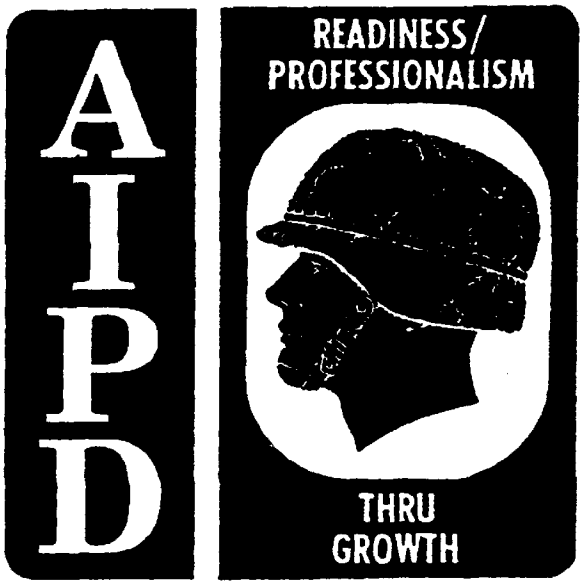
SUBCOURSE
MM0170

EDITION
A

EVALUATE CONVENTIONAL AMMUNITION STORAGE OPERATIONS (PART III)



US ARMY ORDNANCE
MISSILE AND MUNITIONS CENTER AND SCHOOL

THE ARMY INSTITUTE FOR PROFESSIONAL DEVELOPMENT

ARMY CORRESPONDENCE COURSE PROGRAM

EVALUATE CONVENTIONAL AMMUNITION STORAGE OPERATIONS (PART III)

Subcourse Number MM0170

EDITION A

Missile and Munitions
United States Army Combined Arms Support Command
Fort Lee, Virginia 23801-1809

10 Credit Hours

Edition Date: February 1992

SUBCOURSE OVERVIEW

We designed this subcourse to teach you how to evaluate conventional ammunition storage operations. This subcourse is divided into three lessons. Lesson 1 describes ammunition disposal operations. It covers both routine disposal operations and emergency destruction to prevent enemy capture. Lesson 2 covers surveillance operations. It explains ammunition inspection requirements, records, and reports. Lesson 3 describes physical security planning and implementation.

There are no prerequisites for this subcourse.

This subcourse reflects the doctrine that was current at the time the subcourse was prepared. In your own work situation, always refer to the latest publications.

Unless otherwise stated, the masculine gender of singular pronouns is used to refer to both men and women.

Terminal Learning Objective

Action: You will be able to identify the requirements for ammunition disposal. You will be able to supervise the preparation of the materials required to accomplish a disposal operation, to understand the different types of inspections and the records and reports associated with each, and to identify each aspect of ammunition physical security and how it affects the physical security plan.

Condition: You will have access to extracts from relevant publications. You will require only the information contained in this subcourse.

Standard: To demonstrate competency on this task, you must achieve a minimum of 70 percent correct on the subcourse examination.

TABLE OF CONTENTS

LESSON 1

DISPOSAL OPERATIONS

Critical Task: 03-4020.02-0001

OVERVIEW

Lesson Description

In this lesson, you will learn to plan routine and emergency ammunition disposal operations.

Terminal Learning Objective

Action: Identify proper disposal authorization documentation, safety requirements, factors in site selection, types of ignition systems, requirements for temporary storage, types of demolition materiel authorized for use in the destruction of ammunition, quantities of ammunition authorized to be destroyed at a disposal site, and standing operating procedure (SOP) approval authority.

Condition: You will be given a description of routine and emergency ammunition disposal operations and extracts from TM 9-1300-206, TM 9-1300-277, FM 9-38, and AR 710-2.

Standard: You will identify the administrative and safety requirements associated with the disposal of ammunition.

References: The material contained in this lesson was derived from the following publications:

- DA Pamphlet 738-750.
- FM 5-25.
- FM 9-13.
- FM 9-38.
- SB 708-4.
- TM 9-1300-206.
- TM 9-1300-250.
- TM 9-1300-277.
- TM 9-1375-213-12.

INTRODUCTION

There are three circumstances under which ammunition may be deliberately destroyed. The first is when the ammunition becomes an immediate danger to life and property. The second is when the ammunition becomes uneconomically repairable or obsolete. The third is to prevent enemy capture of the ammunition. As an ammunition officer, you will become involved in destroying ammunition for the second and third reasons. The procedures involved in the routine destruction of uneconomically repairable ammunition, and the destruction of

ammunition to prevent enemy capture, will be covered in this lesson. Note that damaged ammunition, duds, and deteriorated ammunition that constitute an explosive hazard are disposed of by explosive ordnance disposal (EOD) personnel. EOD personnel may also be involved in the disposal of other ammunition that is beyond your unit's disposal capability.

AUTHORIZATION FOR DISPOSAL AND ACCOUNTABILITY

Requesting and Receiving Ammunition Disposal Instructions

Authorization for the disposal of ammunition starts with the preparation of a DA Form 2415 (Ammunition Condition Report) (ACR). A sample of a completed DA Form 2415 is shown in Figure 1-1.

The DA Form 2415 is prepared by the surveillance section of an ammunition company according to DA Pamphlet 738-750. It is forwarded through command channels to the US Army Armament, Munitions, and Chemical Command (AMCCOM) for conventional ammunition, or to the US Army Missile Command (MICOM) for guided missiles and large rockets (GMLR). AMCCOM or MICOM, as appropriate, determines the proper disposition of the ammunition and returns the DA Form 2415 through command channels to the surveillance office.

There are several disposition instructions that may be furnished by AMCCOM or MICOM. These range from shipping instructions to the authorization to demilitarize or dispose of the ammunition. In this subcourse, you are concerned only with disposition instructions authorizing the demilitarization or disposal of ammunition. The four approved methods of ammunition demilitarization or disposal are as follows:

- Disassembly.
- Washout.
- Detonation.
- Burning.

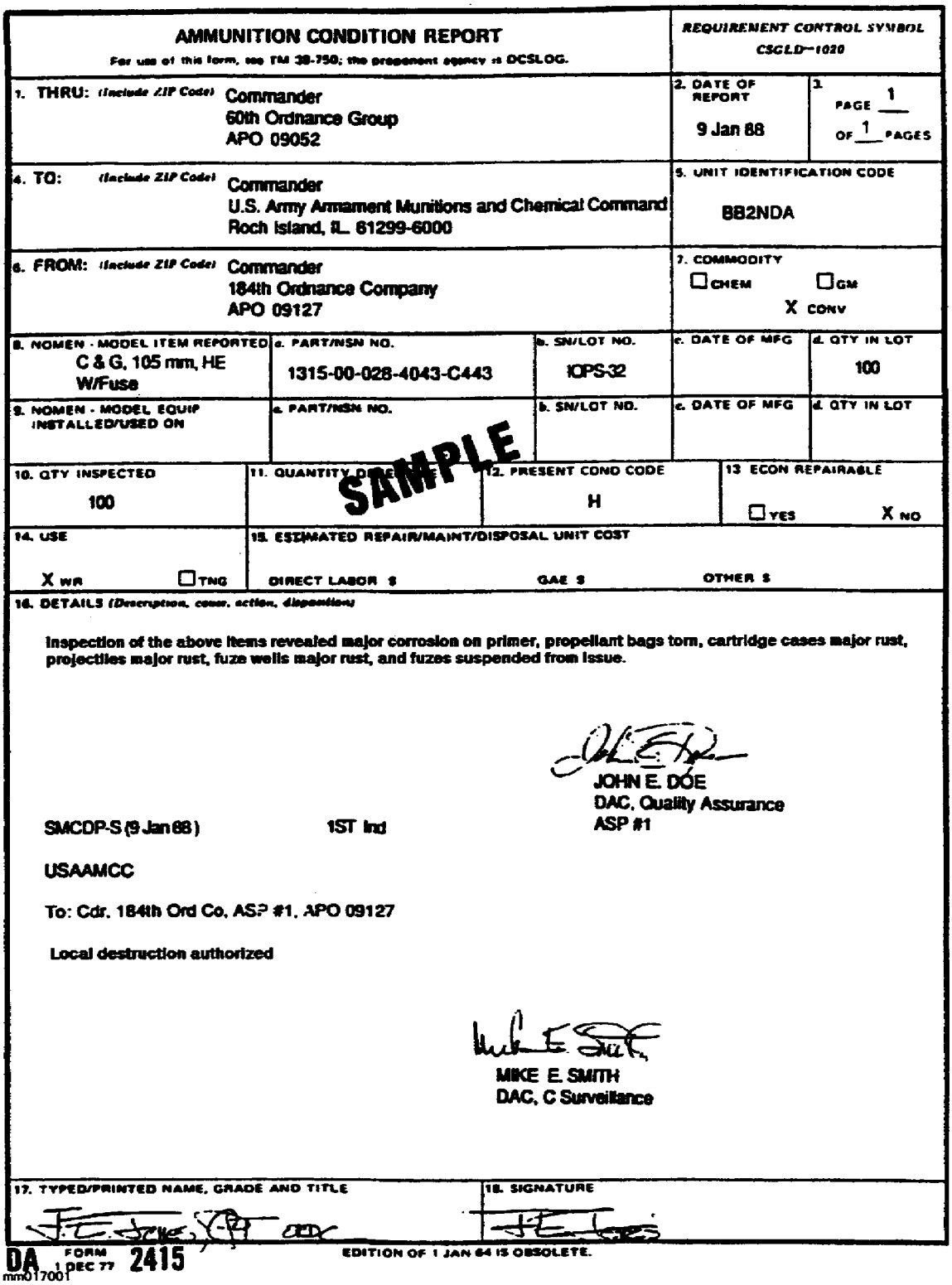
This lesson will deal only with the last two methods-detonation and burning. These methods are common to the combat zone.

Changing an Ammunition Condition Code

When the surveillance section receives a DA Form 2415 from AMCCOM or MICOM authorizing the disposal of an item of ammunition, the ammunition condition code (ACC) must be changed to ACC-H. ACC-H is the established code for condemned ammunition. In order to change the ACC of an item or lot of ammunition, the surveillance section prepares a DA Form 4508 (Ammunition Transfer Record). The DA Form 4508 gives notice to the operations section that an ACC change has been made. See Figure 1-2 for an example of a completed DA Form 4508.

Isolating Condemned Munitions

The operations section, upon receipt of DA Form 4508, must ensure that no ACC-H materials are stored with serviceable materials. When ACC-H materials have to be moved, the operations section initiates an intra-depot transfer (IDT) by preparing a DA Form 3151-R (Ammunition Stores Slip) for each Department of Defense identification code (DODIC) and lot number scheduled for rewarehousing. See Figure 1-3 for an example of a completed DA Form 3151-R.



AMMUNITION CONDITION REPORT

For use of this form, see TM 38-750; the proponent agency is DCSLOG.

REQUIREMENT CONTROL SYMBOL CSGLD-1020

1. THRU: (Include ZIP Code) Commander, 60th Ordnance Group, APO 09052

2. DATE OF REPORT: 9 Jan 88

3. PAGE 1 OF 1 PAGES

4. TO: (Include ZIP Code) Commander, U.S. Army Armament Munitions and Chemical Command, Roch Island, IL 61299-6000

5. UNIT IDENTIFICATION CODE: BB2NDA

6. FROM: (Include ZIP Code) Commander, 184th Ordnance Company, APO 09127

7. COMMODITY: ☐ CHEM ☐ GM X CONV

8. NOMEN - MODEL ITEM REPORTED	a. PART/NSN NO.	b. SN/LOT NO.	c. DATE OF MFG	d. QTY IN LOT
C & G, 105 mm, HE W/Fuse	1315-00-028-4043-C443	IOPS-32		100
9. NOMEN - MODEL EQUIP INSTALLED/USED ON	a. PART/NSN NO.	b. SN/LOT NO.	c. DATE OF MFG	d. QTY IN LOT

SAMPLE

10. QTY INSPECTED	11. QUANTITY DES[illegible]	12. PRESENT COND CODE	13 ECON REPAIRABLE
100		H	☐ YES X NO

14. USE	15. ESTIMATED REPAIR/MAINT/DISPOSAL UNIT COST
X WR ☐ TNG	DIRECT LABOR $ GAE $ OTHER $

16. DETAILS (Description, cause, action, disposition)

Inspection of the above items revealed major corrosion on primer, propellant bags torn, cartridge cases major rust, projectiles major rust, fuze wells major rust, and fuzes suspended from issue.

JOHN E. DOE
DAC, Quality Assurance
ASP #1

SMCDP-S (9 Jan 88) 1ST Ind

USAAMCC

To: Cdr, 184th Ord Co, ASP #1, APO 09127

Local destruction authorized

MIKE E. SMITH
DAC, C Surveillance

17. TYPED/PRINTED NAME, GRADE AND TITLE

18. SIGNATURE

DA FORM 1 DEC 77 2415 EDITION OF 1 JAN 64 IS OBSOLETE.

mm017001

Figure 1-1. An example of a DA Form 2415 (Ammunition Condition Report) used to authorize destruction of ammunition.

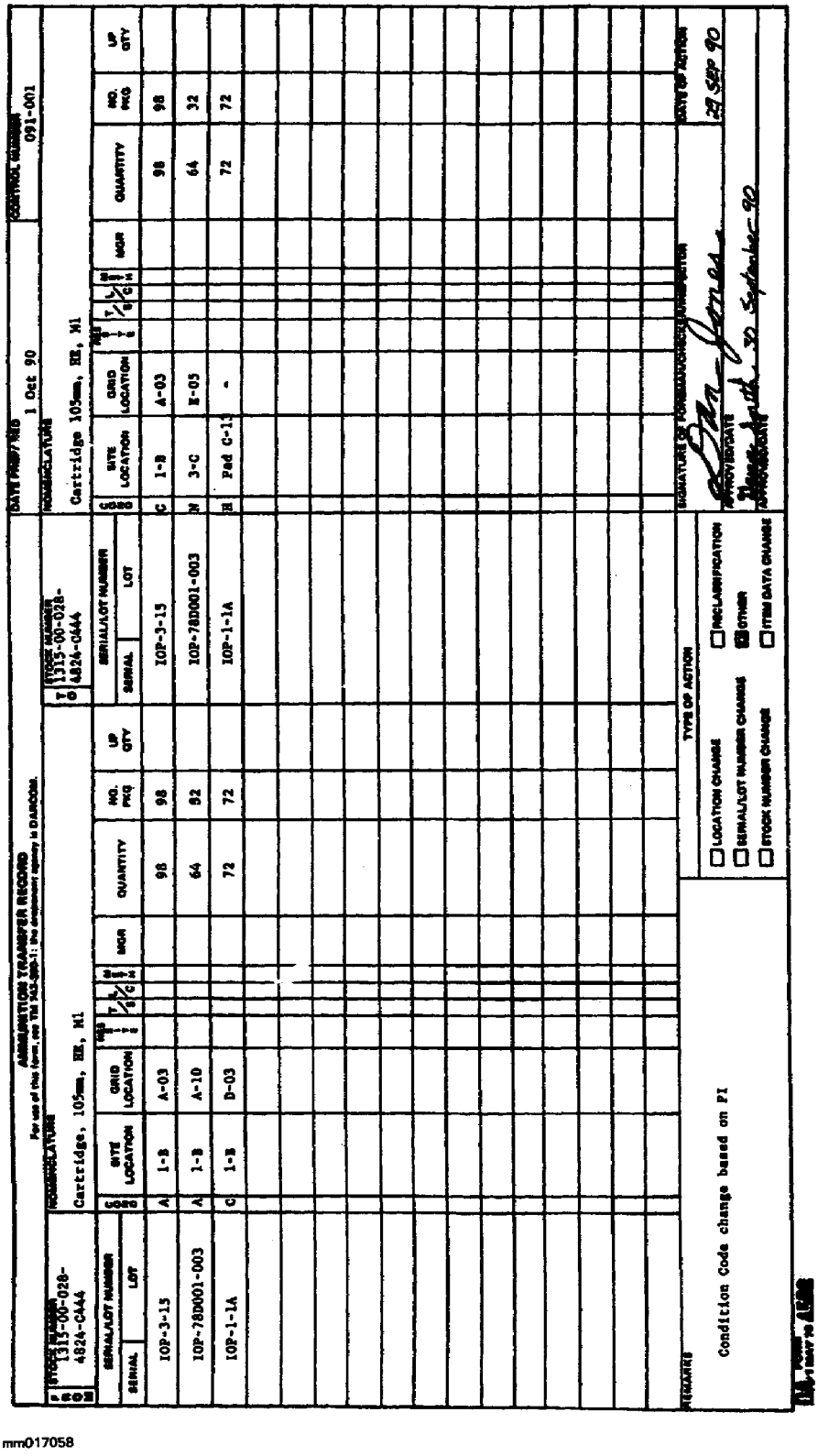


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Figure 1-2. An example of a completed DA Form 4508 (Ammunition Transfer Record).

AMMUNITION STORES SLIP
FOR THE USE OF THIS FORM, SEE FM 9-38. THE PROPONENT IS UNITED STATES ARMY TRAINING AND DOCTRINE COMMAND.

AUTHORITY: AK4103-9021-001
DATE: 9021

FROM: ASP 4
NAME OF ACTIVITY:
TO: 44TH ORD CO.
VEHICLE NO.: 44-10

RECEIPT ☐ ISSUE ☐ OTHER (SPECIFY) REWAREHOUSE ☒
DRIVER: SP4 S. LIVINGSTON

NSN DODIC NOMENCLATURE	LOT NO.	ACC	LOCATION FROM	LOCATION TO	PLTS / BXS	TOTAL ROUNDS	INIT
C443 CTG 105 MM HE	5-32 IOP	H	1A3		60	120	MP

SAMPLE

REMARKS

DATE	SIGNATURE OF ISSUING CHECKER	DATE	SIGNATURE OF RECEIVING CHECKER
9021	SGT. [illegible]		

DA FORM 3151 R
1 APRIL 1976
mm017003

REPLACES DA FORM 3151, 1 JUL 66 WHICH MAY BE USED UNTILL EXHAUSTED

Figure 1-3. An example of a completed DA Form 3151-R (Ammunition Stores Slip).

Issuing Munitions for Destruction

The operations section notifies the noncommissioned officer in charge (NCOIC) /officer in charge (OIC) of the demolition team by providing them with a copy of the DA Form 2415. This should be accomplished as soon as possible after receipt of the form. On the day the destruction is to take place, the ammunition stocks programmed for destruction are issued by the supply support activity (SSA) on a DA Form 581 (Request for Issue and Turn-In of Ammunition). The operations section assigns an SSA document control number to the DA Form 581 from the document register and enters an "X" in Block 1 (ISSUE). The following statement is entered in Block 28 (REMARKS): "Ammunition certified unserviceable by qualified inspector and authorized for destruction under the provisions of DA Pamphlet 738-750, and approved on DA Form 2415." Below this statement is the entry "CERTIFICATE OF DESTRUCTION." An example of a completed DA Form 581 used as a certificate of destruction is shown in Figure 1-4.

The operations section completes and forwards a DA Form 3151-R to the surveillance section to verify that the lot is unserviceable. The surveillance section returns the verified DA Form 3151-R to the operations section. The operations section then forwards the verified DA Form 3151-R with the DA Form 581 to the storage section, which then issues the ammunition to the destruction team NCOIC/OIC. The operations section keeps copies of the DA Form 3151-R and the DA Form 581 in the due-out file.

When the destruction is completed, the demolition team provides the NCOIC/OIC with a copy of the DA Form 2415. The authenticated DA Form 581 is returned to the operations section. The operations section closes the due-out file on the destroyed stocks. It then records the transaction on the lot locator record or the serial number record, as appropriate, and on the DODIC Master Record.

Reporting the Destruction of Munitions

The destruction action is reported to the Standard Army Ammunition System-Level 3 (SAAS-3) activity. This is accomplished by preparing a document identifier code XBH transaction input according to the unit's SOP. The DA Form 581, the DA Form 3151-R, and the DA Form 2415 are filed in the supporting voucher file by SSA document control number.

Safety Training

The single most important safety consideration when planning a disposal operation is ensuring that all personnel selected for the demolition team are thoroughly trained and briefed on each operation. The training program for routine destruction must include the following:

- Methods and procedures for both electric and nonelectric priming and capping.
- Methods and procedures for destruction by detonation and by burning.
- Guidelines for selecting the demolition site.
- General and specific safety procedures for destroying ammunition.

Such training must be routinely scheduled to keep soldiers trained at all times. Refer to TM 9-1300-206, TM 9-1375-213-12, and FM 5-25 for details on scheduling training. Local EOD teams should provide technical assistance during hands-on training sessions.

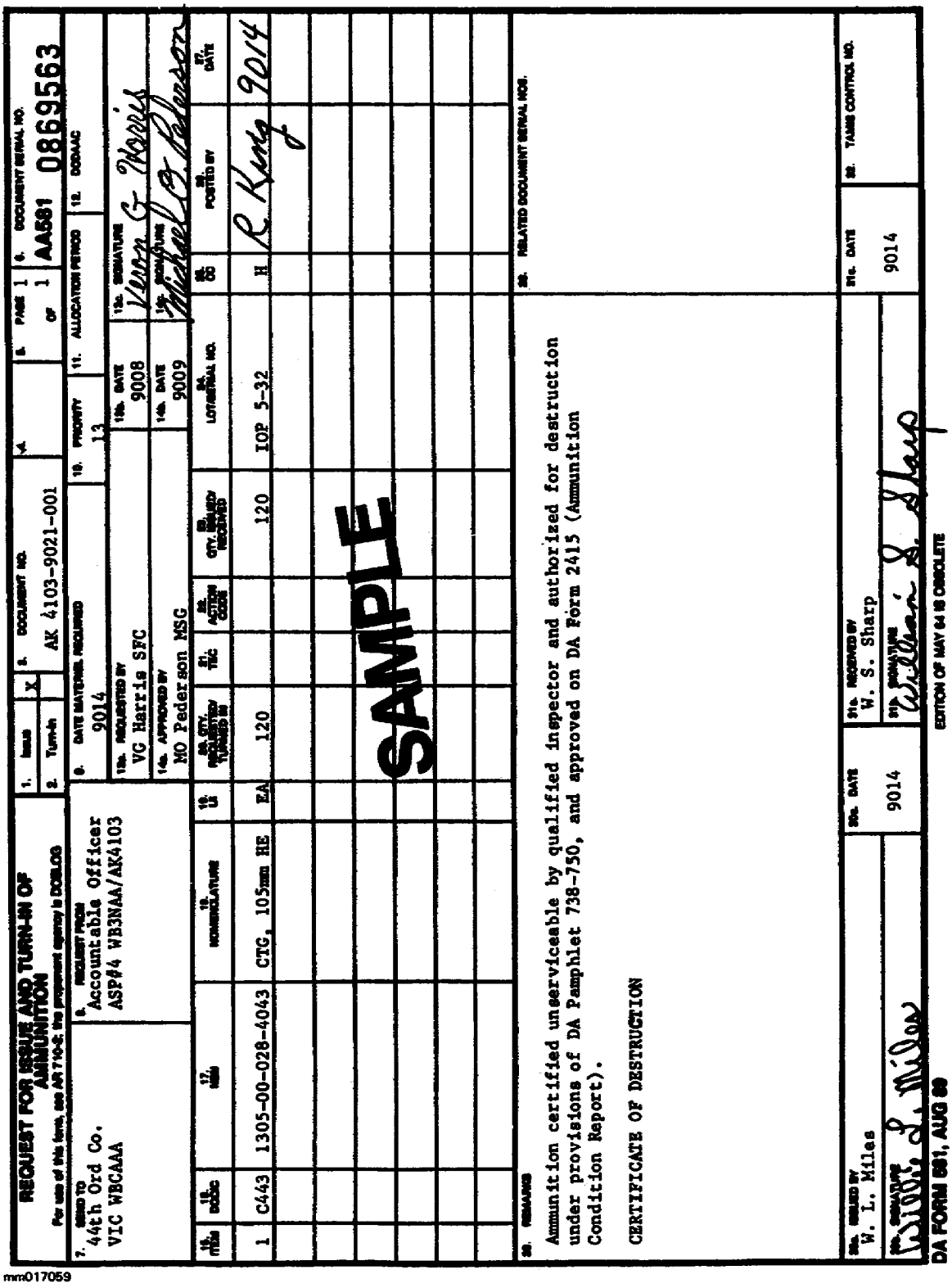

Figure 1-4. An example of a completed DA Form 581 (Request for Issue and Turn-In of Ammunition) used as a Certificate of Destruction.

Safety Planning

The safety of personnel must be ensured during ammunition disposal operations. The following are some basic safety considerations. These are not to be considered all-inclusive.

Shelters. Personnel engaged in demolition work must have ample time to reach shelters affording overhead and frontal protection. Such shelters may be permanent or temporary. They must be located at the appropriate inhabited-building distance (IBD) for the quantity and type of material being detonated, but in no case will the distance be less than 300 feet. Demolition team members must be inside these shelters when explosive materials are destroyed by detonation, or when explosive materials that may detonate are being burned.

Protective Clothing. Personnel engaged in burning ammunition items should be provided with fire-resistant outer clothing. If fire-resistant clothing is not available, clothing may be flameproofed by immersion in an approved flameproofing solution. Refer to TM 9-1300-206 for the composition of these solutions.

Communications. A means of communication must be available at the destruction site. Communications may be by telephone or two-way radio.

Personnel Requirements. The number of personnel exposed to the hazards of ammunition destruction must be kept to a minimum, but may not be fewer than two. The number required is determined by the NCOIC/OIC of the team. Personnel not actively involved in the operation, and those who have completed their tasks (such as transport vehicle operators after vehicle off-loading is completed) must leave the area.

STANDING OPERATING PROCEDURES (SOPs)

A written SOP must be prepared and approved prior to conducting disposal operations. All personnel involved in the destruction operation are required to read the SOP, and a copy must be available at the disposal site.

The SOP must be approved by the commander or by a qualified member of his or her staff to whom the authority to review and approve procedures has been delegated in writing. The SOP should be reviewed by EOD personnel, by those responsible for the disposal operation and site, and by the unit's surveillance section. TM 9-1300-250 contains general information on the preparation of SOPs.

SOP Elements

There are three parts to each SOP-the cover sheet, the index of operations, and the operations formats.

The SOP cover sheet contains the following information:

- The name of the installation.
- The type of activity.
- The organization symbol.
- The number and date of the SOP.
- The revision number (when a complete revision of the SOP has been made).
- The change number and date for either the basic or the revised SOP, as applicable.

- The appropriate technical references.
- The office, typed name, signature, and title of each person who must concur.
- The commander's approval.

The index of operations contains the following information:

- The operation number.
- The site where the operation is conducted.
- The exact location of the operation.
- The total explosive limits.
- A brief description of the work to be done.

The operations format contains the following information:

- The operation to be performed.
- The location.
- The number of rounds and the weight of explosives required.
- The number of personnel required to perform the operation.
- The procedural details of the work to be done (under Description of Operation).
- Specific instructions are located opposite the step in the operation description to which they apply. They may include quality characteristics, specific safety equipment or clothing required, safety precautions to be taken, and technical instructions pertaining to task accomplishment.
- Special requirements or instructions that apply to one operation only, or to one particular step of an operation.
- Equipment, tools, gauges, and supplies needed for task accomplishment.

SITE SELECTION AND LAYOUT

The disposal site must be carefully selected, because its location and terrain affect many safety factors. You should first obtain a map of the area surrounding the ammunition supply point (ASP). The map will provide information on the following features:

- Access routes.
- Natural barricades (such as rolling hills).
- Drainage.
- Whether the prevailing winds will carry sparks or toxic fumes to the ASP or to other inhabited areas.
- Where sites can be located at least 732 meters (2,400 feet) from all magazines, inhabited buildings, public traffic routes, and operating buildings.

After a tentative location or locations have been selected, you must conduct on-site reconnaissance to ensure that the site or sites meet all requirements. This can best be accomplished by using a DA Form 2203-R (Demolition

Reconnaissance Report), shown in Figure 1-5, and by preparing a checklist covering the following points:

- Access routes. The area should have a primary and an alternate access route. Road surfaces must be capable of handling 12-ton stake and platform (S&P) trailers.
- Natural barricades. These are features (such as hills or mountains) that reduce the blast and fragmentation hazards produced by the detonation.
- Prevailing winds. The site should be downwind of inhabited areas and ammunition storage locations.
- Cleared area. The area around the detonation or burning site must be free of combustible material for a 200-foot radius. You must ensure that the area is clear, or that it can be cleared to meet this requirement by your unit personnel or by engineer-support personnel.
- High ground. The selection of high ground ensures proper drainage throughout the year.
- Television or radio transmitters and power lines. The site must be at least 400 meters from short-wave transmitters and 1600 meters from high-frequency transmitters. If any television or radio transmitters are present, refer to TM 9-1300-206 and FM 5-25 for specific minimum distances. The site must be at least 155 meters from electrical power lines.
- Airspace. Due to the blast effect of detonation, operators of military and civilian aircraft must be aware of ammunition or explosive destruction sites. AR 95-2, *Air Traffic Control, Airspace, Airfields, Flight Activities and Navigation Aids,* dated 10 August 1990, outlines the organization and functions of regional airspace subcommittees and establishes uniform procedures for handling airspace problems.
- Operating area. The site selected must be large enough to accommodate the required work areas, personnel shelters, ammunition holding areas, and detonation and burning sites. You must refer to TM 9-1300-206, TM 9-1300-277, and FM 5-25 for required distances based on the types and quantities of explosives involved. All disposal sites must be 300 feet from personnel shelters, and a 10-foot distance is required between the detonation and burning points and the area where ammunition or explosive boxes are being opened. Capping operations must be 25 feet from the area where ammunition or explosive boxes are being opened. Intraline distance must be maintained between the detonation and burning points and ammunition awaiting destruction.
- Physical security. Ensure that the area can be secured.
- EOD coordination. All aspects of the disposal operation should be coordinated with EOD personnel. Note that badly-damaged ammunition, duds, and deteriorated ammunition that constitute an explosive hazard must be disposed of by EOD personnel. EOD personnel may also be required to dispose of other ammunition when it is beyond your unit's capability to do so.

Explosive Limits

There are two types of explosive limits at a disposal site. The first is the quantity of explosives you can detonate at one time. The second is the quantity of explosives allowed to be temporarily stored at the destruction site at any time. The quantity of explosives is referred to as the net explosive weight (NEW). It is based on the amount of explosives contained within a single round of ammunition.

If you are working at an established destruction site, the NEW allowed to be detonated at one time will already be established; if not, the NCOIC/OIC will establish these limits by starting with a small NEW and increasing the

DEMOLITION RECONNAISSANCE REPORT
(FM 5-25)

SECTION I - GENERAL

1. FILE No.	2. DML RECON RPT No.	3. DATE	4. TIME
	91-001	28 Oct 91	1300 hrs

	NAME	GRADE	ORGANIZATION
5. RECON ORDERED BY	James Johnson	03	44th Ord Co Wildflecken Ge
6. PARTY LEADER	George Gordon	01	44th Ord Co Wildflecken Ge

7. MAP NAME Wildflecken Ranges SCALE 1-50,000 SHEET # 01 SERIES # 55

8. TARGET AND LOCATION	9. TIME OBSERVED	10. COORDINATES
Range #3 Mortar Impact Range	1315	421870

11. GENERAL DESCRIPTION (attach sketches)

Open clearing, approximately 5,000 meters circle, bordered by forest on all sides.

12. NATURE OF PROPOSED DEMOLITION (attach sketches)

200 rds M107, 155mm, HE
50 rds M4, 4.2in, mortar, WP

SAMPLE

13. UNUSUAL FEATURES OF SITE

Clearing is located in a valley. Valley runs to village of Griesheim approximately 10Km away.

SECTION II - ESTIMATES*

14. EXPLOSIVES REQUIRED		c. Caps	d. Detonating Cord	f. Fuse Lighters
a. Types	b. Quantity	Electric	5,000 ft	150 ea
C-4	400 ea			
M2 shaped charge	6 ea	Nonelectric 400 ea	e. Time Fuse 2,000 ft	g. Firing Wire

15. EQUIPMENT AND TRANSPORT REQUIRED

2 ea 2 1/2T cargo trks
1 ea 1/4T cargo trk w/AN-VRC-47 radio

16. PERSONNEL AND TIME REQUIRED FOR:	NCO's	Men	Time
a. PREPARING AND PLACING THE CHARGES	2	7	8 hrs
b. ARMING AND FIRING THE DEMOLITION	1	6	8 hrs

17. TIME, LABOR AND EQUIPMENT REQUIRED FOR BYPASS; SPECIFY LOCATION AND METHOD

0800 hrs - 1630 hrs 2 personnel w/AN-PRC-77 radio to block each access road to Range. 2 sawhorse-type portable road barricades or traffic cones. Personnel and road blocks will be placed at the intersection of range access roads and MSR.

* Determine availability of Items 14, 15 and 16 before reconnaissance.

DA FORM 2203-R, 1 Aug 70 Edition of 1 Mar 67 is obsolete.

mm017051

Figure 1-5. An example of a completed DA Form 2203-R (Demolition Reconnaissance Report).

NEW until the safe limit is reached. Remember, you must consider both the blast effect and the fragment distance. You must include the explosive weight of your igniting explosives in the NEW total.

You must exercise extreme caution when using this procedure to establish the explosive limits for a destruction site. Always refer to the most current TM 9-1300-206 and FM 5-25 in such cases. When more than 125 pounds NEW of explosives are to be detonated at one time, you may want to consult with EOD personnel first.

The other explosive limit to consider is the NEW of ammunition awaiting destruction that may be temporarily stored at the destruction site. This temporary storage site must be located at least the intraline distance from ammunition and explosives being prepared for destruction. When the NEW allowed to be detonated at one time is exceeded by the total NEW of the rounds to be destroyed, you must determine at what distance the excess rounds must be stored. If the designated temporary storage area does not meet this required distance, the number of rounds transported to the destruction site must be decreased.

For example, assume that there are 120 rounds of C445, national stock number (NSN) 1315-00-028-4860, cartridge, 105mm, high-explosive (HE) without fuze, to be destroyed. The amount that may be destroyed at one time at your disposal site is 80 pounds NEW. To determine the NEW of C445, refer to SB 708-4, Part IV. Locate the DODIC, C445, in the index as shown in Figure 1-6, and then locate NSN 1315-00-028-4860. The index number is 01461. Now locate the index number in Part VII, as shown in Figure 1-7. The NEW for this item is found to be 7.45 pounds per round. Since the NEW allowed per detonation is 80 pounds, divide 80 by 7.45. The result is 10.74. If you multiply 10 rounds by 7.45 pounds per round, you get a NEW of 74.5 pounds. Subtract

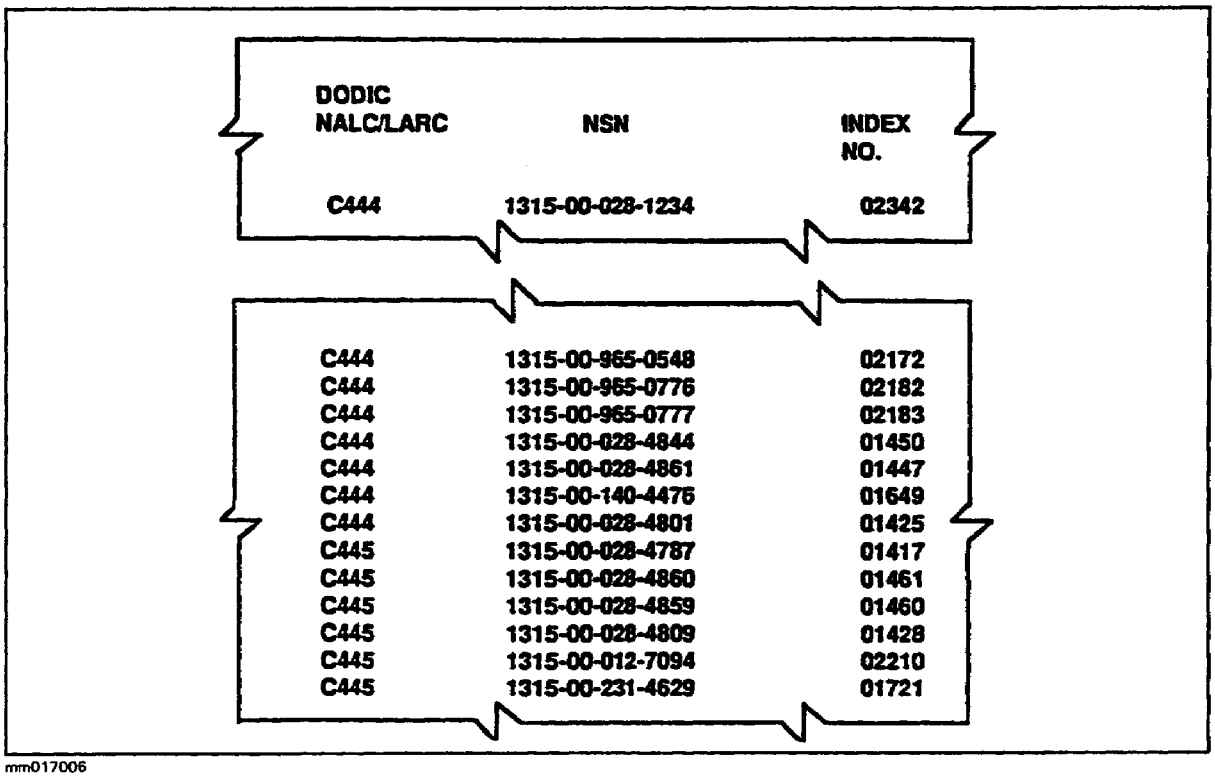

Figure 1-6. Sample entries from SB 708-4, Part IV.

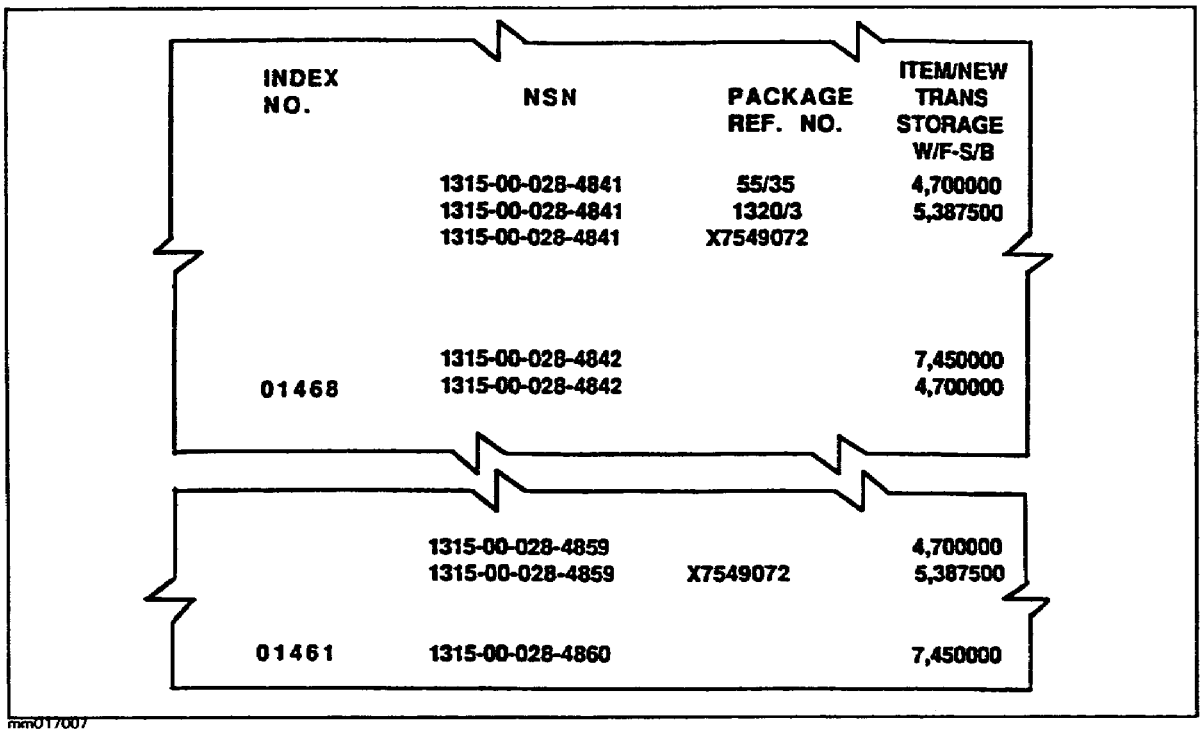

Figure 1-7. Sample entries from SB 708-4, Part VII.

this result from 80 to obtain the NEW of initiating explosives allowed for each detonation. You find that 10 rounds of C445 may be destroyed at one time at this site, with no more than 5.5 pounds of initiating explosives used in each detonation.

In the previous example, there were 120 rounds to be destroyed. If all of the rounds to be destroyed are at the destruction site, there are 110 rounds that must be temporarily stored.

Multiply the NEW per round, 7.45, by 110 rounds to be stored. The result is 819.5 pounds NEW. Next, determine the quantity-distance (QD) class of the item by referring to the tables in Chapter 5 of TM 9-1300-206. The ammunition in the example, cartridge, 105mm, HE without fuze, is Class (12) 1, division 2, that is, (12) 1.2. As shown in Figure 1-8, it falls under "Ammunition, fixed and semi-fixed, 90mm through 106mm, loaded with ammonal, amatol, explosive D, composition B, or TNT, except 105mm HEAT, M341."

Use Table 5-12 in TM 9-1300-206, shown in Figure 1-9, to find the QD. The total NEW in the example is 819.5 pounds, so the distance required from the detonation point to the temporary storage site is 600 feet. A reduction in the NEW would not result in any reduction in the distance requirement. The use of barricades also does not reduce the distance requirement, as it would for Class 1, division 1 ammunition.

DISPOSAL METHODS

Determining the Appropriate Disposal Procedure

The disposal of certain munitions may be accomplished by burning or by detonation. General procedures for each disposal method are included in TM 9-1300-277. Specific procedures and additional requirements are included in the specific demilitarization Depot Maintenance Work Requirement (DMWR) for the item.

Class (12) 1.2
Ammunition, fixed and semifixed, 90mm through 106mm, loaded with ammonal, amatol, explosive D, composition B or TNT, except 105mm HEAT, M341
Chemical ammunition, group A, w/explosive components
Chemical ammunition, group B, w/explosive components, designed for toxic or incapacitating effects greater than lachrymation
Chemical ammunition, group B tear or smoke producing, w/explosive components, over 40mm
Chemical ammunition, group C, w/explosive components
Chemical ammunition, group D, fixed and semifixed rounds, containing flammable liquids or gels with explosive components
Chemical ammunition, group D, fixed or semifixed rounds, containing flammable solids, except for TEA or TPA
Chemical ammunition, group D, TEA or TPA, w/explosive components
Projectiles, HE (Explosive D loaded) fuzed or unfuzed
Rockets, HE, 2.75-inch (in LAU-3/A rocket launcher)
Rockets, practice, 3.5-inch
Rockets, toxic chemical agents, complete rounds

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Figure 1-8. Sample entries from TM-9-1300-206, Table 5-9, Items in Class 1, Division 2.

Table 5-12. Category (12), Class 1.2 Quantity-Distance (Ref. Note 3)

Pounds of explosives (Not over)	Distance in feet			
	Inhabited building	Public traffic route	Intraline	Above ground magazine
500,000[4]	1200	720	600[1]	300[2, 3]

NOTES:
[1]If the H.E. in (12) 1.2 items at an operating line PES is limited to 5000 pounds, the intraline may be reduced to 200 feet.
[2]Items of this category present a risk of propagation to adjacent above-ground magazines, particularly when packed in combustible containers. Storage in earth-covered magazines is, therefore, preferred.
[3]For storage in earth-covered magazines see Note 5*j*, table 5-6.
[4]For the purpose of storage capacity, the net explosive weight for fixed, semifixed, or separate loading ammunition will be the high explosives (HE) contents of the rounds, excluding items subject to paragraph 5-12b, page 5-30.

mm017009

Figure 1-9. Sample entry from TM 9-1300-206, Table 5-12, Category (12), Class 1.2 Quantity-Distance.

DMWRs are documents that contain the minimum requirements for the demilitarization and disposal of specific munitions. They specify the equipment and the materials to be used; the methods, procedures, techniques, safety factors, and inspection criteria; and other essential factors to assure proper demilitarization and disposal of the particular items. They also serve as a basis for preparing local SOPs.

Disposal of munitions by burying or dumping in wells, marshes, streams, inland waterways, landfills, or pits is not authorized.

Munitions with compatible characteristics and similar disposal procedures may be disposed of in the same operation. If possible, refer to the applicable demilitarization DMWR.

Whether ammunition is to be destroyed by detonation or by burning is determined by the type of ammunition. If the applicable DMWR is not available, refer to TM 9-1300-206 for recommended methods of disposal.

Ammunition items most often destroyed by burning include the following:

- Commercial dynamite.
- Propelling charges.
- Black powder.
- Pyrotechnics (except photoflash bombs, photoflash cartridges, and parachute flares).
- Small-arms ammunition.
- Solid propellants.

The following ammunition items are destroyed by detonation:

- Ammunition with HE fillers.
- High-explosive, antitank (HEAT) projectiles.
- Photoflash cartridges and bombs.
- Initiating explosives.
- Rocket warheads.

Disposal by Burning

Disposal by burning is limited to burning on the surface, in a pit, in a trench, or in a deactivating furnace. The use of deactivating furnaces is normally a depot function. Munitions to be burned must be examined carefully to ensure that no removable detonators or blasting caps are included. All removable detonators, blasting caps, and similar items must be removed from munitions to be burned to avoid unexpected detonation. Sites must not be left unattended during burning. They must be observed from the specified safe distance for the item being burned. Refer to TM 9-1300-206 for safe burning distances for specific munitions.

An ignition train is used in pit, trench, or surface burning operations to allow personnel sufficient time to reach a safe distance before the combustion of the munitions begins. A nonelectric ignition train consists of a fuse igniter, a time blasting fuse, and a small bag of smokeless powder. An electric ignition train consists of a blasting machine, a firing wire, a flash-vented squib, and a small bag of smokeless powder (NSN 1375-00-772-1369 or NSN 1375-00-772-1370), which may be purchased locally in one-pound cans. The official nomenclature is powder, rifle, smokeless, Class 1.3C.

Burning high explosives when initiators of any description are included will probably result in a detonation. When burning explosives or munitions, protection against the possibility of a detonation must always be taken. Mixing various types of bulk explosives must not be permitted during burning operations.

Since explosives contain their own oxidizers, burning explosives cannot be extinguished by smothering. Improved conventional munitions (ICM) must not be burned, as this could cause scattering or ejection of cargo. Scattered or ejected cargo is considered armed and hazardous.

Surface Burning. This is an expeditious method for disposing of munitions. As in other explosive operations, great care must be taken to ensure safety. Disposal by open burning must not be undertaken when wind velocity exceeds 15 miles per hour.

Before surface-burning munitions, survey the area to ensure that the ground is perfectly smooth, free of loose material, without cracks or crevices, and packed sufficiently to prevent explosive materials from infiltrating during burning operations. The depth that hazardous materials can be stacked or positioned must also be considered on an individual basis in order to prevent an unwanted detonation. Bulk explosives, propellants, and pyrotechnic materials are usually spread in a thin layer over a combustible bed in order to create a good burning environment. Surface-burning operations may not be repeated at the same burning site within a 24-hour period. Surface burning procedures are as follows:

- Stack items or containers in a pile on the surface.
- Pour diesel or fuel oil over entire pile, if applicable. Do not use volatile flammable liquid to facilitate burning. Volatile flammable liquid has vapor that can be ignited at or below 100° F. This includes ether, acetone, gasoline, ethyl alcohol, methyl alcohol, benzene, toluene, xylene, acyl acetate, napalm, and JP-4. Diesel or fuel oil may be added either as layers are constructed or after all munitions have been laid.
- Prepare an ignition train according to TM 9-1300-277, as shown in Figure 1-10, Figure 1-11, and Figure 1-12.
- Ignite the materials according to TM 9-1300-277.

At least 12 hours after the fire has burned out, inspect the area for unburned or partially burned munitions. This inspection must be performed by a qualified person, with a second qualified person acting as a safety backup.

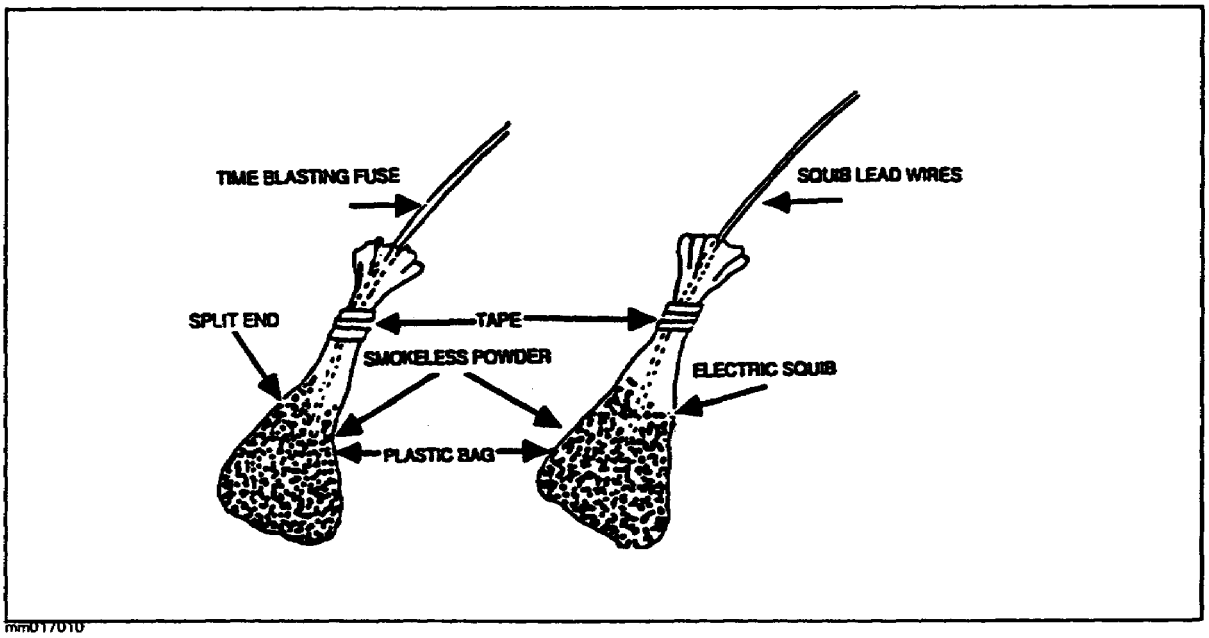


Figure 1-10. Plastic bag of smokeless powder used in burning operations.

Burning In Pits or Trenches. Use this method if the possibility of propulsion exists, or to limit fragmentation if detonation should occur. Pits or trenches must not be reused within a 24-hour period, unless the area is thoroughly soaked with water and an inspection by qualified personnel to ensure the safety of continued

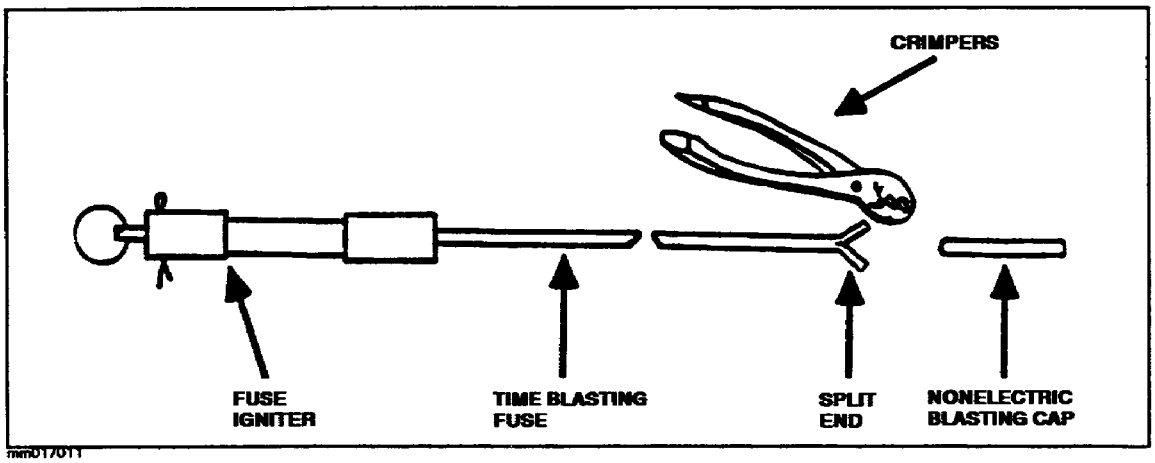


Figure 1-11. Nonelectric firing system.

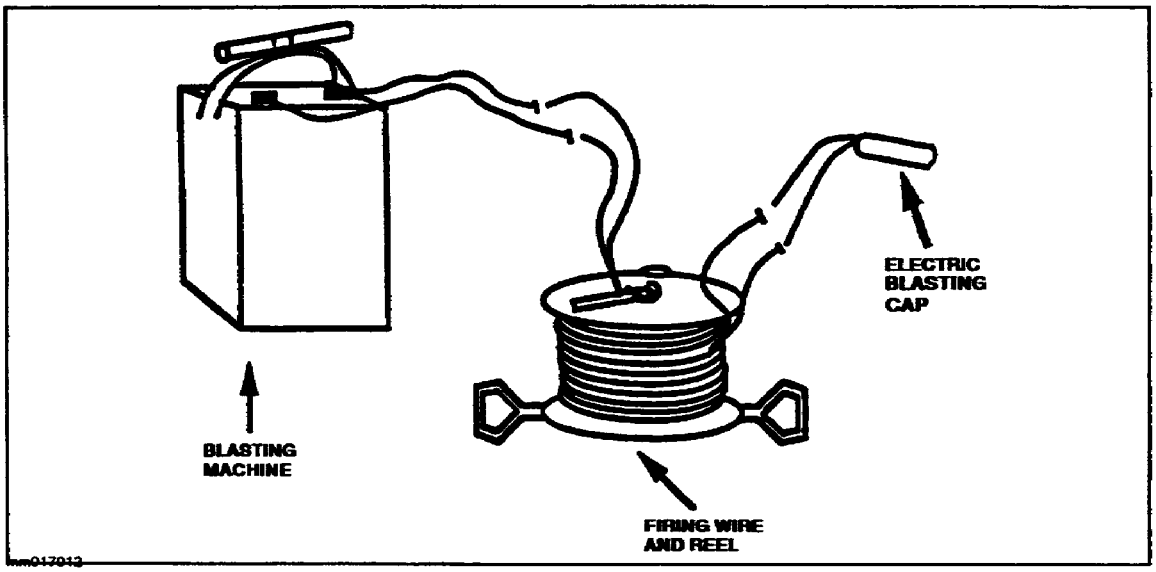


Figure 1-12. Electric firing system.

operations at the site is made. Refer to the applicable demilitarization DMWR for additional information pertaining to the disposal of a specific munition. Pit- and trench-burning procedures are as follows:

- Dig a pit or trench at least 1.22 meters (four feet) deep, with sides sloping enough to prevent a cave-in. The size of the pit or the length and width of the trench are determined by the quantity of material being disposed of and by the safety distances established for the burning site. Place combustible material (such as scrap wood) at least 0.31 meter (one foot) deep in the bottom of the pit.
- Place the munitions on the combustible material, ensuring that the combustible material extends beyond the layer of munitions. Layers of combustible material and munitions may be formed as necessary, allowing an air space of not less than 0.31 meter (one foot) between the top layer of munitions and the top of the pit or trench.

- Pour diesel or fuel oil over the entire pile, if applicable.

- Prepare an ignition train according to TM 9-1300-277, as shown in Figure 1-10, Figure 1-11, and Figure 1-12 on pages 1-16 and 1-17.

- Ignite the materials according to TM 9-1300-277.

At least 12 hours after the fire has burned out, inspect the pit for unburned or partially burned munitions. This inspection must be performed by a qualified person, with a second qualified person acting as a safety backup.

Deactivation Furnace. This method may be used for the disposal of certain munitions. A furnace is considered a safer, more expeditious method of burning such items as small-arms ammunition, delay elements, and primer detonators. Deactivation furnaces are described in TM 9-1300-277.

Disposal by Detonation

Disposal by detonation is accomplished by placing demolition charges or other explosive materials on single or stacked quantities of munitions, priming the charges, and detonating them from a safe distance. Specific instructions on the use of demolition materials and firing systems are contained in the individual demilitarization DMWRs and in TM 9-1300-277. Munitions are destroyed by detonation using both electric and nonelectric priming systems.

Do not attempt to detonate any item using less than the amount of explosive charge specified in the applicable demilitarization DMWR. Do not bury blasting caps. Do not work with electric blasting caps or other electro-explosive devices while wearing static-producing clothing (nylon, silk, synthetic hair, and so forth). Carry blasting caps in approved containers, and keep them out of direct sunlight whenever possible. When explosive charges are to be covered or tamped with earth, fit the charges with detonating cord leads that have a minimum of two meters (six feet) uncovered on the surface.

Conduct a search of the surrounding area after each detonation. Detonate in place fuzed munitions or items that may have internally-damaged components that have been thrown from the pile or pit. Where operations require the use of a personnel shelter, the shelter must be located at the IBD, but not less than 91 meters (300 feet), from the disposal site, and it must afford substantial fragment-proof overhead cover and frontal protection.

The preferred firing system for demolition is the electric firing system. When the electric system is not feasible, or when there is an electromagnetic radiation hazard present, the nonelectric firing system must be used.

A nonelectric system, such as the one shown in Figure 1-11, consists of a fuse igniter, time blasting fuse, and a nonelectric blasting cap. Upon activation, the fuse igniter initiates the time blasting fuse, which transmits the flame that fires the blasting cap. The blasting cap provides a shock adequate to initiate the explosive charge. When more than one charge must be detonated simultaneously, the nonelectric system must be combined with detonating cord to ensure simultaneous firing.

The electric firing system, shown in Figure 1-12, consists of an electric blasting machine, a firing wire and reel, and an electric blasting cap. When the blasting machine is activated, it generates an electrical impulse that travels through the firing wire and the cap lead wires to fire the electric blasting cap. Initiation of the cap detonates the explosive charge into which the cap has been inserted.

The igniting explosives used in the detonation process are trinitrotoluene (TNT); composition C-2, C-3, or C-4; FLEX-X; or tetrytol. The plastic explosives are preferred over TNT or tetrytol, because TNT and tetrytol often produce either a low-order detonation or kickouts. Furthermore, plastic explosives (such as C-4 and FLEX-X) allow for much better contact between the igniting explosive and the munitions to be destroyed. Antitank (AT) mines and demolition materials are also effective igniting explosives. Table 1-1 shows examples of the quantity of igniting explosives required. Capping procedures and explosive placement are covered in the Emergency Destruction section of this lesson.

The storage area should be issued a demolition equipment set to perform required disposal operations. This is listed as the electric and nonelectric explosive initiating demolition equipment set. A breakdown of set components is given in FM 5-25, Chapter 1. For initiating devices and explosive charges used in conjunction with the kit, refer to TM 9-1300-277, Table 4-1. For expendable accessories and equipment, refer to TM 9-1300-277, Table 4-2. Both of these tables are included as extracts in the Appendix at the end of this subcourse booklet.

Table 1-1. Explosive weights for destruction of items by detonation.

Item To Be Destroyed	Explosive Weight (lbs) Per Individual Item		
	TNT	COMP-C	TETRYTOL
Grenades, Hand or Rifle, and Small Rockets	1/2 lb	1/2 lb	1/2 lb
75-mm, 76-mm, 90-mm, and Mortar Cartridges	1 1/2 lbs	1 lb	1 1/4 lbs
105-mm, 152-mm, and 155-mm Projectiles	2 1/2 lbs	2 lbs	2 lbs
175-mm and 8-inch Projectiles	3 lbs	2 1/2 lbs	2 1/2 lbs

EMERGENCY DESTRUCTION

Planning for the Emergency Destruction of Munitions

During the establishment of an ammunition storage facility, many SOPs must be written to standardize and smooth out day-to-day operations. Emergency destruction (ED) should be covered in one of these SOPs. The ED SOP should provide guidance for destroying all assets in the storage area. The destruction of an ASP is not something that can be done on the spur of the moment or without prior planning.

The SOP writer is normally assigned by the company commander. The SOP format varies depending upon Major Army Command (MACOM) guidance. A DA Form 2203-R is a good planning source document. Regardless of the format you use, your SOP should include an assembly point for team members, should ED become necessary; a breakdown of ED teams, missions, and responsibilities; and the types, quantities, locations, priorities, and methods of destruction for ammunition to be destroyed. It should also cover safety considerations. Finally, the name and position of the individual who is authorized to execute the ED action must be prominently highlighted in the ED SOP. This is normally the division commander or a higher-echelon commander, but he or she may delegate this authority.

ED Teams

Manpower requirements for ED teams are usually established by trial and error during training and exercises. Personnel needs also vary among storage facilities. Any team handling explosives must always have at least two personnel. The teams and their responsibilities are as follows:

- The ring main team usually consists of at least four soldiers, with one vehicle. Their job is to emplace the detonating cord ring main. Additional soldiers may be needed to anchor and splice the detonating cord.
- The composition and number of branch line teams required varies greatly among ASPs depending on the site layout and amount of stocks present. The number of teams will also be determined by the amount of time you have to destroy the stock. The less time you have, the more teams you will need. These teams attach detonating cord branch lines to the ring main and lay them in to the prepared charges.
- Charge teams are responsible for preparing and setting up the charges and connecting them to the branch lines. Their number is also governed by the amount of time available.
- The firing team sets up the dual priming on the ring main after all the charges have been rigged. In some cases, it may have to prime more than one site.
- Road guards are responsible for restricting traffic into and within the area, and for preventing damage to the ring main. Because of their scattered positions, special care must be taken to ensure that they are all accounted for.

ED Team Equipment

Equipment needs for each team vary depending on the size of the storage area and the types of destruction to be accomplished. The following is a general guide to the equipment and quantities required by each team.

The ring main team requires the following items:

- Detonating cord with M1 detonating cord clips. This cord forms the ring main, so several 1,000-foot rolls may be needed.
- Electrician's tape.
- M2 crimpers.
- A radio.
- Flashlights.
- A vehicle (with a trailer, if necessary).

The branch line teams require the same items as the ring main team.

The charge teams require the following items:

- Demolition charges or fuel containers, as applicable.
- Detonating cord with M1 detonating cord clips.
- Electrician's tape.

- M2 crimpers.
- A radio.
- Flashlights.
- A vehicle (with a trailer, if necessary).

The firing team requires the following items:

- An M32 or M34 blasting machine. (This is controlled by the team leader.)
- Firing wire and reel.
- Electric or nonelectric blasting caps, as applicable.
- An M51 test set.
- Fuse igniters. (These are controlled by the team leader.)
- Electrician's tape.
- Lineman's pliers.
- M2 crimpers.
- A radio.
- Flashlights.
- A vehicle.

The road guard teams require the following items:

- Radios.
- Flashlights.

The protective clothing and equipment needed by the teams depends on the type of ammunition in the ASP. If the use of chemicals has begun or has been authorized, decontamination kits, decontamination equipment, and protective masks should already be available. Large-scale decontamination of the ASP and marking of contaminated areas will not be performed, since the area is being abandoned.

Munitions To Be Destroyed

Since time may be a major factor, priorities should be assigned to allow for the most complete job possible. Established priorities are as follows:

- Priority 1 includes classified ammunition, associated components, and documents.
- Priority 2 includes ammunition that can be used against friendly forces, that does not require weapons to use (such as mines and hand grenades), and that can be used in enemy weapons (such as 60mm and 81mm mortar projectiles).
- Priority 3 includes ammunition not in priority 1 or priority 2 that is casualty-producing, and that the enemy can use if enough friendly weapons are captured.
- Priority 4 includes non-casualty-producing ammunition and pyrotechnics.

Include the method of destruction to be used for each type of ammunition or storage location, and the demolition

materials or equipment required. The approved methods for preventing ammunition capture are as follows:

- Detonation. Depending upon the ammunition being destroyed, this method is the most effective under most circumstances.
- Burning. Given sufficient fuel and time, burning is just as effective as detonation, especially with those items that are sensitive to flame or heat.
- Gunfire. The use of gunfire from artillery, tanks, rockets, or missiles can be used after everyone has left the storage facility; however, due to the way the site is constructed, the effectiveness of this method is limited.
- Friendly firing. Another method that may be used is the forced issue of ammunition to using units. This method may be very time-consuming.
- Concealment and scattering. This is the least effective method. If it is used, try to take all items of the same kind, so that what remains cannot be used as intended. For example, take all artillery fuzes and throw them into a lake or otherwise hide them. This effectively makes the artillery projectiles useless, at least in the short term.

ED Training

As in any other military operation, good performance depends on good training. If you are starting from scratch, you may want several walk-through exercises before you start actual training. You must ensure that adequate training aids are on hand before attempting any training. There are three factors you must consider when training the teams, as follows:

- Each team member must know to which of the various stations he or she is to report. Do not rely on the team chiefs to direct personnel.
- Each team member must be knowledgeable about the mission of the whole team. In this way, team members can assist each other in accomplishing the mission.
- Each team member must be familiar with assembly points and evacuation routes. Team members must report to their assembly points after the completing their missions. In this way, all team members can be accounted for prior to the final priming for the shot.

Demolition Materials

A sufficient amount of demolition materials to destroy all ammunition on hand should be available.

All bulk demolition materials and associated components (such as blasting caps, firing devices, detonating cord, and M10 universal destructors) are usually stored in storage category E. Items from this category that are designated for ED use must be so identified-not only at the storage site, but also on the appropriate stock records. This is to prevent their inadvertent issue to supported units.

You should make it a point in your ED SOP to store stocks reserved for ED use in at least one Category E location per storage section. This puts the reserved assets much closer to the individual storage locations, which reduces the time the destruction teams need to prepare individual storage locations for destruction.

When the storage facility does not have enough explosives to accomplish the mission, items with low-fragmentation/high-explosive ratios may be used to augment the priming charges. Examples of this type of explosive are the M15 anti-tank (AT) mine, M2- and M3-series shaped charges, and the Bangalore torpedo.

Firing Systems

There are two firing systems used, electric and nonelectric. The electric system is usually preferred, because it allows more complete control; however, it requires more equipment and cannot be used during electrical storms. The nonelectric system uses less equipment, but once the fuse lighter is fired, effective control over the shot is lost. Regardless of the system used, all shots will be dual-primed, as shown in Figure 1-13, Figure 1-14, and Figure 1-15.

The Nonelectric Firing System

This system is easy to use. It is the one normally used in the field during fast-moving operations. The nonelectric system has three components, as shown in Figure 1-11 on page 1-17. These are the fuse igniter, the time fuse, and a nonelectric blasting cap.

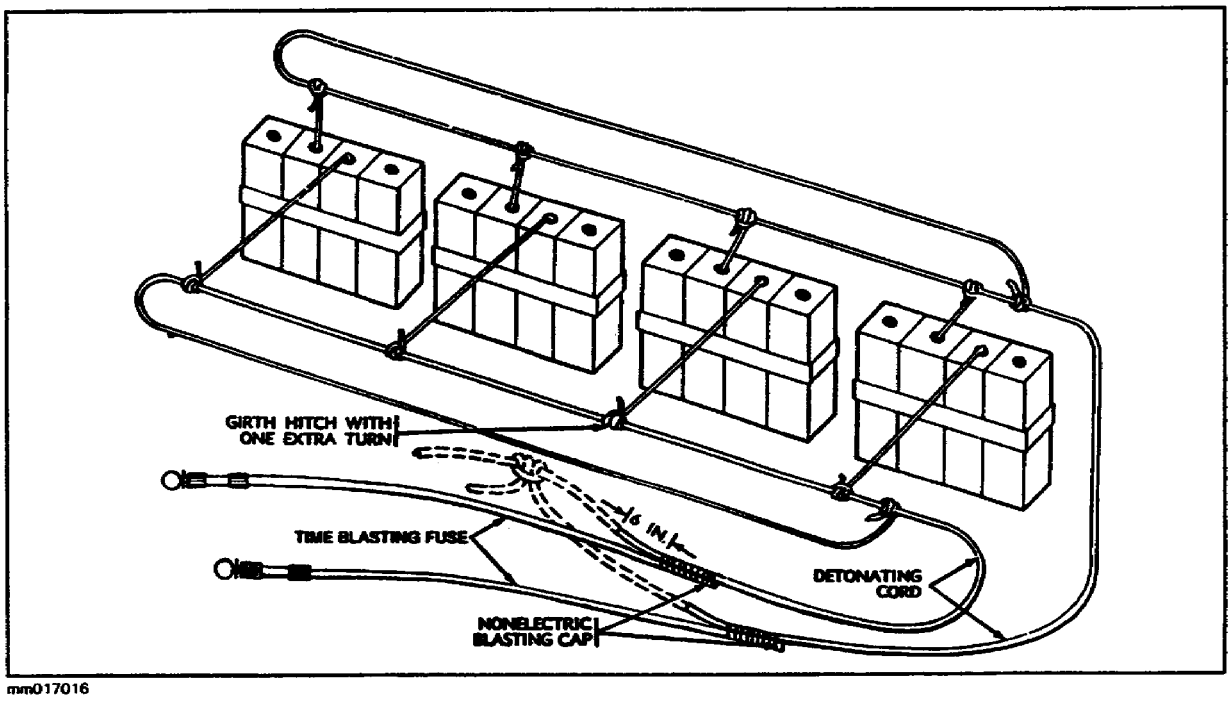


Figure 1-13. Dual nonelectric firing system with dual detonating cord priming.

Fuse Igniters. The system can use three types of fuse igniter. These are the M60 fuse igniter, the M2 fuse igniter, and a common match.

The M60 fuse igniter, shown in Figure 1-16, is the preferred item to use. It is the newest fuse igniter in the supply system. If it does not function the first time, it can be recocked and fired again. The M60 fuse igniter is used as follows:

- Unscrew the fuse holder cap two or three turns. Do not remove it.

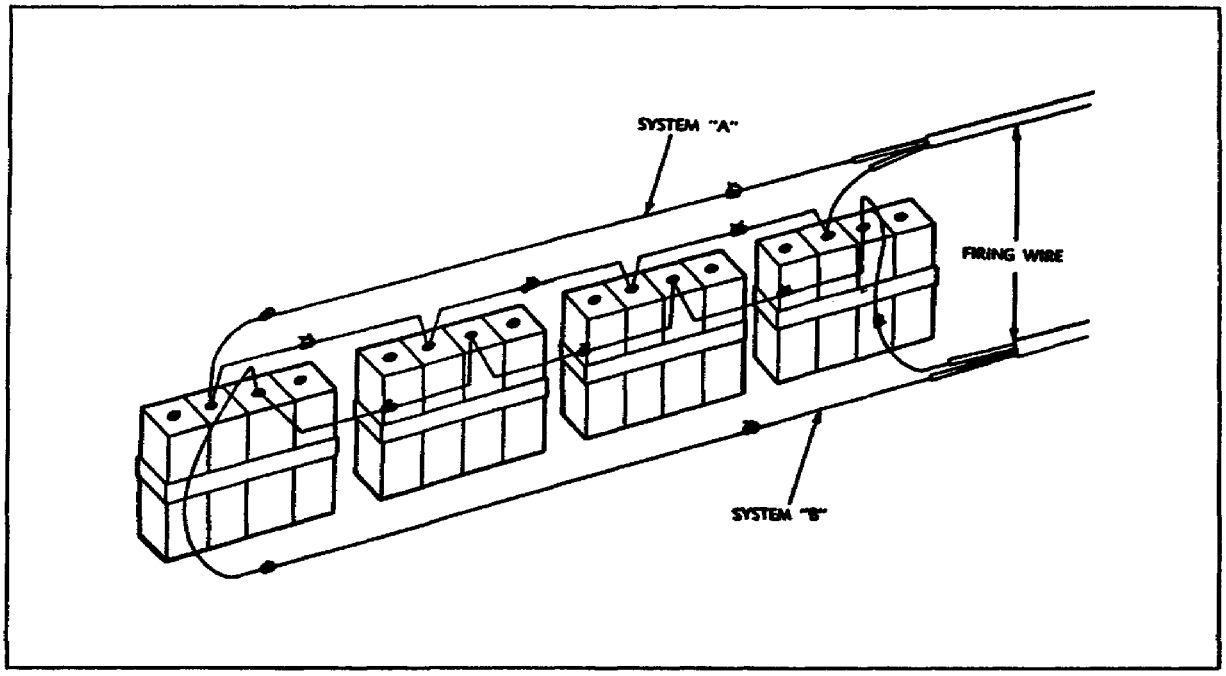


Figure 1-14. Dual electric firing system.

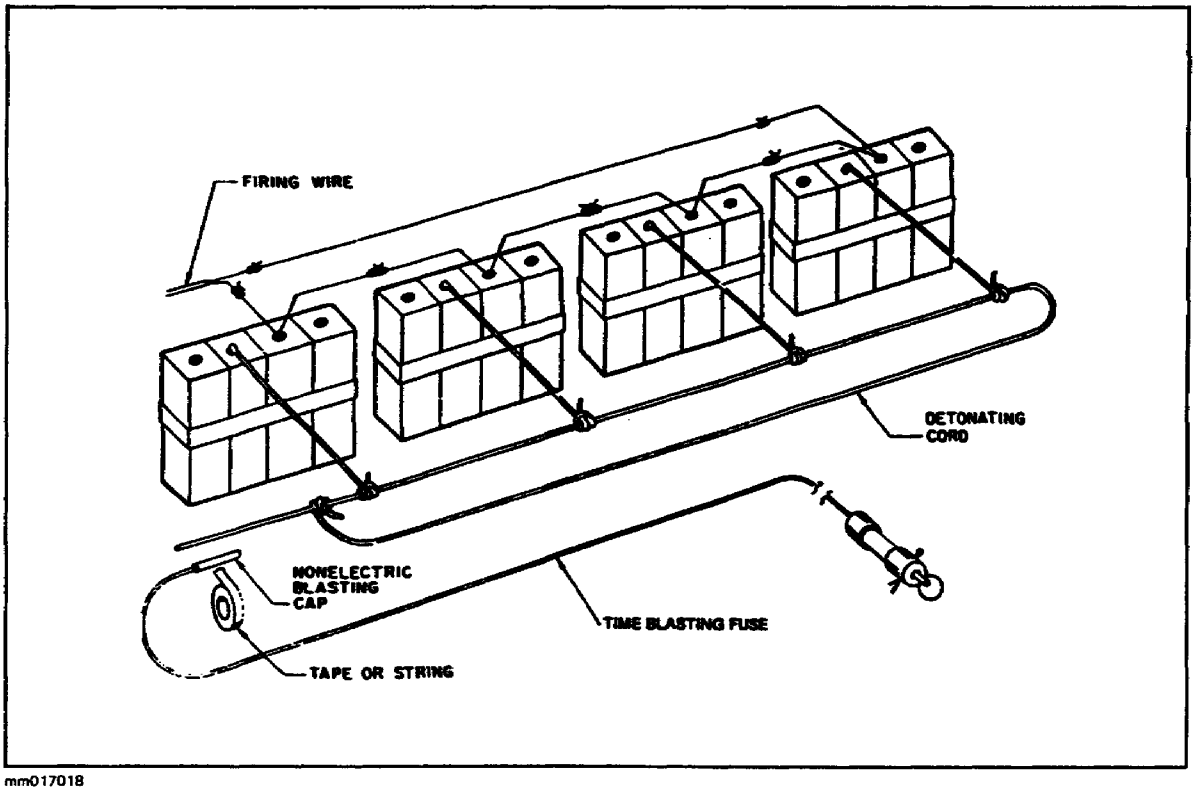


Figure 1-15. Combination dual firing system.

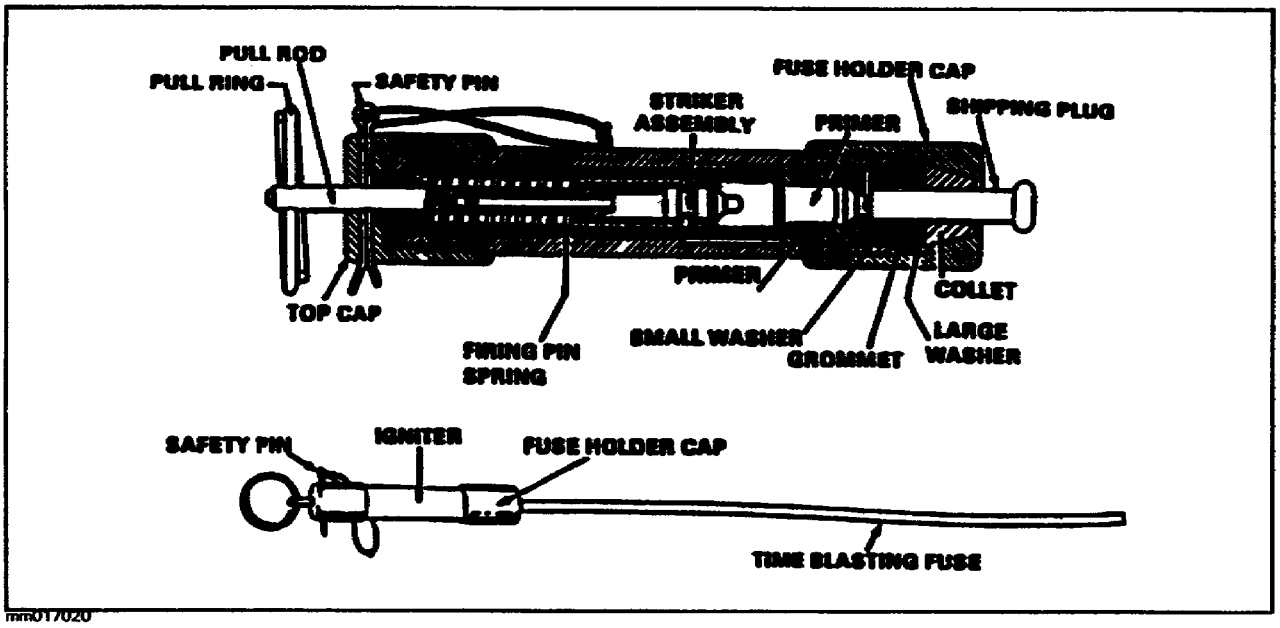


Figure 1-16. M60 weatherproof fuse igniter.

- Press the shipping plug into the igniter to release the collet.
- Rotate the shipping plug to loosen it, pull it out, and discard it.
- Insert the free end of the time fuse as far as possible into the hole left by the shipping plug. Tighten the cap to hold the fuse in place.
- Hold the barrel in one hand, and remove the safety pin.
- Grasp the pull ring, push it in, rotate it, then pull it out. In the event of a misfire, the M60 can be reset quickly without disassembly by pushing the plunger all the way in and attempting to fire as before.
- If the igniter still doesn't fire, replace it with a new one and repeat the steps listed above.

The M2 fuse igniter, shown in Figure 1-17, is an older system. The M2 is operated as follows:

- Remove the cardboard shipping tube on the end of the igniter.
- Pinch off the end of the plastic sealing compound to clear the end of the igniter. Save the sealing compound for later use.
- Insert the time fuse into the igniter, and push it until it is firmly seated. Replace the sealing compound to ensure a weatherproof seal.
- Grasp and pull the pull ring. The firing pin is spring-loaded, and will fire when the pull ring pin is removed. This device cannot be recocked like the M60.

During emergencies, a common match may be used to light the time fuse, as shown in Figure 1-18. This method is used as a last resort only. Procedures for match-lighting the time fuse are as follows.

- Split the time fuse, and insert a match with the match head partially exposed.
- Light the inserted match head with a flaming match, or rub the abrasive on the match box against it.

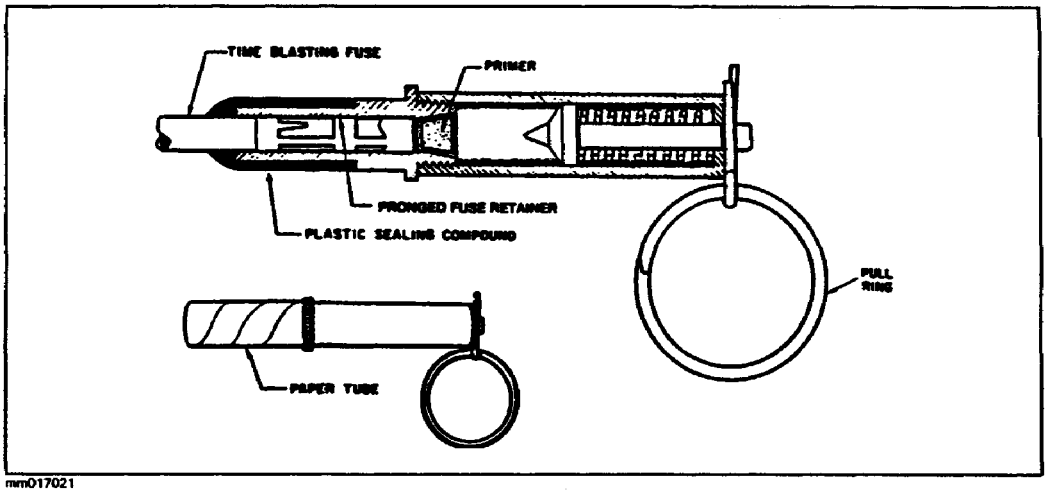


Figure 1-17. M2 weatherproof fuse igniter.

Time Fuse. The time fuse is the second component of a nonelectric firing system. M700 time fuse burns at about 40 seconds per foot, but each roll must be test-burned to determine its actual rate. Test-burning of time fuse must be performed at least 25 feet downwind from blasting caps or other explosives. The procedures for test-burning are as follows:

- Since the powder in the time fuse is hygroscopic (meaning it will absorb water from the air), cut off and discard the first six inches of the roll.
- Cut off a three-foot section for test-burning, and attach a fuse igniter.
- Ignite the fuse.
- Record the starting and ending times of the burn. Compute the burning rate by dividing the time in seconds by the length in feet. For example, if three feet of time fuse burned for 1 minute and 48 seconds, or 108 seconds, divide 108 seconds by 3 feet. The result is 36 seconds per foot.

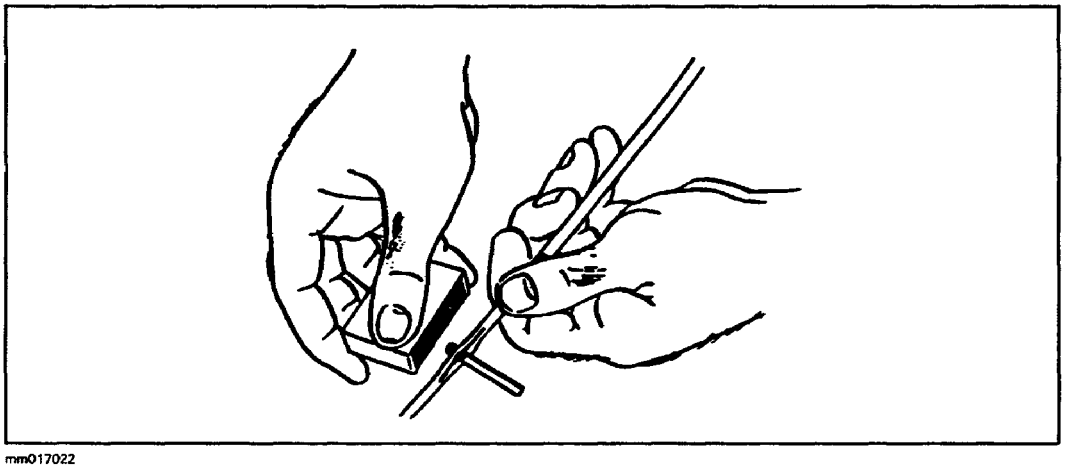


Figure 1-18. Lighting time blasting fuse with a match.

Cut a length of time fuse long enough to permit the person detonating the charge to reach a safe distance from the explosion by walking at a normal pace. Make this cut squarely across the time fuse. A rough, jagged-cut fuse inserted into the blasting cap can cause a misfire. Insert the time fuse through the plastic priming adapter, if one is used, with the threaded end toward the end of the time fuse to be capped.

Blasting Cap. The third component is the M7 nonelectric blasting cap. It contains a flame-sensitive explosive that detonates and causes the main charge to explode. After removing one cap from the cap box, inspect it by looking into the open end. If any foreign matter is present, remove it as follows:

- Hold the cap near the open end between the thumb and middle finger of one hand.
- Aim the open end of the cap at the palm of the other hand.
- Gently bump the wrist of the hand holding the cap against the wrist of the other hand.
- If the foreign matter does not come out, obtain another cap, and dispose of the first one on the demolition shot.
- Inspect the second cap.

Do not blow into the open end of the cap to clear foreign material.

Hold the time fuse upright with the square-cut end pointing up. Slip the blasting cap gently down over it so that the flash charge is in contact with the time fuse. Never force the time fuse into the blasting cap by twisting or any other method than that described. This could cause it to detonate in your hand. If the end of the time fuse is too large to enter the blasting cap freely, roll the time fuse between your thumb and fingers until it fits.

After the blasting cap has been seated, grasp the time fuse between the thumb and third finger of one hand so that your fingers are touching the open end of the cap. Place your forefinger over the closed end of the cap to hold it firmly against the end of the time fuse. Apply slight pressure on the closed end of the cap with your forefinger. Rest the crimpers on the top of the thumb and ring finger of your other hand. Place your second finger on top of the crimpers to secure them. Accurate crimping can be performed even in darkness, because a finger can be used to locate the open end of the blasting cap.

Crimp the blasting cap at a point one-eighth to one-quarter inch from the open end. A crimp too close to the explosive in the blasting cap may cause detonation. Point the cap out and away from your body during crimping. Note that the outer jaws of the crimper are for crimping the blasting cap. The inner jaws are for cutting time fuse or detonating cord.

Nonelectric Misfires

Occasional nonelectric misfires occur. The main reason for dual priming is the prevention of misfires. Investigation and correction should be undertaken only by the individuals who placed the charge. Investigate the misfire at least 30 minutes after the expected time of the detonation. For example, 30 minutes of safety time plus 10 minutes of expected burning time equals 40 minutes of waiting time. This allows for delays caused by defective powder trains in time fuses. Under combat conditions, however, immediate investigation may be necessary. If the misfired charge is not tamped, do not move or disturb it. Lay and fire a primed one-pound charge beside the misfired charge.

The Electric Firing System

This system is preferred when time allows its use. It is preferred because it provides total control of when the shot will be fired. The major drawback to the electric firing system is the amount of equipment it requires. This

system must not be used during electrical storms, sandstorms, or snowstorms. An electric firing system consists of testing equipment, a blasting machine, firing cable, and an electric blasting cap, as shown in Figure 1-19.

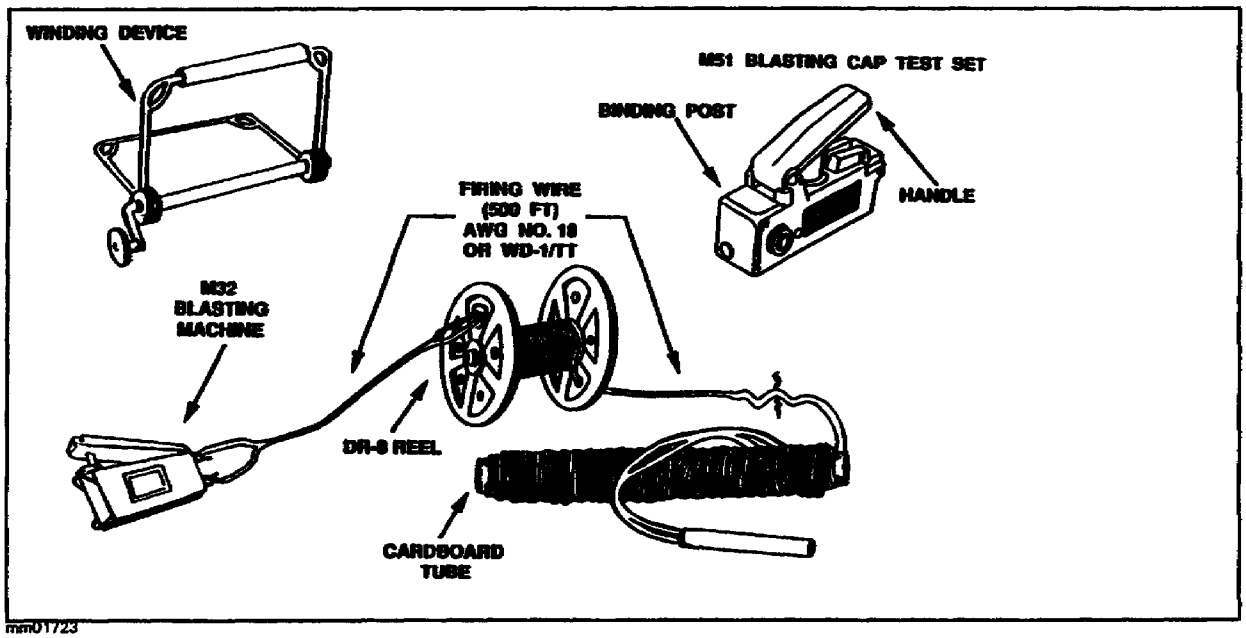


Figure 1-19. Electric firing system.

Testing Equipment. There are two types of electrical continuity testers used in electric firing systems. These testers are used to test current flow, both in firing lines and in electric blasting caps, before tying in to the explosive charge.

The most common tester is a galvanometer, shown in Figure 1-20. It uses a self-contained battery to determine continuity. You must ensure that the correct battery is used. Two types of battery are authorized for use. One is used in temperatures above 0°F, and the other is used in temperatures below 0°F. The use of an unauthorized battery may result in the accidental detonation of blasting caps during testing. Procedures for testing the galvanometer and the firing line are as follows.

- Check the galvanometer by holding a piece of conductive metal across its terminals. If the battery is good, the needle will show a wide deflection.
- Separate the firing wire conductors at both ends. Touch those at one end to the galvanometer posts. The needle should not move. If it moves, the firing wire has a short circuit.
- Twist the wires together at one end. Touch those at the other end to the galvanometer posts. This should cause a wide deflection of the needle. No movement of the needle indicates a break in the wire. A slight movement indicates a high resistance, which may be caused by a dirty wire, loose wire connections, or wire with several strands broken.
- Twist the free ends of the firing wire together after testing.

The other tester is the M51 blasting cap test set. This test set was developed to replace the blasting galvanometer for testing firing line continuity. It is a self-contained unit, with a magneto-type generator and an indicator

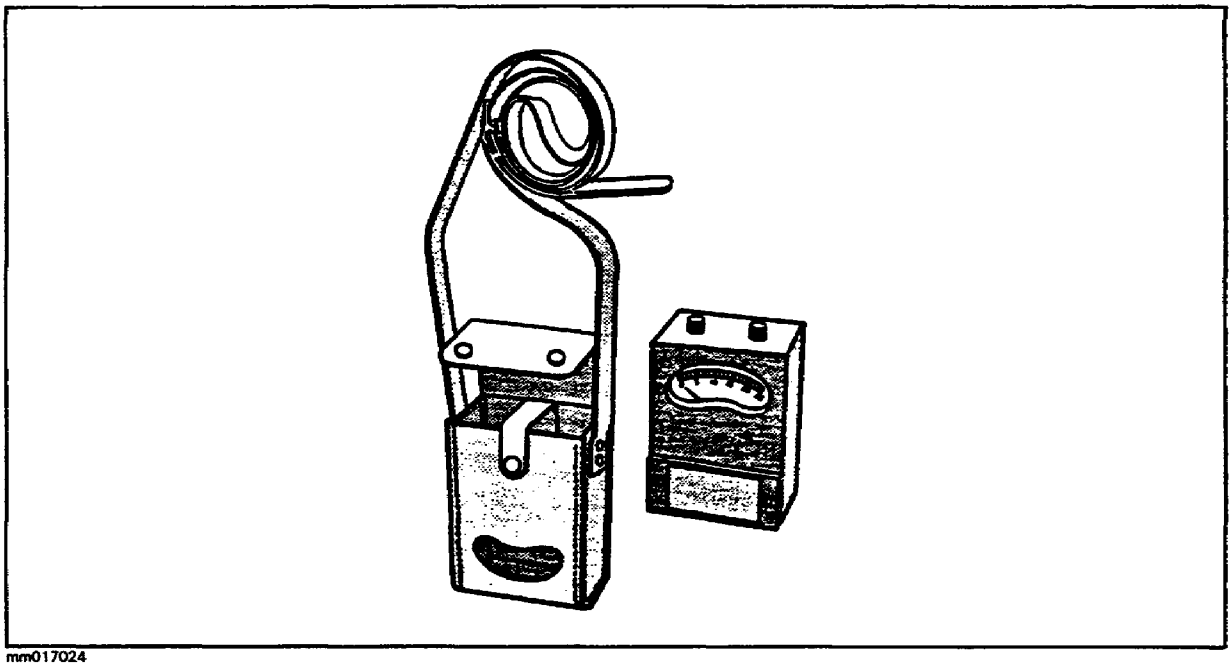


Figure 1-20. Blasting galvanometer.

lamp, as shown in Figure 1-21. The M51 test set is waterproof, and it may be used at temperatures as low as -40°F. The procedures for its use are as follows:

- To test the M51 test set, connect a bare wire or the legs of the M2 crimpers between the binding posts. Depress the handle sharply while observing the indicator lamp. If the test set is operative, the lamp will flash.

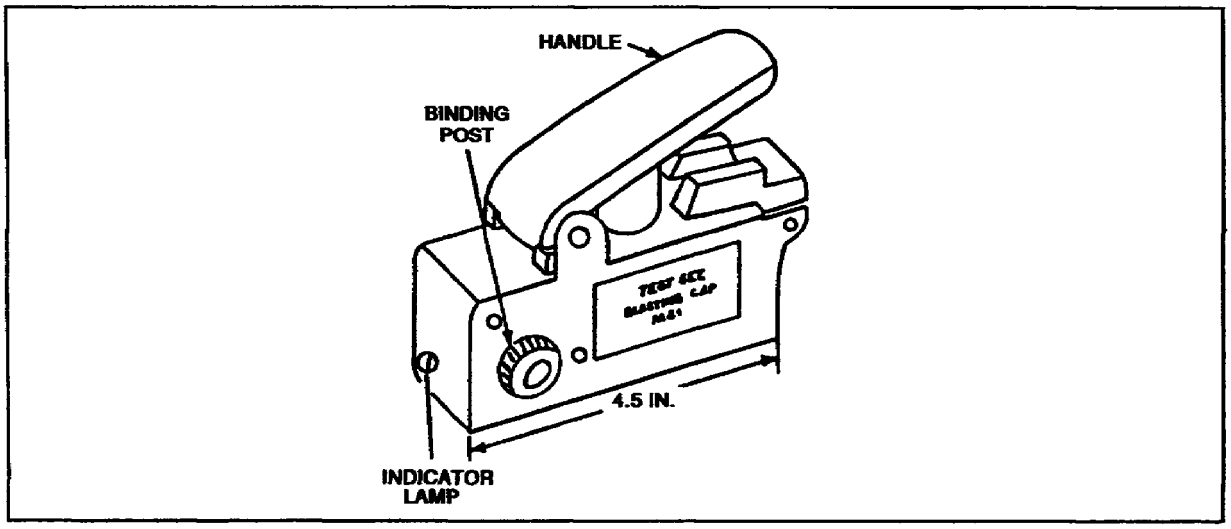


Figure 1-21. M51 Blasting cap test set.

- To test the firing wire for a short circuit, separate the firing wire conductors at both ends, and connect those at one end to the test set binding posts. Actuate the test set. The indicator lamp should not flash. If it does, the firing wire has a short circuit.

- To test the firing wire for continuity, twist the wires together at one end, and connect those at the other end to the M51 test set posts. Actuate the test set. The lamp should flash. If it does not flash, the firing wire has a break.

- Twist the free ends of the firing wire together after testing.

Before being hooked into the firing circuit, each blasting cap must be tested. This can be done using either the M51 test set or the blasting galvanometer. Be sure that you use only the special silver-chloride dry-cell batteries, BA245/U or BA-2245/U, which produce only 0.9 volts, in the galvanometer. Other batteries may produce enough voltage to detonate electric blasting caps. Whether you use the M51 test set or the galvanometer, use the steps that follow to test blasting caps:

- Uncoil or unfold the blasting cap lead wires. Always point the explosive end of the blasting cap away from your body, other personnel, and explosives.

- While uncoiling or unfolding the cap lead wires, hold the blasting cap by the wires, approximately one inch from the cap.

- Carefully extend the cap lead wires to their maximum length. Straighten them out by hand. Do not throw, wave, or snap the blasting cap to loosen the coils or folds.

- Place the blasting cap under a sandbag or a similar object to prevent injuries in the event of a premature detonation.

- Remove the shunt from the blasting cap lead wires. The soldier removing the shunt from a blasting cap's lead wires must ground himself or herself by grasping the bare ends of the firing wire or by touching the bare ground. This prevents accumulated static electricity from detonating the blasting cap.

- If using the M51 test set, attach one cap lead wire to each test set binding post and squeeze the test set handle. The blasting cap is satisfactory if the indicator lamp flashes. If it does not flash, the cap is defective and should not be used.

- If using the galvanometer, a wide deflection of the needle indicates the cap is satisfactory. If there is no deflection, the cap is defective and should not be used.

- Shunt the lead wire immediately after testing.

- Splice the blasting cap lead wires to the firing wire, and insulate the wires. Both the blasting cap lead wires and the firing wire leads must have insulating material stripped from the ends for about three inches in order to prevent a possible misfire.

Blasting Machines. Blasting machines are used to provide the electrical impulse needed in an electric firing system. The term used in many NATO countries for blasting machine is "exploder" or "dynamo exploder." There are six models that derive their power directly from a shunt-wound generator. There are two models, the M32 and the M34, that derive their power from an alternator and use a capacitor discharge output circuit. The generator-type machines are actuated by means of a gear-driven armature. The 10-cap machines have metal cases and twist-type drive handles. The higher-capacity (30-, 50-, and 100-cap) machines have varnished or painted wood cases and plunger-type handles. The 10-cap and 50-cap machines are used most often.

Newer 10-cap and 50-cap machines have significantly higher electrical output than their predecessors. These machines also include a built-in safety circuit. This circuit allows no current to reach the terminals until the machine's handle or plunger has been actuated with sufficient energy to produce nearly the maximum output from the machine.

Older 10-, 30-, 50-, and 100-cap machines include a switch that delays the flow of current from the generator to the output terminals until the handle or plunger is near the end of its travel. This switch ensures that the output produced by the machine's mechanism does not reach the terminals until the operator is using maximum force.

The M32 is a small, light-weight blasting machine intended to replace the larger, heavier machines. Instead of a shunt-wound generator, this machine uses a small alternator that is gear-driven by the handle-actuated plunger. The electrical output from the alternator is rectified and fed into storage capacitors. When sufficient energy is available in the capacitors, (which may require 3 or 4 strokes of the handle) an internal switching circuit discharges the electrical energy to the output terminals and, through them, to the blasting circuit. This machine is capable of initiating ten M6 electric blasting caps.

The M34 blasting machine is similar to the M32, but is capable of initiating fifty M6 electric blasting caps.

Ensure that the blasting machine you are using is capable of carrying the load. For example, do not try to use a 10-cap machine to set off 50 caps.

Firing Cable. The firing cable consists of a DR-8 firing wire reel, an RL-39 reeling machine, and 500 feet of AWG Number 18 firing wire or WD-1/TT telephone wire. The firing cable is used to transfer electrical current from the blasting machine to the electric blasting cap. Based on the size of the storage facility and associated fragment hazards, it may be necessary to splice firing cables together to reach a safe distance.

Strip the insulating material from the ends of insulated wires before splicing. Expose approximately three inches of bare wire, and remove any foreign matter (such as enamel) by carefully scraping the wire with the back of a knife blade or another suitable tool. Do not nick, cut, or weaken the bare wires. Twist multiple-strand wires lightly after scraping them.

Two wires may be spliced as shown in Figure 1-22. This is called the Western Union pigtail splice. Protect the splices from pull damage by tying the ends in an overhand or square knot, allowing sufficient length for each splice. Point the free ends in opposite directions as shown in detail A, join them with a few tight twists, and bend the remaining ends up and away from the joint as shown in detail B. Twist these ends to form a pigtail at a right angle to the connected wires as shown in detail C. Push the pigtail to one side to lie along one of the wires as shown in detail D. Tape the connection to ensure that it is completely insulated.

Another method of splicing two wires is to place the two wires to be connected side by side, with their free ends pointing in same direction, wind them together by twisting, then tape them to ensure that they are completely insulated.

If certain precautions are not observed, a short circuit may easily occur at a splice. If pairs of wires are to be spliced, stagger the two separate splices, and tie them with twine or tape. An alternate method of preventing a short circuit at the point of a splice is shown in Figure 1-23. In. this alternate method, the splices are separated, not staggered. Insulate the splices from the ground and from other conductors by wrapping them with friction tape or with other electric insulating tape. Circuit splices that are not taped or insulated must not lie on moist ground. Support the splices on rocks, blocks, or sticks, so that only the insulated portions of the wires touch the ground. Protect the splices by inserting them in the cardboard cap spools. Bend the spools to hold the splices firmly inside.

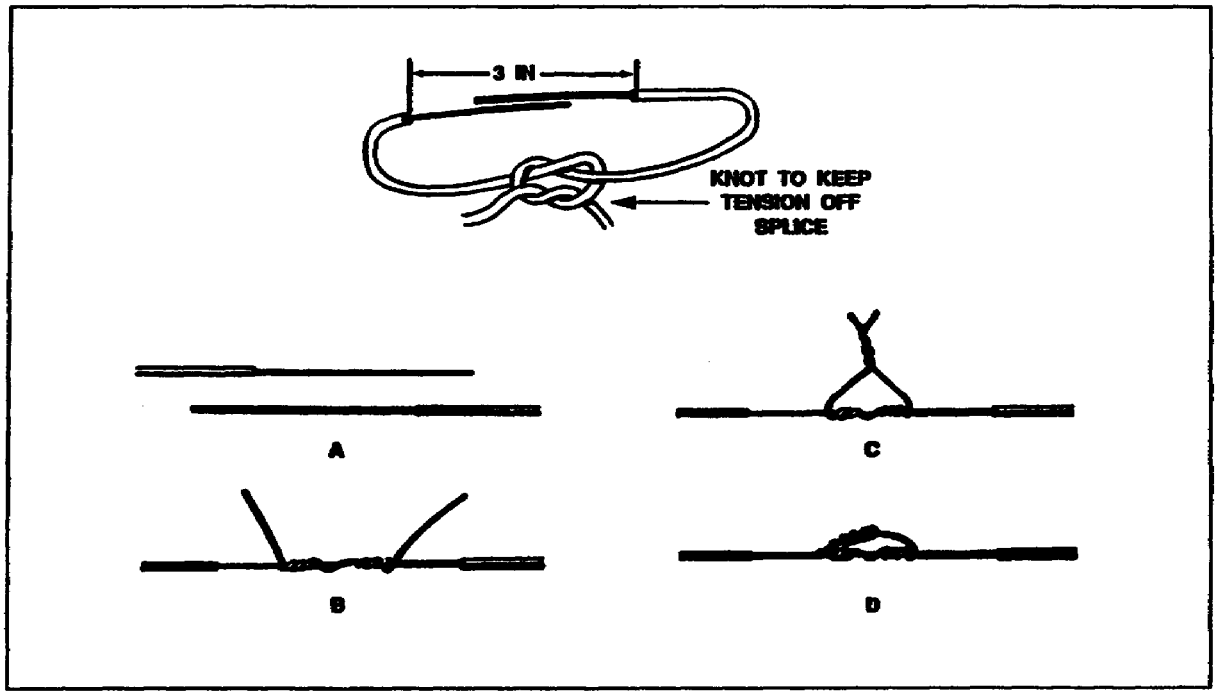


Figure 1-22. Western Union pigtail splices.

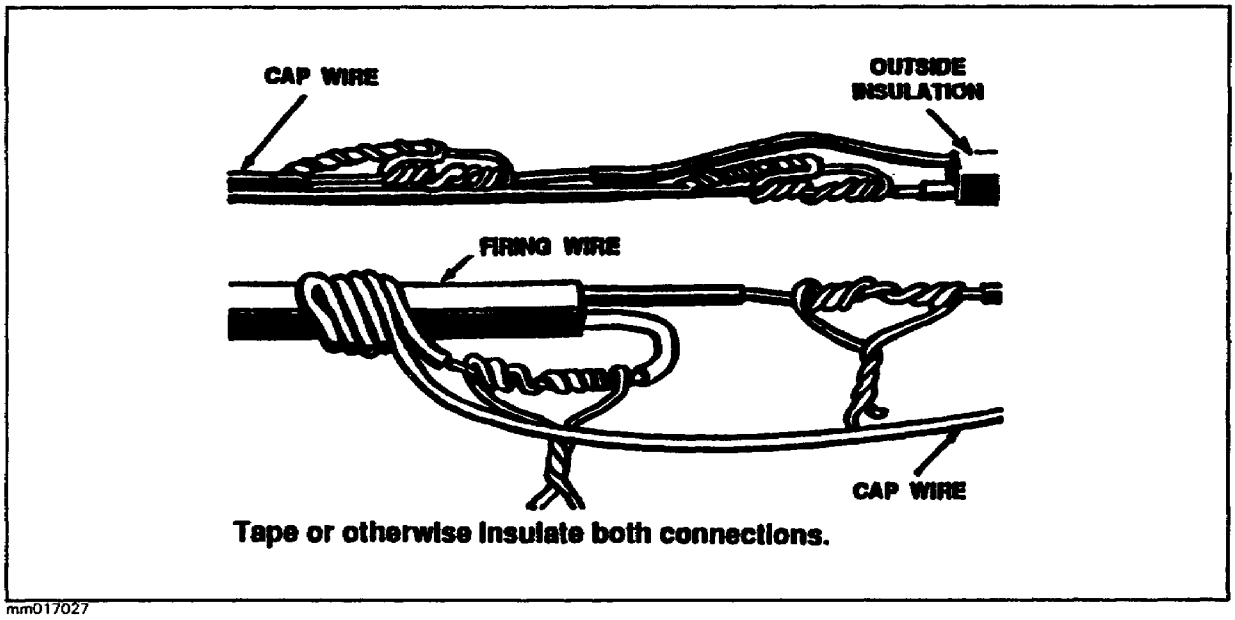


Figure 1-23. Splicing two pairs of wires.

Blasting Caps. Electric blasting caps are used as part of the electric firing system. Electric caps have lead wires of various lengths, the most common being 12 feet long. To prevent accidental firing, they have a short-circuiting shunt that must be removed before using the cap. If the cap is without a shunt, the bare ends of the lead wires must be twisted together to provide the short circuit. Electric blasting caps require a .09-ampere current for ignition. Misfires can result from mixing electric caps with different characteristics in a series circuit. One type of cap may fire before the others have enough electrical energy to fire. With the exception of the military M6 cap, the electrical characteristics of blasting caps vary greatly, even among lots made by the same manufacturer. For this reason, different types of commercial caps, even different lots of the same type made by the same manufacturer, should never be included in the same blasting circuit. The military M6 electric blasting cap, an instantaneous-ignition, Number 12-strength cap, is the standard Army electric blasting cap. It initiates any standard demolition charge. M6 blasting caps are electrically uniform, so any lot of M6 caps may be mixed with any other lot of M6 caps in a blasting circuit without fear of misfires resulting from different characteristics. Use blasting caps according to the following procedures:

- After locating a firing position at a safe distance from the ASP, lay the firing wire from the ring main to the firing position.
- Uncoil or unfold the blasting cap lead wires, holding the blasting cap by the wires, approximately one inch from the cap. Always point the explosive end of the blasting cap away from your body, other personnel, and explosives.
- Carefully extend the cap lead wires to their maximum length. Straighten them out by hand. Do not throw, wave, or snap them to loosen the coils or folds.
- Place the blasting cap under a sandbag or a similar object to prevent injuries in the event of a premature detonation.
- Remove the shunt from the blasting cap lead wires. The soldier removing the shunt from a blasting cap's lead wires must ground himself or herself by grasping the bare ends of the firing wire or by touching the bare ground. This prevents accumulated static electricity from detonating the blasting cap.
- Take one lead wire of the blasting cap in one hand and one lead of the firing wire in the other hand. Point the free ends towards each other and join them with a few twists. Bend the remaining ends up.
- Twist these ends together to form a pigtail. Push the pigtail over to lie along one of the wires, and tape the connection.
- Repeat this action with the remaining lead wires. Stagger the two splices and tape them apart to prevent a short circuit.

Electric Misfires

Electric misfires must be cleared with extreme caution because of the hazards of burning charges and delayed explosions. If the misfire is dual-primed and above-ground, wait 30 minutes before approaching, because a burning charge can cause the second cap to detonate the charge. Clear electric misfires according to the following procedures:

- Check the firing wire connection to the blasting machine or other power source terminals to be sure that the contacts are good.
- Make two or three more attempts to fire the circuits.

- Try to fire again, using another blasting machine or power source, or a different operator.
- Use the secondary firing system (for dual-firing systems).
- Disconnect the blasting machine firing wire and wait 30 minutes before further investigation. Ensure that the firing wires at the power source end of the circuit are shunted to avoid any possible static-electric detonation before moving to the charge site.
- Check the entire circuit, including the firing wire, for breaks and short circuits.
- Do not attempt to remove either the primer or the charge.
- Place a new electric primer and two pounds of explosive beside the original charge.
- Disconnect the blasting cap wires of the original primer from the circuit, and short the cap's lead wires.
- Connect the wires of the new primer.
- Return to the safe area.
- Initiate the detonation. The new primer will fire the original charge.

Direct-Priming Methods

When enough blasting caps are available, they may be primed directly into the explosives. There are several methods that can be used, depending on the explosives and accessories available.

For demolition materials with a fuze well, the M1A4 priming adapter, shown in Figure 1-24, is used. The M1A4 priming adapter is a plastic, hexagon-shaped device threaded to fit the threaded cap wells on demolition blocks, shaped charges, and the M10 universal explosive destructor, shown in Figure 1-25. A shoulder inside the threaded end is large enough for a time fuse and detonating cord, but is too small for a military blasting cap. The adapter is slotted lengthwise to permit quick and easy insertion of the electric blasting cap lead wires.

For demolition materials when an M1A4 priming adapter is not available, use the following procedure, as illustrated in Figure 1-26:

- Wrap a string tightly around the demolition block, and tie it securely, leaving approximately six inches of loose string on each end.
- Insert the blasting cap, with the time fuse attached, into the cap well.
- Tie the loose string around the fuse to prevent the blasting cap from being separated from the demolition block.

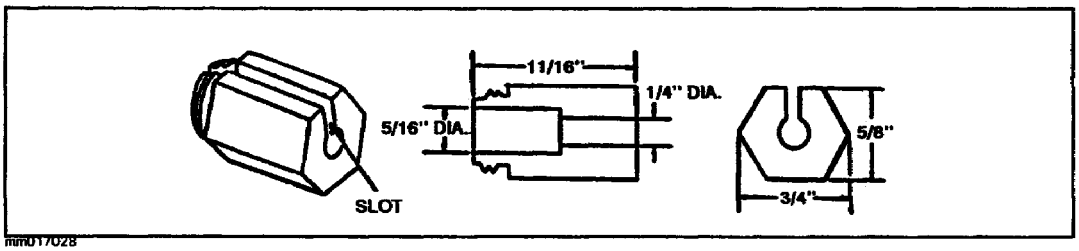


Figure 1-24. M1A4 priming adapter.

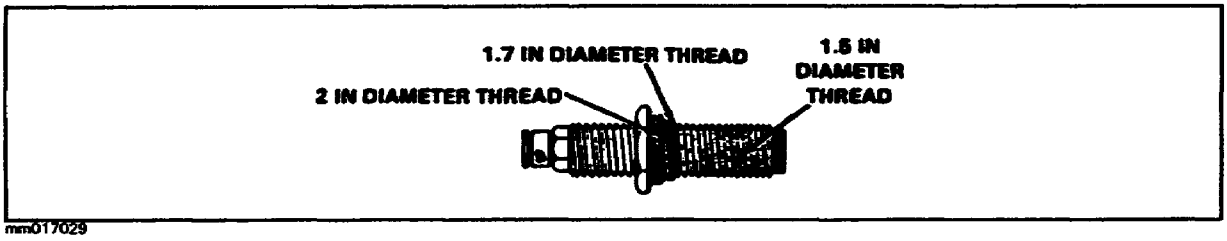


Figure 1-25. M10 universal explosive destructor.

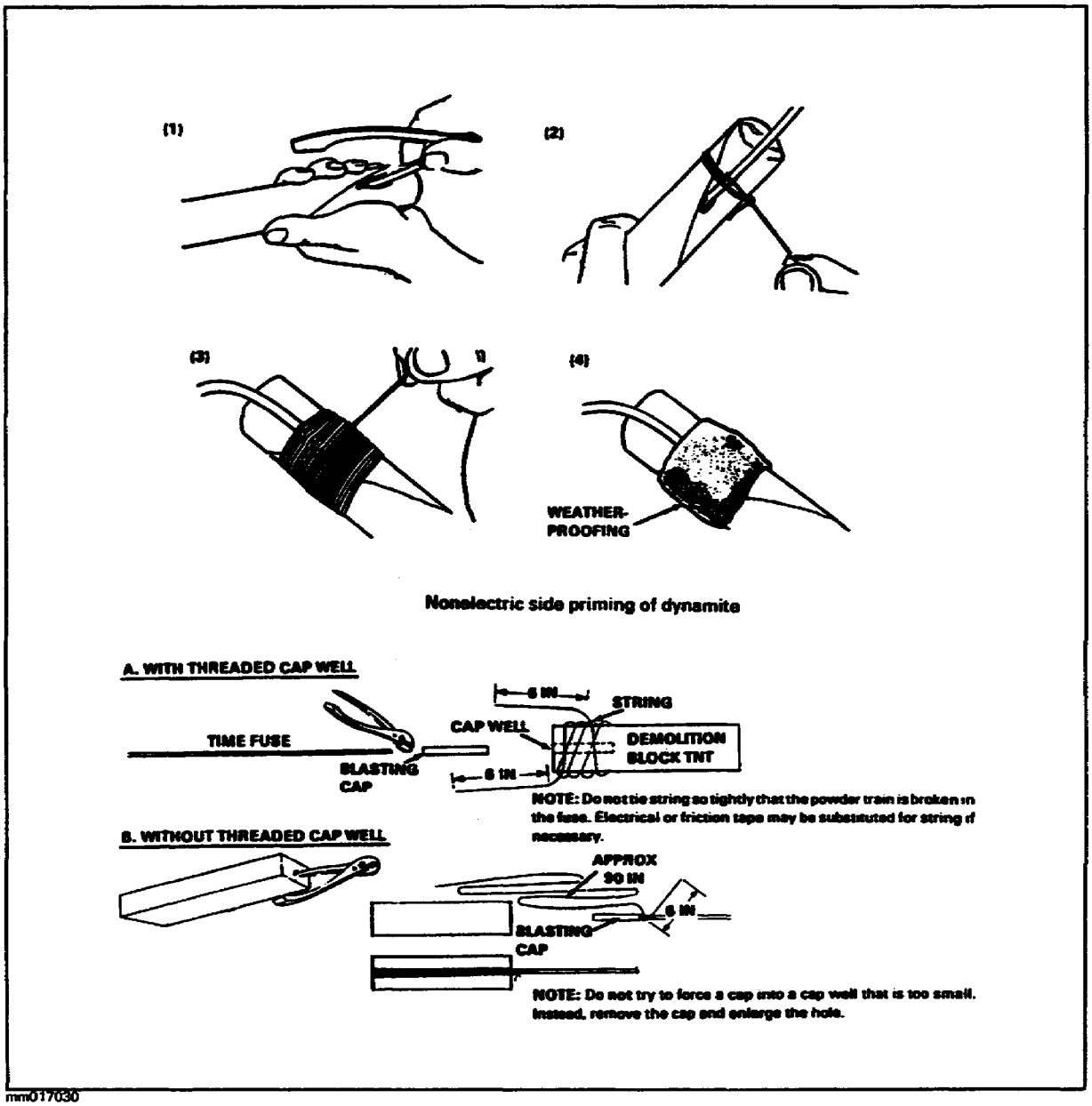


Figure 1-26. Nonelectric priming without a priming adapter.

Use the following procedure for demolition blocks without cap wells:

- Make a hole large enough to contain the blasting cap in the end of the demolition block.
- Wrap a string several times around the explosive, and tie a secure knot. Place the tie so that it will be at the top of the hole when the fused blasting cap is inserted.
- Insert the fused blasting cap into the hole.
- Tie the string around the time fuse at the top of the hole with two half hitches.

The M8 blasting cap holder, shown in Figure 1-27, is used with sheet explosives. The M118 sheet demolition charge and the M186 roll demolition charge are the only sheet explosives used. The M8 holder is supplied with each M118 and M186 demolition charge of recent manufacture. It is also available as a separate item of issue in quantities of 4,000. The procedures for using sheet explosives are as follows:

- Attach an M8 blasting cap holder to one end or to one side of the sheet explosive. The M8 blasting cap holder fastens to the sheet explosive with three slanted protruding teeth that prevent its withdrawal. Two dimpled spring arms firmly hold the blasting cap in the M8 holder. Insert an electric or a nonelectric blasting cap into the holder until the end of the cap presses against the sheet explosive.

- Cut a notch approximately one and one-half inches long and one-quarter inch wide in the sheet explosive. Insert the blasting cap to the limit of the notch. Secure the blasting cap with a strip of sheet explosive, as shown in Figure 1-28.

- Place the blasting cap on top of the sheet explosive, and secure it with a strip of sheet explosive measuring at least three inches by three inches.

- Insert the end of the blasting cap one and one-half inches between two sheets of explosive.

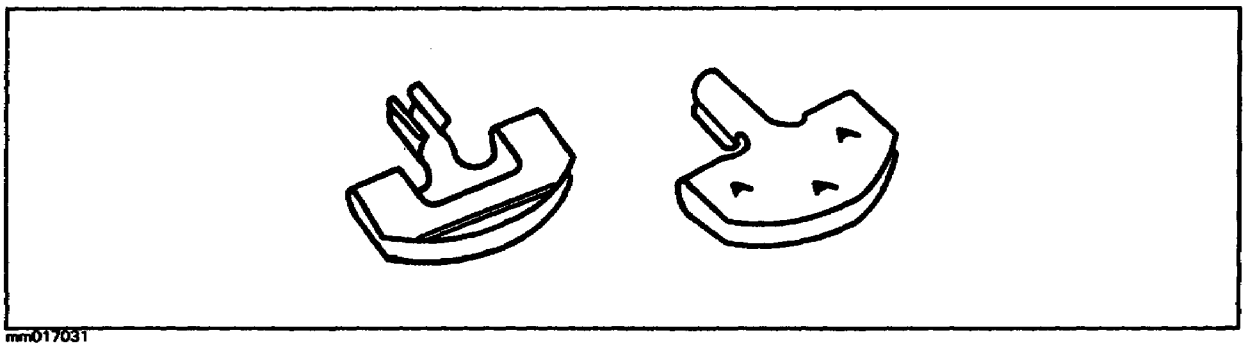


Figure 1-27. M8 blasting cap holder.

Detonating Cord

Both the electric and the nonelectric firing systems use detonating cord to take the explosive shockwave from the blasting cap to the demolition charges. Detonating cord is used when more than one charge must be detonated simultaneously. While the priming crew is preparing the blasting caps, other crews should be busy laying out detonating cord to accomplish the destruction.

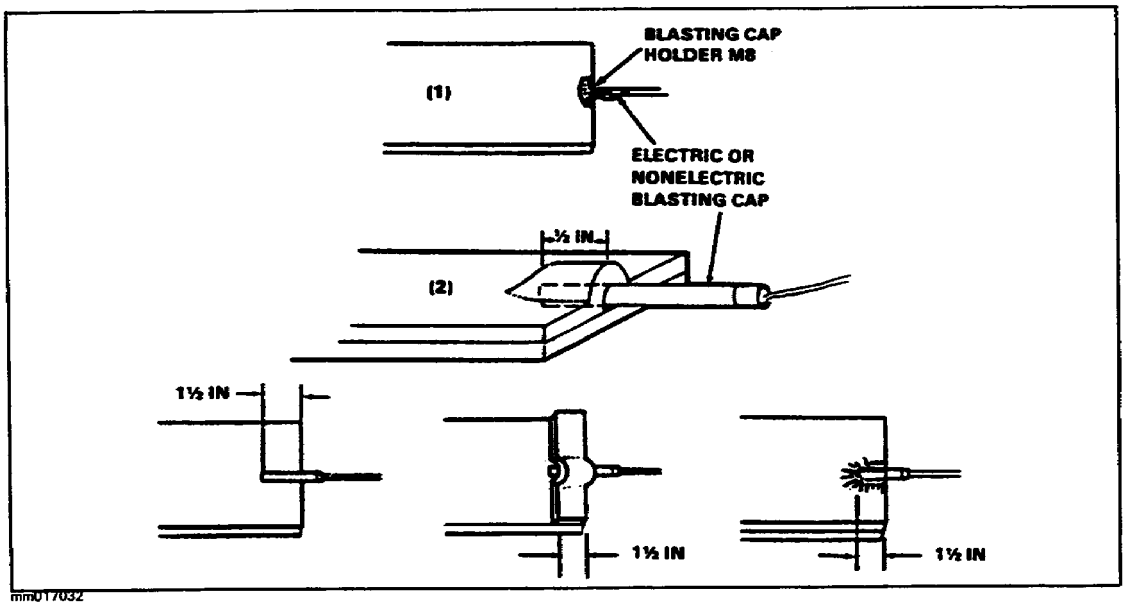


Figure 1-28. Priming sheet explosive.

Ring Main. The ring main team lays out the detonating cord ring main, a continuous loop of detonating cord. The loop is laid from the initiating point, past each group of munitions to be destroyed, and back to the initiating point. This gives the detonation wave two paths to travel, so a break in the loop will not stop the explosion. It may be necessary to connect several rolls of detonating cord together to complete the ring main. There are four methods of connecting detonating cord for a ring main.

In the first method, the M1 detonating cord clip, shown in Figure 1-29, is used according to the following steps:

- Overlap the newly-cut free ends by 18 inches.
- Secure the cords together by bending the tongues of two clips firmly over both strands of cord. The clips should be six inches apart.
- Secure the connection by bending the trough end of the clip back over the tongue. The clips should be six inches from each of the free ends of the detonating cord.

In the second method, a detonating cord connector, shown in Figure 1-30, is used to join two sections of detonating cord.

In the third method, detonating cord is joined with a square knot, as shown in Figure 1-31. When using the square knot, at least six inches of cord must be left free on each side of the knot.

The fourth method is to use electrical tape to splice two lengths of detonating cord together, as shown in Figure 1-32. When splicing two cords together, overlap the two ends by 18 inches, and tape the center for at least six inches.

Branch Lines. Branch line teams lay out detonating cord branch lines from the ring main to the items to be destroyed. They then tie these items into the ring main. This tying-in is very important-the mission depends on it. There are three ways to connect branch lines to the ring main.

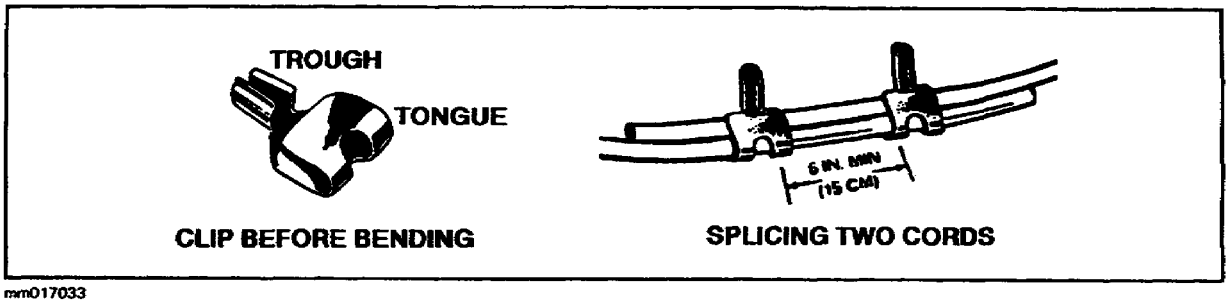


Figure 1-29. Connections using the M1 detonating cord clip.

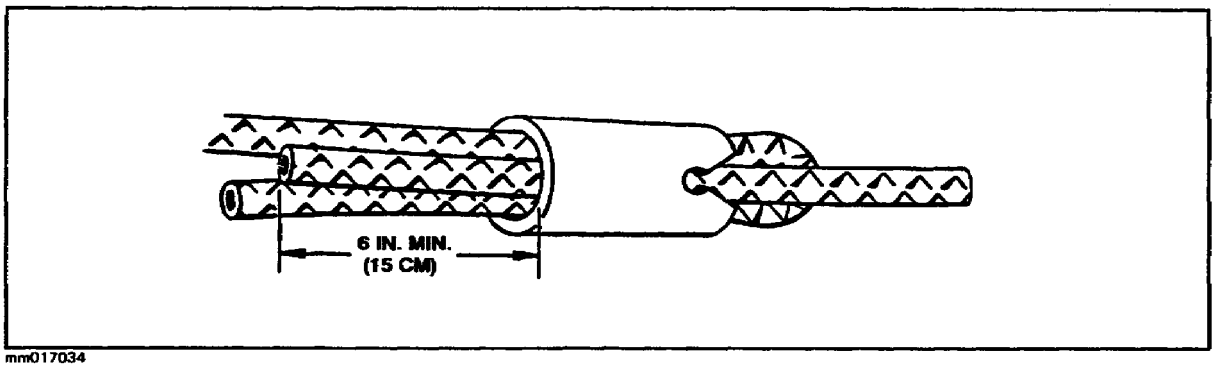


Figure 1-30. Detonating cord connector used to join ring main.

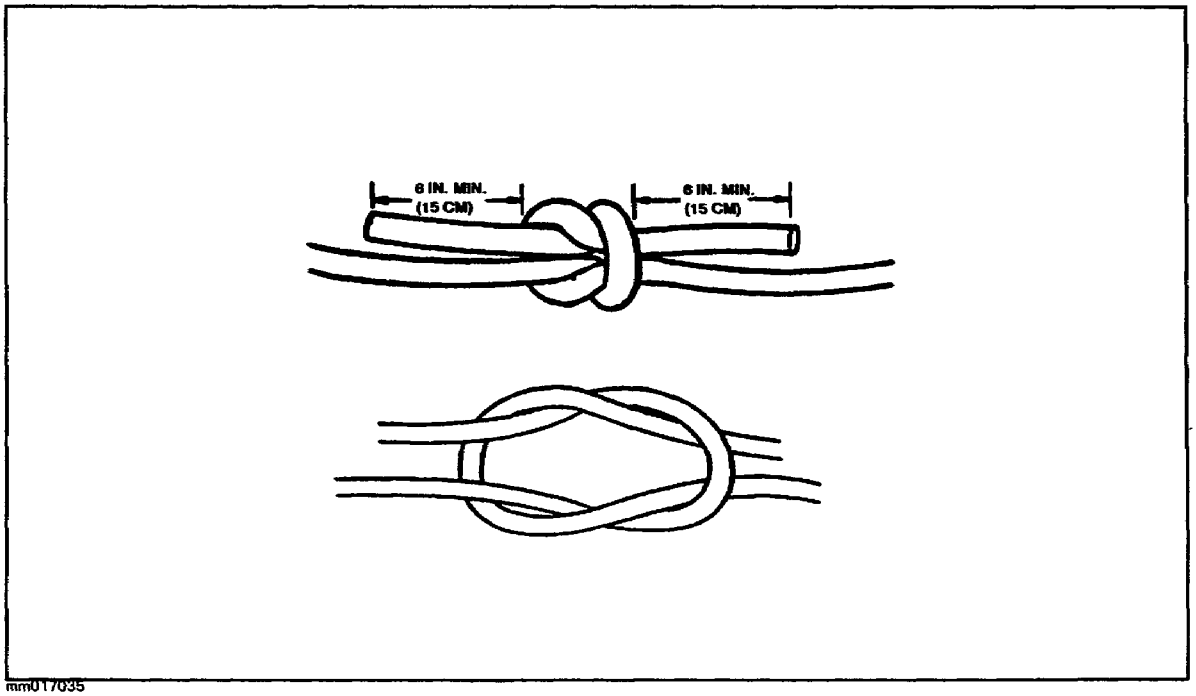


Figure 1-31. Square knot connections.

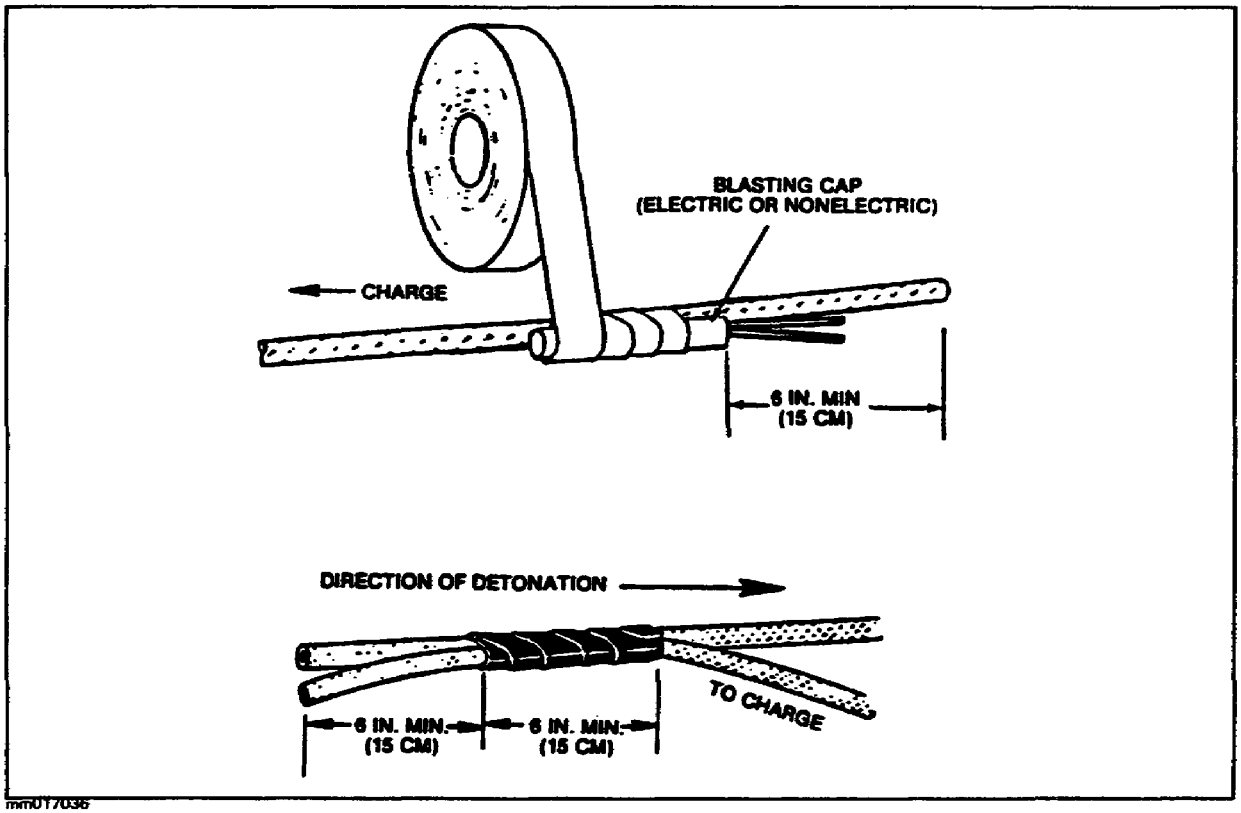


Figure 1-32. Electrical tape splicing.

The first method is to use M1 detonating cord clips. The M1 detonating cord clip can be used to connect two strands of detonating cord at right angles to each other, as shown in Figure 1-33. The angle formed by the branch line and the ring main should not be less than 90 degrees in the direction from which the blast is coming.

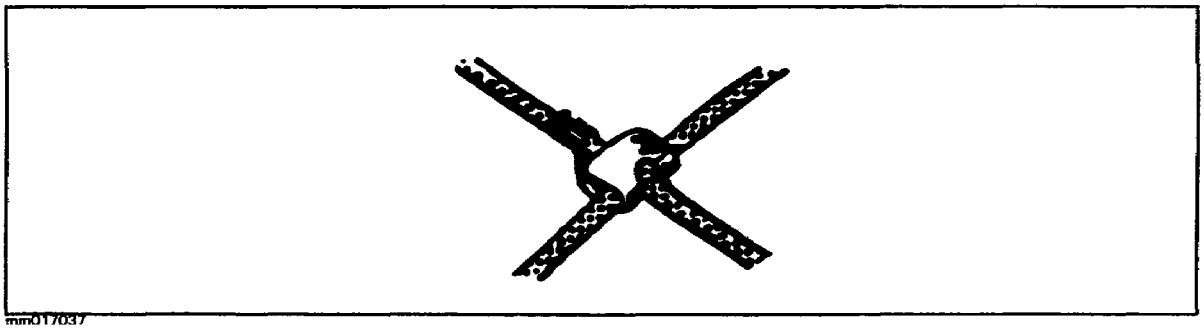


Figure 1-33. M1 detonating cord clip used to connect a branch line.

In the second method, a detonating cord connector is used to join the branch line to the ring main, as shown in Figure 1-34.

The third method is used in the absence of M1 detonating cord clips or detonating cord connectors. Branch lines can be attached to the ring main using the girth hitch with one extra turn, as shown in Figure 1-35. Remember to

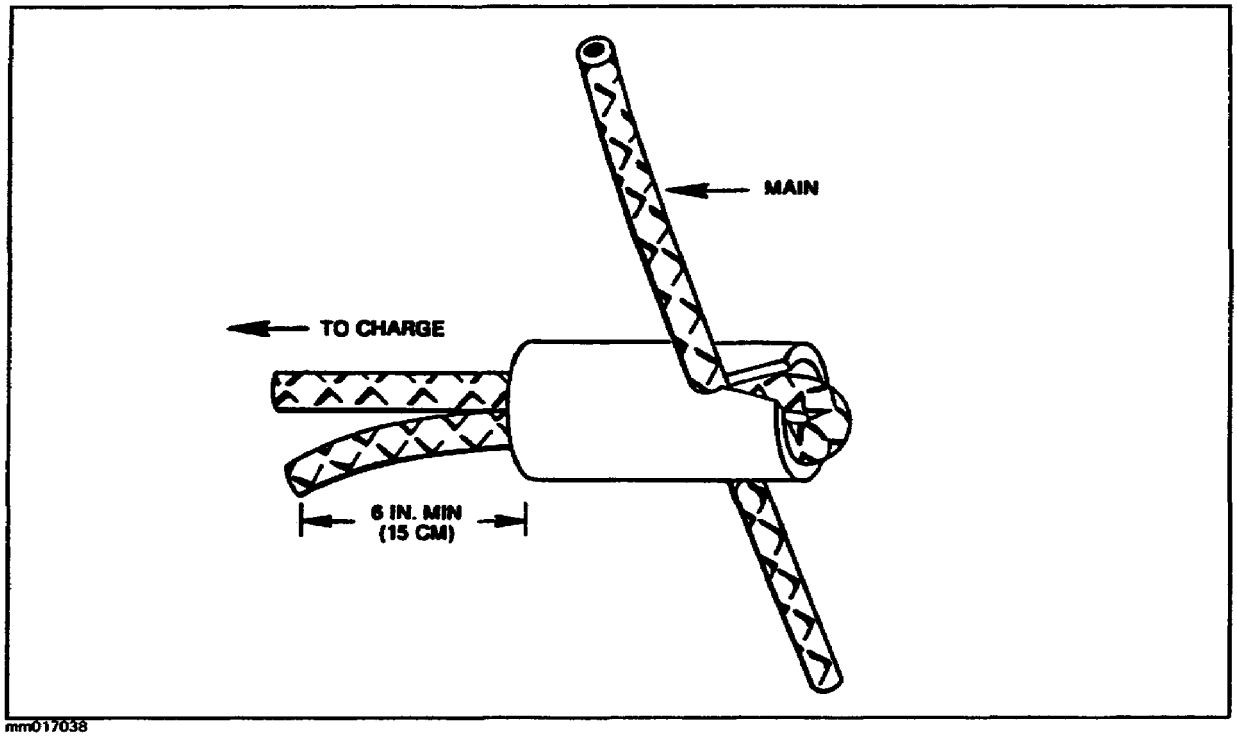


Figure 1-34. Detonating cord connector.

leave approximately six inches of the end free after tying the knot. Keep the angle formed by the branch line and the ring main line not less than 90 degrees in the direction from which the blast is coming.

Explosive Charges

Charge teams connect the branch lines to the explosive charges, which they also emplace.

If M7 nonelectric blasting caps are available, they can be used to sensitize the detonating cord. The capping procedures for detonating cord are the same as those described previously for time fuse. In cases where substitute explosive items (such as shaped charges or AT mines) are used, blasting caps may be necessary.

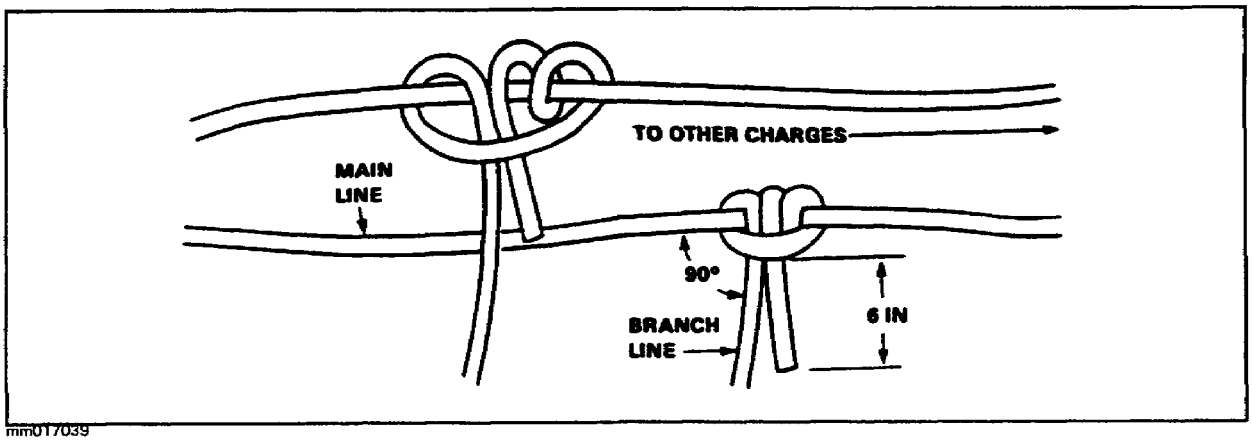


Figure 1-35. Girth hitch with one extra turn.

When there are not enough nonelectric blasting caps available, detonating cord may be used to initiate the priming charge. The priming procedures will vary depending on the explosive charge used.

Demolition Block Charges. Demolition blocks (TNT) can be primed with detonating cord in several ways, as shown in Figure 1-36.

The most reliable method is to affix a nonelectric blasting cap to the end of the detonating cord, then place it in the demolition block in the same way as for nonelectric priming.

Another method is to lay one end of a four-foot length of detonating cord at an angle across the explosive. Wrap the running end around the block three times, and lay the end at an angle. On the fourth wrap, slip the running end under all the wraps parallel to the other end, and draw it tight.

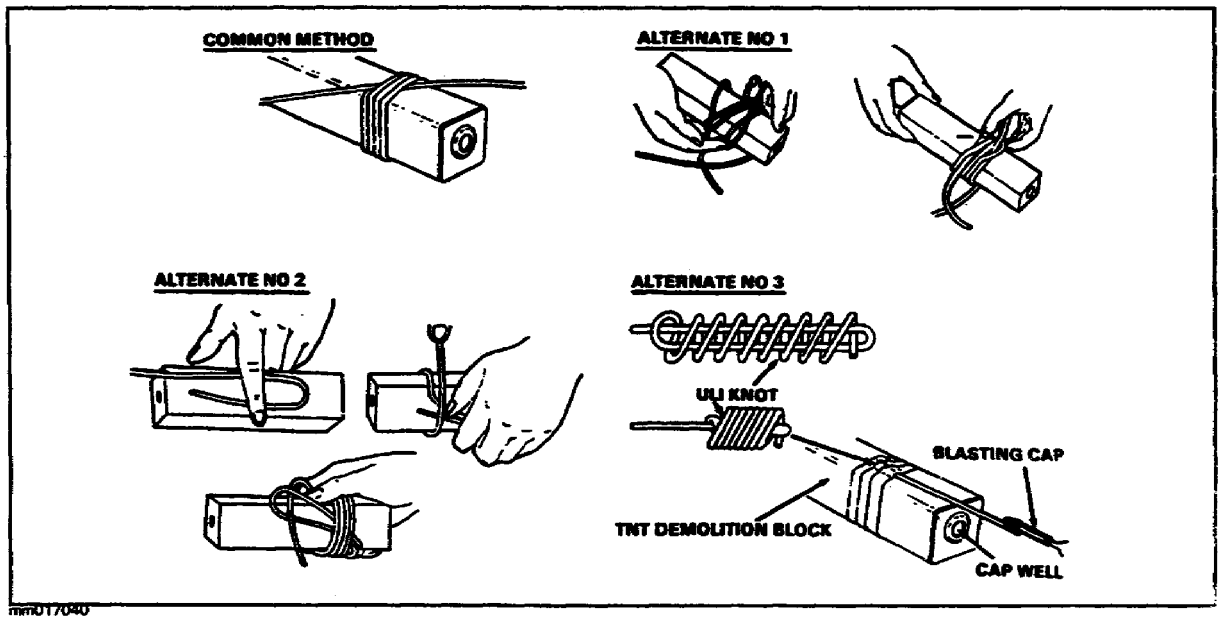


Figure 1-36. Detonating cord priming of demolition blocks.

Alternate method number one is to tie the detonating cord around the explosive block (on top of the booster, if one is present) using a clove hitch and two extra turns. Fit the cord snugly against the blocks, and push the loops close together.

Alternate method number two is to hold a loop of detonating cord on the explosive with four wraps around the block and loop. Ensure that the first wrap goes over the short leg of the loop. Pull the running end through the eye of the loop and tighten it. Note that this method is more applicable to short detonating cord branch lines or primers than to long ones.

Alternate method number three is to tie a Uli knot with a minimum of eight wraps using a 20- to 24-inch length of detonating cord. This knot equals the power output of three to four blasting caps. Tape the knot tightly to the demolition charge to be detonated.

Plastic Explosives. To prime plastic explosives (such as C-4) with detonating cord, form one of the three knots shown in Figure 1-37.

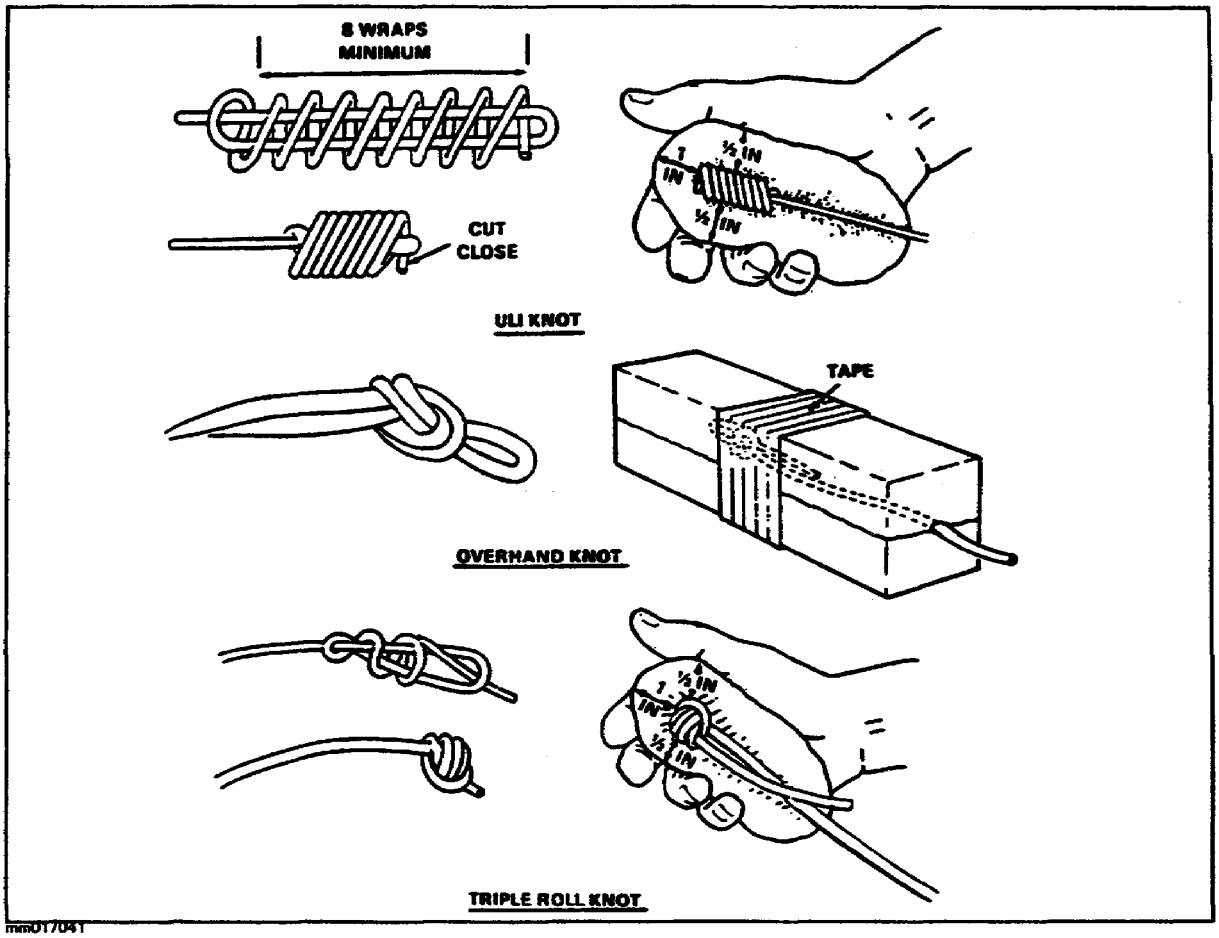


Figure 1-37. Detonating cord priming of plastic explosive.

The most common method is to tie a Uli-knot as previously described. Insert the knot into a block of explosives or a molded piece of explosives. For positive detonation, ensure that there is at least one-half inch of explosive on all sides of the knot.

Another method is to use a triple roll knot. Double back the detonating cord to form a loop. Cross the free end of the cord over the main line, and wrap three loops around the main line only, bringing the free end through the loop each time. Work the knot down into a tight ball. Insert the knot into a block of explosives or a molded piece of explosives. For positive detonation, ensure that there is at least one-half inch of explosive on all sides of the knot.

If two or more blocks of plastic explosives are to be detonated, an overhand knot may be used. An overhand knot is formed by doubling the detonating cord back on itself to form a loop. Take the end of the first loop and fold it back over the doubled detonating cord to form a second loop. Wrap the first loop over the two strands of detonating cord, and bring the end of the first loop through the center of the second loop. Pull the knot tight.

Charge Emplacement

The last task to be accomplished at the explosive site is charge emplacement. Charges should be placed in direct contact with the material to be destroyed whenever possible. Refer to the DMWR for ideal placement locations. Figure 1-38 shows common charge emplacements.

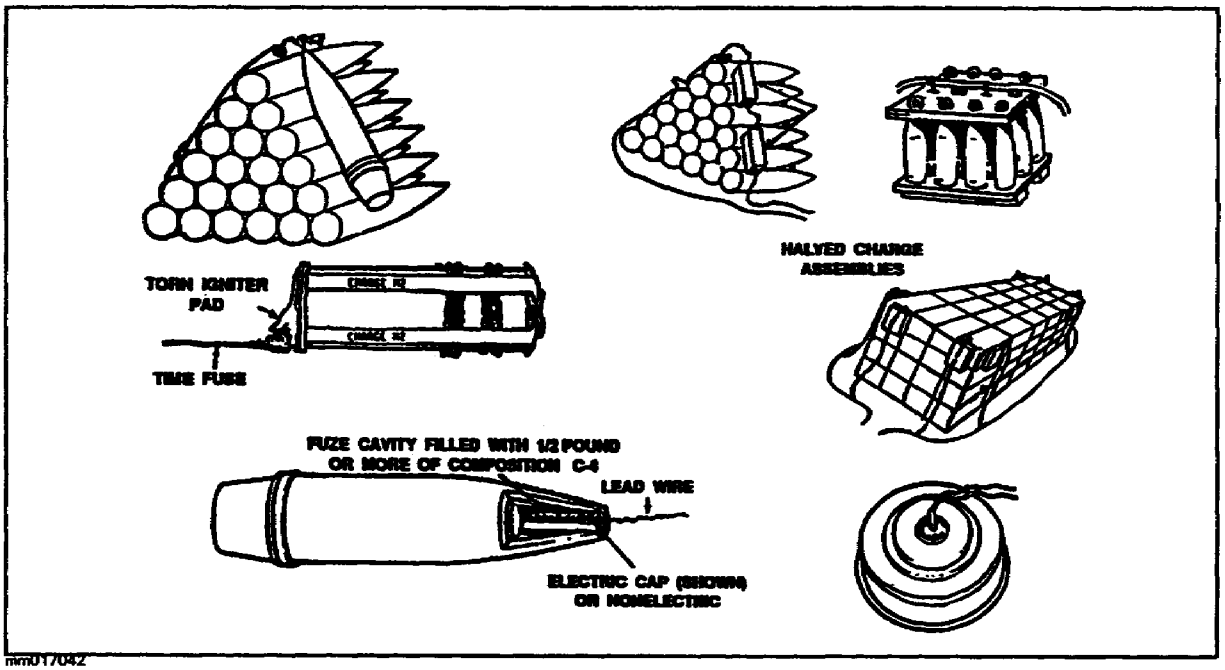


Figure 1-38. Detonating cord priming of plastic explosive.

ED by Burning

Some ammunition items are more efficiently destroyed by burning, and there may be times when you do not have enough explosives to accomplish destruction by detonation. There are three preferred methods used to initiate materials during an ED burn.

The first method uses a nonelectric firing system with a powder bag on the end as previously described (See Figure 1-10 on page 1-16.)

The second method is to set up a nonelectric firing system, but instead of placing the split time fuse into a plastic bag of smokeless powder, cut the igniter pad of a propelling charge, and insert the time fuse into it. This method is shown in Figure 1-39.

The first and second methods both require a combustion train. The combustion train (or ignition train) should be laid so that it must burn into the wind. The train can consist of paper, propellant bags, black powder, or time blasting fuse. As a minimum, the train should be eight meters (25 feet) long. Ignition should be by time fuse whenever possible (for a nonelectric firing system), or by electric squib (for an electric firing system). When burning, time fuse can curl and roll. Secure the fuse with rocks, dirt, or other weights to prevent it from prematurely igniting the charges.

The third method is to use detonating cord tied into a knot and suspended in a closed container of a mixture of gasoline and diesel fuel, as shown in Figure 1-40.

The method used depends on the materials and the time available. Some of the munitions to be destroyed will be palletized, and some will be unpalletized.

Burning Palletized Ammunition. Palletized ammunition is easily ignited in the following ways:

- Remove propelling charges from their containers, and place them around all four sides of the pallets.

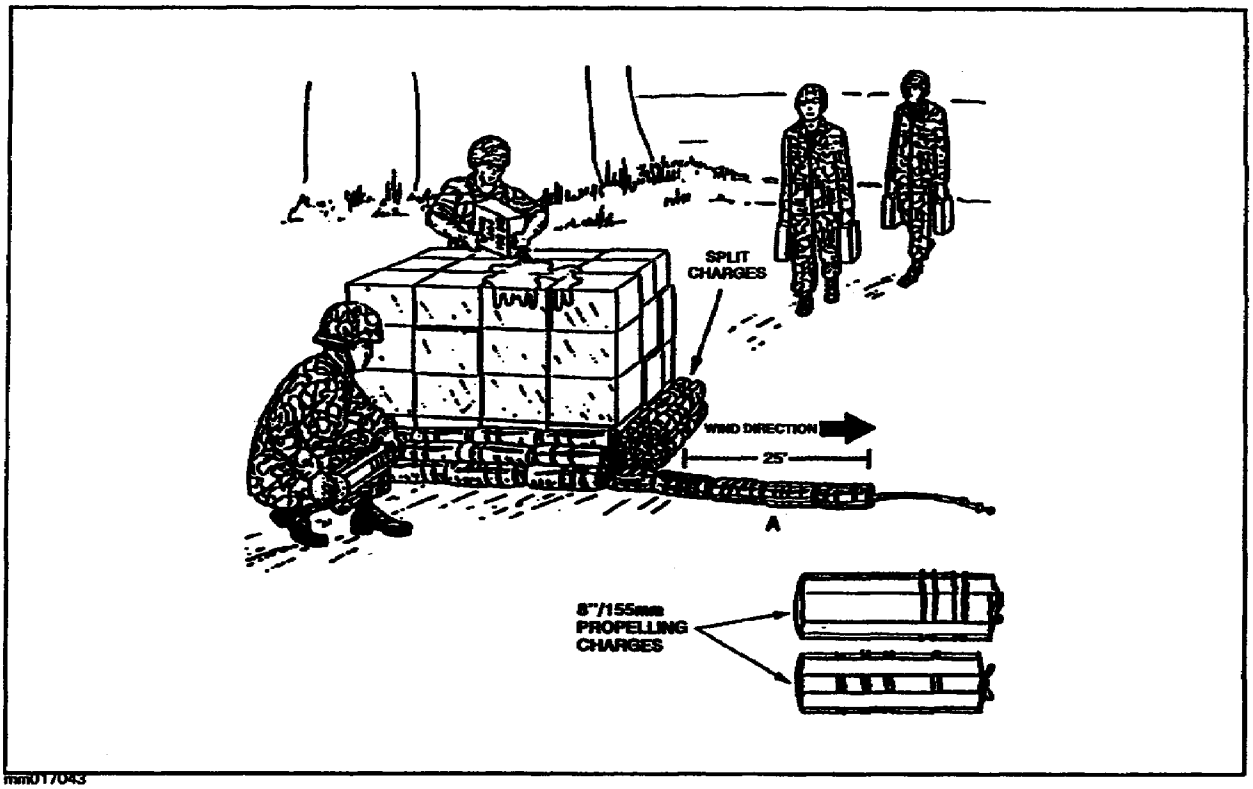


Figure 1-39. Preparing palletized ammunition for burning using split propelling charges.

- Pour diesel fuel over the stacks to assist in burning. Do not use gasoline (except in closed containers) when destroying ammunition by burning. Gasoline poured over the stacks may prematurely ignite due to its vapors.

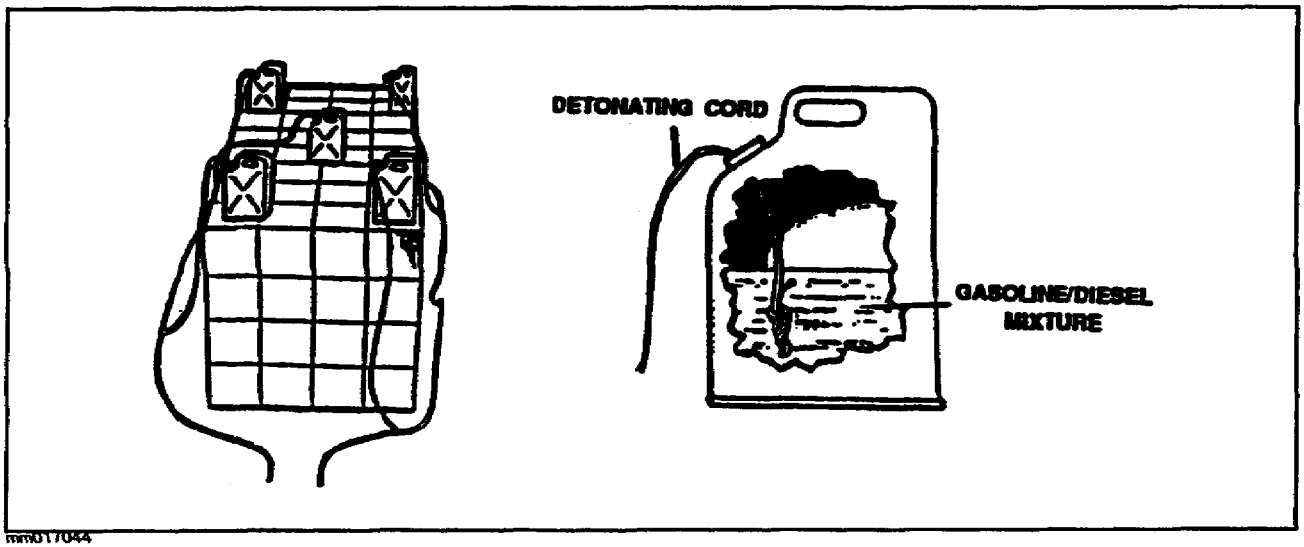


Figure 1-40. Using a gasoline/diesel mixture to initiate ED burning.

Burning Unpalletized Ammunition. Unpalletized ammunition is burned using the same methods as with pallets, except that loose boxes are placed on a bed of combustible material, covered with fuel oil or diesel fuel, and ignited.

Initiating the Firing System

The last actions to take are to ensure that everyone has evacuated to the assembly point, to tie in the blasting caps, and to initiate the detonation. Once at the assembly point, take a head count to ensure that all personnel are accounted for. Tie blasting caps into the detonating cord using the same accessories and procedures used for tying detonating cord. Initiate the firing system only after final clearance has been received.

Safety During ED Operations

Safety is the first consideration when undertaking any destruction operation. The observance of basic safety precautions is mandatory regardless of the urgency of the situation. Some safety factors to be considered are as follows:

- Follow only published procedures.
- Use only trained personnel for ED operations.
- Use the correct demolition procedures.
- Keep the number of personnel involved in handling explosives to a minimum (but no fewer than two).
- Determine the danger radius based on the ammunition or explosives to be destroyed. The radius may not be less than 1,000 meters, with personnel warned and under cover.
- Notify adjacent units.
- When destroying pyrotechnics, face away from the disposal site.
- When destroying riot-control agents, carry a protective mask.
- Use extreme caution when handling gasoline and highly-volatile solvents.
- Always stand by for a high-order detonation when burning ammunition and explosives.
- Consider the wind direction when burning explosives.

LESSON 1

PRACTICE EXERCISE

The following items will test your grasp of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answered any item incorrectly, study again that part of the lesson which contains the portion involved.

1. Which form is used to authorize the disposal of ammunition?

   A. DA Form 581.
   B. DA Form 200-3.
   C. DA Form 2415.
   D. DA Form 3151-R.

2. What is the minimum distance required between a personnel shelter and the disposal area?

   A. 100 feet.
   B. 200 feet.
   C. 300 feet.
   D. 450 feet.

3. What is the preferred method for destroying high-explosive projectiles?

   A. Burning.
   B. Detonation.
   C. Sea dump.
   D. Burial.

4. Which reference shows QD classifications?

   A. FM 9-38.
   B. TM 9-1300-200.
   C. TM 9-1300-206.
   D. TM 43-0001-28.

5. Whom would you contact for technical assistance in the destruction of ammunition?

   A. The commander.
   B. The service platoon leader.
   C. The chemical officer.
   D. Local EOD teams.

6. Who is responsible for destroying dud ammunition?

   A. Ammunition NCOs.
   B. EOD personnel.
   C. QA/QC inspectors.
   D. Ammunition survey personnel.

7. When should the NCOIC/OIC of the demolition team be notified of the pending disposal operation?

   A. After a malfunction.
   B. Upon receipt of an approved DA Form 2415.
   C. When the material has been classified unserviceable.
   D. When the material is placed in condition code J.

8. Which condition code is used for condemned ammunition?

   A. ACC-A.
   B. ACC-C.
   C. ACC-H.
   D. ACC-J.

9. Where must destruction sites be located in regard to inhabited areas?

   A. Crosswind from inhabited areas.
   B. Upwind from inhabited areas.
   C. Downwind from inhabited areas.
   D. In a pocket where wind does not matter.

10. What is the single most important safety consideration for the ammunition destruction operation planner?

    A. To be sure all safety manuals are available.
    B. To be sure an EOD detachment is on call.
    C. To be sure the commanding officer is thoroughly briefed on each operation.
    D. To be sure demolition personnel are thoroughly trained and briefed on each operation.

11. Which type of ammunition is considered to be a good initiating explosive in the destruction of ammunition by detonation?

    A. AT mines.
    B. Fuzes.
    C. Small-arms ammunition.
    D. Hand grenades.

12. Which of the following items is best suited for destroying ammunition by detonation?

    A. White phosphorous.
    B. TNT.
    C. Propelling charges.
    D. Hand grenades.

13. Which publication is used to determine the NEW of a round of ammunition?

    A. TM 9-1300-200.
    B. TM 9-1300-206.
    C. TM 43-0001-28.
    D. SB 708-4.

14. Which publication is used to determine QD requirements?

    A. FM 9-13.
    B. FM 9-38.
    C. TM 9-1300-206.
    D. TM 43-0001-28.

15. How many personnel should be detailed to a disposal operation?

    A. As many as possible to complete the operation before dark.
    B. As few as possible, but not less than two.
    C. At least three.
    D. No more than six.

16. What destruction priority is assigned to classified ammunition and associated components?
    A. Priority 1.
    B. Priority 2.
    C. Priority 3.
    D. Priority 4.
17. What storage category are bulk demolition items usually stored in?
    A. Category A.
    B. Category C.
    C. Category E.
    D. Category F.
18. Which blasting cap is used in a nonelectric firing system?
    A. M6 nonelectric blasting cap.
    B. M7 nonelectric blasting cap.
    C. Any commercial nonelectric blasting cap.
    D. M6 electric blasting cap.
19. What is the required length of time fuse for test burning?
    A. Six inches.
    B. One foot.
    C. Three feet.
    D. Two yards.
20. What is the mandatory waiting period before inspecting for nonelectric misfires?
    A. The expected time of detonation.
    B. 30 minutes.
    C. 30 minutes plus the expected time for detonation.
    D. One hour.
21. Where should a nonelectric blasting cap be crimped?
    A. As close to the open end as possible.
    B. As close to the closed end as possible.
    C. Midway between the open end and the closed end.
    D. One-eighth to one-quarter inch from the open end.
22. What equipment is used to test the continuity of the M6 electric blasting cap?
    A. M32 and M34.
    B. Galvanometer and M34.
    C. M51 and galvanometer.
    D. M51 and M32.
23. When securing an M6 blasting cap inside the cap well of a demolition block, what piece of equipment is used?
    A. M1A4 priming adapter.
    B. M8 blasting cap holder.
    C. M1 detonating cord clip.
    D. Detonating cord connector.
24. With which demolition materials is the M8 blasting cap holder provided?
    A. M3 shaped charge.
    B. M118 and M186 demolition charges.
    C. M6 and M7 blasting caps.
    D. Detonating cord.

25. When using M1 detonating cord clips to connect the ends of detonating cords together for a ring main, how far must the detonating cord be overlapped?

    A. 6 inches.
    B. 12 inches.
    C. 18 inches.
    D. Just far enough to clip the cords together.

26. Which type of knot may be used to attach a branch line to a ring main?

    A. Square knot.
    B. Overhand knot.
    C. Triple roll knot.
    D. Girth hitch with one extra turn.

LESSON 1

ANSWER KEY AND FEEDBACK

Item	*Correct Answer and Feedback*
1.	C. DA Form 2415. (page 1-2, para 2)
2.	C. 300 feet. (page 1-8, paras 2)
3.	B. Detonation. (page 1-15, pars 2)
4.	C. TM 9-1300-206. (page 1-13, para 3)
5.	D. Local EOD teams. (page 1-6, para 6)
6.	B. EOD personnel. (page 1-2, para 1)
7.	B. Upon receipt of an approved DA Form 2415. (page 1-6, para 1)
8.	C. ACC-H. (page 1-2, paras 6)
9.	C. Downwind from inhabited areas. (page 1-10, para 1)
10.	D. To be sure demolition personnel are thoroughly trained and briefed on each operation. (page 1-6, para 5)
11.	A. AT mines. (page 1-22, para 6)
12.	B. TNT. (page 1-18, para 10)
13.	D. SB 708-4. (page 1-12, para 4)
14.	C. TM 9-1300-206. (page 1-13, para 3)
15.	B. As few as possible, but not less than two. (page 1-8, para 5)
16.	A. Priority 1. (page 1-21, para 5)
17.	C. Category E. (page 1-22, para 4)
18.	B. M7 nonelectric blasting cap. (page 1-27, para 2)
19.	C. Three feet. (page 1-26, para 1)
20.	C. 30 minutes plus the expected time for detonation. (page 1-27, para 7)
21.	D. One-eighth to one-quarter inch from the open end. (page 1-27, para 6)
22.	C. M51 and galvanometer. (page 1-28, paras 3 and 4)
23.	A. M1A4 priming adapter. (page 1-34, para 3)
24.	B. M118 and M186 demolition charges. (page 1-36, para 2)
25.	C. 18 inches. (page 1-37, para 2)
26.	D. Girth hitch with one extra turn. (page 1-39, para 3)

LESSON 2

SURVEILLANCE OPERATIONS

Critical Task: 03-4020.02-0001

OVERVIEW

Lesson Description

In this lesson, you will learn the functions, responsibilities, and reporting procedures used in the Army's ammunition surveillance program.

Terminal Learning Objective

Action: Define the purpose of ammunition surveillance, the types of ammunition surveillance inspections, and the types of surveillance records and reports. Describe the ammunition stockpile reliability program (ASRP) and the safety and logistics testing functions of surveillance.

Condition: You will be given this lesson and the accompanying practice exercise.

Standard: Describe ammunition surveillance operations according to AR 702-6 and SB 742-1.

References: The material contained in this lesson was derived from AR 702-6, AR 702-12, AR 740-1, and SB 742-1.

INTRODUCTION

Ammunition is manufactured under guidelines established according to specifications outlined in military standards and contractual agreements. Despite rigid manufacturing standards, however, munitions are subject to damage and deterioration during handling and storage. To ensure that munitions reach the intended users in serviceable condition and function as intended, an effective program of inspecting and testing must be carried out at all Army activities within the continental United States (CONUS) and overseas. The mission of this program includes the receipt, storage, maintenance, and issue of ammunition materiel; the maintenance of basic loads; and the maintenance of commodities managed by MICOM or AMCCOM. Further information on the maintenance of basic loads is contained in AR 700-22, *Worldwide Ammunition Reporting System (WARS)*, dated 15 October 1983, and in AR 710-9, *Guided Missile and Large Rocket Ammunition Issues, Receipts, and Expenditures Report*, dated 9 January 1987.

The Army's ammunition surveillance program can be defined as the observation, inspection, investigation, testing, studying, grading, and classification of munitions during their manufacture, movement, storage, maintenance, and use. All surveillance operations are performed with respect to ammunition serviceability, hazards, and rates of deterioration.

THE AMMUNITION STOCKPILE RELIABILITY PROGRAM

Ammunition surveillance is an integral and essential part of the ASRP. The ASRP includes conventional and chemical ammunition, small and large rockets, and guided missile ammunition and materiel. Another program, called the Army Nuclear Weapons Stockpile Reliability Program (ANWSRP), applies to nuclear weapons and materiel. The two programs may be consolidated where both nuclear and conventional or chemical munitions are involved; however, this lesson will focus on the ASRP. The ASRP applies to the Active Army, the Army National Guard, the Army Reserve, and all Army activities that have a receipt, storage, issue, maintenance, surveillance, or test mission for ammunition materiel.

The objectives of the ASRP are to ensure the following:

- That all ammunition entering into the stockpile meets established explosive safety and reliability requirements.
- That ammunition stockpile conditions and reliability trends are identified.
- That ammunition items are identified for timely maintenance, retrograde, or disposal, and that ammunition items with marginal reliability are identified for priority-of-use or restricted use.
- That shelf life and prescribed stockpile life are established or confirmed.
- That the causes of ammunition malfunctions occurring in type-classified materiel are investigated.
- That a basis for corrective actions to restore the stockpile to a satisfactory condition is provided where unsatisfactory conditions exist.

Most ammunition items are used only once, so usage and wear-and-tear factors do not apply. The storage life of most ammunition items ranges from 5 years to more than 20 years. Therefore, the ASRP provides an on-going program that measures stockpile reliability, ensures that ammunition and ammunition components are available for issue and use, and ensures that they are always safe and reliable.

The ASRP consists of the following three major programs:

- The ammunition surveillance program.
- The stockpile function test program.
- The stockpile laboratory test program.

The paragraphs that follow describe each of these program in detail.

The Ammunition Surveillance Program

The ammunition surveillance program is an important part of the ASRP. It is used to determine the functional and nonfunctional characteristics of the ammunition stockpile. The program includes, but is not limited to, visual inspections and tests. It is also conducted as part of the supply readiness program or other quality control activities.

The ammunition surveillance program is established by AR 740-1 and AR 702-12. Procedures for implementing this program are described in SB 742-1 and other supporting supply bulletins.

Wholesale and retail quantities of ammunition and related materiel stored at depots, plants, arsenals, proving grounds, prestock points, ASPs, and using units are subject to the ammunition surveillance program.

The quality assurance specialist (ammunition surveillance)(QASAS) evaluates stocks that have been subjected to unsatisfactory or abnormal conditions for possible inclusion in the explosive safety waivers and deviations program or the ammunition suspension, restriction, and release program.

Explosive safety functions included in this element of the ASRP are performed by the QASAS or under his or her supervision at installations where a QASAS is assigned. Explosive safety functions include the following.

- Determining compliance with QD and storage compatibility guidance.
- Reviewing explosive safety waivers and deviations.
- Managing the ammunition suspension, restriction, and release program.
- Checking for deterioration and damage that affect safety.
- Ensuring that suitable facilities and equipment are used during the storage, processing, handling, and transportation of ammunition.
- Reviewing and evaluating ammunition conditions during supply and maintenance operations.
- Monitoring troop safety in combat and in training.
- Implementing assigned nuclear and chemical safety and surety functions.

The Stockpile Function Test Program

The stockpile function test program determines the functioning reliability of munitions, develops their shelf or service life, and detects trends in stockpile performance. This program is managed by the materiel commodity commands. It is carried out using function tests at ammunition test facilities, at ammunition storage installations, at training facilities, and as directed by AMCCOM or MICOM.

Function Tests at Ammunition Test Facilities (Including Proving Grounds). This pertains to ammunition items such as mortars, antitank mines, large and small caliber gun and howitzer ammunition, cartridge-activated devices, propellant-activated devices, and missiles requiring special facilities and equipment for testing and data collection.

The stockpile is classified into representative segments. Examples of these segments are periods of production, manufacturer, storage, and climatic conditions. Samples are selected, tested, and rated for reliability, performance, and serviceability of the stockpile.

Function Tests at Ammunition Storage Installations. This includes items such as the following:

- Pyrotechnics.
- Signals and simulators.
- Hand grenades.
- Antipersonnel mines.
- Certain chemical items with fillers of smoke that do not require the extensive use of instruments or range facilities.

Tests for these items are conducted on the lots according to the frequencies and procedures specified in SB 742-1 and the appropriate supply bulletins, or as directed by the materiel commodity command. The tests are performed under the direction of the QASAS.

Function Tests at Training Facilities. Annual service practice firings of GMLR are used to supplement the ballistic performance and reliability data obtained during other elements of the ASRP. In some cases, these firings may be monitored by telemetry or other equipment to collect stockpile reliability data.

Special Function Tests. Special function tests are held as directed by the materiel commodity command. These tests may be conducted independently of, or in addition to, other inspections and tests. Special function tests are used to determine the extent of degradation of a specific portion of the stockpile (for example, lot-by-lot testing of a stockpile segment that is marginally reliable). They are also used to revise or establish criteria for surveillance, service life, shelf life, or similar yardsticks for items currently in use or in stock.

The Stockpile Laboratory Test Program

The third major program within the ASRP is the stockpile laboratory test program. The tests in this program are for those items conducive to laboratory testing. The following are some of these items:

- Toxic chemical fillers.
- Bulk propellant.
- Cartridge-actuated devices.
- Propellant-actuated devices.
- Missiles.
- Complex conventional ammunition and components.
- Items for which functional testing may not be feasible because of cost or range limits (such as extended-range and kinetic-energy projectiles).

The stockpile laboratory test program is also managed by the materiel commodity commands (AMCCOM and MICOM). The program is carried out through either destructive or nondestructive laboratory tests. It is conducted to detect trends or changes in the items' quality, to determine the items' serviceability, and to establish, confirm, or revise the shelf-life periods for the items.

Stockpile laboratory tests may be conducted independently of, or in addition to, the other inspections and tests. Items that are nondestructively tested (such as missiles) are returned to the stockpile in a restored, ready-for-issue condition.

Summary and Additional Information

You are now familiar with the ASRP and the critical importance of this program. The ASRP is a result of lessons learned from history. Two reasons for the early fall of US forces in the Philippines during World War II were ammunition that failed to function and devastating explosive accidents involving ammunition stockpiles. On the other hand, the great successes in Panama and Iraq can be attributed in part to ammunition that arrived in a

serviceable condition and functioned as designed. Further information on the ASRP may be found in AR 702-6, AR 702-12, AR 740-1, SB 742-1, TM 9-1300-206, and in the following publications:

- AR 50-6, *Nuclear and Chemical Weapons and Material, Chemical Surety*, 12 November 1986.
- AR 385-62, *Regulations for Firing Guided Missiles and Heavy Rockets for Training, Target Practice and Combat*, MCO P3570.2, 5 January 1977.
- AR 385-63, *Policies and Procedures for Firing Ammunition for Training, Target Practice and Comb*at, MCO P3570.1, 15 October 1983.
- AR 385-64, *Ammunition and Explosives Safety Standards*, 22 May 1987.

An extract from AR 702-6 is included in the Appendix at the back of this subcourse booklet.

SELECTION, INSPECTION, AND DISPOSITION OF SAMPLES

The first section of this lesson emphasized that the continuous inspection and testing of ammunition items is essential to ensure ammunition and explosives safety and reliability. It is clear, however, that time, personnel, and facilities limitations do not permit the inspection of every round in the stockpile, and that test firing every round is impossible. Through extensive research and testing, DA elements have established an effective and conclusive sampling and inspection system. This system is described in SB 742-1 and in the following paragraphs.

Sample Selection

Samples must be selected as directed by a QASAS, and they must be representative of the entire lot under evaluation. The evaluation includes the overall condition of the lot in storage and is recorded on the inspection report. Judgment must be exercised by the QASAS to ensure maximum representation without unnecessary rewarehousing.

Samples of items that cannot be returned to the original package configuration (such as hermetically-sealed containers and heat-sealed barrier bags) are used on a recurring basis. If the recurring samples indicate progressive deterioration, lot acceptability must be determined by inspecting an additional sample from the original sealed containers.

The selection and preparation of stockpile laboratory test samples is accomplished according to the instructions contained in SB 742-1, those in the applicable SB for the particular item, and those received from the appropriate headquarters.

When an installation does not have adequate personnel, facilities, or equipment to conduct the required tests, samples must be shipped to a designated installation where the test can be conducted. The selection and preparation of function or trace test samples for shipment to a test facility is performed according to the instructions in SB 742-1, those in the applicable SB for the particular item, and those received from the appropriate headquarters. The selection and preparation of propellant samples for shipment to a test facility is performed according to SB 742-1300-94-2, Propellant and Propelling Charges: Ammunition Surveillance Procedures, dated 2 October 1984.

Sample Inspection

The ammunition surveillance inspection program is structured to ensure that the items in the stockpile meet established explosive safety and reliability criteria and are properly classified. Inspections are performed by trained and certified personnel using statistical sampling techniques and procedures. The program identifies items for timely maintenance, disposal, priority of issue, and restricted use.

QASAS personnel conduct or closely direct all inspections and tests.

Applicable supplemental ammunition surveillance inspection procedures (SASIPs), drawings, specifications, SOPs, and DD Forms 1650 (Ammunition Data Cards) are used during all prescribed inspections. These sources are supplemented by related technical publications. Deviation from the standards indicated in these references must be a matter of record both in reports to other agencies and on DA Forms 3022-R (Army Depot Surveillance Records) (DSR cards).

When using drawings and specifications as standards for inspections, ensure that the items are compared with drawings and specifications with the appropriate revisions. In the event of a conflict between defect classifications in surveillance SBs and on the specification or drawing, use the defect classification in the SB.

Requests for ammunition drawings are made to the applicable command as follows:

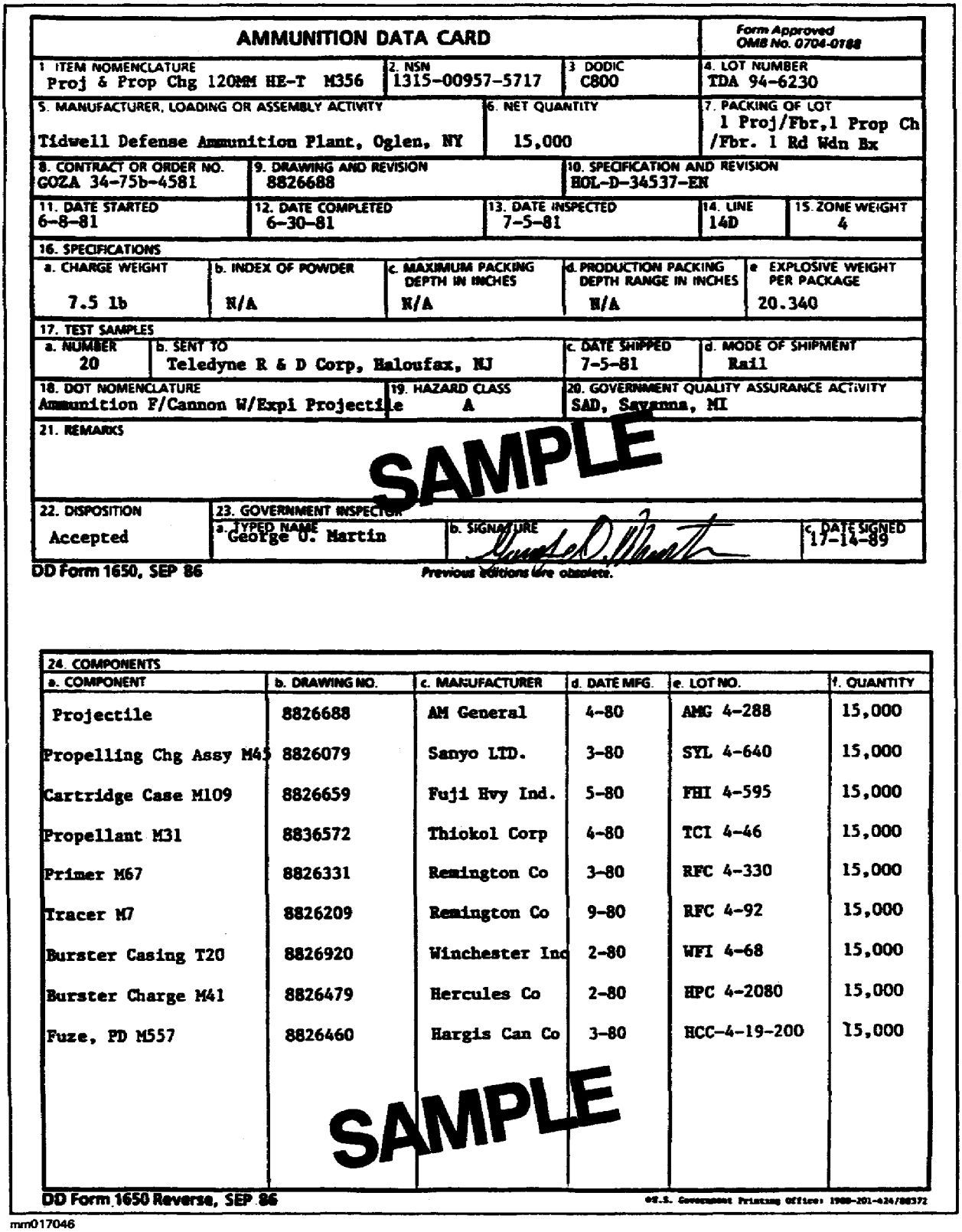
- Army (except chemical and GMLR) -Commander, US Army Armament, Munitions, and Chemical Command, ATTN: AMSMC-TDR-TF, Rock Island, IL 61299-6000.
- Army chemical (conventional) -Commander, US Army Chemical Research and Development Center, Chemical System Laboratory Tech Support Division, ATTN: AMSMC-TDC, Aberdeen Proving Ground, MD 21010-5423.
- Army GMLR-Commander, US Army Missile Command, ATTN: AMSMI-WD, Redstone Arsenal, AL 35898-5290.
- Air Force-Commander, Hill Air Force Base, ATTN: MMEDT, Hill Air Force Base, UT 84056-5609.
- Navy and Marine Corps-Commander, Naval Ordnance Station, Technical Documents Department, Code 8022, Louisville, KY 40214-5001.

The DD Form 1650 is another valuable source of information used during prescribed inspections. This record describes one lot of ammunition. It is originally completed by the manufacturer, and provides drawing numbers and other pertinent information on each component used in the assembly of one ammunition item. When the lot is renovated or modified, a new DD Form 1650 is completed with updated information. An example of a completed DD Form 1650 is shown in Figure 2-1.

Requests for DD Forms 1650 are made first to the consignor. If they are unavailable from the consignor, the requests should be made to the Commander, US Army Armaments, Munitions, and Chemical Command, ATTN: AMSMC-QAD, Rock Island, IL 61299-6000.

The examination of samples is normally conducted at an ammunition surveillance workshop building; however, when authorized by the commander or his or her designated representative, examinations may be performed at the storage site (or elsewhere), but they must conform to prescribed safety and security requirements.

Lots are normally inspected for deterioration, damage, unsafe conditions, and gross manufacturing defects. Gauges and other precision measuring instruments are used during the conduct of sampling inspections, when applicable.



AMMUNITION DATA CARD

Form Approved OMB No. 0704-0188

1. ITEM NOMENCLATURE	2. NSN	3. DODIC	4. LOT NUMBER
Proj & Prop Chg 120MM HE-T M356	1315-00957-5717	C800	TDA 94-6230

5. MANUFACTURER, LOADING OR ASSEMBLY ACTIVITY	6. NET QUANTITY	7. PACKING OF LOT
Tidwell Defense Ammunition Plant, Oglen, NY	15,000	1 Proj/Fbr,1 Prop Ch /Fbr. 1 Rd Wdn Bx

8. CONTRACT OR ORDER NO.	9. DRAWING AND REVISION	10. SPECIFICATION AND REVISION
GOZA 34-75b-4581	8826688	HOL-D-34537-EN

11. DATE STARTED	12. DATE COMPLETED	13. DATE INSPECTED	14. LINE	15. ZONE WEIGHT
6-8-81	6-30-81	7-5-81	14D	4

16. SPECIFICATIONS

a. CHARGE WEIGHT	b. INDEX OF POWDER	c. MAXIMUM PACKING DEPTH IN INCHES	d. PRODUCTION PACKING DEPTH RANGE IN INCHES	e. EXPLOSIVE WEIGHT PER PACKAGE
7.5 lb	N/A	N/A	N/A	20.340

17. TEST SAMPLES

a. NUMBER	b. SENT TO	c. DATE SHIPPED	d. MODE OF SHIPMENT
20	Teledyne R & D Corp, Halousax, NJ	7-5-81	Rail

18. DOT NOMENCLATURE	19. HAZARD CLASS	20. GOVERNMENT QUALITY ASSURANCE ACTIVITY
Ammunition F/Cannon W/Expl Projectile	A	SAD, Savanna, MI

21. REMARKS

SAMPLE

22. DISPOSITION	23. GOVERNMENT INSPECTION		
	a. TYPED NAME	b. SIGNATURE	c. DATE SIGNED
Accepted	George O. Martin		17-14-89

DD Form 1650, SEP 86 Previous editions are obsolete.

24. COMPONENTS

a. COMPONENT	b. DRAWING NO.	c. MANUFACTURER	d. DATE MFG.	e. LOT NO.	f. QUANTITY
Projectile	8826688	AM General	4-80	AMG 4-288	15,000
Propelling Chg Assy M45	8826079	Sanyo LTD.	3-80	SYL 4-640	15,000
Cartridge Case M109	8826659	Fuji Hvy Ind.	5-80	FHI 4-595	15,000
Propellant M31	8836572	Thiokol Corp	4-80	TCI 4-46	15,000
Primer M67	8826331	Remington Co	3-80	RFC 4-330	15,000
Tracer M7	8826209	Remington Co	9-80	RFC 4-92	15,000
Burster Casing T20	8826920	Winchester Inc	2-80	WFI 4-68	15,000
Burster Charge M41	8826479	Hercules Co	2-80	HPC 4-2080	15,000
Fuze, PD M557	8826460	Hargis Can Co	3-80	HCC-4-19-200	15,000

SAMPLE

DD Form 1650 Reverse, SEP 86 U.S. Government Printing Office: 1988-201-424/80372

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Figure 2-1. An example of the front and back of a completed DD Form 1650 (Ammunition Data Card).

Inspection results for each lot or serial number (SN) inspected must be considered in conjunction with the results of previous inspections for that lot or SN. Trends in the serviceability of the lot or SN must be analyzed to determine if further action is required. This analysis could indicate that the inspection interval for the lot or SN needs to be expanded or reduced, that corrective action in storage conditions is required, or that additional lots of the item require inspection prior to their next scheduled inspection date.

Sample Size

The sample size (how many items are to be pulled from a lot of ammunition for inspection) is governed by sampling plans provided in SB 742-1 or by a sampling plan provided in the SB for the particular item of ammunition. The sample size depends on the type of ammunition, the type of storage, and the type of inspection being conducted. An example of a sampling plan is shown in Figure 2-2.

Table 2-2.
Sample Sizes and Acceptance/Rejection Numbers

Sample Size			Accept/Reject Numbers (defectives)					
	SAA	Other	Critical AC-RE		Major AC-RE		Minor AC-RE	
Outer pack	20	20	0	1	1	2	2	3
Inner pack	20	20	0	1	1	2	2	3
Belt (SAA)	20		0	1	1	2	2	3
Item (Other)		20	0	1	1	2	2	3
Item (SAA)	300		0	1	14	15	21	22

NOTE

Inner pack and item samples must be selected from a minimum of ten outer packs. Additional outer packs must be inspected at either the inspection or storage location(s) to make a total sample size of 20.

NOTE

If rounds are linked, 20 belts should be inspected for defective links and subjected to a torsion test and a dead weight test.

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Figure 2-2. Example of an inspection sampling plan (extracted from SB 742-1).

Sample Disposition

Hermetically-sealed containers are resealed with tape. The taped end of the container is then dipped in a sealing compound. The exterior of the package of samples is identified as surveillance samples, not to be shipped unless the total lot quantity is being shipped. The same sample will be reused for subsequent inspections.

Samples of small-arms ammunition packaged in metal-lined boxes are used on a recurring basis. The lids are temporarily replaced using tape and sealing compound. Boxes are identified as surveillance samples, not to be shipped. If the entire lot is scheduled for shipment, these lids are resoldered.

Samples packaged in barrier material are resealed according to the instructions furnished with the material. New bags must be prepared if the original bag cannot be resealed and equivalent barrier material is available. Samples that have been properly resealed should not be used on a recurring basis.

Samples in jungle pack, and those in barrier material that cannot be properly resealed, must be resealed using pressure-sensitive adhesive tape. These samples are then used on a recurring basis. Outer packs are identified as surveillance samples, not to be shipped. When the entire lot is scheduled for shipment, samples in barrier material must be resealed, if possible.

Serviceable samples are returned to storage with the parent lot.

Ammunition with critical defects, considered too hazardous to store, is destroyed as soon as possible according to approved procedures. When applicable, ammunition with critical defects is rendered safe to permit safe handling. The emergency disposal of lethal and incapacitating chemical munitions must comply with applicable public laws. The disposal of lethal and incapacitating chemical munitions by detonation is prohibited unless specifically authorized by higher headquarters. Items or lots are sometimes assigned ACC-H or placed in the demilitarization or disposal account for reasons that could adversely affect future storage safety. Such munitions must be identified at the time of classification for more extensive inspection or for priority demilitarization.

In samples with sufficient defectives to cause lot rejection, the defective samples are tagged or otherwise marked for identification and returned to the parent lot.

When defective samples are noted in insufficient quantities to cause rejection of a serviceable lot, they are repaired or stored separately from the parent lot. Only serviceable samples may be returned to serviceable parent lots.

Rejected lots or samples must be reported according to DA Pamphlet 738-750. Lots containing critical defectives must be locally suspended and reported to the appropriate commodity command by the most expeditious means. The item's nomenclature, its NSN, its lot number or SN, the defect or defects encountered, the number of defectives, and the number of samples examined must be included in the report. Two copies of the DA Form 1650 and the DA Form 3022-R must also be forwarded to the appropriate commodity command. If possible and appropriate, photographs should be included.

TYPES OF SURVEILLANCE INSPECTIONS, CLASSIFICATION OF DEFECT STANDARDS, AND CONDITION CODES

You are now familiar with the reasons for ammunition surveillance and the methods used in sample selection, inspection, and disposition. The next step is to learn what types of inspections are performed, how defects are classified, how condition codes are assigned, and how to distinguish between serviceable, unserviceable, and suspended ammunition.

Types of Ammunition Surveillance Inspections

Initial Receipt Inspections (IRIs). These are performed within 30 days of receiving materials (directly from the manufacturer, vendor, or government activity) that have been inspected and accepted by the government at the point of origin. This inspection is expected to identify gross manufacturer errors, and is not intended as a manufacturer's acceptance-type inspection. IRIs are performed on a sampling basis by lot or group. They should reveal damage that occurred in transit, manufacturing defects, and nonstandard conditions.

Receipt Inspections (RIs). These are performed when materiel is received from another storage activity, if the DA Form 1650 shows that required inspections or tests were performed on the lot within the specified time intervals for the item. The RI is performed on a sampling basis by lot or group for damage in transit only. If an additional inspection is indicated, its scope is determined by the QASAS in charge. When materiel is returned

from users, 100 percent of the contents of unsealed containers is inspected. Gauging is performed as required. Sealed containers are normally inspected on a sampling basis, by lot, for damage in transit, deterioration, and nonstandard conditions. Used packaging materials (such as boxes, fiber containers, and residue) are also inspected.

Acceptance Inspections (AIs). These inspections are performed on materiel received from the contractor or plant that requires inspection and acceptance at the destination, on materiel that is inspected at the destination, on materiel that is inspected at the origin and that requires acceptance at the destination, and on components from demilitarization that are to be reused or returned to the stockpile. Instructions for an AI are furnished by the applicable commodity command, when required.

Periodic Inspections (PIs). PIs, also called cyclic inspections, are performed on all materiel except that in condition code H or in demilitarization accounts. Materiel is inspected periodically for deterioration and for nonstandard conditions. The purpose of inspecting unserviceable, economically repairable, and suspended ammunition is to detect evidence of further deterioration that may alter the percentages. This may, in turn, require a rework or a change of condition code. If stocks are stored under adverse conditions, they must be examined on an annual basis by lot or by group sampling, or more frequently as determined by the QASAS in charge. If stocks are stored under normal conditions, the periodic inspection interval will be that given in SB 742-1, as shown in Figure 2-3.

Safety In Storage Inspections (SISs). These are performed on unserviceable, nonrepairable ammunition and on all ammunition in demilitarization accounts (whether it is serviceable or unserviceable) to ensure safety for continued storage and handling. Handling includes the preparatory actions necessary to demilitarize the items. The QASAS determines whether the defects noted could result in a hazardous situation (for handling or for storage) in the foreseeable future for each lot in this category. The SIS inspection is conducted prior to handling any ammunition that has been declared unserviceable.

Storage Monitoring Inspections (SMIs). SMIs are performed as required by the applicable technical instructions for specific items, or as determined necessary by the QASAS in charge. An SMI is performed on items in storage. It includes, but is not necessarily limited to, the inspection of lethal chemical agent munitions, containers of bulk lethal chemical agents, and containerized lethal chemical agent munitions. It is performed to detect leaks and other defects that can be seen, and to read and record the pressure and relative humidity of items packaged in pressurized or desiccated containers.

Special Inspections (SPIs). SPIs are performed at the direction of higher headquarters, or to satisfy special or local requirements when approved by the QASAS in charge. The reason for conducting an SPI must be entered on the inspection report.

Preissue Inspections (PIIs). These are inspections other than PIs that must be performed prior to issue. For example, PIIs are performed on ammunition destined for preposition ships, as a special check for specific defects as determined by the QASAS in charge, or when directed by higher headquarters.

Note that a lot overdue for a PI is given a PI prior to shipment, not a PII. The reason for conducting a PII must be entered on the inspection report.

Verification Inspections (VIs). VIs are performed on materiel processed during preservation and packaging (P&P) and during maintenance operations (such as renovation, modification, or overhaul).

Periodic Inspection Intervals

Category	Year
W	5
X	4
Y	3
Z	2

NOTE

Categories for specific items or family of items covered by a SASIP supersede guidance, given for general items in this paragraph.

Item	Category
(1) Activators	X
(2) Additive Jacket	Y
(3) Ammunition fixed and semi-fixed, 37-mm through 165-mm for guns and howitzers (see also para I–10):	
(a) AP (except 105-mm XM744), APERS, CAN, HE (all types), WP, TP	W
(b) Blank, illuminating	Y
(c) Chemical, colored smoke, HC, leaflet, pyrotechnic, riot control	Z
(d) 105-mm APFSDS–T M774	Annual
(4) Ammunition for mortars:	
(a) HE, WP, and practice w/explosive components	X
(b) Practice w/o explosive components, inert	W
(c) Chemical, FS smoke, leaflet, riot control	Z
(d) Illuminating	Y
(5) Ammunition for recoilless rifles	X
(6) Ammunition, inert, all types	W
(7) Ammunition, small arms, through 30-mm	W
(8) Bag loading assemblies for mortars	Y
(9) Bangalore torpedoes	X
(10) Black powder charges:	
(a) In hermetically sealed containers	Y
(b) Not in hermetically sealed containers	Z
(11) Blasting caps	Z
(12) Bombs:	
(a) HE, fragmentation, and WP unfuzed	W
(b) HE, fragmentation, WP fuzed or packed w/fuze, and photoflash	Y
(c) Chemical except WP	Z
(13) Boosters, all types	X
(14) Bursters	Y
(15) Canisters, smoke	Z
(16) Cartridge actuated devices (CADs)	Y
(17) Cartridge, bomb ejection	Y
(18) Cartridge cases, primed:	
(a) Artillery	Z
(b) Small arms	Y
(19) Cartridge, delay	Y
(20) Cartridge, engine starter	Y
(21) Cartridge, ignition	Y
(22) Cartridge, impulse	Y
(23) Cartridge, photoflash	Y
(24) Cartridge, powder actuated	Y
(25) Charge, practice, hand grenade	Z
(26) Chemical agent, bulk	Z
(27) Coupling base w/primer	Y
(28) Cutters	Y
(29) Delay elements, all types, delay plungers:	
(a) Hermetically-sealed elements	Y
(b) Not hermetically-sealed	Z
(30) Demolition kit, projected charge	X
(31) Demolition block charges	X
(32) Destroyers, all types (document, cryptographic equipment, file)	Z
(33) Destructors	Y
(34) Detonating cord:	
(a) In hermetically-sealed container	W
(b) Not in hermetically-sealed container	Z
(35) Detonation simulator, explosive M88	Z
(36) Detonators	Y
(37) Dispenser, aircraft mine, M58 and practice M132 loaded, and reload kits	Y
(38) Disperser, riot control	Z
(39) Dynamite, military (for commercial dynamite see para I–14.)	Y
(40) Expelling charges:	
(a) Black powder filled	Z
(b) Propellant filled	Y
(41) Explosive bolts	X
(42) Fire starters	Z
(43) Firing devices	Y
(44) Flares	Z
(45) Fuse, blasting, time	Z

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Figure 2-3. Periodic inspection (PI) intervals (extracted from SB 742-1).

Basic Load Inspections (BLIs). These are performed on stocks of munitions (including training, security, and contingency stocks) that are maintained by a military unit or by civilian security forces. BLIs are conducted annually according to TM 9-1300-206.

Surveillance Function Test Inspections (SFTIs). SFTIs are conducted according to the applicable regulations for specific items. A visual inspection, conducted when preparing test samples for SFTIs, may satisfy

the PI required for the lot or lots tested; however, additional samples may be required. The frequency of SFTIs is as prescribed in the SB for the item, or as directed by AMCCOM.

Inspection Intervals

As you have learned, the inspection interval depends mainly on the type of inspection and the situation or the operations taking place. However, the PI (or cyclic inspection) is a continuous operation using specified intervals.

The normal interval of inspection is based on the assigned category of the ammunition item to be inspected. These categories have been derived from research on the expected rate of deterioration. When the time since the date of the last inspection exceeds the assigned interval by six months, serviceable ammunition lots are transferred to ACC-D. This means that the ammunition cannot be issued before being inspected. The entire lot remains in ACC-D until the inspection has been performed.

When the inspection results of a specific lot reveal progressive degradation to such a degree that the lot may become unserviceable before expiration of the assigned category interval, the next inspection must be scheduled at a shorter interval based on the conditions detected, the storage conditions, and the materiel involved.

The normal interval of inspection may be expanded whenever local storage conditions, climatic conditions, and previous inspections justify doing so. A prime concern is relative humidity. The QASAS in charge is responsible for determining which items and specific lots to place in an expanded inspection interval status.

For most efficient operations, all similar items should be programmed during the same month or months of a given year's PI schedule. To establish and maintain a schedule by like items, it is permissible to vary the date of the next inspection by decreasing the interval by up to five months, or increasing the interval by up to six months. Emphasis is placed on the inspection of overdue lots placed in ACC-D pending inspection. When the total workload precludes this, inspections are scheduled to ensure that sufficient quantities with a current inspection are on hand to fulfill issue requirements.

Defect Classification Standards

Ammunition defects are classified as either critical, major, minor, or incidental.

A critical defect is one that is likely to result in hazardous or unsafe conditions for individuals using, maintaining, or depending on the item, or one that is likely to cause the destruction of, or serious damage to, the weapon or launcher under training or combat conditions.

A major defect is one that is likely to result in failure during tactical use, or one that precludes or materially reduces the usability of the item.

A minor defect is one that is not likely to result in failure during use, or reduce the usability of the item, but should be corrected prior to issue.

A incidental defect is one that cannot be classified as critical, major, or minor. It may be corrected when routine maintenance is performed on the item. Incidental defects are not normally reported to the commodity command (unless specifically requested), but they are recorded on the DA Form 3022-R.

Some items are evaluated on the basis of defectives rather than defects. Defectives are items having one or more defects; that is, an ammunition item having one or more major defects is considered a major defective. An ammunition item having one or more critical defects, one or more major defects, and one or more minor defects is

classified as a critical defective, a major defective, and a minor defective. SB 742-1 and the SBs for specific items provide inspection criteria and defect classifications to assist the inspector with the inspection and with the classification decision. An example of such inspection criteria and defect classifications is given in the extract from SB 742-1 in the Appendix at the end of this subcourse booklet.

The paragraphs that follow provide guidance on how to classify some specific types of ammunition defects.

The deterioration of metal, plastic, and rubber components is classified as follows:

- Critical. Deterioration that creates a hazardous condition for persons using or maintaining the item.
- Major. Deterioration that significantly reduces or precludes the usability of the item and requires maintenance or renovation prior to issue.
- Minor. Deterioration that does not significantly reduce the usability of the item. Minor maintenance is normally required to restore the item to an issuable condition or to prevent more serious deterioration.
- Incidental. Superficial deterioration that affects only the surface of the item and not the intended use of the item. Items with incidental defects are acceptable for issue at the time of inspection.

Mixed ammunition defects are classified as follows:

- Critical. Types of ammunition mixed within a lot that can result in hazardous or unsafe conditions for persons using or maintaining them (such as ball ammunition mixed with grenade cartridges, or blank HE ammunition mixed with practice ammunition).
- Major. Types of ammunition mixed within a lot that can result in failure during tactical use (such as HE mixed with HEAT ammunition or the inclusion of the incorrect fuze model).
- Minor and incidental defects are not defined for mixed ammunition.

Another type of defect is damage to ammunition. Note that any damage other than that defined here must be noted on the appropriate record for information, but may not be used as an acceptance or rejection criterion. The following is a guide to classifying ammunition defects caused by damage:

- Critical. A condition where the damage can cause hazardous or unsafe conditions for persons using or maintaining the item (such as broken safety devices, or broken fins on fin-stabilized projectiles).
- Major. A condition where the damage can cause a failure or materially reduce the intended use of an item (such as dented or distorted cartridge cases, damaged rotating bands, or misaligned components).
- Minor and incidental defects are not defined for damaged ammunition.

The following is a guide for classifying packaging defects:

- Critical. A condition where the packaging or the absence of packaging components can cause hazardous or unsafe conditions for persons using, handling, transporting, or maintaining the ammunition.
- Major. A condition where containers are damaged, weathered, or decayed to the extent that the contents cannot be adequately protected, the containers require replacement, or their contents cannot be readily removed. A major defect also exists when the cap or closure is damaged or insecure to the extent that the contents cannot be adequately protected, and when the contents are loose to the extent that the item cannot be adequately protected during handling and transportation.
- Minor. A condition where containers are weathered or deteriorated to the extent that maintenance is normally required prior to the issue or use of the ammunition. Examples of minor packaging defects include wet, moldy, or mildewed inner containers (except metal ones) and improper or inadequately-sealed fiber containers.
- Incidental. Any packaging defect other than critical, major, or minor. Such defects are corrected during routine maintenance. Examples of incidental packaging defects are broken or missing handles or cleats and broken, missing, or ineffective hardware, banding, or packing components. For a packaging defect to be classified as incidental, the contents must be safe and adequately protected for storage and shipment.

Defects resulting from markings that are missing, illegible, incorrect, or misleading are classified as follows.

- Critical. A condition where the markings can result in hazardous or unsafe conditions for persons using or maintaining the item (such as an incorrect delay time, an incorrect color or type of smoke or signal, or HE ammunition with practice markings).
- Major. A condition where the markings can cause misuse or failure (such as an incorrect model or type of round or fuze or an HE marking instead of HEAT).
- Minor. A marking defect other than critical or major that should normally be corrected before issuing the ammunition. Examples of minor marking defects are an incorrect or missing lot number and a missing or incorrect Department of Transportation (DOT) name on the item or packing.
- Incidental. Any marking defect other than critical, major, or minor. Such defects are corrected during routine maintenance. Incidental marking defects include illegible or missing markings (such as nomenclature, NSN, DODIC, cube, or weight) and incorrect weight format or placement.

Tools Used During Inspections

The tools used to detect and classify defects include gauges and other precision measuring instruments.

As a general policy, every lot of ammunition that can be gauged must be gauged at least once during its storage life cycle. However, ammunition lots for which the specified gauges are not immediately available must not be reclassified to a lesser condition code, nor should shipments to users be denied pending gauging.

Gauges are requisitioned expeditiously by ammunition surveillance organizations for ammunition on hand or due in from new production. Gauging is accomplished whenever possible during RIs or at the next regularly-scheduled PI. For a lot that has been gauged at least once during its storage life cycle, the use of gauges during

subsequent inspections is only required when directed by the QASAS. Lots rejected because they failed to gauge correctly during IRIs are reclassified to ACC-L and reported on the appropriate report. Lots rejected because they failed to gauge correctly during inspections other than IRIs are reclassified to ACC-D (for major or minor defects) or ACC-J (for critical defects) pending receipt of disposition instructions from the appropriate commodity command.

Precision measuring instruments that are not ammunition-peculiar (such as torque wrenches, feeler gauges, and micrometers) are used to inspect for critical and major defects whenever required.

Surveillance of Ammunition by Testing

Tests are performed at designated storage installations and at ammunition test facilities or laboratories according to the applicable SBs and ammunition surveillance test procedures (ASTPs). These SBs and ASTPs prescribe the sample size, the equipment and methods to be used, the data to be recorded, and the criteria for evaluating the lot tested.

The small-caliber stockpile reliability program (SCSRP) and the centralized trace test program (CTTP) of small-arms ammunition are accomplished under a centralized control program managed by AMCCOM (AMSMC-QAS).

All candidate lots under test are considered functionally serviceable by the shipping installation unless otherwise notified by AMCCOM. Annual computerized printouts of SCSRP and CTTP test results are distributed by AMCCOM to outside continental United States (OCONUS) commands and to CONUS storage installations. By 30 June of each year, OCONUS commands and CONUS storage installations are queried on the availability of candidate lots for testing. Appropriate management controls are established to ensure program execution. The storage installation surveillance organization monitors all shipping actions to ensure the arrival of surveillance samples at the test facility on or before the required delivery date. The selection and preparation of the samples for shipment to a test facility must be performed according to SB 742-1, Chapter 3.

The centralized control function test program (CCFTP) is also managed by AMCCOM. It includes all stocks reported under WARS for which an ammunition surveillance function test procedure exists. These procedures are published as SBs. Except for material covered by SBs relating to a special test, function testing is accomplished under the CCFTP. AMCCOM informs the storing installations of the lots to be tested during the fiscal year.

Under the CCFTP, all visually serviceable lots are considered functionally serviceable. Lots that exhibit obvious exposure to adverse conditions, causing their functional reliability to be suspect, are placed in ACC-D and reported by letter to AMCCOM for disposition. The selection of samples and the test results are documented on the DA Form 984 (Munitions Surveillance Report). All samples are selected and prepared for shipment to test facilities under the supervision of a QASAS. The appropriate commodity command requests samples and directs shipment to the designated test facility.

Function tests are performed at designated function test facilities as soon as possible within the fiscal year (consistent with local workload priorities). When samples cannot be tested by the designated facility because required equipment or facilities are not available, AMCCOM is contacted for further instructions. Test results are reported and forwarded to AMCCOM. If test findings are inconclusive in determining the overall reliability of the stockpile, AMCCOM may require additional testing.

When a critical defect is encountered during the functional test, the QASAS in charge is notified. If there is no hazard to the personnel performing the test, the test should be completed. If the QASAS in charge considers the continuation of the function test to be hazardous, further testing of the lot is immediately discontinued and the appropriate commodity command is notified.

Function tests of conventional and chemical ammunition stored at installations are performed as directed by AMCCOM. AMCCOM includes basic and operational loads and contingency stocks of function test items in the CCFTP and directs the shipment of samples to designated facilities for testing. AMCCOM also furnishes advance planning data for budgeting and programming.

Upon receipt of sample requests from AMCCOM, representative samples from each lot are selected by a QASAS and prepared for shipment. AMCCOM evaluates the test findings and furnishes dispositions for all materiel determined to be other than functionally serviceable.

The large-caliber stockpile reliability program (LCSRP) includes gun, howitzer, and mortar ammunition larger than 40mm; mines; and small rockets. The actual testing is conducted by the test facilities in compliance with the appropriate ASTP. LCSRP samples are selected and prepared for shipment according to the general guidance of current regulations and the specific instructions provided in each request for samples.

Functional Codes (FCs)

FCs are assigned to ammunition lots based on test results. These FCs apply to all conventional and chemical munitions included within the CCFTP. They are assigned and used by AMCCOM in arriving at final condition code determinations. The FCs are as follows:

- FC-A describes munitions that are functionally serviceable and perform essentially to their design intent for service use.
- FC-B describes munitions that are functionally serviceable and completely satisfactory for service use. Although somewhat below FC-A in overall performance, the item lot is not sufficiently impaired to warrant reconditioning or demilitarization.
- FC-D describes munitions that are markedly inferior to FC-B in functional performance. Their issue would be justified only in an emergency. Such items should be demilitarized, renovated, or used as priority for training to preclude loss of assets, as determined by the commodity command.
- FC-J describes lots that are considered too hazardous to use due to a critical functional defect or malfunction encountered during testing, training, or combat.

Lots tested and evaluated as FC-A or FC-B, based on functional performance characteristics, are functionally serviceable for unrestricted issue and use, unless there is a specific stipulation qualifying their use (such as "restricted to training use only").

Lots from which samples have been submitted to ammunition test facilities are considered functionally serviceable unless otherwise instructed or specified. These lots are retained in the condition codes assigned based on current visual inspections. Upon completion of ASRP testing and evaluation, AMCCOM notifies all concerned activities if a change to functional status is required.

Ammunition Condition Codes (ACCs)

Every item of ammunition is assigned an ACC. ACCs are designated based on a combination of tests and inspections. They are based on both functional and nonfunctional characteristics.

ACCs are designated as ACC-A through ACC-N (excluding I) as shown in Table 2-1. Note that ACCs are divided into three main groups-serviceable, unserviceable, and suspended. ACC-A through ACC-D are used for serviceable munitions, ACC-E through ACC-H are used for unserviceable munitions, and ACC-J through ACC-N are used for suspended munitions. Ammunition items are occasionally classified as ACC-P, which indicates salvage materials and inert components.

As an ammunition officer, operations officer, accountable officer, or ASP commander, you do not need to remember detailed information on each ACC. However, it is extremely important for you to know the summary information given in Table 2-1.

Table 2-1. Ammunition condition codes (ACCs).

1. Serviceable Munitions

ACC	Ammunition Status
A	Issuable with no restrictions.
B	Issuable with certain restrictions.
C	Priority Issue—borderline condition.
D	Serviceable, but requires test, inspection, or other action prior to issue.

2. Unserviceable Munitions

ACC	Ammunition Status
E	Needs minor maintenance.
F	Economically repairable.
G	Missing parts or components.
H	Condemned.

3. Suspended Munitions

ACC	Ammunition Status
J	Pending classification—ACC unknown.
K	Unit return not inspected—awaiting inspection/ classification.
L	In litigation or negotiation with contractors.
M	Designated for maintenance or modification program.
N	Emergency combat use only.

Suspended or Restricted Munitions

It is critically important that ammunition items with suspected or confirmed defects that present a safety hazard during firing, handling, transportation, or storage are expeditiously suspended from further issue until the hazard has been corrected. The suspension and restriction program is managed by AMCCOM and MICOM, and applies to ammunition that has been suspended or restricted worldwide. It does not include ammunition that has been locally suspended.

A temporary suspension is an interim order (distributed by message) prohibiting the issuance of an item pending the results of a malfunction investigation. Quantities on hand are usually reported through command channels by electrical message.

A permanent suspension is an order based on an engineering evaluation that confirms that the munition is unsafe or otherwise defective. Quantities on hand are reported through command channels on a DA Form 2415. Permanently-suspended munitions declared unsuitable for issue and use require either maintenance, demilitarization, or inspection before they can be used.

Disposition instructions on permanently-suspended munitions are furnished by the national maintenance point (NMP) upon receipt of the DA Form 2415. The DA Form 2415 is used to identify suspended stocks in storage.

A listing of restricted or suspended lots of ammunition is published quarterly in TB 9-1300-385, *Munitions, Restricted or Suspended.* During the quarter, ammunition supplemental notices and overhead fire supplemental notices are used to publish any additional restrictions or suspensions that occur. The next quarterly publication of TB 9-1300-385 incorporates all supplements and announces any releases from suspension.

The control of suspended stocks is the responsibility of the ammunition surveillance organization that maintains the installation's master suspension records. The ammunition surveillance organization is also responsible for ensuring that suspended items that are restricted from handling or movement are not moved, handled, or shipped, except as specifically authorized by higher headquarters.

Classes of Suspension

There are two classes of suspension-Class A and Class B. Class A suspensions apply to defective munitions that endanger life, property, or materiel. Class B suspensions apply to all other defective munitions.

Suspension Limitations

There are three limitations on suspensions as follows:

- The suspended from issue and use. (SIU) limitation imposes no restrictions on the handling, movement, or transport of the suspended munition.

- The suspended from issue, movement, and use (SIMU) limitation does impose such restrictions due to the safety hazard presented by the munition.

- ACC-N munitions may be issued only in emergency combat conditions when no other serviceable stocks are available.

Restrictions

Ammunition items may be restricted for issue, handling, transportation, storage, and use for a variety of reasons. TB 9-1300-385 explains what the restrictions may be (such as issuable only to certain units, usable only in certain weapons, or stored or fired only within certain temperature limits).

AMMUNITION SURVEILLANCE FOR SAFETY AND LOGISTICS FUNCTIONS

Commanders and QASAS personnel are responsible for ammunition safety and logistics functions. These functions include inspecting buildings and areas where ammunition and explosives are stored; inspecting ammunition and explosives handling, storage, maintenance, shipping, and destruction operations; and inspecting the vehicles and vessels used to transport ammunition and explosives. Applicable safety, transportation, storage, maintenance, demilitarization, and supply regulations and directives issued by responsible commands are used in conducting these inspections and to ensure the adequacy of SOPs. The primary concerns of these inspections are safety, proper conduct of the operation, compliance with SOPs, lot integrity, and serviceability. The QASAS in charge maintains close coordination with the safety director on matters affecting the explosive safety program at an installation.

Handling, Storage, and Shipping Operations

QASAS personnel review handling, storage, and shipping operations for compliance with applicable safety and operational regulations. Reports of deficiencies are forwarded through appropriate channels for required corrective actions. Follow-ups are conducted to ensure that all deficiencies are corrected. A QASAS clears all lots of ammunition, components, and related materials designated for shipment or issue. Clearance procedures include reviewing DA Forms 3022-R (Army Depot Surveillance Records), suspension records, and other applicable references.

Inspection of Storage Buildings and Storage Areas

Magazines and other buildings where ammunition and explosives are stored are given a formal inspection every seven months. These inspections are performed by QASAS personnel, who record and report the inspection results. A formal record is kept of the results of these inspections. This record includes discrepancy reports that are forwarded to the responsible installation activities, and the resolution or corrective actions resulting from these reports. Inspection results are part of the technical history of the items in storage. Any unusual or changing conditions encountered during an inspection that could have an adverse effect on any of the stored items are recorded. Such conditions, along with any potentially hazardous conditions, are specifically noted and reported to the appropriate organization for prompt corrective action. Locations where potentially serious conditions are encountered are then reinspected to verify that the problems have been corrected.

Lightning protection systems within the ammunition area are visually inspected every seven months, and are tested once every 14 months for electrical continuity and adequacy of grounding. These inspections and tests are normally conducted by the surveillance organization, but they may be performed by the facilities engineer, depending on the individual installation and the availability of manpower. Regardless of which activity actually performs the inspection or the test, the procedures and the results are monitored and reviewed by QASAS personnel.

At the discretion of the QASAS in charge, the required inspection of magazines may be increased to quarterly or reduced to every 14 months depending on the activity or on local conditions. Reasons for changing intervals must be documented.

Inspection of Outdoor Storage Areas

A formal inspection of each outdoor storage site containing ammunition is made quarterly. This inspection consists of a general exterior inspection of the ammunition items and packages for evidence of deterioration, damage, and any conditions indicating the possibility of future deterioration. If the exterior inspection reveals any evidence of deterioration or nonstandard conditions, additional detailed inspections are made as necessary to determine the condition of all of the affected ammunition. Each outside site is inspected immediately following any unusual weather condition (such as severe rain, snow, or wind storms) that might damage or affect the ammunition. DA policy requires that the outdoor storage of ammunition and explosives be held to an absolute minimum.

Ammunition in outdoor storage is subjected to a complete PI at least semiannually. The primary emphasis of this PI is to detect any evidence of deterioration or hazardous conditions that may affect the continued serviceability or storage safety of the ammunition.

Inspection of Transport Vehicles and Vessels

Transport vehicles and vessels (motor vehicles, railcars, barges, ships, and aircraft) and transport containers used to transport ammunition and explosives are inspected inside and outside before loading to ensure their serviceability. Loading is performed according to the specific requirements for the transport mode and the type or types of ammunition and explosives involved. An authorized carrier's representative certifies the proper condition of railcars used to transport Class A explosives.

Transport vehicles carrying ammunition and explosives are inspected inside and outside before unloading operations are started. This inspection is performed to uncover any evidence of tampering or sabotage, missing cargo, and hazardous conditions resulting from damage in transit. The condition of the lading is observed upon receipt and during unloading operations to detect damaged cargo and to determine if improper blocking, bracing, or staying methods were employed.

Monitoring Major Training Area Operations

QASAS personnel assigned to live-firing training areas are responsible for providing technical assistance and support on ammunition quality and explosive safety matters to locally assigned personnel and to troops training at the facility. This includes, but is not limited to, providing range support during training exercises and investigating and reporting malfunctions involving ammunition.

During visits to firing ranges, the QASAS observes firing and, if possible, consults with troops to determine if any problems were encountered with the ammunition. Problems that are brought to the attention of the QASAS are investigated and reported through command channels to the appropriate commodity command.

AMMUNITION SURVEILLANCE RECORDS

The technical history of each lot, SN, or group is maintained by the surveillance organization. It includes the results of each inspection, test, and investigation, as well as any unusual or changing conditions affecting the ammunition. The technical history is an important record used in evaluating the serviceability and reliability of ammunition items. It is therefore important that all data recorded for inspections, tests, and investigations be accurate and concise. The information included in the technical history is determined by the information requirements of the supply, maintenance, and stockpile reliability organizations supported by the surveillance. The information required for supply purposes is determined by local procedures to satisfy local and higher-headquarters supply actions. The information required for maintenance purposes normally includes more details

on the extent of defects and the work required to return the item to an issuable condition. The types of data required to evaluate the reliability of the stockpile include the condition of the materiel, the quantity, the date of manufacture, the type of storage, the type of defects, the assignable cause or causes of defects, and the results of tests. The surveillance organization is also required to submit various other types of reports on items received or in storage, and to maintain certain specified records.

DA Form 3022-R (Army Depot Surveillance Record)

An example of a completed DA Form 3022-R, commonly called a DSR card, is shown in Figure 2-4. A DA Form 3022-R is prepared and maintained in an up-to-date status for each lot, SN, or group of ammunition in storage (except nuclear weapons).

When ammunition is shipped from one storage activity to another, a copy of the DA Form 3022-R is forwarded from the consignor to the consignee. When the shipment is from a CONUS depot to an overseas storage area, a copy is also forwarded to the appropriate overseas command commodity manager.

The DA Form 3022-R provides the complete technical history for each lot of ammunition, including a record of all inspections performed, storage conditions, maintenance performed, and any other pertinent information on the background of the lot.

DD Form 1575 (Suspended Tag-Materiel) and DD Form 1575-1 (Suspended Label-Materiel)

When TB 9-1300-385 shows that an ammunition lot in your area of responsibility has been suspended or restricted, identify the suspended stocks using a DD Form 1575 or DD Form 1575-1. Samples of these forms are shown in Figure 2-5. Annotate the appropriate form with one of the following remarks:

- Suspended-Issue Prohibited.
- Suspended from Issue, Movement, and Use.
- Suspended Except for Emergency Combat Use.

Attach the completed form to the ammunition lot stack.

Write your entries as large as you can. The command may authorize the fabrication of multilingual or more-conspicuous placards.

DA Form 3023 (Gage Record)

A DA Form 3023, shown in Figure 2-6, is received with each gauge. It includes pertinent gauge information. The DA Form 3023 is kept up to date, with actual gauge usage recorded on the reverse side. This form is used to determine when gauges should be submitted for a dimensional check, and is returned with a gauge that requires a use-test check.

DD Form 1650 (Ammunition Data Card)

The DD Form 1650 (see Figure 2-1 on page 2-7) is used as a record of ammunition and explosive material. It contains descriptive data pertaining to one lot of ammunition. The original DD Form 1650 for an ammunition lot is completed by the manufacturer. When a lot of ammunition or explosive material is changed or renovated, a new DD Form 1650 is completed for that lot.

ARMY DEPOT SURVEILLANCE RECORD
For use of this form, see SB 742-1 The proponent agency is DARCOM.

Name of Installation: Fort Hermann, CA.

NSN/PN	Nomenclature
1315-00-542-0179 C223	Cartridge 81MM HE M362

Lot/Serial No.	Grade	Date Mfg	Explo Wt/Pkg	Shelf Life Exp Dte	Wt/Cube	Stg Comp Grp & QD Class
PBA 92-011-6	NA	9-68	6.84	N/A	55 lb 1.4 cf	(08) 1.2E

DOT Name	DOT Class	Packed
Ammunition for Cannon w/explosive projectile	A	1/FBR CNTNR 3 CNTNR, 9 RD/WDN BX

Component Nomenclature	Lot/Serial No.
N/A	N/A

Alt/MWO Status: N/A

Location	Quantity	Cond Code	I L P	Location	Quantity	Cond Code	I L P	Location	Quantity	Cond Code	I L P
1-C-10	3003	C									
2-C-9	2,121	C									
3-C-21	3,212	C									

SAMPLE

DODAC/PN	Due Dates: Inspection	Due Dates: Monitor	Due Dates: Cal/Load Test	Packed	Cond Code	Caliber	Lot/Serial No.
1315-C223	Sep 92	N/A	N/A	1/Fbr 3/Wdn BX	C	81MM	PBA 92-011-6

RECORD OF INSPECTION

Date	Type Inspection	Location	Conditions Encountered	Code Remarks
5 Sep 80	RI	BLDG 39	No defects noted. ACC-A	Storage: W
29 Aug 84	PI	BLDG 39	Incidental packaging deterioration. Not significant to support ACC change.	Defect: AR Storage: W
14 Sep 88	PI	BLDG 39	Minor deterioration of propellant increment wrap material. Change from ACC-A to ACC-C.	Defects: AR, SL Storage: W
12 Oct 90	SPI	BLDG 39	Special inspection to ensure safety in firing. Ref: deteriorating increment wrap material. ACC-C	Defects: AR, SL Storage: W

DA FORM 3022-R. 1 May 76 — PREVIOUS EDITION IS OBSOLETE. (Paper size 8X10½"Image size 7 X 9½")
mm017096

Figure 2-4. A sample of a completed DA Form 3022-R (Army Depot Surveillance Record).

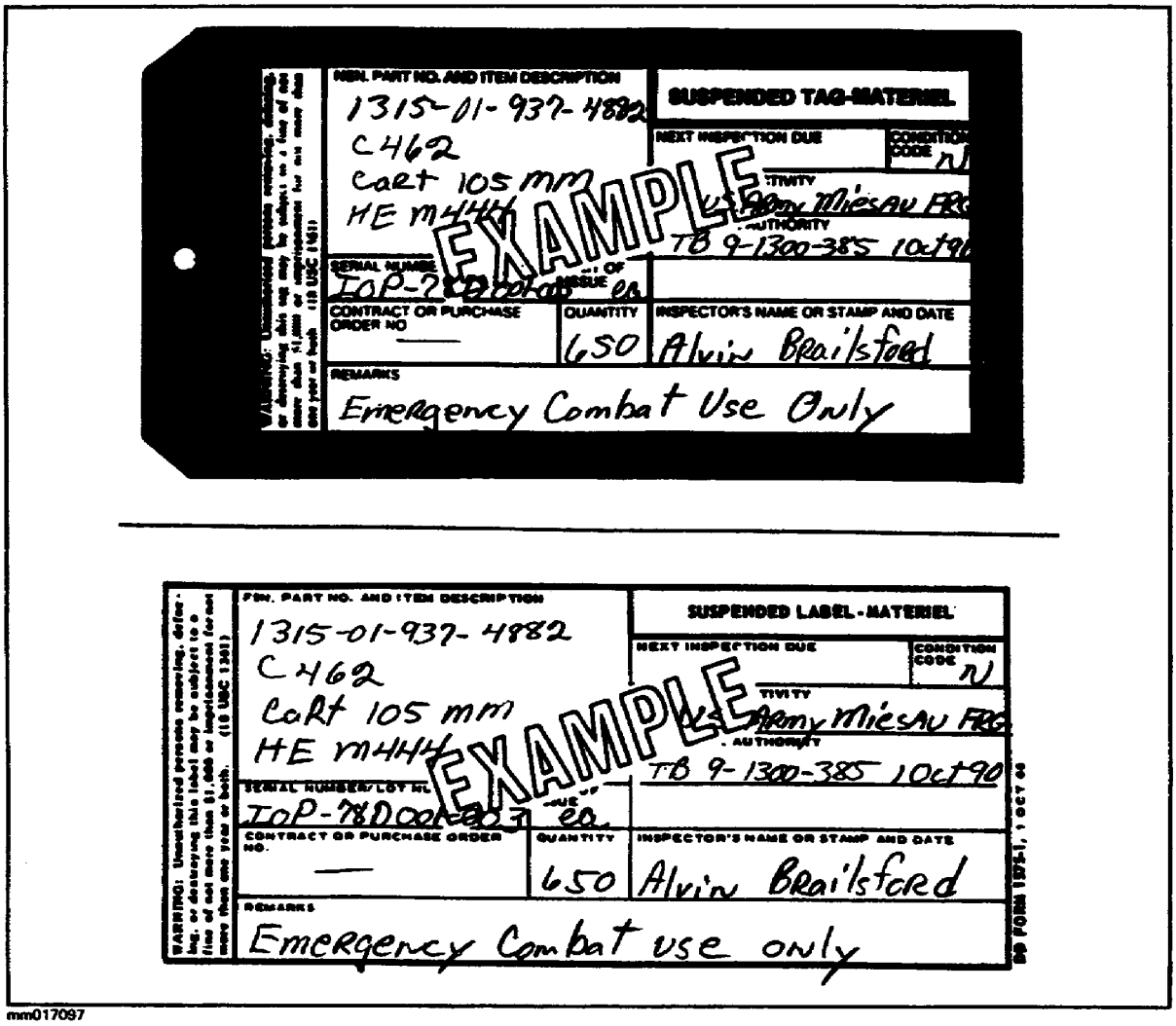


Figure 2-5. DD Form 1575 (Suspended Tag-Materiel) and DD Form 1575-1 (Suspended Label-Materiel).

DA Form 4508 (Ammunition Transfer Record)

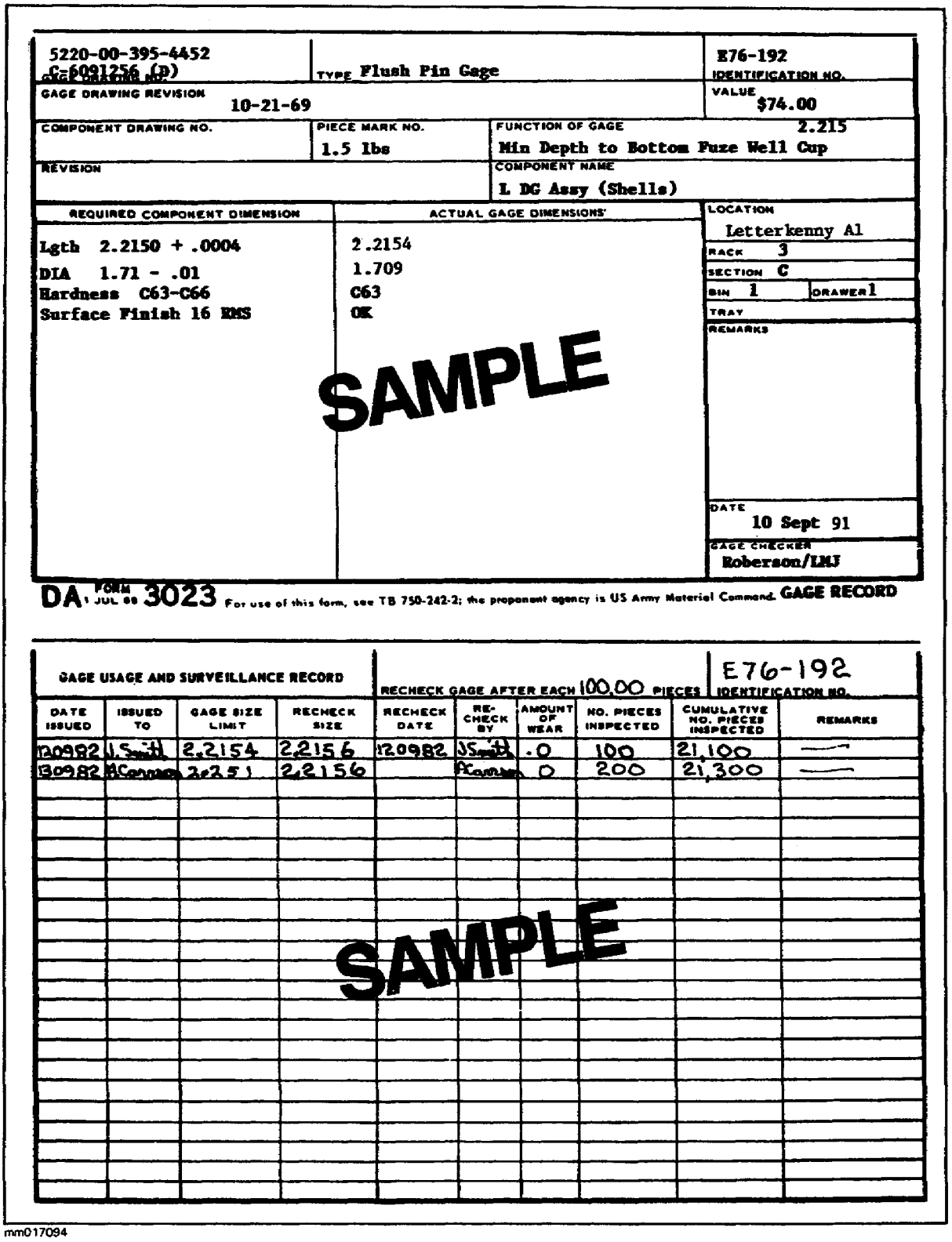
The DA Form 4508, shown in Figure 2-7, is used for local ACC, NSN, nomenclature, lot number, and SN changes. It is processed through the ammunition surveillance organization, and provides the accountable officer with a basis for changing stock accounting records

Equipment Logbooks and Maintenance Logs

The results of inspections and the maintenance performed on missiles and associated test and handling equipment are maintained according to DA Pamphlet 738-750.

Storage Monitoring Record

A locally-devised format, which may be either manual or automated, is used to record the performance of storage monitoring for each lot or SN of items requiring such monitoring. When the storage monitoring reflects nonstandard conditions, the results of the monitoring and the action taken are posted to the DA Form 3022-R.



5220-00-395-4452
C-6091256 (D)
GAGE DRAWING NO.

TYPE Flush Pin Gage

E76-192
IDENTIFICATION NO.

GAGE DRAWING REVISION
10-21-69

VALUE
$74.00

COMPONENT DRAWING NO.

PIECE MARK NO.
1.5 lbs

FUNCTION OF GAGE
2.215
Min Depth to Bottom Fuze Well Cup

REVISION

COMPONENT NAME
L DG Assy (Shells)

REQUIRED COMPONENT DIMENSION	ACTUAL GAGE DIMENSIONS
Lgth 2.2150 + .0004	2.2154
DIA 1.71 - .01	1.709
Hardness C63-C66	C63
Surface Finish 16 RMS	OK

LOCATION
Letterkenny Al
RACK 3
SECTION C
BIN 1 DRAWER 1
TRAY

REMARKS

DATE
10 Sept 91

GAGE CHECKER
Roberson/LMJ

SAMPLE

DA FORM 1 JUL 69 3023 For use of this form, see TB 750-242-2; the proponent agency is US Army Materiel Command. GAGE RECORD

GAGE USAGE AND SURVEILLANCE RECORD

RECHECK GAGE AFTER EACH 100.00 PIECES

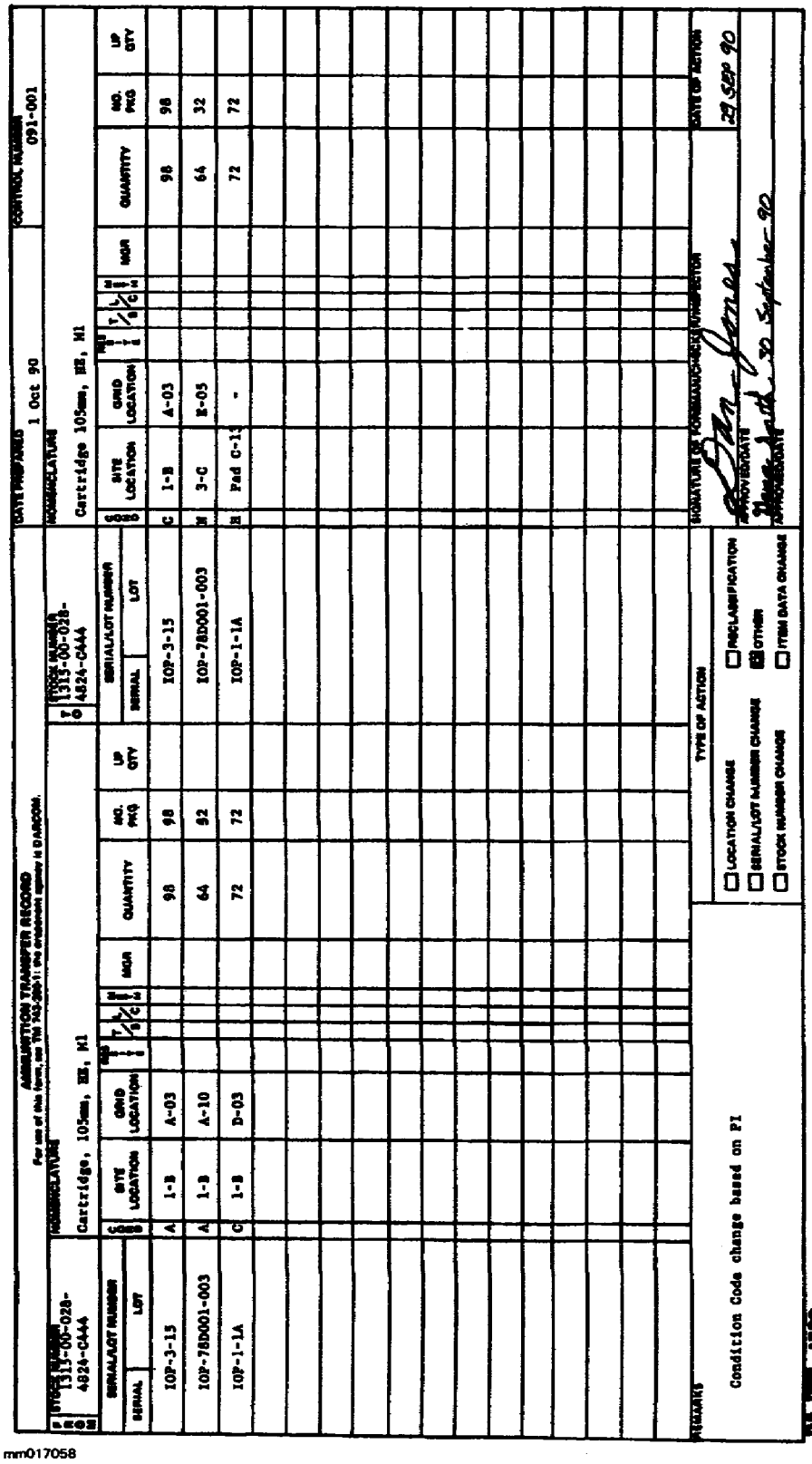
E76-192
IDENTIFICATION NO.

DATE ISSUED	ISSUED TO	GAGE SIZE LIMIT	RECHECK SIZE	RECHECK DATE	RE-CHECK BY	AMOUNT OF WEAR	NO. PIECES INSPECTED	CUMULATIVE NO. PIECES INSPECTED	REMARKS
120982	J.Smith	2.2154	2.2156	120982	JSmith	.0	100	21,100	—
130982	MConnor	2.2151	2.2156		MConnor	0	200	21,300	—

SAMPLE

mm017094

Figure 2-6. An example of the front and back of a completed DA Form 3023 (Gage Record).



mm017058

Figure 2-7. An example of a completed DA Form 4508 (Ammunition Transfer Record).

AMMUNITION SURVEILLANCE REPORTS

DA Form 2415 (Ammunition Condition Report) (ACR)

The DA Form 2415 is used to report failures, discrepancies, and permanent suspensions of ammunition materiel (except nuclear weapons). Instructions for preparing and using the DA Form 2415 are provided in DA Pamphlet 738-750. An example of a completed DA Form 2415 is shown in Figure 2-8.

This form is used to report unserviceable ammunition that is economically repairable. These are ammunition items in ACC-E, ACC-F, ACC-G, or ACC-N. The DA Form 2415 is also used to report unserviceable ammunition that is uneconomically repairable, and to recommend or request demilitarization and disposal procedures. These are ammunition items in ACC-H.

The DA Form 2415 is not used to report temporarily-suspended ammunition, to make equipment improvement recommendations, to report serviceable but obsolete ammunition, or to report incorrect publications.

Standard Form (SF) 368 (Product Quality Deficiency Report)

The SF 368 is the authorized means for materiel users to report the following:

- Faults in equipment design, operation, and manufacturing.
- Equipment improvement recommendations.
- New equipment that is unsatisfactory due to below-standard quality or workmanship.

Instructions on completing and using the SF 368 are given in AR 702-7, *Reporting of Product Quality Deficiencies Across Component Lines*, dated 27 November 1989, and in DA Pamphlet 738-750. An example of a completed SF 368 is shown in Figure 2-9.

SF 364 (Report of Discrepancy) (ROD)

This form is used to report improper packaging or item discrepancies that may be the fault of the shipper. Instructions on completing and using the SF 364 are given in AR 735-11-2, *Reporting of Item and Packaging Discrepancies*, dated 1 October 1986. An example of a completed SF 364 is shown in Figure 2-10. The SF 364 is not used to report damage to packaging that occurred during transmit.

SF 361 (Transportation Discrepancy Report)

This form is used to report shipments received at an installation that are over or short of the shipped quantity, astray, lost, or damaged. It is also used to report improper handling by the carrier or tender, the carrier's use of inadequate equipment or facilities, misdirected shipments, improper documents, or other failure to follow military regulations. Instructions on completing and using the SF 361 are given in AR 55-38, *Reporting of Transportation Discrepancies in Shipments*, dated 1 May 1982. An example of a completed SF 361 is shown in Figure 2-11.

AMMUNITION CONDITION REPORT
For use of this form, see TM 38-750; the proponent agency is DCSLOG.

REQUIREMENT CONTROL SYMBOL CSGLD-1020

SAMPLE

1. THRU: (Include ZIP Code)

2. DATE OF REPORT: 5 Jan 91

3. PAGE 1 OF 1 PAGES

4. TO: (Include ZIP Code) Commander
U.S. Army Armament, Munitions and
Chemical Command ATTN: AMSMC-DSM (R)
Rock Island, IL 61299-6000

5. UNIT IDENTIFICATION CODE: MI-WOMMAA-SDSTE-QAV-1-83

6. FROM: (Include ZIP Code) Commander
Tooele Army Depot
ATTN: SDSTE-QAV
Tooele, UT 84074

7. COMMODITY: ☐ CHEM ☐ GM ☒ CONV

8. NOMEN - MODEL ITEM REPORTED	a. PART/NSN NO.	b. SN/LOT NO.	c. DATE OF MFG	d. QTY IN LOT
Cartridge, 105mm, HE M1, STL CASE, W/O Fuze	1315-00-028-4757-C445	KN-77E002-001	May 1977	10,147
9. NOMEN - MODEL EQUIP INSTALLED/USED ON	a. PART/NSN NO.	b. SN/LOT NO.	c. DATE OF MFG	d. QTY IN LOT

10. QTY INSPECTED	11. QUANTITY DEFECTIVE	12. PRESENT COND CODE	13. ECON REPAIRABLE
20	20	F	☒ YES ☐ NO

14. USE: ☒ WR ☐ TNG

15. ESTIMATED REPAIR/MAINT/DISPOSAL UNIT COST: DIRECT LABOR $ GAE $ OTHER $

16. DETAILS (Description, cause, action, disposition)

a. Description: During periodic inspection the following defects were observed:

(1) Outer Pack: 100 percent wood box weathered (minor).

(2) Inner Pack: 100 percent incorrect-Lot Number stenciled on fiber container (major). Lot Number KN-77F002-001 marked, should be Lot Number KN-77E002-001.

(3) Item: 20 percent of cartridge cases with rust (major); 100 percent with blue bag propellant with loss of tensile strength (major).

b. Action Taken: Lot transferred from CC-A to CC-F.

c. Recommendation: Accomplish maintenance required to return assets to Condition Code A.

d. Components Required:

NSN	NOMENCLATURE	QUANTITY	UNIT COST
1395-00-825-1384-C436	Chg Prop, M67	10,147	$16.28
1395-00-825-1370-N518	Primer, Perc, M28B2	10,147	2.56
1395-00-077-2129	Ctg Case, M14B1	2,030	2.69

e. Owner/Account: Army/B14

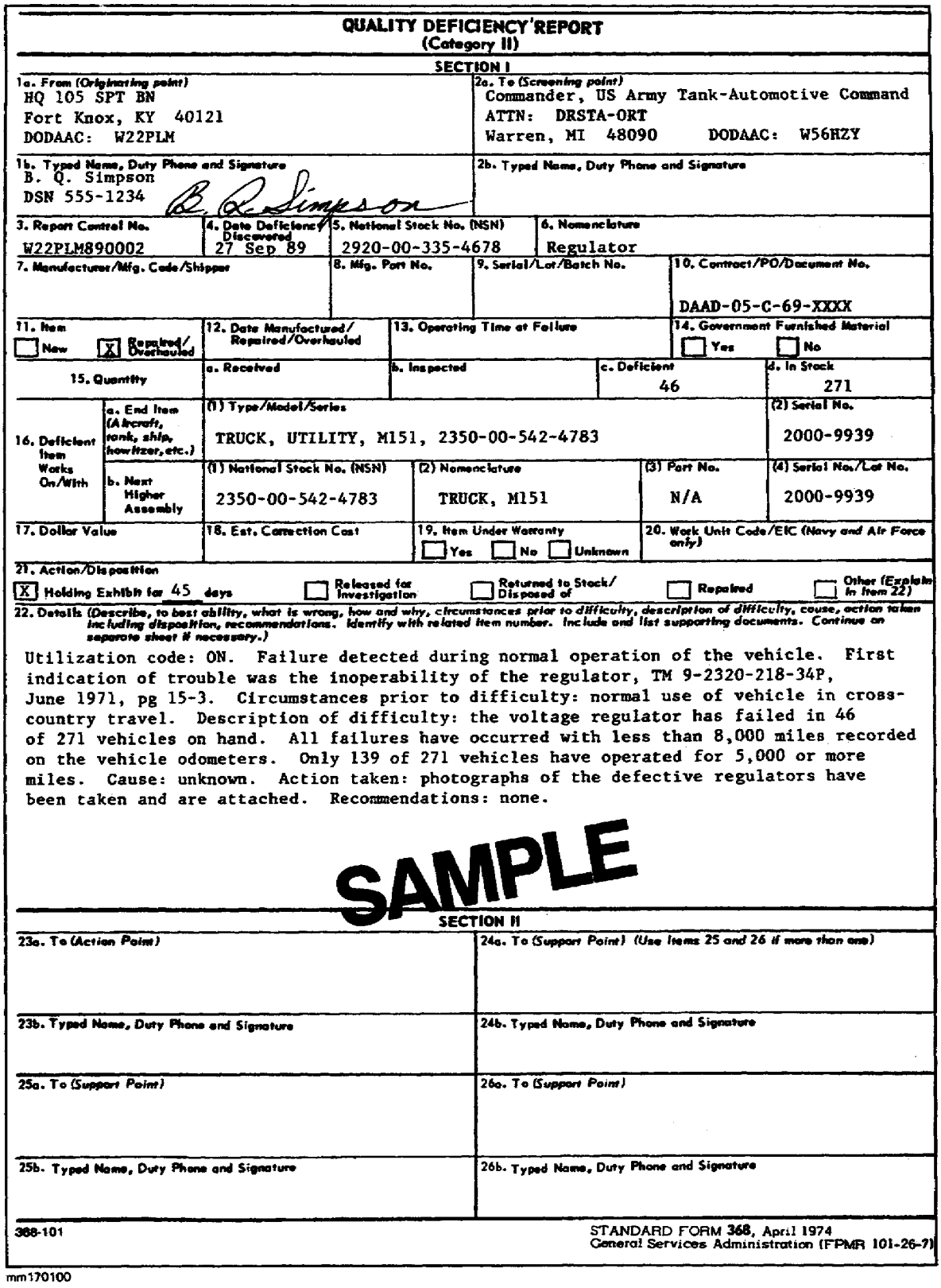
f. Originator: J. Henry Blossom, QASAS, AUTOVON

17. TYPED/PRINTED NAME, GRADE AND TITLE	18. SIGNATURE
P. HOBBS, C, Ammunition Surv Division	P. Hobbs

DA FORM 1 DEC 77 2415 EDITION OF 1 JAN 64 IS OBSOLETE.

mm017054

Figure 2-8. An example of a completed DA Form 2415 (Ammunition Condition Report).



QUALITY DEFICIENCY REPORT
(Category II)

SECTION I

1a. From (Originating point) HQ 105 SPT BN Fort Knox, KY 40121 DODAAC: W22PLM	2a. To (Screening point) Commander, US Army Tank-Automotive Command ATTN: DRSTA-ORT Warren, MI 48090 DODAAC: W56HZY
1b. Typed Name, Duty Phone and Signature B. Q. Simpson DSN 555-1234 B. Q. Simpson	2b. Typed Name, Duty Phone and Signature

3. Report Control No.	4. Date Deficiency Discovered	5. National Stock No. (NSN)	6. Nomenclature
W22PLM890002	27 Sep 89	2920-00-335-4678	Regulator

7. Manufacturer/Mfg. Code/Shipper	8. Mfg. Part No.	9. Serial/Lot/Batch No.	10. Contract/PO/Document No.
			DAAD-05-C-69-XXXX

11. Item	12. Date Manufactured/ Repaired/Overhauled	13. Operating Time at Failure	14. Government Furnished Material
☐ New ☒ Repaired/ Overhauled			☐ Yes ☐ No

15. Quantity	a. Received	b. Inspected	c. Deficient	d. In Stock
			46	271

16. Deficient Item Works On/With		(1) Type/Model/Series	(2) Serial No.
	a. End Item (Aircraft, tank, ship, howitzer, etc.)	TRUCK, UTILITY, M151, 2350-00-542-4783	2000-9939

	(1) National Stock No. (NSN)	(2) Nomenclature	(3) Part No.	(4) Serial No./Lot No.
b. Next Higher Assembly	2350-00-542-4783	TRUCK, M151	N/A	2000-9939

17. Dollar Value	18. Est. Correction Cost	19. Item Under Warranty	20. Work Unit Code/EIC (Navy and Air Force only)
		☐ Yes ☐ No ☐ Unknown	

21. Action/Disposition
☒ Holding Exhibit for 45 days ☐ Released for Investigation ☐ Returned to Stock/ Disposed of ☐ Repaired ☐ Other (Explain in Item 22)

22. Details (Describe, to best ability, what is wrong, how and why, circumstances prior to difficulty, description of difficulty, cause, action taken including disposition, recommendations. Identify with related item number. Include and list supporting documents. Continue on separate sheet if necessary.)

Utilization code: ON. Failure detected during normal operation of the vehicle. First indication of trouble was the inoperability of the regulator, TM 9-2320-218-34P, June 1971, pg 15-3. Circumstances prior to difficulty: normal use of vehicle in cross-country travel. Description of difficulty: the voltage regulator has failed in 46 of 271 vehicles on hand. All failures have occurred with less than 8,000 miles recorded on the vehicle odometers. Only 139 of 271 vehicles have operated for 5,000 or more miles. Cause: unknown. Action taken: photographs of the defective regulators have been taken and are attached. Recommendations: none.

SAMPLE

SECTION II

23a. To (Action Point)	24a. To (Support Point) (Use Items 25 and 26 if more than one)
23b. Typed Name, Duty Phone and Signature	24b. Typed Name, Duty Phone and Signature
25a. To (Support Point)	26a. To (Support Point)
25b. Typed Name, Duty Phone and Signature	26b. Typed Name, Duty Phone and Signature

368-101 STANDARD FORM 368, April 1974
General Services Administration (FPMR 101-26-7)

mm170100

Figure 2-9. An example of a completed SF 368 (Quality Deficiency Report).

REPORT OF DISCREPANCY (ROD)

☒ SHIPPING ☐ PACKAGING

1. DATE OF PREPARATION: 88 Jun 17

2. REPORT NUMBER: 06881701A AK40017156006

3. TO (Name and address, include ZIP Code): Commander, 60th Ord Gp ATIN: Material Officer Zwiblicken, Germany APO 09052

4. FROM (Name and address, include ZIP Code): Accountable Officer ASP #1 AK4001 Vilseck, Germany APO 09114

5a. SHIPPER'S NAME: Accountable Officer AK4EK7 Mieasu Army Depot

5b. NUMBER AND DATE OF INVOICE: 7315

6. TRANSPORTATION DOCUMENT NUMBER (GBL, Waybill, TCN, etc.): DD1384 AK400173156006XXX

7a. SHIPPER'S NUMBER (Purchase Order/Shipment, Contract, etc.)

7b. OFFICE ADMINISTERING CONTRACT: Commander, 60th Ord Gp ATIN: Material Officer Zwilbrlicken, Germany APO 09052

8. REQUISITIONER'S NUMBER (Requisition, Purchase Request, etc.): AK400173156006

9. SHIPMENT, BILLING, AND RECEIPT DATA				10. DISCREPANCY DATA				11.
NSN/PART NUMBER AND NOMENCLATURE (a)	UNIT OF ISSUE (b)	QUANTITY SHIPPED/ BILLED (c)	QUANTITY RECEIVED (d)	QUANTITY (a)	UNIT PRICE (b)	TOTAL COST (c)	CODE[1] (d)	ACTION CODE[2]
1315-00-028-4841 C445	EA	210	180	30	52.00	1,560.00	S1	1D

12. REMARKS (Continue on separate sheet of paper if necessary)

15 Boxes Short
2 Rds/Box

SAMPLE

[1]DISCREPANCY CODES

CONDITION OF MATERIAL
C1 — In condition other than that indicated on receipt/receipt document
C2 — Expired shelf life
C3 — Damaged parcel post shipment
SUPPLY DOCUMENTATION
D1 — Not received
D2 — Illegible or mutilated
D3 — Incomplete improper or without authority (Only when receipt cannot be properly processed)
MISDIRECTED MATERIAL
M1 — Addressed to wrong activity
OVERAGE/DUPLICATE SHIPMENTS
O1 — Quantity in excess of that on receipt document
O2 — Quantity in excess of that requested (Other than unit of issue pack)
O3 — Quantity duplicates shipment
PACKING DISCREPANCY
P1 — Improper preservation
P2 — Improper packing
P3 — Improper marking
P4 — Improper unitization
PRODUCT QUALITY DEFICIENCIES
Q1 — Deficient material (Applicable to Grant Aid and FMS shipments only)
SHORTAGE OF MATERIAL
S1 — Quantity less than that on receipt document
S2 — Quantity less that that requested (Other than unit of issue pack)
S3 — Non-receipt of parcel post shipments
ITEM TECHNICAL DATA MARKINGS (i.e., Name Plate, Log Books, Operating Handbooks, Special Instructions, etc.)
T1 — Missing
T2 — Illegible or mutilated
T3 — Precautionary operational markings missing
T4 — Inspection data missing or incomplete
T5 — Serviceability operating data missing or incomplete
T6 — Warranty data missing
WRONG ITEM (Identify requested item as a separate entry in Item 9 above)
W1 — Incorrect item received
W2 — Unacceptable substitute
OTHER DISCREPANCIES
Z1 — See remarks

[2]ACTION CODES

1A — Disposition instructions requested (Reply on reverse)
1B — Material being retained (See remarks)
1C — Supporting supply documentation requested
1D — Material still required expedite shipment (Not applicable to FMS)
1E — Local purchase material to be returned at vendor's expense await disposition instructions to the contrary are received within 15 days (Reply on reverse) (Not applicable to FMS)
1F — Replacement shipment requested (Not applicable to FMS)
1G — Replacement not required. Item to be reconditioned.
1H — No action required. Information only
1Z — Other action requested (See remarks)

13. FUNDING AND ACCOUNTING DATA

14a. TYPED OR PRINTED NAME, TITLE, AND PHONE NUMBER OF PREPARING OFFICIAL: James Avlis ZWI 5138 Accountable Officer CW 2 USA

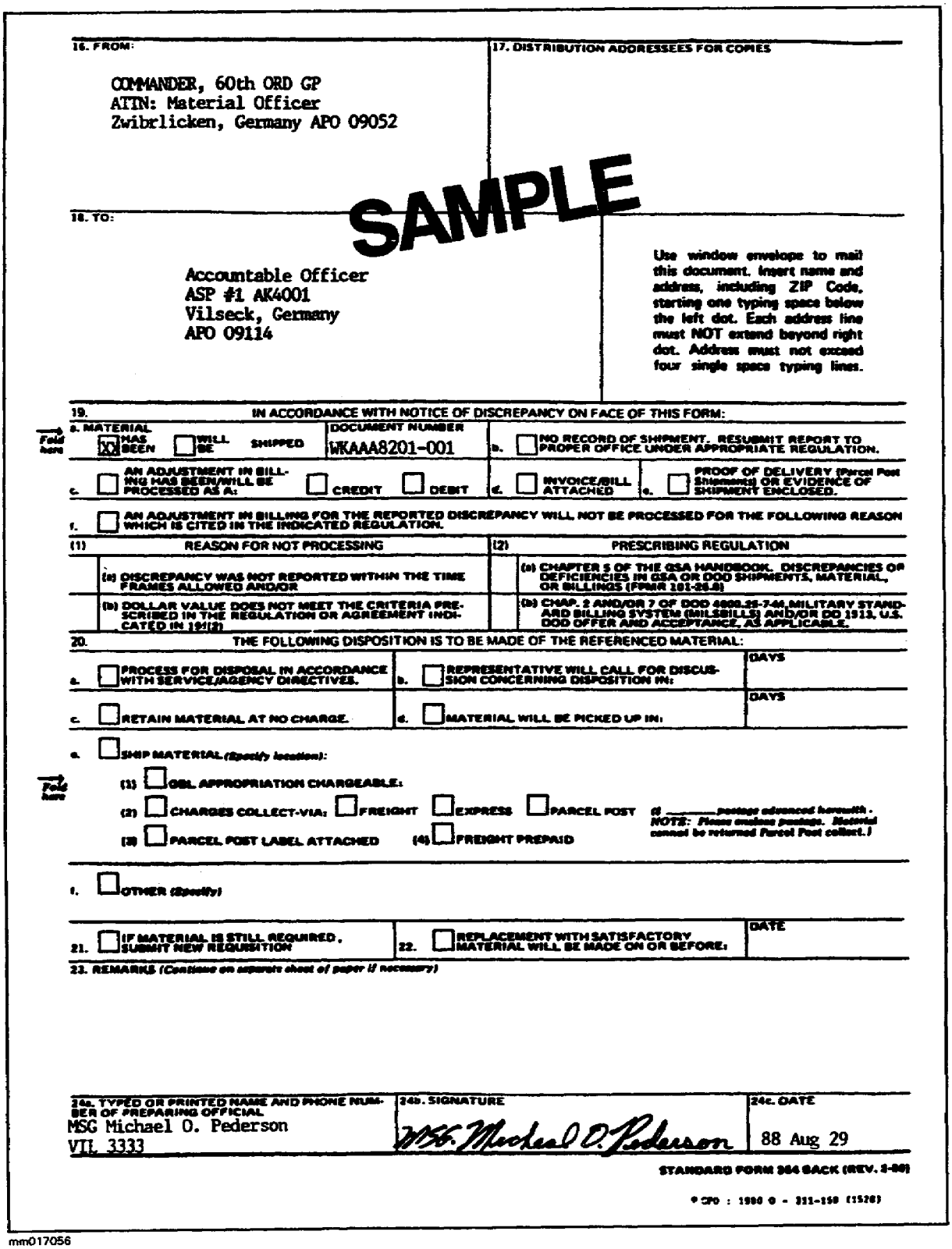
14b. SIGNATURE: James Avlis

15. DISTRIBUTION ADDRESSEES FOR COPIES
Original- 1 Cy to Cdr.,60th Ord Gp
2 Cy to Mieasu Army Depot
2 Cy to ASP #1

364-103 7540-00-139-4442 (Previous edition is obsolete.) STANDARD FORM 364 (REV. 2-90) Prescribed by GSA FPMR 101-32.8

mm017055

Figure 2-10. An example of a completed SF 364 (Report of Discrepancy)(front side).



16. FROM:

COMMANDER, 60th ORD GP
ATTN: Material Officer
Zwibrlicken, Germany APO 09052

17. DISTRIBUTION ADDRESSEES FOR COPIES

SAMPLE

18. TO:

Accountable Officer
ASP #1 AK4001
Vilseck, Germany
APO 09114

Use window envelope to mail this document. Insert name and address, including ZIP Code, starting one typing space below the left dot. Each address line must NOT extend beyond right dot. Address must not exceed four single space typing lines.

19. IN ACCORDANCE WITH NOTICE OF DISCREPANCY ON FACE OF THIS FORM:

a. MATERIAL [XX] HAS BEEN [ ] WILL BE SHIPPED — DOCUMENT NUMBER: WKAAA8201-001

b. [ ] NO RECORD OF SHIPMENT. RESUBMIT REPORT TO PROPER OFFICE UNDER APPROPRIATE REGULATION.

c. [ ] AN ADJUSTMENT IN BILLING HAS BEEN/WILL BE PROCESSED AS A: [ ] CREDIT [ ] DEBIT

d. [ ] INVOICE/BILL ATTACHED

e. [ ] PROOF OF DELIVERY (Parcel Post Shipments) OR EVIDENCE OF SHIPMENT ENCLOSED.

f. [ ] AN ADJUSTMENT IN BILLING FOR THE REPORTED DISCREPANCY WILL NOT BE PROCESSED FOR THE FOLLOWING REASON WHICH IS CITED IN THE INDICATED REGULATION.

(1) REASON FOR NOT PROCESSING		(2) PRESCRIBING REGULATION	
	(a) DISCREPANCY WAS NOT REPORTED WITHIN THE TIME FRAMES ALLOWED AND/OR		(a) CHAPTER 5 OF THE GSA HANDBOOK, DISCREPANCIES OR DEFICIENCIES IN GSA OR DOD SHIPMENTS, MATERIAL, OR BILLINGS (FPMR 101-26.8)
	(b) DOLLAR VALUE DOES NOT MEET THE CRITERIA PRESCRIBED IN THE REGULATION OR AGREEMENT INDICATED IN 19(2)		(b) CHAP. 2 AND/OR 7 OF DOD 4000.25-7-M, MILITARY STANDARD BILLING SYSTEM (MILSBILLS) AND/OR DD 1913, U.S. DOD OFFER AND ACCEPTANCE, AS APPLICABLE.

20. THE FOLLOWING DISPOSITION IS TO BE MADE OF THE REFERENCED MATERIAL:

a. [ ] PROCESS FOR DISPOSAL IN ACCORDANCE WITH SERVICE/AGENCY DIRECTIVES.

b. [ ] REPRESENTATIVE WILL CALL FOR DISCUSSION CONCERNING DISPOSITION IN: ____ DAYS

c. [ ] RETAIN MATERIAL AT NO CHARGE.

d. [ ] MATERIAL WILL BE PICKED UP IN: ____ DAYS

e. [ ] SHIP MATERIAL (Specify location):

(1) [ ] OBL APPROPRIATION CHARGEABLE:

(2) [ ] CHARGES COLLECT-VIA: [ ] FREIGHT [ ] EXPRESS [ ] PARCEL POST (f) ____ postage advanced herewith. NOTE: Please endorse package. Material cannot be returned Parcel Post collect.)

(3) [ ] PARCEL POST LABEL ATTACHED (4) [ ] FREIGHT PREPAID

f. [ ] OTHER (Specify)

21. [ ] IF MATERIAL IS STILL REQUIRED, SUBMIT NEW REQUISITION

22. [ ] REPLACEMENT WITH SATISFACTORY MATERIAL WILL BE MADE ON OR BEFORE: DATE

23. REMARKS (Continue on separate sheet of paper if necessary)

24a. TYPED OR PRINTED NAME AND PHONE NUMBER OF PREPARING OFFICIAL
MSG Michael O. Pederson
VIL 3333

24b. SIGNATURE
MSG Michael O. Pederson

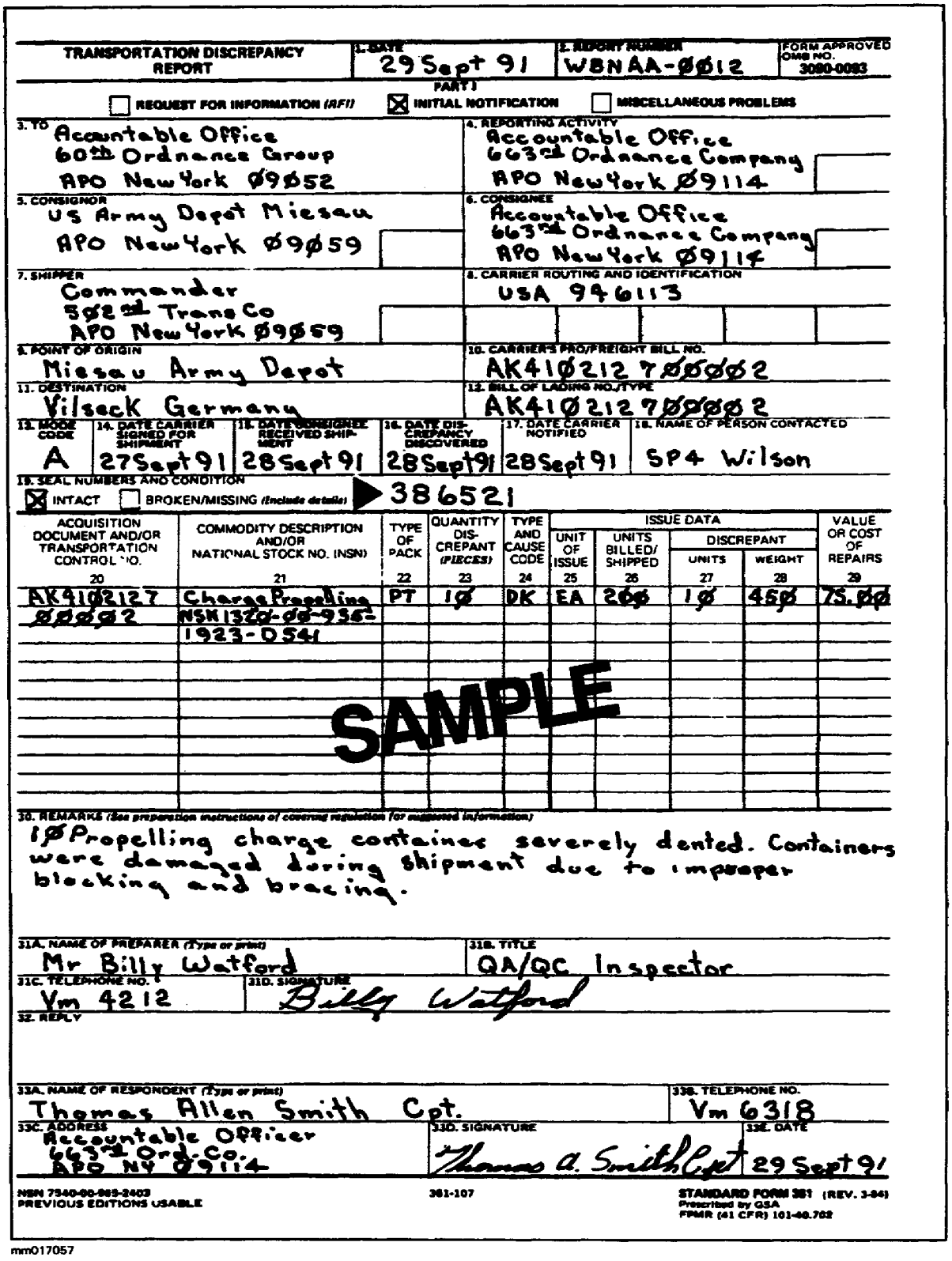
24c. DATE
88 Aug 29

STANDARD FORM 364 BACK (REV. 3-80)

* GPO : 1980 O - 311-150 (1520)

mm017056

Figure 2-10 (continued). An example of a completed SF 364 (Report of Discrepancy) (back side).



TRANSPORTATION DISCREPANCY REPORT

1. DATE: 29 Sept 91
2. REPORT NUMBER: WBNAA-ØØ12
FORM APPROVED OMB NO. 3080-0083

PART I

☐ REQUEST FOR INFORMATION (RFI) ☒ INITIAL NOTIFICATION ☐ MISCELLANEOUS PROBLEMS

3. TO: Accountable Office
60th Ordnance Group
APO New York Ø9Ø52

4. REPORTING ACTIVITY: Accountable Office
663rd Ordnance Company
APO New York Ø9114

5. CONSIGNOR: US Army Depot Miesau
APO New York Ø9Ø59

6. CONSIGNEE: Accountable Office
663rd Ordnance Company
APO New York Ø9114

7. SHIPPER: Commander
592nd Trans Co
APO New York Ø9Ø59

8. CARRIER ROUTING AND IDENTIFICATION: USA 946113

9. POINT OF ORIGIN: Miesau Army Depot

10. CARRIER'S PRO/FREIGHT BILL NO.: AK41Ø212 7ØØØØ2

11. DESTINATION: Vilseck Germany

12. BILL OF LADING NO./TYPE: AK41Ø212 7ØØØØ2

13. MODE CODE	14. DATE CARRIER SIGNED FOR SHIPMENT	15. DATE CONSIGNEE RECEIVED SHIPMENT	16. DATE DISCREPANCY DISCOVERED	17. DATE CARRIER NOTIFIED	18. NAME OF PERSON CONTACTED
A	27Sept91	28Sept91	28Sept91	28Sept91	SP4 Wilson

19. SEAL NUMBERS AND CONDITION ☒ INTACT ☐ BROKEN/MISSING (Include details) ▶ 386521

ACQUISITION DOCUMENT AND/OR TRANSPORTATION CONTROL NO. (20)	COMMODITY DESCRIPTION AND/OR NATIONAL STOCK NO. (NSN) (21)	TYPE OF PACK (22)	QUANTITY DISCREPANT (PIECES) (23)	TYPE AND CAUSE CODE (24)	ISSUE DATA: UNIT OF ISSUE (25)	ISSUE DATA: UNITS BILLED/SHIPPED (26)	DISCREPANT: UNITS (27)	DISCREPANT: WEIGHT (28)	VALUE OR COST OF REPAIRS (29)
AK4102127 ØØØØ2	Charge Propelling NSN 1320-00-936-1923-0541	PT	1Ø	DK	EA	26Ø	1Ø	45Ø	75.ØØ

SAMPLE

30. REMARKS (See preparation instructions of covering regulation for suggested information)
1Ø Propelling charge containes severely dented. Containers were damaged during shipment due to improper blocking and bracing.

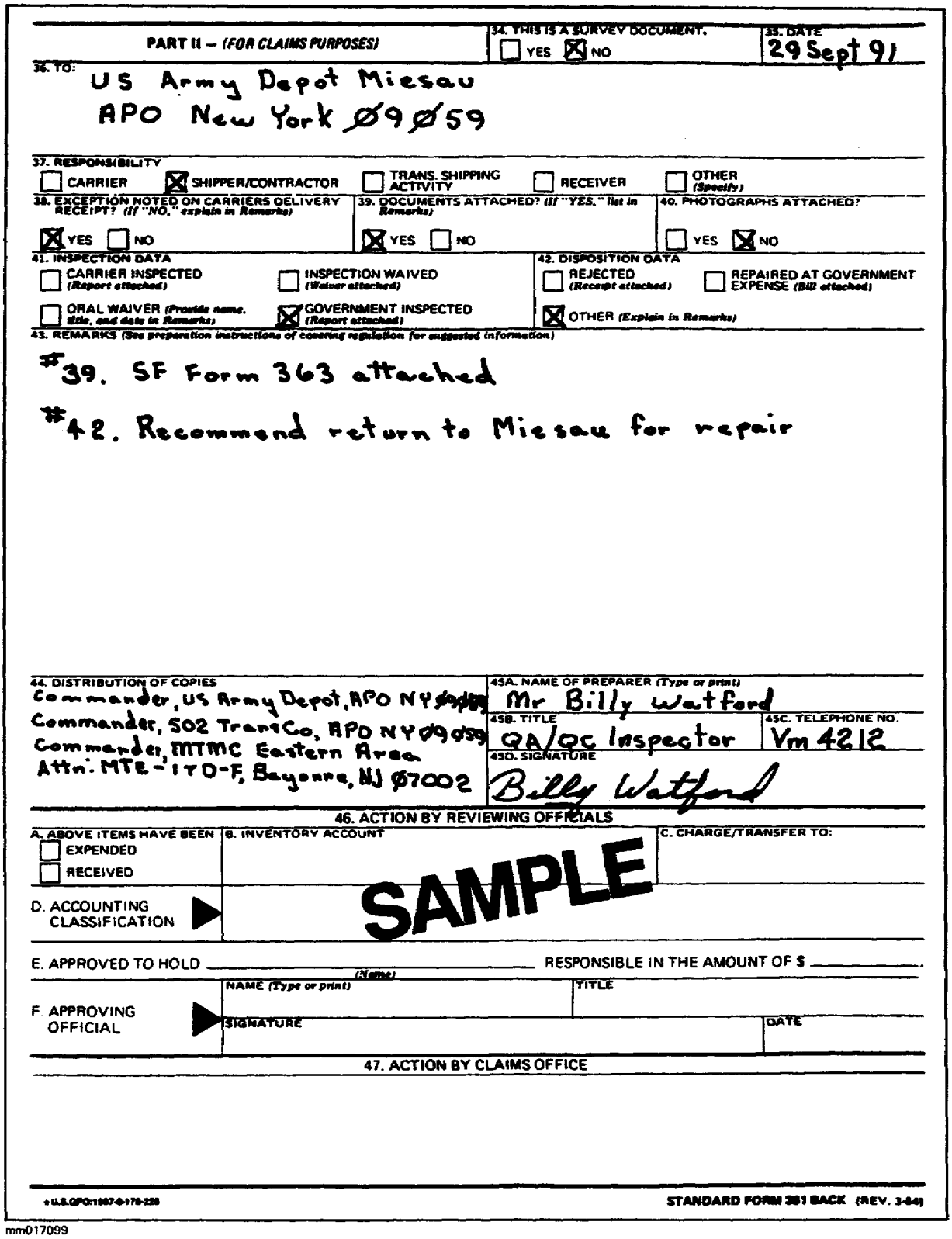
31A. NAME OF PREPARER (Type or print): Mr Billy Watford
31B. TITLE: QA/QC Inspector
31C. TELEPHONE NO.: Vm 4212
31D. SIGNATURE: Billy Watford
32. REPLY

33A. NAME OF RESPONDENT (Type or print): Thomas Allen Smith Cpt.
33B. TELEPHONE NO.: Vm 6318
33C. ADDRESS: Accountable Officer 663rd Ord. Co. APO NY Ø9114
33D. SIGNATURE: Thomas A. Smith Cpt
33E. DATE: 29 Sept 91

NSN 7540-00-985-2403 PREVIOUS EDITIONS USABLE
361-107
STANDARD FORM 361 (REV. 3-84) Prescribed by GSA FPMR (41 CFR) 101-40.702

mm017057

Figure 2-11. An example of a completed SF 361 (Discrepancy in Shipment Report) (front side).



PART II – (FOR CLAIMS PURPOSES)

34. THIS IS A SURVEY DOCUMENT. ☐ YES ☒ NO

35. DATE: 29 Sept 91

36. TO:
US Army Depot Miesau
APO New York Ø9Ø59

37. RESPONSIBILITY
☐ CARRIER ☒ SHIPPER/CONTRACTOR ☐ TRANS. SHIPPING ACTIVITY ☐ RECEIVER ☐ OTHER (Specify)

38. EXCEPTION NOTED ON CARRIERS DELIVERY RECEIPT? (If "NO," explain in Remarks)
☒ YES ☐ NO

39. DOCUMENTS ATTACHED? (If "YES," list in Remarks)
☒ YES ☐ NO

40. PHOTOGRAPHS ATTACHED?
☐ YES ☒ NO

41. INSPECTION DATA
☐ CARRIER INSPECTED (Report attached)
☐ INSPECTION WAIVED (Waiver attached)
☐ ORAL WAIVER (Provide name, title, and date in Remarks)
☒ GOVERNMENT INSPECTED (Report attached)

42. DISPOSITION DATA
☐ REJECTED (Receipt attached)
☐ REPAIRED AT GOVERNMENT EXPENSE (Bill attached)
☒ OTHER (Explain in Remarks)

43. REMARKS (See preparation instructions of covering regulation for suggested information)

#39. SF Form 363 attached

#42. Recommend return to Miesau for repair

44. DISTRIBUTION OF COPIES
Commander, US Army Depot, APO NY Ø9Ø59
Commander, SO2 TransCo, APO NY Ø9Ø59
Commander, MTMC Eastern Area
Attn: MTE-ITD-F, Bayonne, NJ Ø7002

45A. NAME OF PREPARER (Type or print): Mr Billy Watford

45B. TITLE: QA/QC Inspector

45C. TELEPHONE NO.: Vm 4212

45D. SIGNATURE: Billy Watford

46. ACTION BY REVIEWING OFFICIALS

A. ABOVE ITEMS HAVE BEEN ☐ EXPENDED ☐ RECEIVED

B. INVENTORY ACCOUNT

C. CHARGE/TRANSFER TO:

D. ACCOUNTING CLASSIFICATION

SAMPLE

E. APPROVED TO HOLD _____ (Name) RESPONSIBLE IN THE AMOUNT OF $ _____.

F. APPROVING OFFICIAL
NAME (Type or print) | TITLE
SIGNATURE | DATE

47. ACTION BY CLAIMS OFFICE

* U.S.GPO:1987-0-178-228 STANDARD FORM 361 BACK (REV. 3-84)

mm017099

Figure 2-11 (continued). An example of a completed SF 361 (Discrepancy in Shipment Report)(back side).

Ammunition Inspection and Lot Number Report

This is a quarterly report in the 80-column computer format, as shown in Figure 2-12. It is used to provide input for WARS. This report uses a series of defect codes to indicate the defects found in each ammunition lot during inspection. It is prepared under the supervision of the QASAS according to AR 700-22 for conventional ammunition, and according to AR 710-9 for GMLR.

DA Form 3524-R (Small Arms Ammunition Trace Test Record)

This form is used to record and report surveillance function test results for small-arms tracer ammunition. An example of a completed DA Form 3524-R is shown in Figure 2-13. Instructions on completing and using the DA Form 3524-R are given in SB 742-1305-94-20, *Small Arms Ammunition Trace Testing*, dated 9 November 1989. The completed DA Form 3524-R is forwarded to AMCCOM for final evaluation.

DD Form 250 (Material Inspection and Receiving Report)

This report is initiated at depots in connection with the shipment of a new procurement of supplies from a vendor's manufacturing plant.

DA Form 984 (Munition Surveillance Report-Descriptive Data of Ammunition Represented By Sample)

This is one of the most commonly used and most important reports in the ASRP. It is used to report all findings during surveillance inspections, and also to report the results of function tests (except small-arms ammunition trace tests). This report is therefore the basis for the data recorded on DA Forms 3022-R, DD Forms 1575, DD Forms 1575-1, DA Forms 4508, and DA Forms 2415. The DA Form 984 also serves as a handy and versatile worksheet used by surveillance personnel to keep notes during the inspection or test process. An example of a completed DA Form 984 is shown in Figure 2-14.

DD Form 626 (Motor Vehicle Inspection)

Although not classified as a record or report, the DD Form 626 is an important document in the surveillance program. It is used to certify motor vehicles for the transportation of ammunition. An example of a completed DD Form 626 is shown in Figure 2-15.

DD Form 836 (Special Instructions for Motor Vehicle Drivers)

Since drivers are not normally familiar with the characteristics of various ammunition items, it is essential that they be provided with instructions for actions to be taken or avoided in the event that the vehicle is involved in an accident, a fire, or a breakdown. The DD Form 836 provides such instructions for the specific type of materiel being transported. An example of a completed DD Form 836 is shown in Figure 2-16.

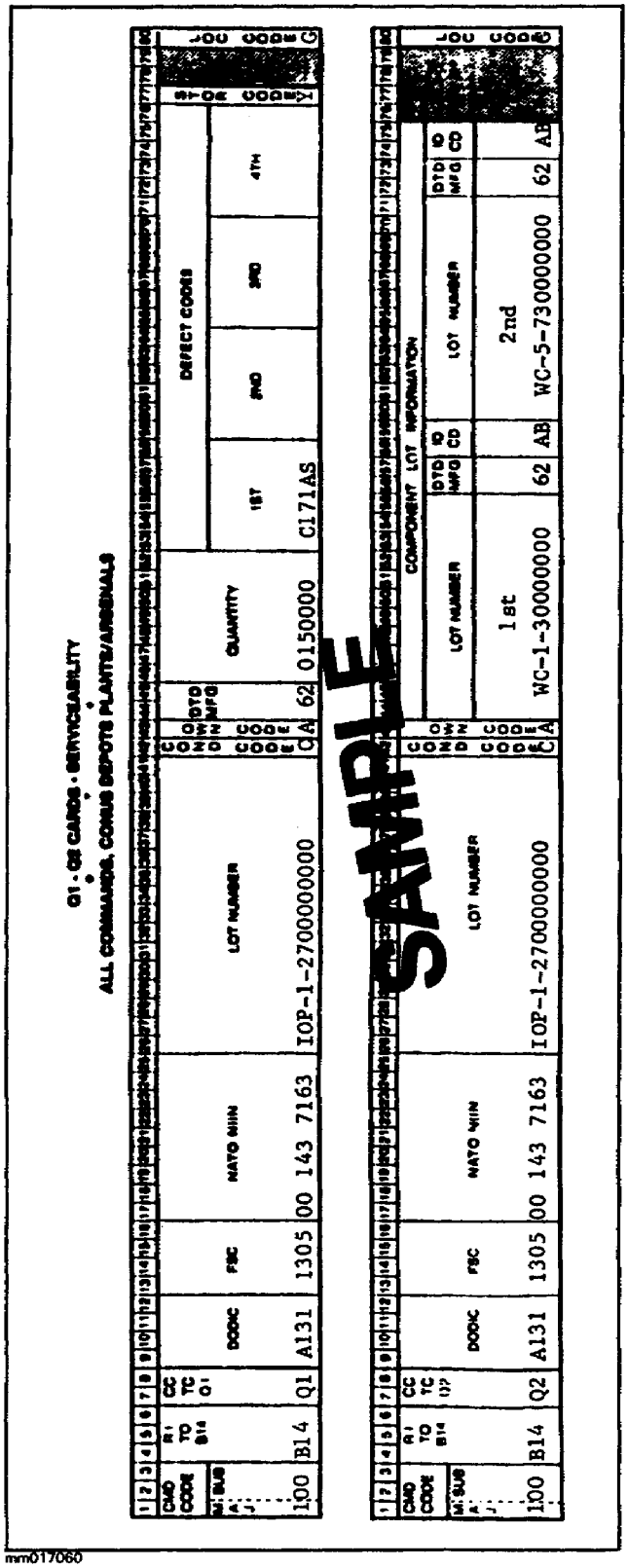


Figure 2-12. An example of a completed ammunition inspection and lot number report.

SMALL ARMS AMMUNITION TRACE TEST RECORD
For use of this form, see SB 742-1305-94-20; the proponent agency is AMC

Requirements Control Symbol
AMC-875

PART I - SHIPPER

1. TO	2. CODE	3. FROM	4. CODE
Test & Eval Section Aberdeen Proving Ground, MD	APG	Stock Control Section MIAD Miesau, FRG	MAD

5. NSN/DODIC	6. SAMPLE SIZE
1305-00-143-7163 A131	5,000

7 NOMENCLATURE

Cartridge, 7.62mm, linked

SAMPLE

8. FUNCTIONAL LOT NUMBER	9. MFG-YR *(Tracer lot)*
LC 1-27	LC AAP-62 WC 5-73

	10. COMPONENT TYPE		11. COMPONENT LOT NO.
1st	Ball M80	1st	WC-1-3
2nd	Tracer M62	2nd	WC-5-73

12. SIGNATURE	13. TITLE	14. DATE
John Barth	Surveillance NCO	3 Sept 89

PART II - TEST INSTALLATION

15. TEMPERATURE *(F)*	16. WIND VELOCITY	17. VISIBILITY
34°	3 mph	limited 600 meters

18. WPN	19. WPN MODEL	20. RECEIVER NUMBER	21. BARREL NUMBER	22. HEADSPACE		23. HEADSPACE		
				a. BEFORE	b. AFTER	a. BARREL	b. EA. GUN	c. TOTAL
1	M60	C728371	T68152	.005	.005	512	7010	7522
2	M60	LC24718	T69148	.008	.008	215	2515	2730

24. TEST CYCLE *(Yr. and type test)*	25. ROUNDS FIRED	26. DATE TESTED
FY91 CTTP	20	14 NOV 90

27. REMARKS *(Use continuation sheet if necessary.)*

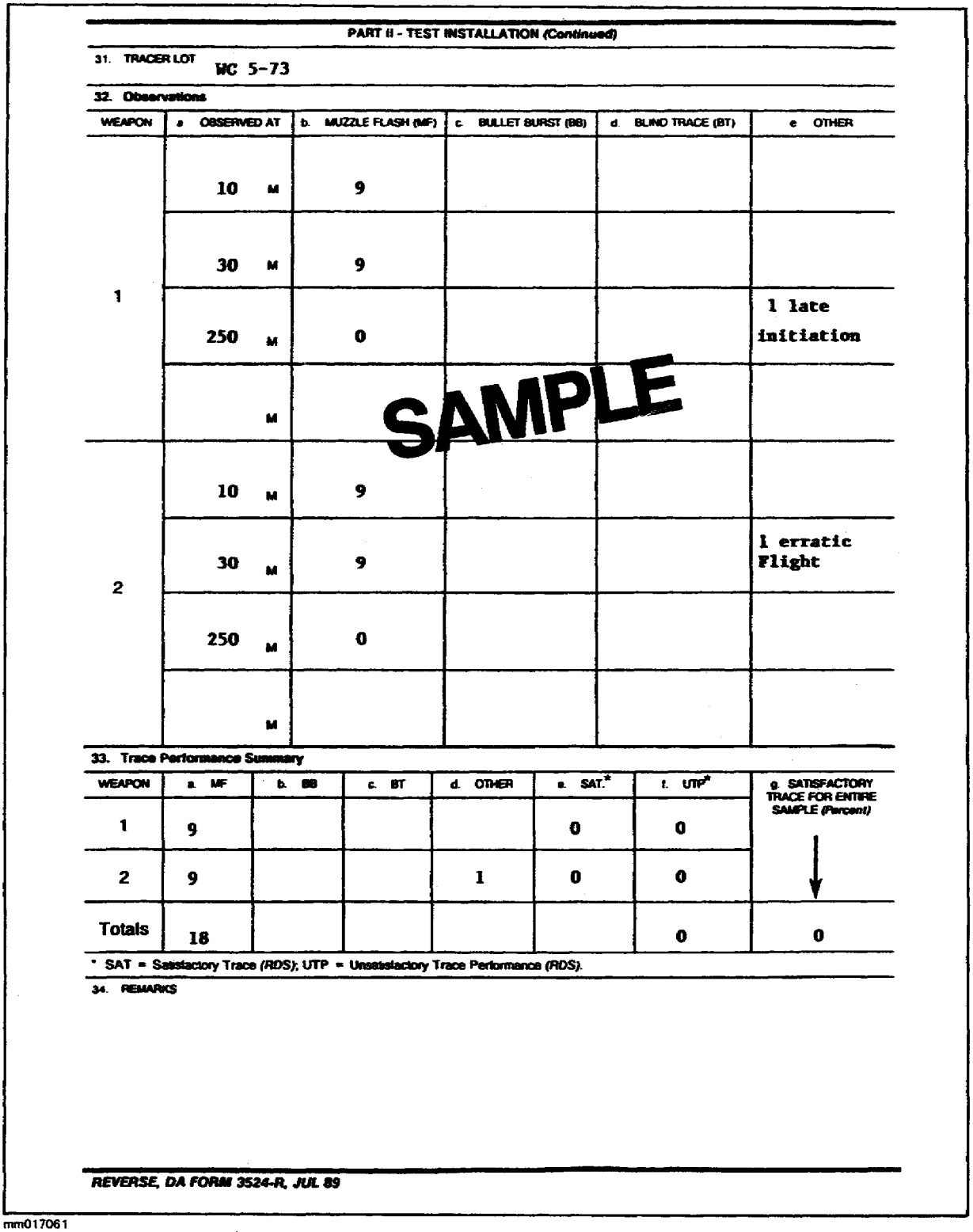
Item 1.2 Low muzzle velocity
Item 1.5 Late tracer initiation
Item 1.9 Low muzzle velocity
Item 1.10 Short duration (early burn-out)
Item 2.5 Late tracer initiation
Item 2.8 Erratic Flight

28. SIGNATURE	29. TITLE	30. DATE
James T. Brown	Chief QASAS	14 NOV 90

DA FORM 3524-R, JUL 89 — DA FORM 3524-R, AUG 89 IS OBSOLETE

mm017060

Figure 2-13. An example of a completed DA Form 3524-R (Small Arms Ammunition Trace Test Record)(front side).



PART II - TEST INSTALLATION *(Continued)*

31. TRACER LOT WC 5-73

32. Observations

WEAPON	a. OBSERVED AT	b. MUZZLE FLASH (MF)	c. BULLET BURST (BB)	d. BLIND TRACE (BT)	e. OTHER
1	10 M	9			
	30 M	9			
	250 M	0			1 late initiation
	M				
2	10 M	9			
	30 M	9			1 erratic Flight
	250 M	0			
	M				

SAMPLE

33. Trace Performance Summary

WEAPON	a. MF	b. BB	c. BT	d. OTHER	e. SAT.*	f. UTP*	g. SATISFACTORY TRACE FOR ENTIRE SAMPLE *(Percent)*
1	9				0	0	
2	9			1	0	0	
Totals	18					0	0

* SAT = Satisfactory Trace *(RDS)*; UTP = Unsatisfactory Trace Performance *(RDS)*.

34. REMARKS

REVERSE, DA FORM 3524-R, JUL 89

mm017061

Figure 2-13 (continued). An example of a completed DA Form 3524-R (Small Arms Ammunition Trace Test Record (back side).

MUNITIONS SURVEILLANCE REPORT
DESCRIPTIVE DATA OF AMMUNITION REPRESENTENED BY SAMPLE
For use of this form, see SB 742-1; the proponent agency is U S Army Materiel Development & Readiness Command.

PART I

1. INSTALLATION	2. REPORT NUMBER	3. DATE OF REPORT
Aberdeen Proving Ground	WAAG BD-3-91	15 Jan 91
4. ITEM		**5. LOT NUMBER**
Cartridge, 7.62mm, Linked		LC 1-27
6. PACKED		**7. NSN/DODIC**
100/Belt 1 Belt/CTN 1 CTN/Band 3 Band/MTL BX 2 BX/WRBND BX		1305-00-143-7163 A131
8a. CURRENT STORAGE	**8b. PAST STORAGE**	**9. SAMPLE SIZE**	**10. QUANTITY REM IN LOT**
Igloo	Outdoor Mod	5,000	25,000
11. LOT RECEIVED FROM	**12. DATE RECEIVED**	**13. DATE/TYPE LAST INSP**	**14. DATE THIS (VISIT) INSP**
Miesau Army Depot	15 Dec 88	9 Jul 90/Annual	10 Jan 91
15. MANUFACTURER/DATE OF MANUFACTUR		**16. DATE LAST FUNCTION TEST**	**17. LAST REPORT NUMBER**
Lake City AAP/May 62		2 Sep 87	WAAG BD-14-87

18. CONDITION OF PACKING

Outer pack severely weathered, boxes broken and rotten.
Mtl Bx rusted on bottom.
CTN unopened and CTN/Bands in factory condition.

19. CONDITION OF AMMUNITION ITEMS
Rounds in factory condition

SAMPLE

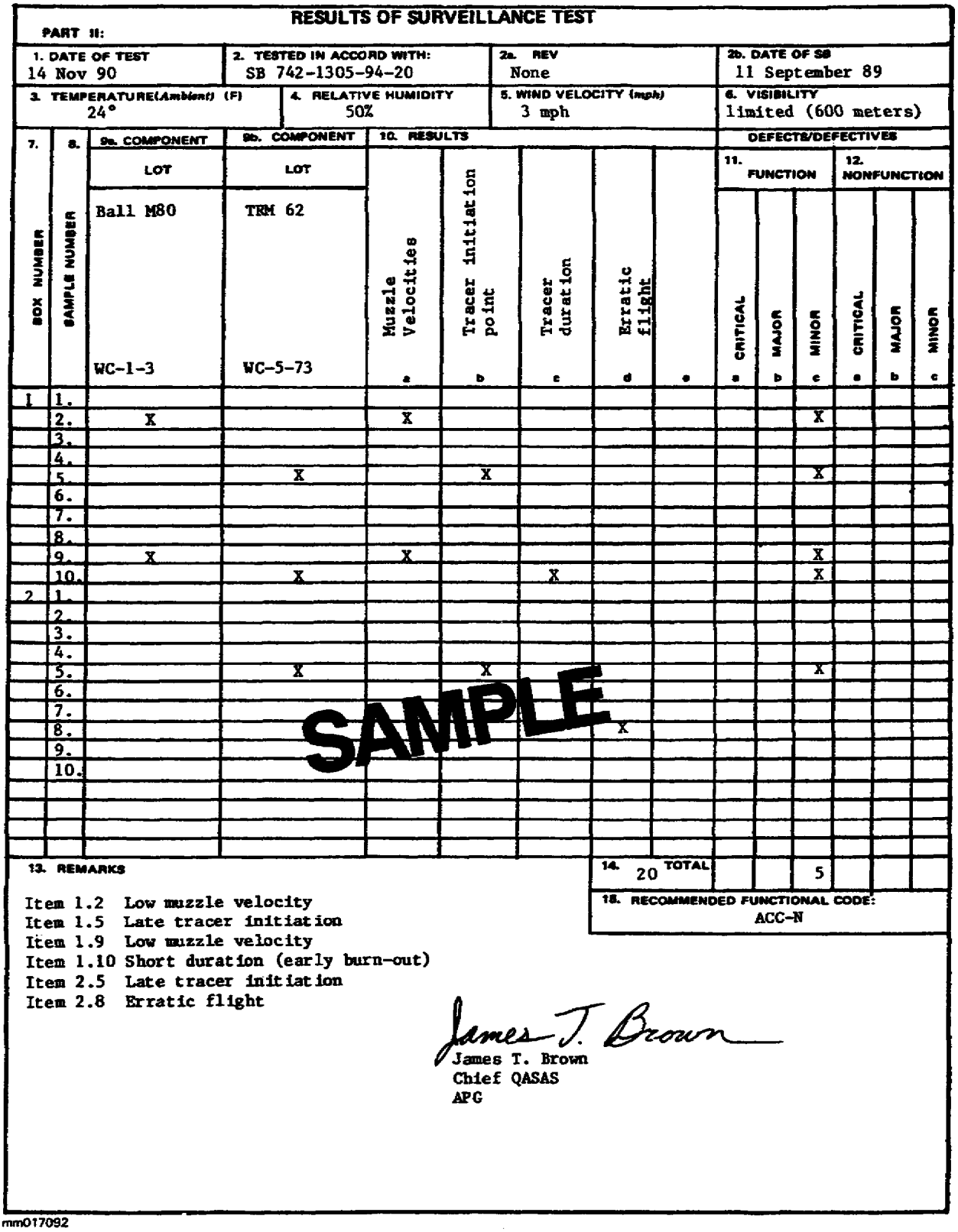
20. REMARKS AND BRIEF LOT HISTORY

Army Lot never issued. Stored outdoors, uncovered in modular storage. Received APG 23 Sept 90
First test, no previous defects noted.

21a. COND CODE BEFORE TEST	21b. COND CODE AFTER VIS INSP	21c. COND CODE AFTER TEST	22. SIGNATURE (QASAS CHIEF)
C	D	N	James Franklin

DA FORM 1 JUN 80 984 — EDITION OF 1 APRIL 1969 IS OBSOLETE.
mm017052

Figure 2-14. An example of a completed DA Form 984 (Munitions Surveillance Report (front side).



RESULTS OF SURVEILLANCE TEST

PART II:

1. DATE OF TEST	2. TESTED IN ACCORD WITH:	2a. REV	2b. DATE OF SB
14 Nov 90	SB 742-1305-94-20	None	11 September 89

3. TEMPERATURE(Ambient) (F)	4. RELATIVE HUMIDITY	5. WIND VELOCITY (mph)	6. VISIBILITY
24°	50%	3 mph	limited (600 meters)

7. BOX NUMBER	8. SAMPLE NUMBER	9a. COMPONENT LOT	9b. COMPONENT LOT	10. RESULTS a. Muzzle Velocities	b. Tracer initiation point	c. Tracer duration	d. Erratic flight	e.	DEFECTS/DEFECTIVES 11. FUNCTION a. CRITICAL	b. MAJOR	c. MINOR	12. NONFUNCTION a. CRITICAL	b. MAJOR	c. MINOR
		Ball M80	TRM 62											
		WC-1-3	WC-5-73	a	b	c	d	e	a	b	c	a	b	c
1	1.													
	2.	X		X							X			
	3.													
	4.													
	5.		X		X						X			
	6.													
	7.													
	8.													
	9.	X		X							X			
	10.		X			X					X			
2	1.													
	2.													
	3.													
	4.													
	5.		X		X						X			
	6.													
	7.													
	8.						X							
	9.													
	10.													

SAMPLE

13. REMARKS

Item 1.2 Low muzzle velocity
Item 1.5 Late tracer initiation
Item 1.9 Low muzzle velocity
Item 1.10 Short duration (early burn-out)
Item 2.5 Late tracer initiation
Item 2.8 Erratic flight

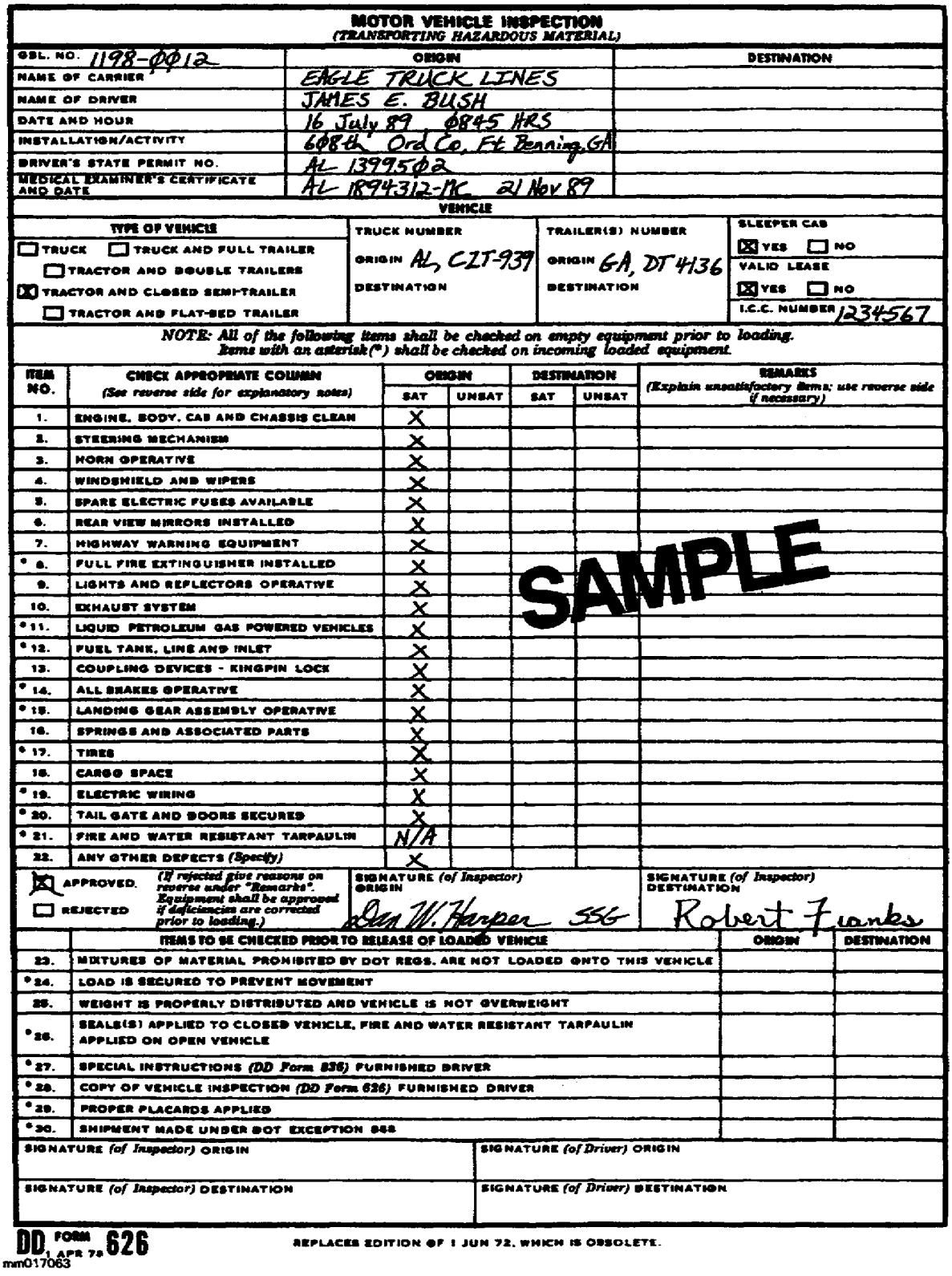
14. TOTAL 20 — 5

15. RECOMMENDED FUNCTIONAL CODE: ACC-N

James T. Brown
James T. Brown
Chief QASAS
APG

mm017092

Figure 2-14 (continued). An example of a completed DA Form 984 (Munitions Surveillance Report (back side).



MOTOR VEHICLE INSPECTION
(TRANSPORTING HAZARDOUS MATERIAL)

	ORIGIN	DESTINATION
GSL. NO. 1198-ØØ12		
NAME OF CARRIER	EAGLE TRUCK LINES	
NAME OF DRIVER	JAMES E. BUSH	
DATE AND HOUR	16 July 89, Ø845 HRS	
INSTALLATION/ACTIVITY	608th Ord Co, Ft Benning, GA	
DRIVER'S STATE PERMIT NO.	AL 13995Ø2	
MEDICAL EXAMINER'S CERTIFICATE AND DATE	AL 1894312-MC 21 Nov 89	

VEHICLE

TYPE OF VEHICLE: ☐ TRUCK ☐ TRUCK AND FULL TRAILER ☐ TRACTOR AND DOUBLE TRAILERS ☒ TRACTOR AND CLOSED SEMI-TRAILER ☐ TRACTOR AND FLAT-BED TRAILER

TRUCK NUMBER — ORIGIN AL, CIT-939 — DESTINATION

TRAILER(S) NUMBER — ORIGIN GA, DT 4136 — DESTINATION

SLEEPER CAB: ☒ YES ☐ NO

VALID LEASE: ☒ YES ☐ NO

I.C.C. NUMBER 1234567

NOTE: All of the following items shall be checked on empty equipment prior to loading. Items with an asterisk (*) shall be checked on incoming loaded equipment.

ITEM NO.	CHECK APPROPRIATE COLUMN (See reverse side for explanatory notes)	ORIGIN SAT	ORIGIN UNSAT	DESTINATION SAT	DESTINATION UNSAT	REMARKS (Explain unsatisfactory items; use reverse side if necessary)
1.	ENGINE, BODY, CAB AND CHASSIS CLEAN	X				
2.	STEERING MECHANISM	X				
3.	HORN OPERATIVE	X				
4.	WINDSHIELD AND WIPERS	X				
5.	SPARE ELECTRIC FUSES AVAILABLE	X				
6.	REAR VIEW MIRRORS INSTALLED	X				
7.	HIGHWAY WARNING EQUIPMENT	X				
* 8.	FULL FIRE EXTINGUISHER INSTALLED	X				
9.	LIGHTS AND REFLECTORS OPERATIVE	X				
10.	EXHAUST SYSTEM	X				
* 11.	LIQUID PETROLEUM GAS POWERED VEHICLES	X				
* 12.	FUEL TANK, LINE AND INLET	X				
13.	COUPLING DEVICES - KINGPIN LOCK	X				
* 14.	ALL BRAKES OPERATIVE	X				
* 15.	LANDING GEAR ASSEMBLY OPERATIVE	X				
16.	SPRINGS AND ASSOCIATED PARTS	X				
* 17.	TIRES	X				
18.	CARGO SPACE	X				
* 19.	ELECTRIC WIRING	X				
* 20.	TAIL GATE AND DOORS SECURED	X				
* 21.	FIRE AND WATER RESISTANT TARPAULIN	N/A				
22.	ANY OTHER DEFECTS (Specify)	X				

SAMPLE

☒ APPROVED ☐ REJECTED — *(If rejected give reasons on reverse under "Remarks". Equipment shall be approved if deficiencies are corrected prior to loading.)*

SIGNATURE (of Inspector) ORIGIN: Dan W. Harper SSG

SIGNATURE (of Inspector) DESTINATION: Robert Franks

	ITEMS TO BE CHECKED PRIOR TO RELEASE OF LOADED VEHICLE	ORIGIN	DESTINATION
23.	MIXTURES OF MATERIAL PROHIBITED BY DOT REGS. ARE NOT LOADED ONTO THIS VEHICLE		
* 24.	LOAD IS SECURED TO PREVENT MOVEMENT		
25.	WEIGHT IS PROPERLY DISTRIBUTED AND VEHICLE IS NOT OVERWEIGHT		
* 26.	SEALS(S) APPLIED TO CLOSED VEHICLE, FIRE AND WATER RESISTANT TARPAULIN APPLIED ON OPEN VEHICLE		
* 27.	SPECIAL INSTRUCTIONS (DD Form 836) FURNISHED DRIVER		
* 28.	COPY OF VEHICLE INSPECTION (DD Form 626) FURNISHED DRIVER		
* 29.	PROPER PLACARDS APPLIED		
* 30.	SHIPMENT MADE UNDER DOT EXCEPTION 868		

SIGNATURE (of Inspector) ORIGIN	SIGNATURE (of Driver) ORIGIN
SIGNATURE (of Inspector) DESTINATION	SIGNATURE (of Driver) DESTINATION

DD FORM 1 APR 78 626 — REPLACES EDITION OF 1 JUN 72, WHICH IS OBSOLETE.

mm017063

Figure 2-15. An example of a completed DD Form 626 (Motor Vehicle Inspection).

SPECIAL INSTRUCTIONS FOR MOTOR VEHICLE DRIVERS

DATE: 20 June 89

TO: (Carrier's Name and Trailer Number): THOMAS TRANSPORT CO. 362147

FROM: (Installation Issuing Instructions): REDSTONE ARSENAL, AL 35898-6000

BILL OF LADING NUMBER: C-214018

TYPE PLACARDS REQUIRED: EXPLOSIVE "A"

THIS TRUCK IS LOADED WITH (Commodity description): AMMUNITION FOR CANNON WITH EXPLOSIVE PROJECTILES

IN CASE OF FIRE

1. If any part of the vehicle outside of actual contents catches fire, take vehicle to a clear or uninhabited area, if practicable, and/or attempt to put fire out immediately with hand extinguishers or other available means. If practicable, ask someone to notify the fire department. Call to the attention of fire or police personnel at the scene of the fire the information on this form.
2. Fires may be fought until the flames reach the cargo, at which time firemen and other personnel should be withdrawn to a safe distance, as noted in 5 and 6 below.
3. If in convoy, other trucks proceed to safe distance.
4. Water may be used on this cargo ☐ Yes ☐ No *(See Other Specific Precautions or Instructions below)*
5. Firemen should not approach closer than 2500 feet* from the fire when the fire has reached the cargo. *(See Other Specific Precautions or Instructions below)*
6. Public should not approach closer than 2500 feet* from fire.
7. As soon as practical, notify the nearest military installation.

IN CASE OF ACCIDENT

1. Set brake and block vehicle to prevent movement.
2. Post flags by day, and red electric lanterns or reflectors by night, warning traffic approaching from each direction.
3. Call for ambulance, if necessary.
4. Notify nearest police.
5. Notify nearest military installation if cargo is damaged.

ADDITIONAL NOTIFICATION REQUIRED *(By phone or wire as soon as possible)*

SAMPLE

IN CASE OF BREAKDOWN

1. Do not attempt to tow loaded vehicle.
2. Post flags by day and red electric lanterns by night, warning traffic from each direction.

GENERAL PRECAUTIONS

1. While operating over public roads, keep at least 300 feet from trucks loaded with explosives or other dangerous articles; a greater minimum distance must be maintained if required by state or municipal regulations.
2. Protect the public from the hazards of the cargo.
3. Do not allow smoking or use of matches or lighters in or near the vehicle.
4. Obey all state and local traffic regulations.
5. Do not exceed posted speed limits.
6. Stop at all railroad crossings.
7. Use designated routes. Whenever possible, avoid congested residential or business areas.
8. Do not permit unauthorized persons to ride on vehicles.
9. At other than carrier rest stops or interchange points, select safe parking space at stopping locations designated by the carrier. Vehicles carrying explosives should not group together at these stopping locations.

OTHER SPECIFIC PRECAUTIONS OR INSTRUCTIONS

FIRE DIRECTLY INVOLVING CARGO IS SUBJECT TO DETONATION.

These instructions must be transferred to each subsequent driver for turn-in at final destination. If more than 3 drivers are involved, the additional signatures should be made on an extra sheet and attached hereto.

SIGNATURE OF SHIPPER REPRESENTATIVE: Frank Smith

SIGNATURE OF FIRST DRIVER: Jim Richards

SIGNATURE OF SECOND DRIVER:

SIGNATURE OF THIRD DRIVER:

* The distances shown are minimum; greater distances should be used whenever possible.

DD FORM 1 MAY 71 836 REPLACES EDITION OF 1 JUN 66, WHICH MAY BE USED. ☆U.S.G.P.O.—1984-420-979/17185

mm017064

Figure 2-16. An example of a completed DD Form 836 (Special Instructions for Motor Vehicle Drivers).

LESSON 2
PRACTICE EXERCISE

The following items will test your grasp of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answered any item incorrectly, study again that part of the lesson which contains the portion involved.

1. In which publication and how often is a listing of restricted or suspended munitions published?
   A. DOD 6055.9-STD. Quarterly.
   B. TM 9-1300-206. Annually.
   C. AMC Regulation 385-100. Monthly.
   D. TB 9-1300-385. Quarterly.

2. Within how many days after the receipt of a lot of ammunition must an initial receipt inspection (IRI) be performed?
   A. Within 90 days.
   B. Within 60 days.
   C. Within 45 days.
   D. Within 30 days.

3. During which inspection is an inspection of lethal chemical agents munitions conducted?
   A. Periodic inspection (PI).
   B. Safety in storage inspection (SIS).
   C. Acceptance inspection (AI).
   D. Storage monitoring inspection (SMI).

4. Which ACC is assigned to ammunition items returned by the customers or users upon receipt?
   A. ACC-E.
   B. ACC-H.
   C. ACC-K.
   D. ACC-P.

5. How often should a formal inspection of buildings where ammunition and explosives are stored be made?
   A. Annually.
   B. Semiannually.
   C. Every nine months.
   D. Every seven months.

6. How often are lightning protection systems within an ammunition area visually inspected?
   A. Every seven months.
   B. Every 10 months.
   C. Every 14 months.
   D. Every 16 months.

7. How often should a formal inspection of each outdoor storage site containing ammunition be made?

   A. Quarterly.
   B. Semiannually.
   C. Every seven months.
   D. Every nine months.

8. What is the defect classification when you find ball ammunition mixed with grenade cartridges?

   A. Critical.
   B. Major.
   C. Minor.
   D. Incidental.

9. What is the defect classification for dented or distorted cartridge cases?

   A. Incidental.
   B. Minor.
   C. Major.
   D. Critical.

10. What is the defect classification for a container that is deteriorated to the extent that maintenance is required prior to issue?

    A. Critical.
    B. Major.
    C. Minor.
    D. Incidental.

11. What is the defect classification for HE ammunition with practice markings?

    A. Critical.
    B. Major.
    C. Minor.
    D. Incidental.

12. What are the major programs that make up the ammunition stockpile reliability program (ASRP)?

    A. The sampling plan, sample inspection, and sample disposition.
    B. Ammunition surveillance, function test, and laboratory test.
    C. Defect standards, defect classifications, ammunition suspensions, and ACCs.
    D. Inspection procedures, SOPs, drawings, and ammunition data cards.

13. How is the size of a representative sample determined when making a sample selection for inspection?

    A. According to an analysis of trends in serviceability from previous inspections.
    B. Based on a percentage of the total quantity in stock.
    C. According to sampling plans provided in SBs.
    D. According to the sampling criteria in TB 9-1300-385.

14. If you have 15,000 rounds of cartridges, 81mm mortar, leaflet, MK112 stored in three separate earth-covered magazines, what is the PI interval?

    A. Two years.
    B. Three years.
    C. Four years.
    D. Five years.

15. A forward ammunition transfer point (ATP) has requested 40,000 rounds of fragmentation grenades. All you have in stock are in ACC-D. Can you meet this request? Why or why not?
    A. Yes. ACC-D is serviceable without qualification.
    B. No. ACC-D needs repackaging prior to issue.
    C. Yes. ACC-D needs only inspection or testing, which can be done prior to shipment.
    D. No. ACC-D is unserviceable.

16. When a storage crew is issuing ammunition at a storage site, what identifies suspended stocks in storage?
    A. Boxes are painted orange.
    B. DA Form 3022-R.
    C. DD Form 1575 or DD Form 1575-1.
    D. DA Form 2415.

17. Which form is used to report surveillance inspections and test results of ammunition items except for small-arms ammunition trace tests?
    A. DA Form 3151-R.
    B. DA Form 3020-R.
    C. DA Form 2496.
    D. DA Form 984.

18. Which form is initiated in connection with the shipment of a new procurement of supplies from the vendor's plant?
    A. DA Form 4508.
    B. DA Form 3023.
    C. DD Form 1650.
    D. DD Form250.

19. What is the purpose of the SF 364?
    A. To report damage to packaging that occurred during shipment.
    B. To report improper packaging or item discrepancies that may be the fault of the shipper.
    C. To report receipts that are over or short in quantity.
    D. To report new procurement supplies from the vendor.

20. Which record shows the date when your 105mm ring gauge was last checked?
    A. DA Form 3023.
    B. DA Form 984.
    C. DD Form 250.
    D. SF 361.

21. Which report is used to report ammunition stocks in an ASP that have been reclassified to an unserviceable condition?
    A. DA Form 2415.
    B. DA Form 4508.
    C. SF 364.
    D. SF 368.

22. Which document authorizes the accountable officer in the ASP stock control section to change accountable records pertaining to the condition code of a specific lot of ammunition?
    A. The Ammunition Inspection and Lot Number Report.
    B. The Army Depot Surveillance Record.
    C. The Ammunition Transfer Record.
    D. The Storage Monitoring Record.

Item	*Correct Answer and Feedback*
1.	D. TB 9-1300-385. Quarterly. (page 2-18, para 4)
2.	D. Within 30 days. (page 2-9, para 8)
3.	D. Storage monitoring inspection (SMI). (page 2-10, para 5)
4.	C. ACC-K. (page 2-17, Table 2-1)
5.	D. Every seven months. (page 2-19, para 3)
6.	A. Every seven months. (page 2-19, para 4)
7.	A. Quarterly. (page 2-20, para 1)
8.	A. Critical. (page 2-13, para 4)
9.	C. Major. (page 2-13, para 5)
10.	C. Minor. (page 2-14, para 1)
11.	A. Critical. (page 2-14, para 2)
12.	B. Ammunition surveillance, function test, and laboratory test. (page 2-2, para 3)
13.	C. According to sampling plans provided in SBs. (page 2-8, para 2)
14.	A. Two years. (page 2-11, Figure 2-3)
15.	C. Yes. ACC-D needs only inspection or testing, which can be done prior to shipment (page 2-17, Table 2-1)
16.	C. DD Form 1575 or DD Form 1575-1. (page 2-21, para 5)
17.	D. DA Form 984. (page 2-33, para 4)
18.	D. DD Form 250. (page 2-33, para 3)
19.	B. To report improper packaging or item discrepancies that may be the fault of the shipper. (page 2-26, para 6)
20.	A. DA Form 3023. (page 2-21, para 8)
21.	A. DA Form 2415. (page 2-26, para 1)
22.	C. The Ammunition Transfer Record. (page 2-23, para 1)

LESSON 3

PHYSICAL SECURITY EVALUATIONS

Critical Task: 03-4020.02-0001

OVERVIEW

Lesson Description

In this lesson, you will learn the basic requirements for providing security at an ammunition storage facility.

Terminal Learning Objective

Action:	Identify the procedures necessary to provide security in an ammunition storage facility.
Condition:	You will be given a description of security procedures and access to the publication extracts in the Appendix.
Standard:	Describe the measures used to meet physical security requirements, including a security SOP, fencing, a guard force, and key control, in an ammunition storage area.
References:	The material contained in this lesson was derived from AR 190-11, AR 190-13, AR 640-3, FM 19-30, and TM 9-1300-206.

INTRODUCTION

As an ammunition officer at an ammunition storage facility, one of your most important considerations is the protection of the stored ammunition. The only way this can be accomplished is through the use of a well-thought-out security plan. Such a plan should take intangible factors, physical factors, security forces, inspections, and audits into consideration.

PHYSICAL SECURITY PLANNING

DA-Level Responsibilities

Physical security responsibilities start at the DA level. The Enforcement Division, Deputy Chief of Staff for Personnel, establishes DA policy and procedures, provides Armywide guidance, and assists in the development of physical security equipment. The Assistant Chief of Staff for Intelligence provides an assessment of counterintelligence for use in physical security plans and programs. The Chief of Engineers performs a final technical review and approval of plans and specifications for installing intrusion detection systems.

Commander's Responsibilities

Local commanders must ensure that all reasonable precautions are taken to safeguard the people and property of their command. Each commander designates a physical security manager to coordinate physical security matters.

Physical Security Manager's Responsibilities

Each physical security officer must formulate a security plan, supervise physical security inspections, coordinate for security equipment and personnel, and review plans for new construction and modifications.

To develop a complete and concise security program, the security manager should review the requirements for planning security measures. These include the following elements:

- The current mission.
- Possible mission changes.
- The vulnerability of the stored materials.
- Impacts on operations.
- Budget limitations.
- Personnel limitations.
- Equipment limitations.

The security manager should also review the layout of the storage area, paying special attention to the following elements:

- Perimeter barriers.
- Clear zones.
- Protective lighting.
- Entry control points.
- Intrusion detection systems.
- Perimeter defensive positions.

Finally, the security manager should review possible security threats, both natural and human.

Natural threats may either greatly reduce the effect of existing security measures or require an increase in security requirements. Natural threats include the following.

- Floods.
- Storms.
- Earthquakes.
- High winds.
- Snow and ice.
- Fires.
- Heavy fog.

Human threats include overt or covert acts that disrupt or destroy the operation of an installation or facility. These threats include the following:

- Pilferage.
- Sabotage.
- Espionage.
- Bombing.
- Attacks on key personnel
- Carelessness.
- Accidents.
- Safety hazards.

PHYSICAL FACTORS

Storage Magazine Categories

The storage categories of munitions are given in AR 190-11. An extract of the relevant part of AR 190-11 is included in the Appendix at the end of this subcourse booklet.

Category I and Category II. Bulk storage areas are depot activities, prestock points, and ASPs at which bulk quantities of missiles, rockets, ammunition, and explosives are stored. These items are usually stored in their original containers. The magazines considered acceptable for storage are listed in DOD 6055.9-STD as implemented by AR 385-64. Storage structures acceptable for storage of category I and category II ammunition and explosives are the earth-covered magazines and igloos listed in paragraphs 5-2a and 5-2b of AR 190-11 and DOD 6055.0-STD. Commanders may permit the storage of missiles, rockets, ammunition, or explosives in other types of structures if comparable security is provided and if all other requirements are met.

Unless continuously manned or under constant surveillance, category I and category II storage facilities must be protected by intrusion detection systems (IDSs). MACOMs must program the installation of IDSs for category I and category II storage facilities at the earliest practicable time.

Storage facilities must be periodically checked by a security patrol as dictated by any threats and by the vulnerability of the facility. Checks are conducted on an irregular basis during nonduty hours. When the facility is protected by an IDS, the intervals between checks may not exceed 24 hours. Pending installation of an IDS, or in the case of an IDS failure, the intervals between checks for facilities storing category I items may not exceed one hour. The intervals between checks may not exceed two hours for facilities storing category II items.

Category III. Ammunition and explosives listed under category III are stored in structures constructed according to the applicable guidance. Structures without alarms must be checked by a security patrol at irregular intervals not to exceed 24 hours. Patrol checks are not required for IDS-protected facilities. New IDSs may not be programmed for category III storage facilities unless they are determined necessary based on an assessment of local threats, vulnerabilities, and cost effectiveness.

Category IV. Ammunition and explosives listed under category IV are stored according to the applicable guidance. Structures without alarms must be checked by a security patrol at irregular intervals not to exceed 48 hours. Patrol checks are not required for IDS-protected facilities. New IDSs may not be programmed for category IV storage facilities, unless they are determined necessary based on an assessment of local threats, vulnerabilities, and cost effectiveness.

Items used as training devices (such as inert and expended light antitank weapon [LAW] launcher tubes, inert Claymore mines and hand grenades, and the M190 rocket launcher with the M73 sub-caliber practice rocket) are vulnerable to pilferage, misuse, or conversion to live ammunition. Such devices and training aids must be conspicuously marked to prevent their accidental turn-in, or their turn-in as live-fire residue. Those items that can be converted to live ammunition or explosives must be accounted for and secured in the same way as category IV live ammunition and explosives.

Modifications to Facilities

The provisions of AR 190-11 are mandatory for new construction of permanent, land-based installations for the storage of sensitive arms, ammunition, and explosives (AA&E). Modifications to existing facilities are performed as described in the paragraphs that follow.

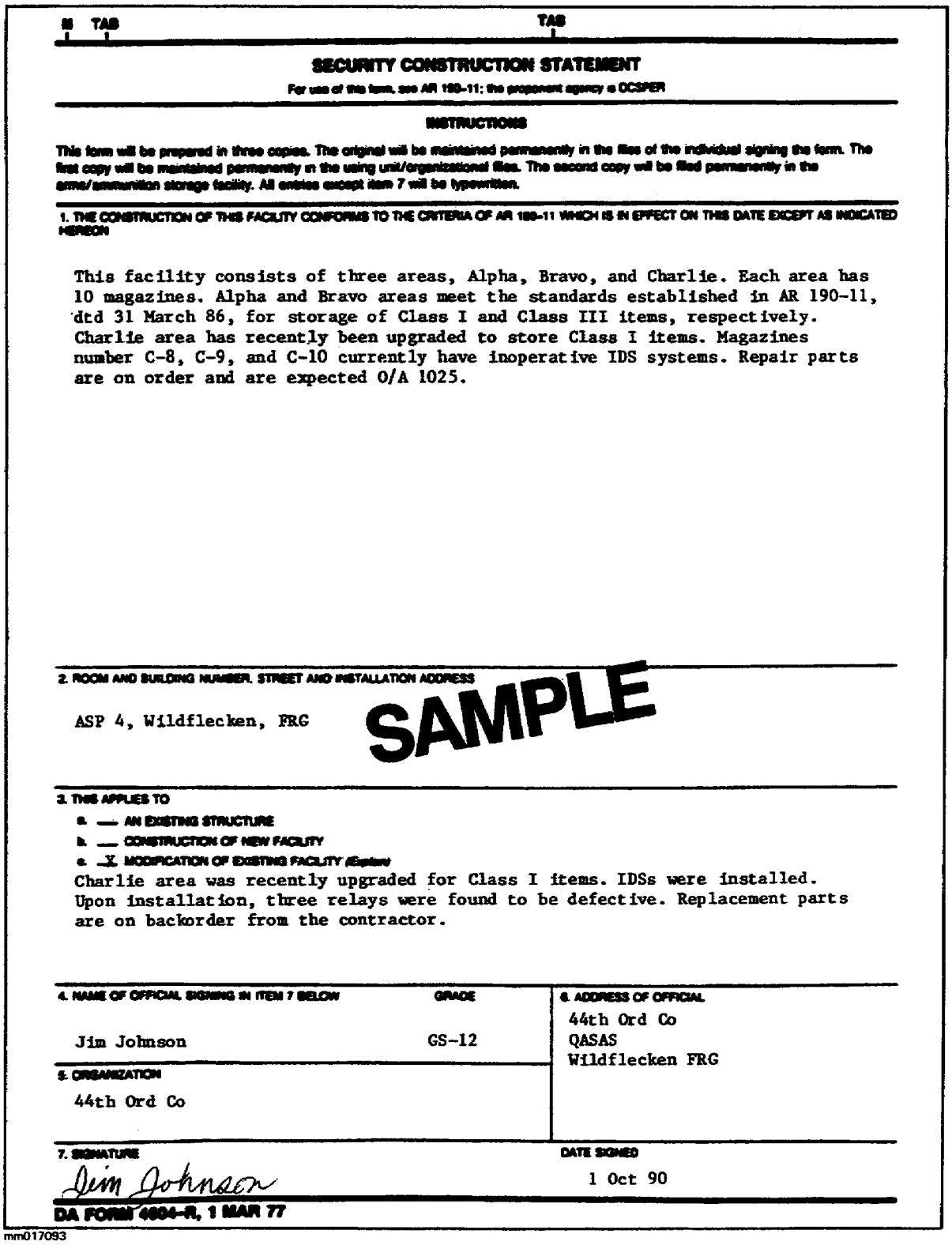
The tearing down and rebuilding of facilities is not undertaken unless the MACOM has determined that existing security measures cannot be supplemented to provide the required degree of protection.

When nonstandard structures or facilities provide equivalent or better protection, modifications are not undertaken.

The upgrading of existing storage structures must be consistent with approved plans for future development and new construction plans. The type, planned use, modification costs, and remaining economic life of storage structures must be considered. In determining upgrade requirements, ammunition and explosives must be consolidated by risk category to the maximum extent consistent with operational, safety, and training requirements. Adequate compensatory security measures are established for AA&E storage structures that do not meet minimum construction standards. Definitive drawings and specifications for the new construction, upgrading, or modification of AA&E storage structures must be coordinated with the engineer office, the safety office, the law-enforcement agency (LEA), the program management office (PMO), and the security police office to ensure that safety and physical security requirements are met.

Qualified engineer personnel must verify the structural composition (including the walls, ceilings, roofs, floors, and doors) of AA&E storage facilities. These personnel prepare DA Forms 4604-R (Security Construction Statements). An example of a completed DA Form 4604-R is shown in Figure 3-1. These forms must indicate the highest construction category met by the facility for the storage of AA&E, and the date of the applicable regulation. A DA Form 4604-R is posted in each AA&E storage facility. This form may be reproduced locally on 8 1/2-by 11-inch paper. A reproducible copy of DA Form 4604-R is located at the back of AR 190-11.

A blanket DA Form 4604-R may be issued at an installation for all facilities (such as ammunition magazines) constructed according to the same specifications. Under these circumstances, a copy of the form need not be posted in each individual storage structure, but it must specifically identify the facilities by number and location and be readily available for inspection. Security construction statements are reviewed during physical security inspections. The DA Forms 4604-R must be revalidated by engineer personnel every five years.



IS TAB TAB

SECURITY CONSTRUCTION STATEMENT

For use of this form, see AR 190-11; the proponent agency is OCSPER

INSTRUCTIONS

This form will be prepared in three copies. The original will be maintained permanently in the files of the individual signing the form. The first copy will be maintained permanently in the using unit/organizational files. The second copy will be filed permanently in the arms/ammunition storage facility. All entries except item 7 will be typewritten.

1. THE CONSTRUCTION OF THIS FACILITY CONFORMS TO THE CRITERIA OF AR 190-11 WHICH IS IN EFFECT ON THIS DATE EXCEPT AS INDICATED HEREON

This facility consists of three areas, Alpha, Bravo, and Charlie. Each area has 10 magazines. Alpha and Bravo areas meet the standards established in AR 190-11, dtd 31 March 86, for storage of Class I and Class III items, respectively. Charlie area has recently been upgraded to store Class I items. Magazines number C-8, C-9, and C-10 currently have inoperative IDS systems. Repair parts are on order and are expected O/A 1025.

2. ROOM AND BUILDING NUMBER, STREET AND INSTALLATION ADDRESS

ASP 4, Wildflecken, FRG

SAMPLE

3. THIS APPLIES TO

a. ___ AN EXISTING STRUCTURE
b. ___ CONSTRUCTION OF NEW FACILITY
c. _X_ MODIFICATION OF EXISTING FACILITY (Explain)

Charlie area was recently upgraded for Class I items. IDSs were installed. Upon installation, three relays were found to be defective. Replacement parts are on backorder from the contractor.

4. NAME OF OFFICIAL SIGNING IN ITEM 7 BELOW — GRADE

Jim Johnson — GS-12

5. ORGANIZATION

44th Ord Co

6. ADDRESS OF OFFICIAL

44th Ord Co
QASAS
Wildflecken FRG

7. SIGNATURE — DATE SIGNED

Jim Johnson — 1 Oct 90

DA FORM 4604-R, 1 MAR 77

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Figure 3-1. An example of a completed DA Form 4604-R (Security Construction Statement).

Physical security personnel monitor the construction of new facilities and the renovation of existing facilities. Engineer personnel coordinate new construction and renovation projects with the local provost marshal or security officer. In addition to meeting construction standards, the storage of AA&E must meet physical security criteria (such as IDSs, locks and hasps, lighting, and security patrols) for the particular category of AA&E involved.

MACOMs must establish a priority list for meeting security requirements by category for planning, programming, and budgeting purposes. The sequence of priorities is as follows:

- Facilities storing category I items (when protection is inadequate). Those having the largest quantities of AA&E get attention first.
- Facilities storing category II items.
- Facilities storing category III items.
- Facilities storing category IV items.

Facilities in the United States and Puerto Rico generally receive priority over facilities in other areas.

Deviations from these priorities are permitted only when MACOMs have determined that a local threat justifies such deviations.

Further guidance on security requirement priorities is given in the extract from AR 190-11 contained in the Appendix at the back of this subcourse booklet.

Deviations from Physical Security Standards

Commanders are authorized a 10-percent deviation from the physical security construction standards for existing facilities as established in AP 190-11. Otherwise, waivers and exceptions to the physical security requirements of AR 190-11 may be granted only by MACOMs or their equivalent according to procedures established by HQDA (DAPE-HRE).

Waivers and exceptions are considered individually; blanket waivers and exceptions are not authorized. Copies of approved waivers or exceptions applying to commercial carriers' minimum security standards, together with compensatory measures taken, are forwarded to the Commander, Military Traffic Management Command, ATTN: MT-SS, 5611 Columbia Pike, Falls Church, VA 22041-5050.

Waivers are normally granted for a period of one year. They may be extended only after a review of the circumstances necessitating the extension. MACOMs may grant waivers for a period not to exceed two years when resource considerations clearly indicate a continued waiver requirement beyond the normal one-year waiver period. Justification for such waivers is required. Each extension must state "first extension," "second extension," and so on.

Exceptions are granted only when the correction of a deficiency is not feasible, or when the security afforded is equivalent to or better than that afforded under the standard criteria.

Requests for waivers and exceptions must include the compensatory measures in effect or recommended. Approvals for waivers and exceptions must specify the compensatory measures required. Equivalent-protection exceptions do not require compensatory measures.

Deficiencies that will be corrected within 60 days do not require a waiver or exception; however, compensatory measures must be taken during the interval.

The authority to grant waivers and exceptions constituting a physical security standard below that prescribed in AR 190-11 is delegated to MACOMs and the heads of Army staff agencies commanding field operating agencies and activities. This authority may be further delegated to the appropriate staff element within the MACOM or

agency having assigned staff cognizance. This authority may not be delegated below the MACOM or agency level. United States Army Reserve (USAR) requests for waivers and exceptions are submitted through command channels to the Commander, US Army Forces Command.

Requests for physical security waivers or exceptions are coordinated between the LEA, the PMO, or the security office of the installation or activity. When structural deficiencies exist, such requests are also coordinated with the supporting engineer.

A request for a physical security waiver or an exception must include the following information:

- A statement of the problems or deficiencies that constitute standards below those given in AR 190-11.
- The compensatory measures in effect at AA&E storage facilities to compensate for noncompliance with required standards of protection.
- The reasons why the unit, facility, or installation cannot comply with the requirements of AR 190-11.
- The commander's statement of corrective action taken or planned to correct the deficiencies for which the waiver or exception is required.
- Each successive commander's recommendation.

The unit and the approving -headquarters keep the waiver or exception (including all supporting documents) on file.

Exceptions are generally regarded as permanent; however, they must be reviewed at least every two years to determine if they need to be continued. This review may be conducted by the approving authority concerned, or by the commander to whom the exception was granted.

If they are still required, exceptions previously granted under the criteria of AR 190-11, dated 30 March 1977 or 15 October 1981 are still valid. Such exceptions need not be resubmitted for approval. However, such exceptions must be reviewed at least every two years.

Fencing

Security fencing is required for category I and category II storage areas. Use the fence standards shown in Office, Chief of Engineers (OCE) Drawings 40-16-08, Type FE-5, with six-foot-high fabric. New chain-link fencing may not be programmed for category III and category IV storage facilities, unless it is determined necessary by the commander concerned based on an assessment of local threats, vulnerabilities, and cost effectiveness.

The fence fabric must be of chain links (galvanized, aluminized, or plastic-coated woven steel), with two-inch square mesh and nine-gauge diameter wire, including coating. In Europe, fencing may be North Atlantic Treaty Organization (NATO) standard design fencing, which has 2.5mm to 3mm gauge, 76mm grid openings, two-meter height, and 3.76-meter post separation.

Posts, bracings, and other structural members must be on the inside of the fence fabric. Galvanized steel or aluminum tie-wires equal in gauge to the fencing must be used to secure the fence fabric to the posts and structural members. These tie-wires must be affixed in such a manner as to prevent easy removal by hand.

The minimum height of the fence is six feet. The bottom of the fence fabric must extend to within two inches of firm ground. Ground surfaces must be stabilized in areas where loose sand, shifting soil, or surface water may

cause erosion and thereby assist an intruder in penetrating the area. Where surface stabilization is impossible or impracticable, use concrete curbs, sills, or other anchoring devices that extend below ground level.

Modifications to existing chain link fencing to conform to these requirements are unnecessary if the existing fencing provides an equivalent or greater penetration resistance, as determined by the commander concerned.

The barrier must have vehicular and pedestrian gates consistent with operational requirements. These gates must be structurally comparable to, and provide the equivalent penetration resistance of, the adjacent fence. They must also be designed so that the traffic through them will be under the positive control of the security force. Unless they are continuously manned, the gates must be provided with a lock approved by HQDA (DAPE-HRE). Hinge pins and other hardware must be welded or otherwise secured to prevent removal.

Drainage structures and water passages penetrating the barrier must be barred to provide penetration resistance equivalent to the fence itself. Openings to drainage structures having a cross-sectional area greater than 96 square inches, and having a smallest dimension greater than six inches, must be protected by securely-fastened, welded-bar grills. As an alternative, drainage structures may be constructed of multiple pipes, each pipe having a diameter of 10 inches or less, joined to each other and to the drainage culvert. Multiple pipes of this diameter may also be placed and secured in the inflow end of the drainage culvert to prevent intrusion into the area.

Building walls may be incorporated into the barrier system if they provide penetration resistance equivalent to the perimeter barrier and are subject to observation.

Clear zones must extend 12 feet on the outside and 30 feet on the inside of the perimeter fence, where possible. These clear zones must be free of all obstacles, topographical features, and vegetation over eight inches tall that could reduce the effectiveness of the physical barrier, impede observation, or provide cover and concealment for an intruder. Vegetation or topographical features that must be retained in clear zones for erosion control, for passive defense, or for legal reasons must be trimmed or pruned to eliminate their concealment potential, or they must be checked by security patrols at irregular intervals. Perimeter light poles, fire hydrants, steam pipes, barricades for explosives safety purposes, entry control buildings within the clear zone, and other objects that provide no aid to circumvention of the perimeter barrier and no concealment to an intruder do not violate the requirements of clear zones.

Fencing needs must be evaluated and determined for each installation on a case-by-case basis. The erection of large quantities of new security fencing around an outer perimeter may not be cost effective. The following factors should be considered:

- If the installation's outer perimeter has adequate security fencing, fencing of inner zones may not be required.
- If the installation's outer perimeter has barbed-wire fencing or no fencing, security fencing of inner zone storage areas may be more practical and cost effective.
- If the installation's outer perimeter is partially fenced, it may be more cost effective to complete the loop rather than to install fencing around inner zone storage areas.
- If natural barriers (such as mountains, cliffs, rivers, seas, or other difficult-to-traverse terrain) form portions of the perimeter and provide equivalent or better security than fencing, then the security fencing of inner zone storage areas may not be required.

- If conditions warrant, commanders may use inexpensive fencing such as three-strand barbed wire to mark perimeters or to assist in controlling and screening authorized entries into storage areas that do not require mandatory fencing.

An explosives area must be placarded at each entrance. The placard requires personnel to present proper credentials and turn over all prohibited articles to the guard on duty, or place them in containers provided for that purpose, before entering the area. The explosives area must be separated from administration, residential, unrelated, and warehouse areas by fences. Fencing (excluding that installed for security reasons only) should not be placed closer to magazines than magazine distance. It should not be closer to explosives operating buildings than the intraline distance.

Reservation boundaries should be fenced. In certain cases, topography or other physical considerations may make fencing impossible or impracticable. Security measures must be taken according to AR 50-6 and AR 190-11. The boundary of each explosives area must be posted at 500-foot intervals to warn against trespassing according to AR 190-13.

Security Lighting

Security lighting must be provided for category I and category II storage facilities. New security lighting systems may not be programmed for category III and category IV facilities unless they are determined to be necessary based on an assessment of the local threats and vulnerabilities. Security lighting must be provided for the exterior doors of all category I and category II item storage rooms and magazines. The switches for exterior lights must be installed so that they are not accessible to unauthorized individuals. Exterior lights must be, covered with wire-mesh screens to prevent their being broken by thrown objects. Vandal-resistant lenses may be used instead of wire-mesh screens.

Security lighting must also be provided for motor pools, hangars, and outdoor parking areas for vehicles and aircraft that have category I and category II ammunition and explosives stored on board, and for such items located in open storage areas. Lighting must be provided along storage site perimeter barriers as determined necessary by the commander based on the threat, perimeter extremities, and surveillance capabilities.

Security lighting requirements must conform to the ammunition and safety requirements of Appendix C, TM 9-1300-206. FM 19-30 should be used as a guide in determining lighting descriptions, layouts, patterns, and minimum intensities. Emergency lighting and standby power are not required, but should be considered when the threat and vulnerability warrant.

Locks

A class V steel vault door with a built-in, three-position, dial-type, changeable-combination lock or a key-operated, high-security padlock and hasp (military specification P-43607 or P-49851) must be used on doors to structures housing classified material. This is according to DOD 5200.I-R, as implemented by AR 380-5. Otherwise, each ammunition magazine or room must be secured with a high-security padlock and high-security hasp approved by the concerned DOD component. Storage facility hasps and locking hardware must provide comparable protection to that afforded by the locks. Examples include the high-security hasp (MIL-H-43905) and the Navy's high-security shrouded hasp (MIL-H-291181). Other high-security locking hardware may be approved for use by the responsible DOD component. Facilities in which aircraft or vehicles are stored with ammunition aboard must be secured with an approved security padlock. See AR 190-11 for a list of approved DA and DOD locks and hasps.

Padlocks are locked to the staple or hasp when the area or container is open to preclude theft, loss, or substitution of the lock.

Keys

Keys to AA&E storage buildings, rooms, racks, containers, and IDSs are maintained separately from other keys, and are accessible only to those individuals whose official duties require access to them. A current roster of these individuals is kept within the unit, agency, or organization. The roster must be protected from public view. It is signed by the designated official and contains the names of those individuals authorized to receive keys from the key custodian. At no time will keys be in the sole custody of a person not listed on the roster.

Keys to AA&E storage buildings, rooms, racks, containers, and IDSs may be secured together in the same key container. However, keys required for the maintenance and repair of IDSs, including keys to the control unit door and the monitor cabinet, must be kept separate from other IDS keys, and access must be permitted only to authorized maintenance personnel.

When arms and ammunition are stored in the same areas, keys to those storage areas may be maintained together, but they must be kept separate from other keys that do not pertain to AA&E storage. The number of keys must be held to the minimum essential.

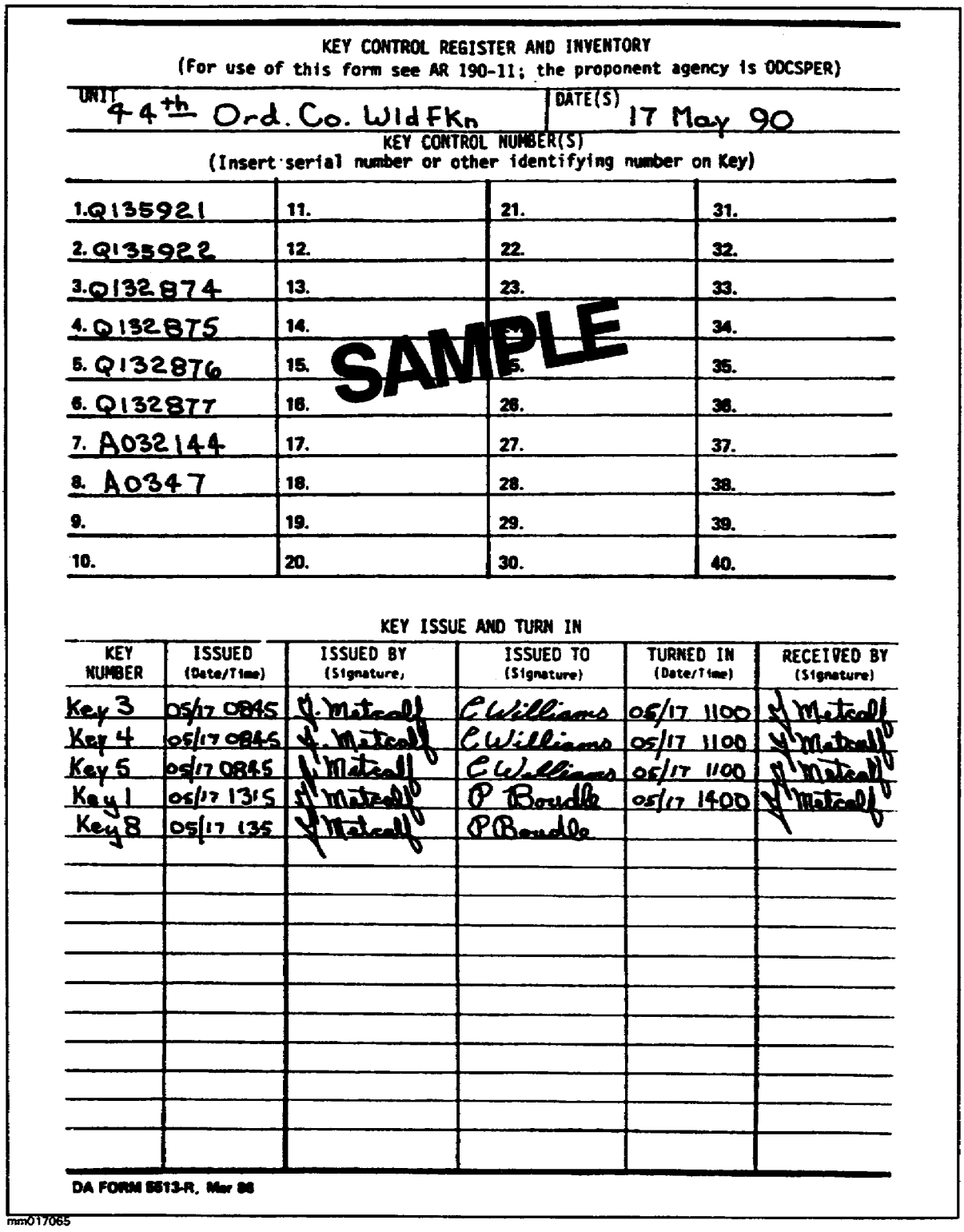
Keys may not be left unattended or unsecured at any time. When not attended or used, they must be secured in containers of at least 20-gauge steel, or of material of equivalent strength, that are equipped with a secondary padlock or a General Services Administration (GSA) -approved, three-position, changeable-combination lock. Keys or combinations must be accounted for at all times. Containers weighing less than 500 pounds must be fastened to the structure with bolts or with chains equipped with secondary padlocks. Keys to arms-storage buildings, rooms, racks, IDSs, or containers may not be removed from the installation except to provide for protected storage elsewhere.

In the event of lost, misplaced, or stolen keys, the affected locks or lock cores must be replaced immediately. Replacement locks, cores, and keys must be secured. The use of a master-key or multiple-key system is prohibited.

Key and Lock Custodian

A key and lock custodian, whose duties include assuring proper custody and handling of keys and locks, must be appointed in writing. Only the commander and the key custodian (or alternate, if appointed) may issue keys to those individuals on the key access roster. Personnel listed on the roster may transfer custody (in writing) among themselves when circumstances warrant. The key and lock custodian's duties also include the procurement and receipt of keys and locks and the investigation of lost or stolen keys. The key and lock custodian maintains a record to identify each key, lock, and combination used by the activity, including replacement or reserve keys and locks. This record must show the current location and custody of each key and lock. A key control register is maintained at the unit level to ensure continuous administrative accountability for keys. The intent of this requirement is to ensure the positive control of keys and to affix responsibility for the custody of stored AA&E.

Key control registers contain the printed name and signature of the individual receiving the key, the date and hour of issuance, the SN or other identifying information of the key, the signature of the person issuing the key, the date and hour the key was returned, and the signature of the individual receiving the returned key. The DA Form 5513-R (Key Control Register) may be used for these purposes. An example of a completed DA Form 5513-R is shown in Figure 3-2. The DA Form 5513-R may be reproduced on 8 1/2-by 11-inch paper. A reproducible copy of DA Form 5513-R is located at the back of AR 190-11. Completed key control registers are retained in



KEY CONTROL REGISTER AND INVENTORY

(For use of this form see AR 190-11; the proponent agency is ODCSPER)

UNIT	DATE(S)
44th Ord. Co. Wld FKn	17 May 90

KEY CONTROL NUMBER(S)

(Insert serial number or other identifying number on Key)

1. Q135921	11.	21.	31.
2. Q135922	12.	22.	32.
3. Q132874	13.	23.	33.
4. Q132875	14.	24.	34.
5. Q132876	15.	25.	35.
6. Q132877	16.	26.	36.
7. A032144	17.	27.	37.
8. A0347	18.	28.	38.
9.	19.	29.	39.
10.	20.	30.	40.

SAMPLE

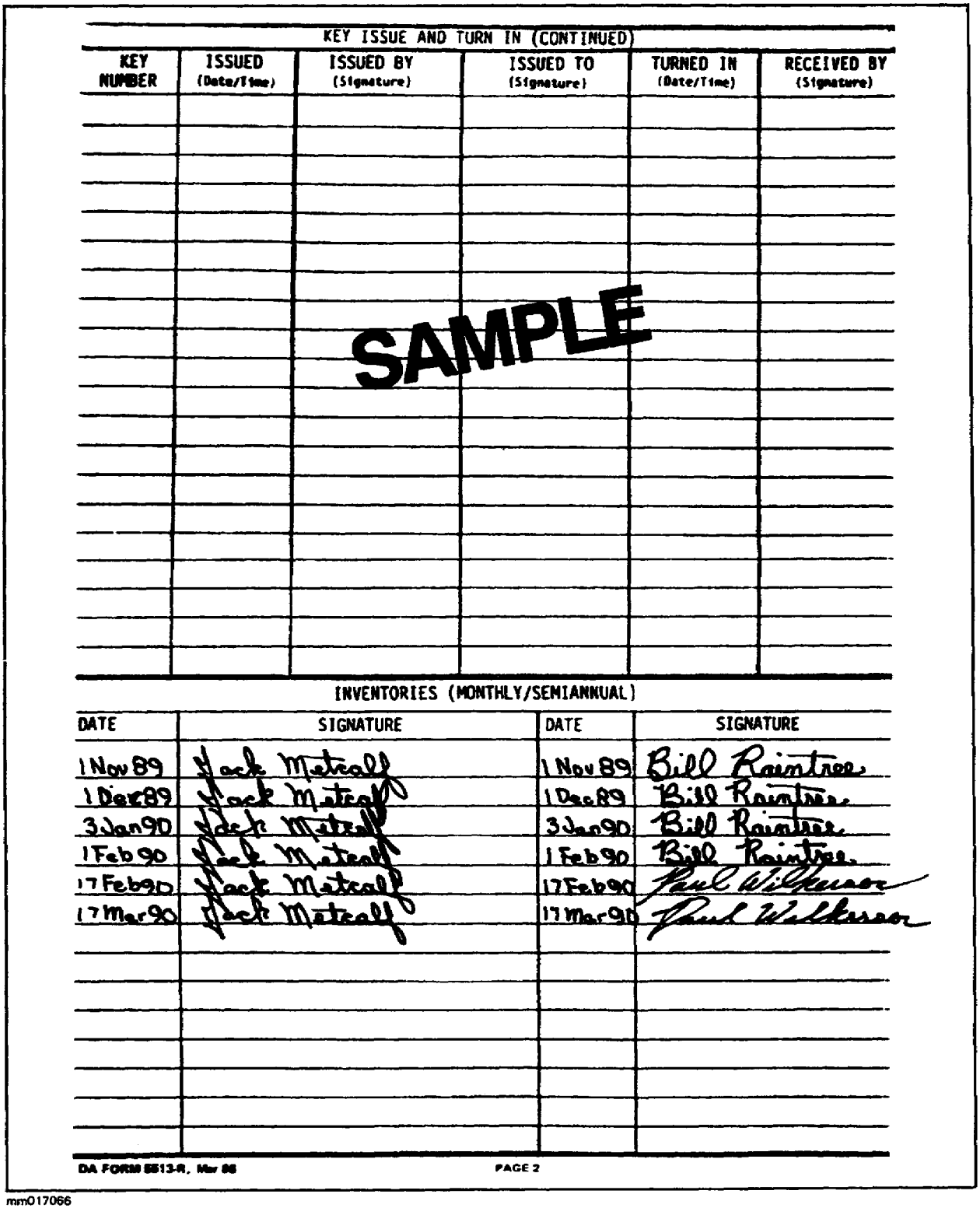
KEY ISSUE AND TURN IN

KEY NUMBER	ISSUED (Date/Time)	ISSUED BY (Signature)	ISSUED TO (Signature)	TURNED IN (Date/Time)	RECEIVED BY (Signature)
Key 3	05/17 0845	J. Metcalf	C Williams	05/17 1100	J. Metcalf
Key 4	05/17 0845	J. Metcalf	C Williams	05/17 1100	J. Metcalf
Key 5	05/17 0845	J. Metcalf	C Williams	05/17 1100	J. Metcalf
Key 1	05/17 1315	J. Metcalf	P Boudle	05/17 1400	J. Metcalf
Key 8	05/17 135	J. Metcalf	P Boudle		

DA FORM 5513-R, Mar 86

mm017065

Figure 3-2. An example of a completed DA Form 5513-R (Key Control Register and Inventory) (front side).



KEY ISSUE AND TURN IN (CONTINUED)

KEY NUMBER	ISSUED (Date/Time)	ISSUED BY (Signature)	ISSUED TO (Signature)	TURNED IN (Date/Time)	RECEIVED BY (Signature)

INVENTORIES (MONTHLY/SEMIANNUAL)

DATE	SIGNATURE	DATE	SIGNATURE
1 Nov 89	Jack Metcalf	1 Nov 89	Bill Raintree
1 Dec 89	Jack Metcalf	1 Dec 89	Bill Raintree
3 Jan 90	Jack Metcalf	3 Jan 90	Bill Raintree
1 Feb 90	Jack Metcalf	1 Feb 90	Bill Raintree
17 Feb 90	Jack Metcalf	17 Feb 90	Paul Wilkerson
17 Mar 90	Jack Metcalf	17 Mar 90	Paul Wilkerson

DA FORM 5513-R, Mar 88 PAGE 2

mm017066

Figure 3-2 (continued). An example of a completed DA Form 5513-R (Key Control Register and Inventory) (back side).

unit files for a minimum of 90 days, and then they are disposed of according to the established procedures of the concerned DOD component. The provisions of AR 25-400-2, *The Modern Army Recordkeeping System (MARKS)*, dated 15 October 1986, apply.

Key and Lock Inventories

Inventories of keys and locks are conducted semiannually. Inventory records are retained in unit files for a minimum of one year, and are then disposed of according to the established procedures of the DOD component concerned. The requirements given in AR 25-400-2 apply.

When individuals (such as duty officers) must have keys immediately available for any reason, they must sign for a sealed container of keys. A sealed container is a locked and sealed key container, or a sealed envelope containing the key or the combination to the key container. When the sealed container of keys is transferred from one individual to another, the unbroken seal is evidence that the keys have not been disturbed. The seal need not be broken for an inventory of the keys. However, evidence of tampering with a sealed container requires an inventory of the keys and other actions as determined by the commander. If the keys are not placed in a sealed container, an inventory of the keys must be made by SN or using other identifying information on each key (such as a stamped number on the key). The inventory and the change of custody must be recorded.

Combination Changes

The combinations to locks on vault doors or on class V security containers are changed annually or upon change of custodian, armorer, or other person having knowledge of the combination. They are also changed when the combination may have been compromised and when the container is first put into service. The combination is recorded, sealed in an SF-700 (Security Container Information) envelope, and stored in a safe that meets the storage requirements given in AR 380-5, *Department of the Army Information Security Program*, dated 25 February 1988. No other written record of the combination may be kept. Controls must be established to ensure that envelopes containing combinations to locks are not made available to unauthorized personnel.

Replacement Locks and Keys

Replacement of lock cylinders and broken keys for high-security locks may be requested through normal supply channels. Coordinate requests through the key control custodian. MACOMs are designated as approval authorities for any deviation from normal key procurement procedures (such as requests for the procurement of extra keys for high-security locks).

Intrusion Detection System

The IDS is an essential part of the physical security system. When used, it promotes the economical and efficient use of manpower. The IDS must be an approved, DOD-standardized system, such as the Joint-Service Interior Intrusion Detection System (J-SIIDS); the AN/GSS-20 alarm set, anti-intrusion, restricted area, which uses microwave or ultrasonic signals to detect movement in an enclosed area; or commercial equipment that has been approved by the appropriate DOD component according to DOD Directive 3224.3. Components of the J-SIIDS are given first consideration. Before any commercial IDS is purchased, leased, or renewed for lease, technical review and approval by the MACOM commander is required according to the procedures given in AR 190-13.

In addition to ON and OFF switches that are not located at a central control system, the ACCESS and SECURE switches are located within the alarmed area. The IDS must be designed to cause an alarm to sound at the annunciator panel when the system is turned off and when a malfunction occurs. An IDS installed to protect arms rooms must consist of two types of sensors with different methods of activation (such as a balanced magnetic switch on the door and ultrasonic motion sensors inside the arms room). When practical, the use of additional levels of protection (such as duress signaling components) is encouraged.

Components of the DOD standardized system must be used as replacements for installed commercial systems that become obsolete.

The IDS must have a central control station where alarms annunciate, and from which a response force can be dispatched. The response force should respond to an activated alarm as soon as possible, but in no case may arrival at the scene take longer than 15 minutes. An alarm bell located only at the protected location is not acceptable. Alarm circuitry that requires that alarm signals be cleared either by the central control station alarm monitor or by entering the protected area must be used. The remote clearing of alarms before entering the area and checking the alarm is not authorized. Some means of communication must be provided between the protected areas and the monitoring area to coordinate status changes. Facilities located away from military installations must have a local alarm in addition to monitoring capability. The use of alarm delay switches at Reserve Component (RC) facilities is discouraged.

Where IDSs are used in civilian communities, arrangements must be made to connect the alarms to civil police headquarters, to a private security company, or to a monitoring service from which immediate response can be directed in case of unauthorized entry. The use of a commercial answering service is not authorized. This coordination with civil authorities is required to ensure that a response force can be directed to the facility immediately.

Wherever possible, a daily log is maintained of all alarms received. This log includes the nature of the alarm (for example, intrusion system failure or nuisance alarm), the date and time the alarm was received, the location, and the action taken in response to the alarm. Such logs are maintained for a minimum of 90 days, and are reviewed to identify and correct IDS reliability problems. A DA Form 4930-R (Alarm/Intrusion Detection Record) may be used to record alarms received. An example of a completed DA Form 4930-R is shown in Figure 3-3. DA Form 4930-R may be reproduced on 8 1/2-by 11-inch paper. A reproducible copy of the DA Form 4930-R is located at the back of AR 190-11. A computer-generated printout of alarms may be used to instead of this form if all of the required information is included, or if supplemental information is included in a log.

The daily logs are reviewed periodically to monitor and correct IDS reliability problems. J-SIIDS problem areas must be described in writing and sent through command channels to the Commander, US Army Belvoir Research and Development Center, ATTN: AMCPM-PSE, Fort Belvoir, VA 22060-5606.

Transmission lines for the alarm circuits must be electrically supervised and dedicated to minimize undetected tampering. For an example of this, see the data transmission system (type 1), described in TB 5-6350-264, *Selection and Application of Joint-Services Interior Intrusion Detection System (J-SIIDS)*, dated 28 July 1986. Visible lines must be inspected periodically. A protected, independent backup power source of at least four hours duration must be provided. The provision of telephone communication between a central control station and alarmed zones (to provide for controlled entry by authorized personnel) should be considered as an adjunct to the IDS. Telephone dialers and McCoullough Loop Communications applications may not be used.

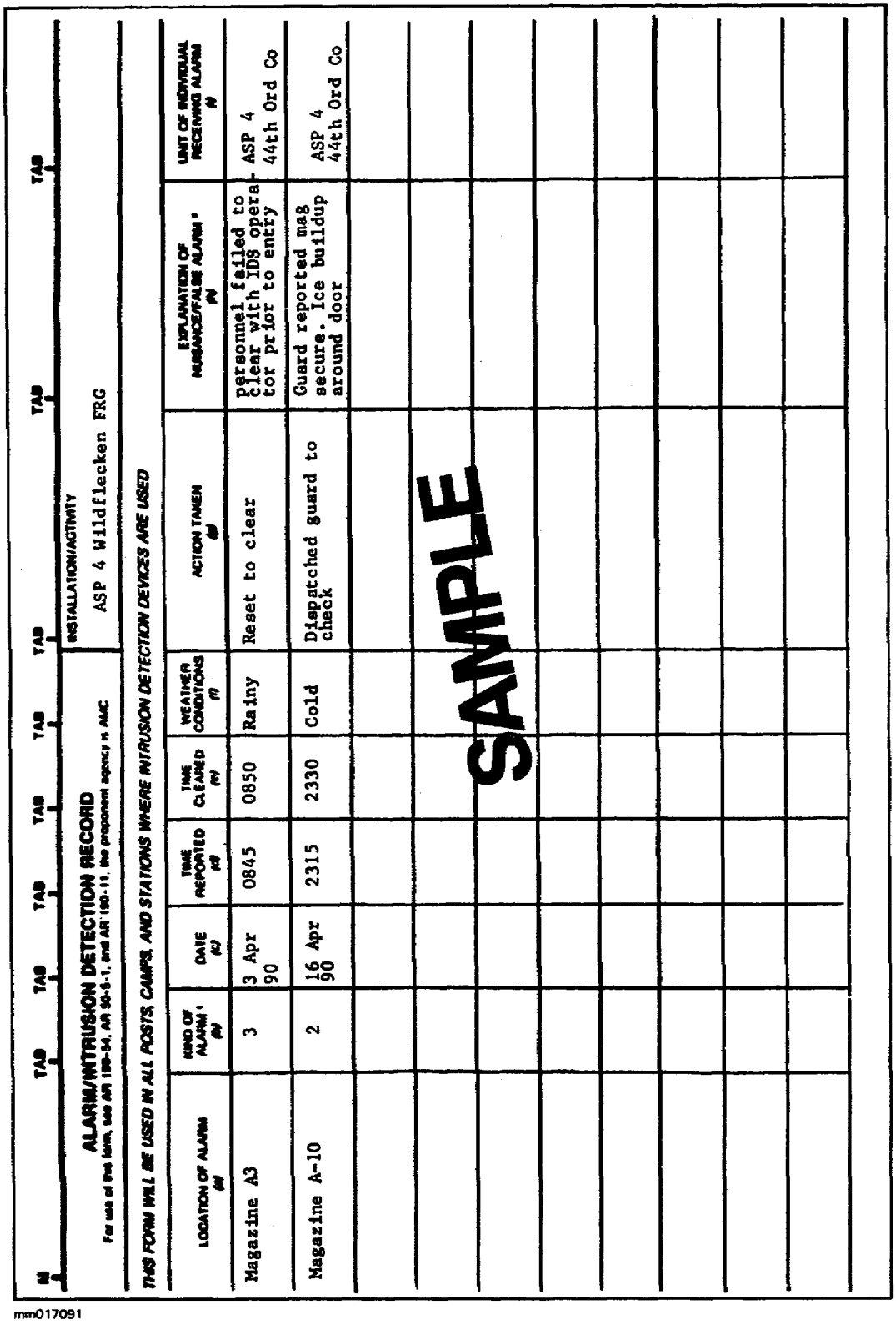


Figure 3-3. An example of a completed DA Form 4930-R (Alarm Intrusion Detection Record).

IDS Security

The IDS is considered for security classification if it meets the specific classifying criteria in AR 380-5. If classified, appropriate personnel security clearances must be obtained.

Only authorized personnel may be allowed access to unclassified IDS installation wiring diagrams for a specific facility or location. This also applies to information on known, specific vulnerabilities or counter-measures affecting the IDS.

According to AR 380-67, *The Department of the Army Personnel Security Program*, dated 9 September 1988, civilian employees whose duties involve the design, operation, or maintenance of IDSs require the completion of a favorable National Agency Check with written inquiries (NACI) before they may be appointed to such noncritical-sensitive positions.

A check of the National Crime Information Center (NCIC) for installers and maintainers of unclassified IDSs is a command decision. This decision is based on the sensitivity of the area to be protected and the need for quality control over personnel having access to the area and the IDS.

All installers, maintainers, and operators of unclassified IDSs must undergo a command-oriented security check. This security check should be made with the area provost marshal or other agencies that might have information on file that bears on the honesty or stability of the individual. The requirement for command-oriented security checks should be based on local jurisdiction policies, the local threat and sensitivity, and the vulnerability of the protected facility.

All keys required to be installed on IDS components must be safeguarded and controlled.

Periodic system operational checks must be made and logged by unit security personnel. A visual inspection of the components and the conduits is made for evidence of tampering, and operational checks of sensors are made to ensure that the sensors activate.

Installation physical security inspectors must include a check of each IDS during all security inspections to verify that the IDSs are operating satisfactorily. These checks must include an inspection of the components and the conduits for evidence of tampering. The unit's log entries and records regarding the operation and inspection of each IDS must also be checked.

Before accepting a newly-installed IDS for operation, an inspection must be conducted by qualified technical personnel to ensure that the system meets the minimum acceptable standards outlined in AR 190-11. The statement of verification is maintained in the using unit's organizational files. DA Form 4604-R may be used to record this verification inspection.

The maintenance of IDSs is provided only by qualified personnel. Such maintenance must be performed consistent with operational requirements to ensure the continuous operation and reliability of each system in use.

The duress signaling system must be considered for arms storage facilities whenever constant surveillance posts are used to protect category I and category II AA&E.

Signs prominently announcing the presence of an IDS must be displayed on ammunition storage rooms, magazines, or perimeter barriers using such a system. These signs are affixed at eye level when possible. They are affixed on the exterior walls containing an entrance to the ammunition or explosives storage room, vault, building, or magazine. In the case of alarmed barrier fences, they are affixed on the outside of the fence at about 100-meter intervals. They must be placed where they will not hinder observation or fields of fire. Signs

must not be placed where they may be used by intruders to gain entry. Alarm signs must not create nuisance alarms. If they do, they must be posted outside the perimeter fence. IDS signs such as the one depicted in Figure 3-4 must be used.

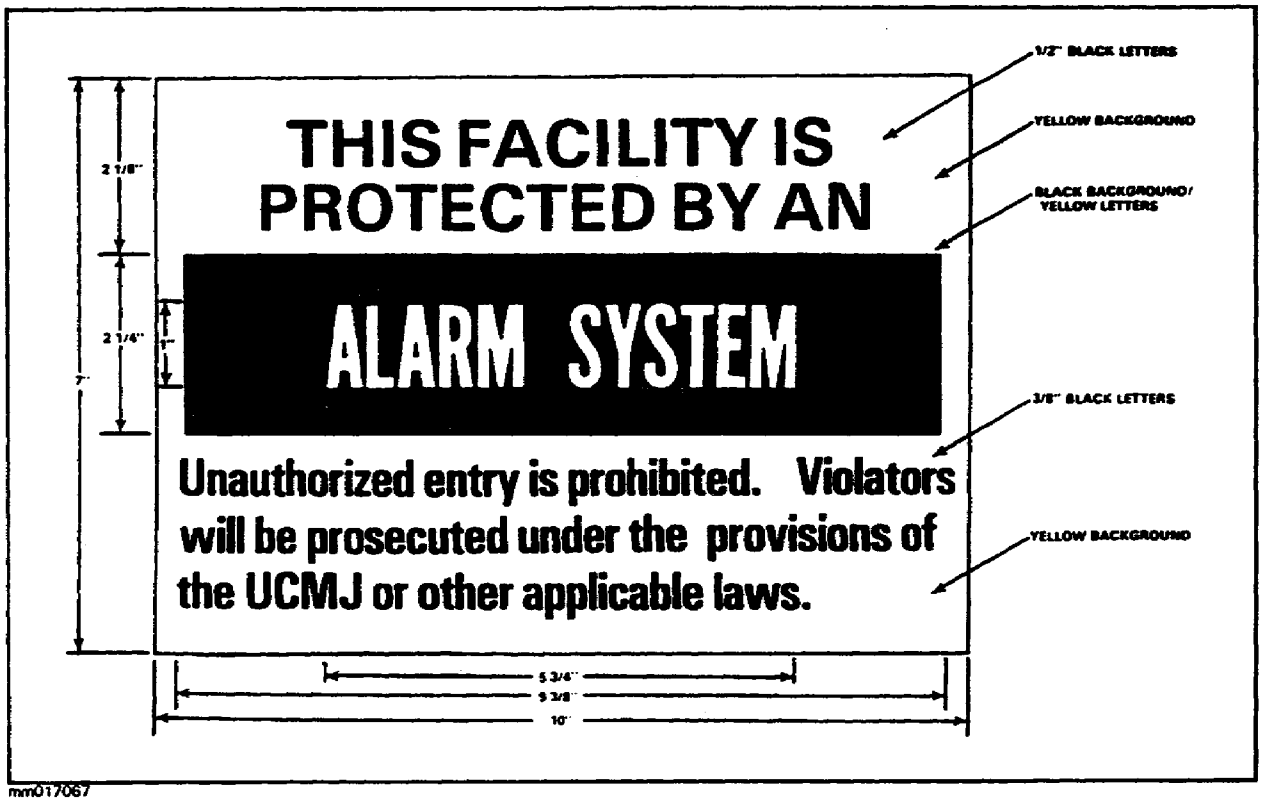


Figure 3-4. Sample intrusion detection system sign.

Computer Security

Computers are expensive, and they control a great deal of important information. Damage to a computer can result in costly repairs and the loss of critical information. Therefore, computers present special security problems involving the physical computer, the user, the hacker, and the computer media. Terminals connected to a mainframe require the same procedural and physical protection as the mainframe itself. All components must be protected.

The degree of protection a computer system needs is determined by what kind of information is stored in it. A system containing Top Secret data needs more protection than one used for unclassified data. Because there are many ways to provide security, several protective measures may be used in combination. It is unusual for one measure to be used alone. The paragraphs that follow describe some security measures that can be employed to protect computer systems.

Indoctrination and Training. These must be initiated as soon as personnel come on board. An annual refresher that is tailored to the duties should also be conducted. The training should include individual responsibilities, threats to the system, vulnerabilities; and countermeasures. SOPs can be used to familiarize everyone on the staff with what is normal. This can aid in spotting actions that are out of the ordinary.

Limit Access to Computer Media. The computer area should be designated as restricted to provide greater control of assets. A master list of computer media must be maintained if the media are classified. Top Secret and Secret materials must be inventoried at prescribed intervals. Approved users must have access on a need-to-know basis only. All others are refused access, and even approved users are admitted only to the areas where they work. This keeps one individual from adversely affecting the whole system. Barriers (such as escorts, receptionists, locked doors, counters, access rosters, and sign-in/sign-out logs for people and for computer media should be used to restrict access to the computer media.

Computer components (media), as well as the computers themselves, are vulnerable. Computer input is often stored on magnetic tapes, disks, or other media. Since they are easily portable, these media are especially subject to tampering, theft, or destruction. Media containing classified information must be protected by marking.

Punched Cards. When 25 or fewer cards are classified, each card must be marked on the front and back with the appropriate classification. When a large number of cards are classified, the appropriate classification marking must be placed on the first and last cards of the deck, or on header and trailer cards. Cards removed from the deck are individually marked as needed.

Magnetic Tapes and Disk Packs. These items are marked externally with labels. They may be marked internally with a notation indicating the classification.

Punched "Paper" Tape. Rolls must be marked externally with labels. If not on rolls, mark the tape at the beginning and the end on a readily observable portion.

Media Impossible to Mark. When the medium itself cannot be marked, the container in which it is stored must be marked.

GMLR Security

Classified GMLR, or other classified items, must be segregated from unclassified items stored in the same facility, when possible. Strict access and accountability control procedures must be established by the commander. See AR 190-11, paragraph 5-9, for the two-person rule for access to category I missiles and rockets. Personnel whose duties require access to such storage facilities must have a security clearance commensurate with the classification of the items involved. Commanders must establish appropriate lock and key control procedures to preclude defeat of the two-person rule. MACOMs may exempt the two-person rule requirement without instituting formal exemption provisions. Examples of valid exemptions include contingency operations and other mission-essential activities.

Restricted Areas

When conditions warrant, commanders of Army installations may designate restricted areas in writing to protect classified defense information or to safeguard property or materials for which they are responsible.

Tenant units and activities on the installation must request the authority of the installation commander to designate restricted areas. The designation of restricted areas for Army activities not on an installation is done under the authority of the activity commander or officer in charge. When required, adequate physical safeguards are installed to deter unauthorized persons from entering the restricted area.

Commanders designating or terminating restricted areas to meet the requirements of AR 380-40; AR 380-19, *Information Systems Security*, dated 1 August 1990; AR 381-14,

Technical Surveillance Countermeasures (TSCM), dated 3 October 1986; or AR 530-4, Control of Compromising Emanations, dated 1 March 1984, must advise the Commander, US Army Intelligence and Security Command, ATTN: IAOPS-OP, Fort Meade, MD 20755-5995, of such establishments or terminations. The applicable regulation must be cited.

Except when such action would tend to advertise an otherwise concealed area, signs or notices are posted in conspicuous and appropriate places to identify the restricted area. This includes signs posted at each entrance or approach to the area and on perimeter fences or boundaries of the area.

Failure to post conspicuous signs and notices to give people approaching a restricted area actual knowledge of the restriction may seriously hamper any resulting criminal prosecution.

Each sign or notice must be marked with the words, "RESTRICTED AREA," and must include the following warning notice:

> THIS (INSTALLATION, ACTIVITY, OR OTHER AREA) HAS BEEN DECLARED A RESTRICTED AREA BY AUTHORITY OF (TITLE: COMMANDING GENERAL OR COMMANDING OFFICER) IN ACCORDANCE WITH THE PROVISIONS OF THE DIRECTIVE ISSUED BY THE SECRETARY OF DEFENSE ON 20 AUGUST 1954, PURSUANT TO THE PROVISIONS OF SECTION 21, INTERNAL SECURITY ACT OF 1950. UNAUTHORIZED ENTRY IS PROHIBITED.
>
> ALL PERSONS AND VEHICLES ENTERING HEREIN ARE LIABLE TO SEARCH. PHOTOGRAPHING OR MAKING NOTES, DRAWINGS, MAPS, OR GRAPHIC REPRESENTATIONS OF THIS AREA OR ITS ACTIVITIES IS PROHIBITED UNLESS SPECIFICALLY AUTHORIZED BY THE COMMANDER. ANY SUCH MATERIAL FOUND IN THE POSSESSION OF UNAUTHORIZED PERSONS WILL BE CONFISCATED.

In areas in which languages other than English are commonly spoken, warning signs must contain this message in the local languages as well as in English.

Access Controls

Vehicular and personnel gates must be secured, and strict key control accountability must be observed. A pass, badge, access roster, or sign-in and sign-out system for admission to magazine areas must be used to admit only properly-identified, authorized personnel. Registers must be maintained for a minimum of 90 days. Privately-owned vehicles are normally prohibited in magazine or storage areas. Hunting, if permitted in such areas, must be rigidly controlled and minimized.

Vehicle and personnel gates are secured except as necessary to allow authorized entry to or exit from the area. Gate keys and locks must be controlled and accounted for. Entry and exit procedures must include checks of personnel and vehicles for unauthorized materials. Persons requiring frequent recurring entrance to the area must be listed on an entry control roster prepared by the responsible storage commander. This roster must contain the name, grade, and unit or organization of each authorized person.

Security identification cards and badges must be used according to AR 190-13 and AR 640-3. Privately-owned vehicles and leased vehicles must be tagged with a pass card and recorded when entering secure areas. Upon exiting, all vehicles must be thoroughly inspected to ensure that only authorized materials are being removed.

Vehicles leased by government agencies are considered to be government vehicles for the contracted period. Rental vehicles obtained by individuals for their use during periods of temporary duty are not considered government vehicles.

Personnel whose duties require access to storage facilities containing classified items must have a security clearance commensurate with the classification of the items involved. This includes guards and host country guards.

SECURITY FORCES

A security or guard patrol or unit personnel must periodically check facilities and areas used to store AA&E according to the paragraphs that follow and as dictated by a threat and vulnerability analysis. Checks must be conducted during nonduty hours on an irregular basis to avoid establishing a pattern. Minimum security patrol check requirements are prescribed in Chapter 4 and Chapter 5 of AR 190-11.

Security checks are made to ensure that unauthorized personnel are not in the area and that storage structures are intact and have not been broken into. During periods of increased vigilance because of a threat situation, security patrols must physically inspect doors and locks on all storage structures in their area of responsibility. The selection of personnel to perform guard duties at AA&E storage facilities must be monitored closely by commanders to ensure that only properly-trained and reliable individuals are assigned such duty. Supervisory checks are conducted to ensure that guard duties are being performed properly.

Inspections and guard checks must be increased during nights, weekends, and holidays to provide for deterrence of violations and early detection of losses. Such checks must be recorded, and must consist of an inspection of the building or facility, including all doors and windows. Records of these checks are maintained in the unit's active file for a minimum of 90 days, and then they are destroyed.

Guard procedures must be reviewed at least annually. If necessary, they are revised to provide greater security at AA&E storage areas. Such procedures place special emphasis on guard post locations and on guard orientation concerning the duties to be performed.

Law enforcement patrol plans must be coordinated and integrated with the guard plan or other security plans and programs to the maximum extent possible. When facilities are located in civilian communities, liaison must be established with local civil police agencies to ensure that periodic surveillance is conducted and that a coordination plan for security exits.

Security patrols may be conducted by military personnel; by civilian security personnel, including contract personnel; by the US Marshal Service; or by state, local, or campus police.

Security forces must be provided with adequate means of communication.

Protection and surveillance by guards or other personnel must be established for facilities or for temporary open storage areas according to AR 190-11, and as needed to ensure protection in conjunction with other physical security measures at the facilities. Entrance and exit points into and out of magazine areas and holding areas where vehicles, railcars, or aircraft with missiles, rockets, ammunition, or explosives aboard are parked must be controlled by guards or other personnel when not locked. When duty personnel are not present, or when an IDS or closed-circuit television is not used, sufficient security patrols must be provided to allow for the physical inspection of each aircraft, railcar, or vehicle at a frequency determined by the commander concerned, based on the category of AA&E, the threat, and the location.

INSPECTIONS AND AUDITS

Security measures, including theft or loss reporting and inventory and accountability procedures for AA&E, must be examined during appropriate inspections and audits. The status of existing waivers and exceptions must be examined for compliance and for their continuing necessity.

Physical Security Surveys

A physical security survey is a formal, recorded assessment of the installation physical security program. It provides the commander with an assessment of the overall security of the installation given the threat and the mission. Specific procedures and measures evaluated can include threat-assessment procedures, security-personnel effectiveness, control of visitors and packages, use of physical security equipment (such as IDSs, barriers, and lighting), identification of critical areas or facilities, and integration of physical security planning into contingency and war plans. It advises the commander on the installation physical security program's strengths and weaknesses.

Physical security surveys are conducted when an installation is activated, when no record exists of a prior physical security survey, and every three years, except for those installations with the mission of nuclear, chemical, or conventional arms and ammunition storage. Such installations are surveyed every 18 months.

Critically-sensitive automatic data processing (ADP) activities or facilities are surveyed every 18 months, at the same time as the accreditation procedures prescribed in AR 380-19 are conducted. Highly-sensitive, sensitive, or nonsensitive ADP activities or facilities are surveyed every 24 months.

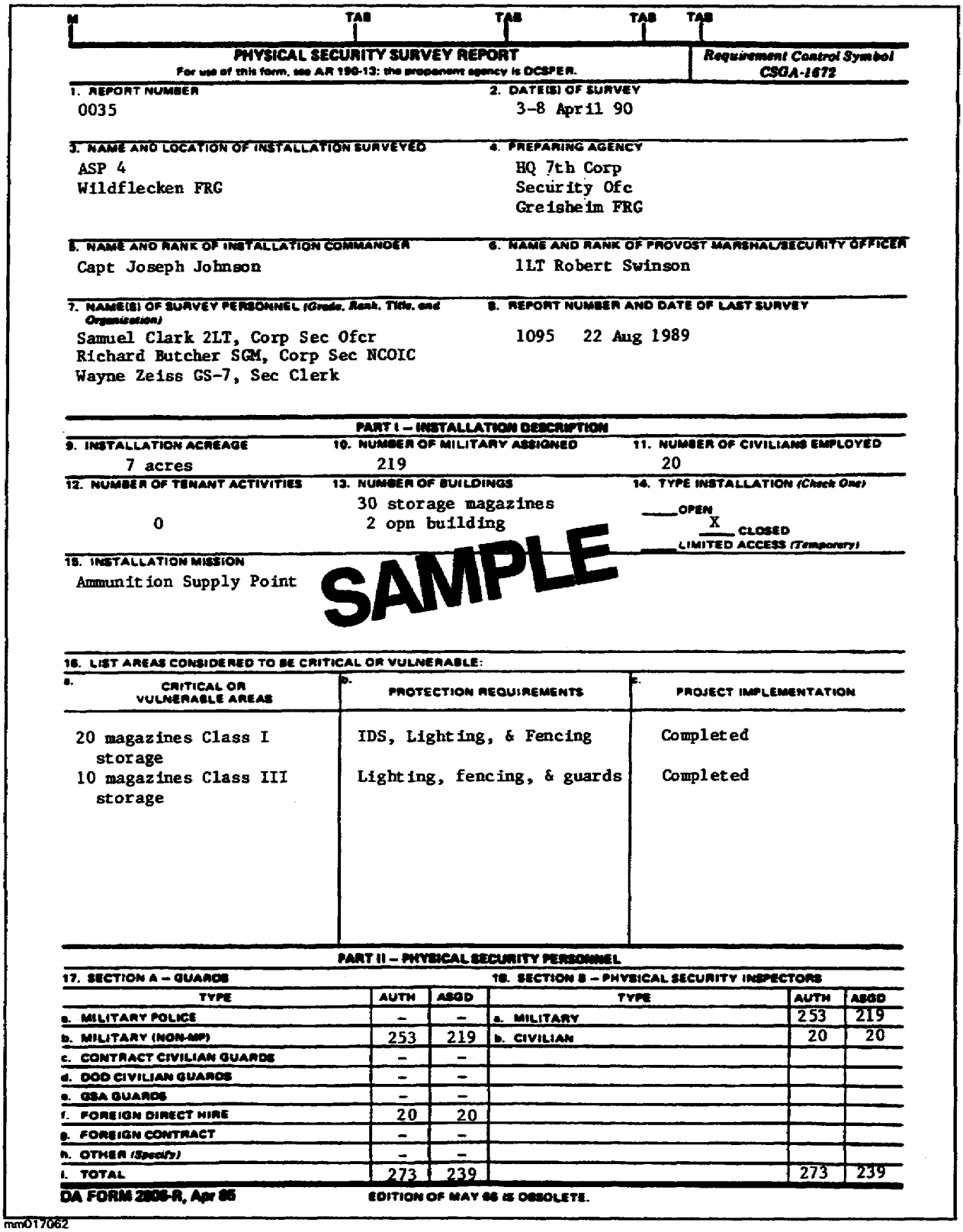
Physical security surveys may be conducted more frequently at the discretion of MACOM or subordinate commanders.

When possible, physical security surveys should be scheduled sufficiently early in the fiscal year so that resource requirements can be identified and included in the planning, programming, budgeting, and execution system (PPBES) cycle.

DA Form 2806-R (Physical Security Survey Report) is used to record physical security survey findings. An example of a completed DA Form 2806-R is shown in Figure 3-5. The form may be reproduced locally on 8 1/2-by 11-inch paper. The completed DA Form 2806-R, with exhibits, is forwarded to the installation commander for information and appropriate action. In the case of US Army, Europe (USAREUR), the major subordinate commands (MSCs) of USAREUR receive completed DA Forms 2806-R and oversee follow-up actions on those installations under their jurisdiction and control. The completed forms should provide the commander with an assessment of the security at his or her installation. It should recommend courses of action for improving security or for reducing security based on the threat and on local needs. The commander's decision and report of corrective actions taken or being taken is be retained on file until the next survey is completed. This form may be modified to cover unique command requirements.

The DA-form 2806-R should be accompanied by exhibits that assist in clarifying findings and recommendations and in an assessment of their criticality and vulnerability. Photographs, sketches, graphs, charts, and other materials are examples of such exhibits.

One copy of the completed DA Form 2806-R is forwarded through command channels to the appropriate MACOM. The commander's decision and report of corrective actions taken or being taken, less any exhibits, must be included. MACOMs must establish proper follow-up actions to ensure that appropriate measures are being taken to correct discrepancies noted on DA Forms 2806-R.



TAB TAB TAB TAB

PHYSICAL SECURITY SURVEY REPORT
For use of this form, see AR 190-13; the proponent agency is DCSPER.

Requirement Control Symbol CSGA-1672

1. REPORT NUMBER: 0035
2. DATE(S) OF SURVEY: 3-8 April 90
3. NAME AND LOCATION OF INSTALLATION SURVEYED: ASP 4, Wildflecken FRG
4. PREPARING AGENCY: HQ 7th Corp, Security Ofc, Greisheim FRG
5. NAME AND RANK OF INSTALLATION COMMANDER: Capt Joseph Johnson
6. NAME AND RANK OF PROVOST MARSHAL/SECURITY OFFICER: 1LT Robert Swinson
7. NAME(S) OF SURVEY PERSONNEL *(Grade, Rank, Title, and Organization)*: Samuel Clark 2LT, Corp Sec Ofcr; Richard Butcher SGM, Corp Sec NCOIC; Wayne Zeiss GS-7, Sec Clerk
8. REPORT NUMBER AND DATE OF LAST SURVEY: 1095 22 Aug 1989

PART I – INSTALLATION DESCRIPTION

9. INSTALLATION ACREAGE: 7 acres
10. NUMBER OF MILITARY ASSIGNED: 219
11. NUMBER OF CIVILIANS EMPLOYED: 20
12. NUMBER OF TENANT ACTIVITIES: 0
13. NUMBER OF BUILDINGS: 30 storage magazines, 2 opn building
14. TYPE INSTALLATION *(Check One)*: ___ OPEN, X CLOSED, ___ LIMITED ACCESS *(Temporary)*
15. INSTALLATION MISSION: Ammunition Supply Point

SAMPLE

16. LIST AREAS CONSIDERED TO BE CRITICAL OR VULNERABLE:

a. CRITICAL OR VULNERABLE AREAS	b. PROTECTION REQUIREMENTS	c. PROJECT IMPLEMENTATION
20 magazines Class I storage	IDS, Lighting, & Fencing	Completed
10 magazines Class III storage	Lighting, fencing, & guards	Completed

PART II – PHYSICAL SECURITY PERSONNEL

17. SECTION A – GUARDS

TYPE	AUTH	ASGD
a. MILITARY POLICE	–	–
b. MILITARY (NON-MP)	253	219
c. CONTRACT CIVILIAN GUARDS	–	–
d. DOD CIVILIAN GUARDS	–	–
e. GSA GUARDS	–	–
f. FOREIGN DIRECT HIRE	20	20
g. FOREIGN CONTRACT	–	–
h. OTHER *(Specify)*	–	–
i. TOTAL	273	239

18. SECTION B – PHYSICAL SECURITY INSPECTORS

TYPE	AUTH	ASGD
a. MILITARY	253	219
b. CIVILIAN	20	20
	273	239

DA FORM 2806-R, Apr 85 EDITION OF MAY 66 IS OBSOLETE.

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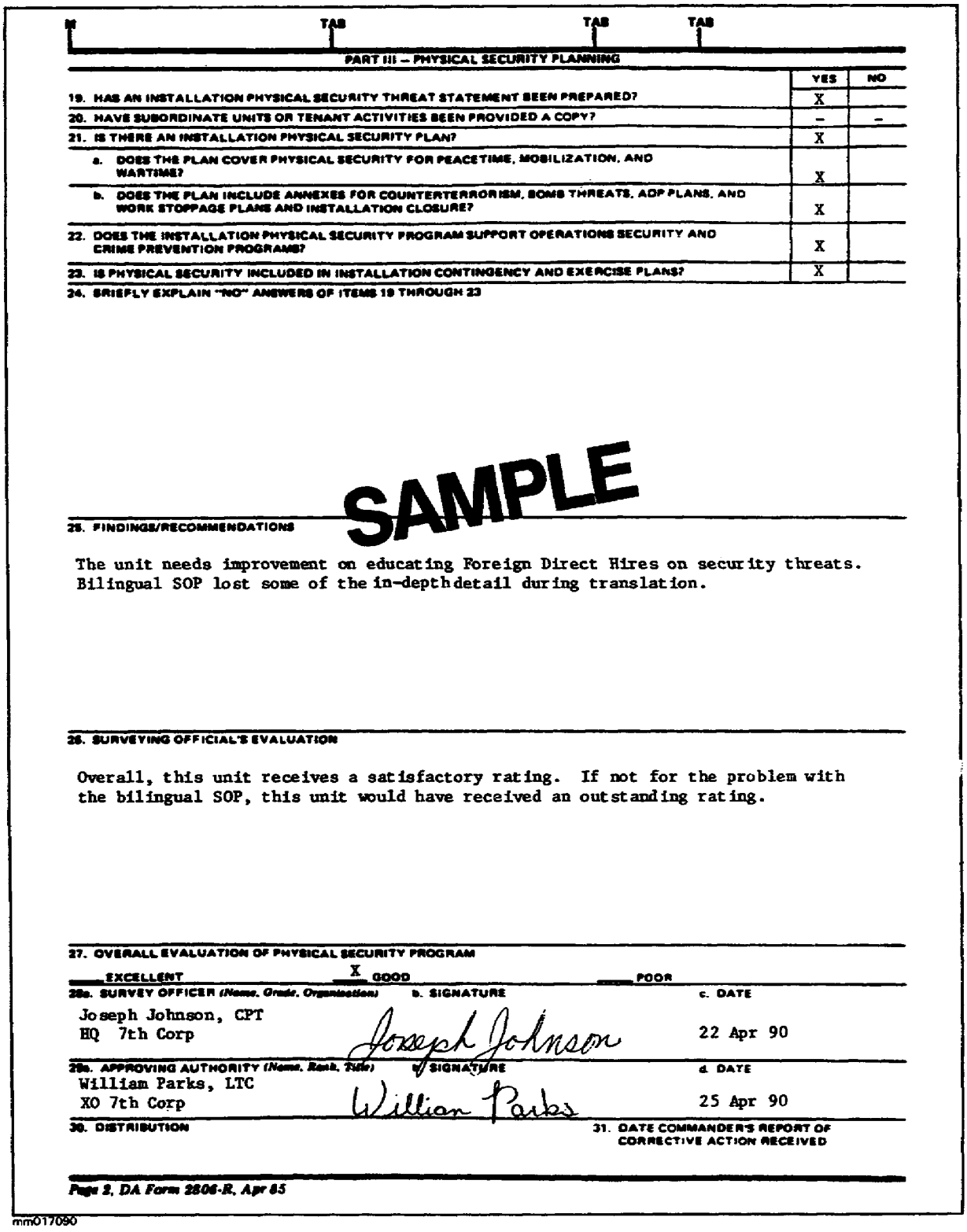
Figure 3-5. An example of a completed DA Form 2806-R (Physical Security Survey Report)(front side).



TAB TAB TAB

PART III – PHYSICAL SECURITY PLANNING

	YES	NO
19. HAS AN INSTALLATION PHYSICAL SECURITY THREAT STATEMENT BEEN PREPARED?	X	
20. HAVE SUBORDINATE UNITS OR TENANT ACTIVITIES BEEN PROVIDED A COPY?	–	–
21. IS THERE AN INSTALLATION PHYSICAL SECURITY PLAN?	X	
a. DOES THE PLAN COVER PHYSICAL SECURITY FOR PEACETIME, MOBILIZATION, AND WARTIME?	X	
b. DOES THE PLAN INCLUDE ANNEXES FOR COUNTERTERRORISM, BOMB THREATS, ADP PLANS, AND WORK STOPPAGE PLANS AND INSTALLATION CLOSURE?	X	
22. DOES THE INSTALLATION PHYSICAL SECURITY PROGRAM SUPPORT OPERATIONS SECURITY AND CRIME PREVENTION PROGRAMS?	X	
23. IS PHYSICAL SECURITY INCLUDED IN INSTALLATION CONTINGENCY AND EXERCISE PLANS?	X	

24. BRIEFLY EXPLAIN "NO" ANSWERS OF ITEMS 19 THROUGH 23

SAMPLE

25. FINDINGS/RECOMMENDATIONS

The unit needs improvement on educating Foreign Direct Hires on security threats. Bilingual SOP lost some of the in-depth detail during translation.

26. SURVEYING OFFICIAL'S EVALUATION

Overall, this unit receives a satisfactory rating. If not for the problem with the bilingual SOP, this unit would have received an outstanding rating.

27. OVERALL EVALUATION OF PHYSICAL SECURITY PROGRAM

____EXCELLENT ___X___ GOOD ____POOR

28a. SURVEY OFFICER (Name, Grade, Organization)	b. SIGNATURE	c. DATE
Joseph Johnson, CPT HQ 7th Corp	Joseph Johnson	22 Apr 90
29a. APPROVING AUTHORITY (Name, Rank, Title)	**b. SIGNATURE**	**d. DATE**
William Parks, LTC XO 7th Corp	William Parks	25 Apr 90

30. DISTRIBUTION

31. DATE COMMANDER'S REPORT OF CORRECTIVE ACTION RECEIVED

Page 2, DA Form 2806-R, Apr 85

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Figure 3-5 (continued). An example of a completed DA Form 2806-R (Physical Security Survey Report)(back side).

After the survey has been completed, the installation physical security officer must reassess the installation's physical security posture based on the following factors:

- The mission.
- The potential threat.
- The findings of the survey team.
- A comparison with the findings of previous surveys and inspections.

Using this assessment, the physical security officer develops a physical security resource plan recommending resource allocation priorities for personnel, equipment, and money, and recommending the development of any new procedures needed. The highest priority is normally given to activities considered essential or critical to mission accomplishment. This plan is forwarded to the commander for consideration, and is included in the installation physical security plan.

Physical Security Inspections

Physical security inspections are conducted according to AR 190-13 on facilities in which AA&E governed by this regulation are stored. Additionally, physical security inspections must be scheduled as follows:

- For new AA&E storage facilities, before and immediately after occupancy.
- On significant change in the facilities' structure.
- After a forced entry or an attempted forced entry with or without theft.

When a unit receives an unsatisfactory rating on its physical security inspection, a reinspection will be conducted within six months. A copy of an unsatisfactory physical security survey or inspection concerning RC and Reserve Officers' Training Corps (ROTC) units is furnished to the installation commander providing logistical support. The follow-up physical security inspection report is annotated to show which elements have received copies.

A physical security inspection is a formal, recorded assessment of physical security procedures and measures implemented by a unit or activity to protect its assets. Normally, the inspections are limited to those units or activities designated by the commander as mission-essential or those that contain vulnerable areas. When available, a copy of the evaluation of the resource protection assessment conducted under the provisions of AR 11-2, *Internal Management Control*, dated 14 September 1990, should be provided to facilitate the inspection.

Inspections do not allow illegal or dangerous conduct by inspectors to demonstrate security deficiencies or weaknesses. Inspections may be conducted on an unannounced basis to ensure that proper physical security measures are being employed to safeguard personnel, equipment, materiel, and facilities. Before conducting unannounced inspections, inspectors should review unit training schedules to ensure that the inspections will not interfere with training exercises.

A physical security inspection is conducted every 18 months for nuclear reactor facilities, nuclear and chemical storage units or activities, and conventional arms and ammunition storage activities.

An inspection is conducted every two years for all other mission-essential or vulnerable areas, for other activities as directed by the local commander, and for ROTC facilities storing only .22 caliber weapons. The biennial requirement to inspect ROTC facilities storing only .22 caliber weapons is eliminated if such facilities are inspected by qualified ROTC region physical security personnel during the annual formal inspection (AFI).

ADP activities are inspected as follows:

- Critically-sensitive ADP activities or facilities are inspected every 18 months in conjunction with the accreditation procedures prescribed in AR 380-19.
- Highly-sensitive, sensitive, or nonsensitive ADP activities are inspected every 24 months. Inspections of these ADP activities or facilities is incorporated into scheduled physical security inspections of the individual activity or facility.
- When there is any change in the unit or activity that may impact on existing physical security plans.
- When there is any indication or reported incident of significant or recurring criminal activity.
- More frequently at the discretion of the commander.
- When possible, inspections should be scheduled early enough in the fiscal year so that resource requirements can be identified and included in the PPBES cycle.

Physical security inspectors must be granted access to Army facilities, records, and information based on their need to know. Such access must be consistent with the inspectors' security clearance and with the provisions of applicable regulations.

DA Form 2806-1-R (Physical Security Inspection Report) is used for all physical security inspections. An example of a completed DA Form 2806-1-R is shown in Figure 3-6. The form may be reproduced locally on 8 1/2-by 11-inch paper. It is designed to cover a variety of activities, and it may be supplemented to cover unique command requirements.

Copies of the completed DA Form 2806-1-R are provided to the unit inspected and to the installation physical security officer.

Correcting Physical Security Deficiencies

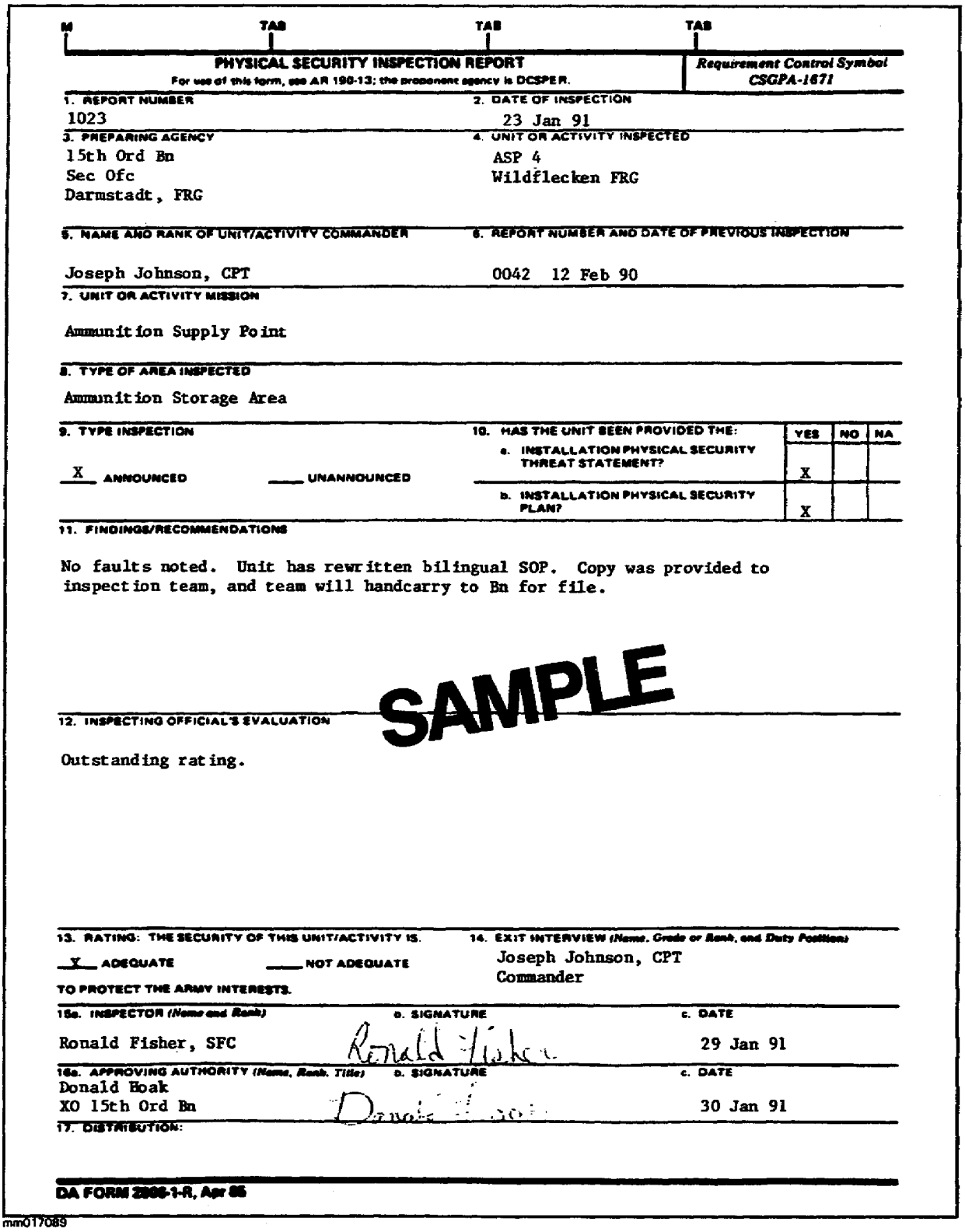
Findings noted on DA Forms 2806-R or DA Forms 2806-1-R may be used for programming funds and for submitting work orders.

The submission of work order requests or requests for telecommunications support does not resolve a report finding. Compensatory measures within available resources must be placed in effect pending completion of work order requests. Findings for which work orders and telecommunications requirements were submitted must be reported on later physical security inspections until the work is completed.

Findings that are beyond the capabilities of the local commander to correct because of a lack of resources are reported to the proper higher commander for possible assistance.

Records Maintenance

A report of the corrective actions taken for both surveys and inspections is required by the installation commander, and is attached as an exhibit to the appropriate report. DA Forms 2806-1-R are filed with the corresponding DA Forms 2806-R. These records are maintained in the active files of the unit or activity inspected until the completion of the next physical security inspection, and then they are destroyed.



M TAB TAB TAB

PHYSICAL SECURITY INSPECTION REPORT
For use of this form, see AR 190-13; the proponent agency is DCSPER.

Requirement Control Symbol
CSGPA-1671

1. REPORT NUMBER
1023

2. DATE OF INSPECTION
23 Jan 91

3. PREPARING AGENCY
15th Ord Bn
Sec Ofc
Darmstadt, FRG

4. UNIT OR ACTIVITY INSPECTED
ASP 4
Wildflecken FRG

5. NAME AND RANK OF UNIT/ACTIVITY COMMANDER
Joseph Johnson, CPT

6. REPORT NUMBER AND DATE OF PREVIOUS INSPECTION
0042 12 Feb 90

7. UNIT OR ACTIVITY MISSION
Ammunition Supply Point

8. TYPE OF AREA INSPECTED
Ammunition Storage Area

9. TYPE INSPECTION
X ANNOUNCED ____ UNANNOUNCED

10. HAS THE UNIT BEEN PROVIDED THE:

	YES	NO	NA
a. INSTALLATION PHYSICAL SECURITY THREAT STATEMENT?	X		
b. INSTALLATION PHYSICAL SECURITY PLAN?	X		

11. FINDINGS/RECOMMENDATIONS
No faults noted. Unit has rewritten bilingual SOP. Copy was provided to inspection team, and team will handcarry to Bn for file.

SAMPLE

12. INSPECTING OFFICIAL'S EVALUATION
Outstanding rating.

13. RATING: THE SECURITY OF THIS UNIT/ACTIVITY IS.
X ADEQUATE ____ NOT ADEQUATE
TO PROTECT THE ARMY INTERESTS.

14. EXIT INTERVIEW (Name, Grade or Rank, and Duty Position)
Joseph Johnson, CPT
Commander

15a. INSPECTOR (Name and Rank) b. SIGNATURE c. DATE
Ronald Fisher, SFC Ronald Fisher 29 Jan 91

16a. APPROVING AUTHORITY (Name, Rank, Title) b. SIGNATURE c. DATE
Donald Hoak
XO 15th Ord Bn 30 Jan 91

17. DISTRIBUTION:

DA FORM 2806-1-R, Apr 85

mm017089

Figure 3-6. An example of a completed DA Form 2806-1-R (Physical Security Inspection Report).

Reports of completed physical security surveys or inspections must be classified and safeguarded according to DOD 5200.1-R and AR 380-5, as appropriate.

LESSON 3
PRACTICE EXERCISE

The following items will test your grasp of the material covered in this lesson. There is only one correct answer for each item. When you have completed the exercise, check your answers with the answer key that follows. If you answered any item incorrectly, study again that part of the lesson which contains the portion involved.

1. Who is responsible for security at the local level?

   A. The Assistant Chief of Staff for Intelligence.
   B. The Law Enforcement Division, Deputy Chief of Staff for Personnel.
   C. Local commanders.
   D. The local provost marshal.

2. What regulation covers the storage, IDS, and security patrol requirements for ammunition based on the security risk category?

   A. AR 190-11.
   B. AR 190-13.
   C. AR 380-5.
   D. AR 380-19.

3. What is the correct distance between trespassing placards posted along the boundary of the explosives area?

   A. 100 feet.
   B. 100 yards.
   C. 500 feet.
   D. 500 yards.

4. Which form may be used to maintain continuous administrative accountability for keys?

   A. DA Form 2806-R.
   B. DA Form 2806-1-R.
   C. DA Form 4930-R.
   D. DA Form 5513-R.

5. Who has approval authority for the purchase or lease of Joint-Service Interior Intrusion Detection Systems (J-SIIDSs) ?

   A. The MACOM commander.
   B. The company commander.
   C. The local provost marshal.
   D. The DOD component concerned.

6. When classified computer media cannot be marked, what must be done to identify their classification?

   A. Nothing.
   B. The containers in which they are stored must be marked.
   C. They must be kept in separate containers and must be logged in and out using a DA Form 1296.
   D. They must be stored in the company area and picked up and returned daily.

7. Which two regulations govern the use of security cards and badges?

   A. AR 190-11 and AR 190-13.
   B. AR 190-13 and AR 640-3.
   C. AR 380-5 and AR 190-11.
   D. AR 380-5 and AR 640-3.

8. How frequently must guard procedures be reviewed?

   A. Weekly.
   B. Quarterly.
   C. Semiannually.
   D. Annually.

9. Which regulation governs the conduct of physical security inspections?

   A. FM 19-30.
   B. AR 640-3.
   C. AR 190-13.
   D. AR 190-11.

10. How frequently must physical security surveys be conducted for areas storing ammunition?

    A. Every 3 years.
    B. Every 24 months.
    C. Every 18 months.
    D. Every 12 months.

LESSON 3
ANSWER KEY AND FEEDBACK

Item	*Correct Answer and Feedback*
1.	C. Local commanders. (page 3-2, para 1)
2.	A. AR 190-11. (pages A-3 and A-4)
3.	C. 500 feet. (page 3-9, para 3)
4.	D. DA Form 5513-R. (page 3-10, paras 6 and 7)
5.	A. The MACOM commander. (page 3-13, para 6)
6.	B. The containers in which they are stored must be marked. (page 3-18, para 6)
7.	B. AR 190-13 and AR 640-3. (page 3-19, para 8)
8.	D. Annually. (page 3-20, para 6)
9.	C. AR 190-13. (page 3-24, para 3)
10.	C. Every 18 months. (page 3-21, para 3)