoD IG assessment team conducts their final assessment of the DSE System production facility.

The DoD IG team also witnessed the Medium Caliber Ammunition FAAT team conduct their part verification inspections. The DoD IG observed inconsistencies between the three sub-teams inspection and documentation techniques. These inconsistencies included different sampling techniques used between groups, not signing off on test data sheets, and varying degrees test documentation. Because DSE Systems can utilize the data produced during the government verification process in their FAAT report, the government test validation process should be consistent throughout the team. The DoD IG recommends that for future FAAT's the government team or QAR develop and document a strategy for performing surveillance of the FAAT. This is considered a best practice to maintain a quality process.

By April 9, 2012 please provide my office with the status of actions planned and taken in response to this memorandum. Once we complete our assessment, we will provide a report on the issues addressed in this memorandum along with any additional matters that might come to our attention. Questions or concerns regarding this memorandum should be directed to [redacted]

[redacted]
Director
Technical Assessment Directorate

Attachment:
None

cc:
Product Manager, Medium Caliber Ammunition

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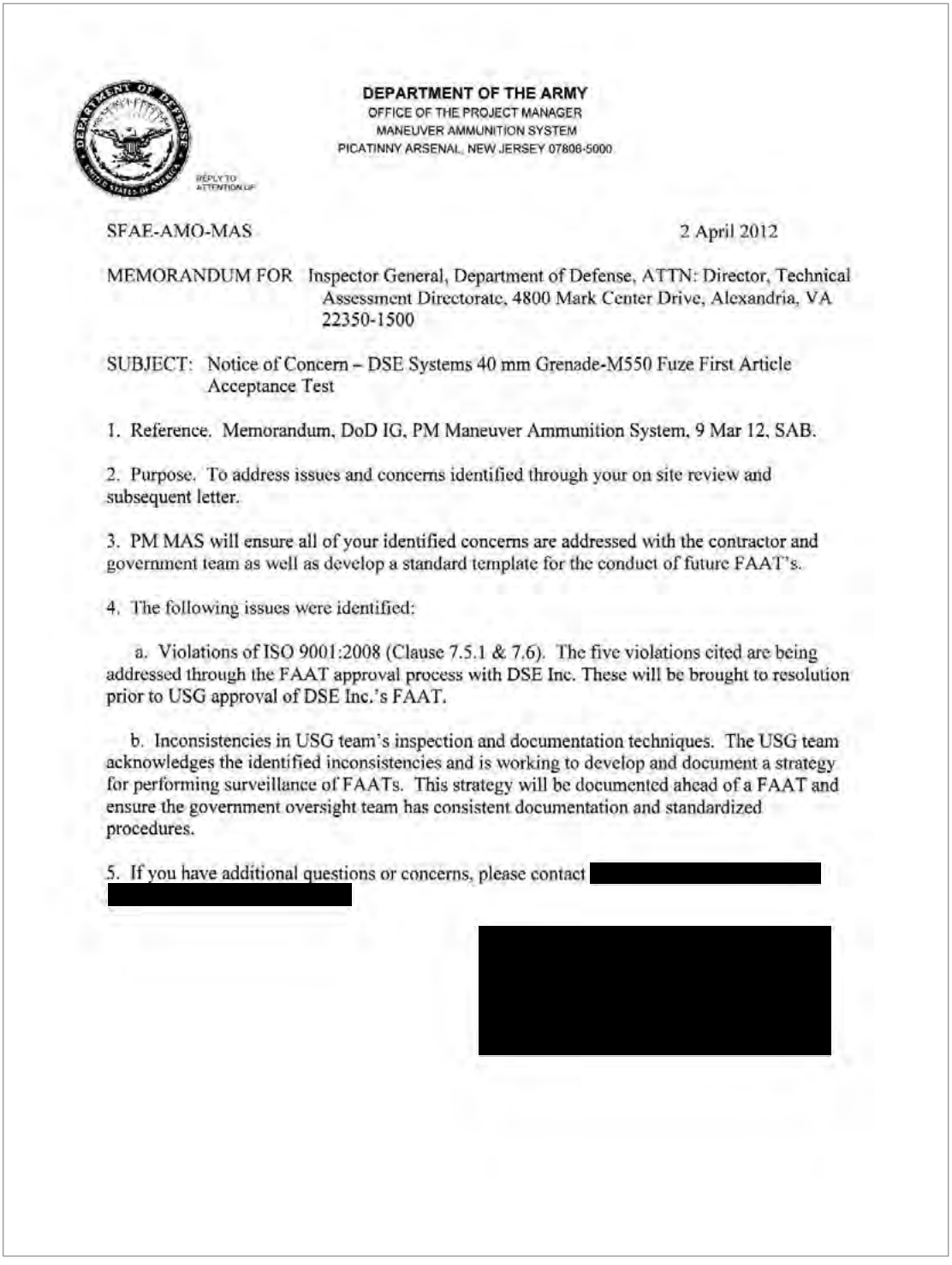
Notice of Concern Response



DEPARTMENT OF THE ARMY
OFFICE OF THE PROJECT MANAGER
MANEUVER AMMUNITION SYSTEM
PICATINNY ARSENAL, NEW JERSEY 07806-5000

REPLY TO ATTENTION OF

SFAE-AMO-MAS 2 April 2012

MEMORANDUM FOR Inspector General, Department of Defense, ATTN: Director, Technical Assessment Directorate, 4800 Mark Center Drive, Alexandria, VA 22350-1500

SUBJECT: Notice of Concern – DSE Systems 40 mm Grenade-M550 Fuze First Article Acceptance Test

1. Reference. Memorandum, DoD IG, PM Maneuver Ammunition System, 9 Mar 12, SAB.

2. Purpose. To address issues and concerns identified through your on site review and subsequent letter.

3. PM MAS will ensure all of your identified concerns are addressed with the contractor and government team as well as develop a standard template for the conduct of future FAAT's.

4. The following issues were identified:

a. Violations of ISO 9001:2008 (Clause 7.5.1 & 7.6). The five violations cited are being addressed through the FAAT approval process with DSE Inc. These will be brought to resolution prior to USG approval of DSE Inc.'s FAAT.

b. Inconsistencies in USG team's inspection and documentation techniques. The USG team acknowledges the identified inconsistencies and is working to develop and document a strategy for performing surveillance of FAATs. This strategy will be documented ahead of a FAAT and ensure the government oversight team has consistent documentation and standardized procedures.

5. If you have additional questions or concerns, please contact [redacted]

[redacted]

Management Comments

DEPARTMENT OF THE ARMY
OFFICE OF THE PROJECT MANAGER
MANEUVER AMMUNITION SYSTEM
PICATINNY ARSENAL, NEW JERSEY 07806-5000

REPLY TO ATTENTION OF

SFAE-AMO-MAS

MEMORANDUM FOR Department of Defense Inspector General, 4800 Mark Center Drive, Alexandria, VA 22350-1500

SUBJECT: Assessment of the DSE 40mm Grenades (Project No. D2011-DT0TAD-0001)

1. Reference memorandum, DoD IG, undated, SAB

2. While PM MAS agrees with substantially all of the recommendations and findings contained in the report, we do have a number of comments and recommendations on content identified below:

a. Page i, Results in Brief, under Management Comments, "Maneuvering Ammunitions Systems" should be "Maneuver Ammunition Systems."

b. Page 3, Contracting Overview - for clarification recommend changing the last three sentences to "The 40mm grenade contract requires that if a manufacturing line that produces an item in the technical data package is either idle for 90 days or moved, the contractor must recertify the production line and conduct a FAAT. DSE Systems completed their FAAT in December 2012. Subsequently, the Project Manager, Maneuver Ammunition Systems (PM MAS) and the Army Contracting Command approved production in February 2013."

c. Page 8, Control of Nonconforming Products, last paragraph. PM MAS puts the safety of the Warfighter above all else and feel that the sentence "In this particular case, a discrepant M550 fuze could result in early arming of the grenade, violating minimum standoff distance of 45 feet thus affecting the safety of the Warfighter." paints an unnecessarily negative picture of the risk of this type of condition occurring. We recommend changing the statement to: "In this particular case, a discrepant M550 fuze could result in early arming of the grenade, violating minimum standoff distance of 45 feet. However, required ballistic testing at both the fuze level and the cartridge level minimizes this risk. To date, there have been no verified early arming cartridges reported from the Warfighter."

Management Comments (cont'd)

SFAE-AMO-MAS
SUBJECT: Assessment of the DSE 40mm Grenades (Project No. D2011-DT0TAD-0001)

d. Page 9, Corrective and Preventative Actions, last paragraph. Again PM MAS takes exception to the wording "which could affect the safety of the Warfighter." and recommends the statement be deleted.

e. Page 13, Recommendations, Note: it's "Maneuver Ammunition Systems" not Maneuver Ammunitions Systems. Also, in Para 2, recommend changing "Project Manager, Maneuver Ammunition Systems apply the necessary...." to "Project Manager, Maneuver Ammunition Systems continue to apply the necessary...."

3. It is important to note that in May 2013, DSE announced the permanent layoff of their production employees at DSE Systems in Gaffney, SC and DSE Inc in Tampa, FL. On 3 July 2013, DSE, Inc. announced that they had agreed to sell "substantially all of their assets" to AMTEC Corp of Janesville, WI, their key competitor in the 40mm Grenade market. In order for the sale to be completed, the Government must agree to novate DSE's contract and to recognize AMTEC as the successor, in interest, to the government contract to supply 40mm ammunition. PM MAS and Army Contracting Command are working with both contractors to accomplish the novation of DSE's 40mm contract.

4. PM MAS is dedicated to assuring that all of our ammunition producers, to include our 40mm grenade contractors, comply with all of the product technical/quality requirements and the terms and conditions of their contracts to include, compliance to ISO 9001-2000 standards. We continue to actively engage with DCMA, Army Contracting Command, the Armaments Research, Development and Engineering Center and Joint Munitions Command to assure all necessary resources, including Quality Engineering, Quality Assurance, Product and Process Engineering and other technical expertise are appropriately planned, resourced and applied to ensure our ammunition contractors, to include current and future 40mm producers, adhere to all technical, contractual and Quality Management System requirements.

5. The POC for this matter is [redacted]

[redacted]

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Acronyms and Abbreviations

CARs	Corrective Action Requests
DCMA	Defense Contract Management Agency
FAAT	First Article Acceptance Test
OIG	Office of the Inspector General
PM MAS	Project Manager, Maneuver Ammunition Systems
QMS	Quality Management System
SPC	Statistical Process Control


INSPECTOR GENERAL
INTEGRITY
EFFICIENCY
DEPARTMENT OF DEFENSE

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U.S. Department of Defense

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