



United States General Accounting Office

Briefing Report to the Chairman,  
Legislation and National Security  
Subcommittee, Committee on  
Government Operations, House of  
Representatives

September 1990

# DEFENSE INVENTORY

## Controls Over C-4 Explosive and Other Sensitive Munitions



142396

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**National Security and  
International Affairs Division**

B-238708

September 7, 1990

The Honorable John Conyers, Jr.  
Chairman, Legislation and National  
Security Subcommittee  
Committee on Government Operations  
House of Representatives

Dear Mr. Chairman:

In response to your request, we have reviewed the inventory controls now in place for sensitive munitions under the control of the military departments, and the extent of reforms undertaken to safeguard those inventories in response to our earlier reports. You had expressed particular concern about C-4 explosive due to its high demand by paramilitary groups and other illicit organizations. To address your concerns, we reviewed the inventory controls over such sensitive munitions at Fort Lewis, Washington, and Fort Stewart, Georgia, and the extent of reforms undertaken to safeguard those inventories. We focused our work primarily on the Army because it has the largest requirement for C-4 explosive of the military services. We provided you with information on the production, distribution, and storage of C-4 explosive in our earlier report.<sup>1</sup>

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**Background**

Composition C-4 is a semiplastic, putty-like material containing Research Development Explosive (RDX)<sup>2</sup> (91 percent) and a nonexplosive plasticizer (9 percent). It is dirty white to light brown in color, can be molded over a wide range of temperatures (-7°F to 17°F), and produces a cutting action when detonated. The U.S. Army Armament, Munitions and Chemical Command is the national inventory control point for C-4 explosive at the wholesale level.<sup>3</sup> According to Munitions and Chemical Command officials, if C-4 is properly stored and kept from extremes

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<sup>1</sup>Defense Inventory: Production, Distribution, and Storage of C-4 Explosive (GAO/NSIAD-90-139FS, May 7, 1990).

<sup>2</sup>RDX (the chemical name is cyclotrimethylenetrinitramine) is a white solid compound manufactured by the nitration of hexamethylenetetramine. RDX was first prepared in 1899, but its explosive properties were not discovered until 1920. It was used extensively in World War II as an explosive filler in ammunition.

<sup>3</sup>The wholesale system is comprised of the inventory control points that determine inventory requirements and procure the items; the distribution depots which receive, store, and issue stock to retail activities; and the manufacturing plants that produce C-4. The retail system is comprised of numerous supply support activities at bases and installations throughout the world.

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of heat, its shelf life is considered to be indefinite. C-4 is only produced for the military, and the current producers are Holston Army Ammunition Plant in Kingsport, Tennessee, and Expro Chemical Products, Inc., of Canada. C-4 is not available for purchase from the military by non-military users. However, the Defense Logistics Agency sells C-4 determined to be unusable by the military to non-military users who have valid end-use permits and are licensed by the Bureau of Alcohol, Tobacco and Firearms. Civilians use C-4 for such items as initiators for other explosives or in underwater seismic charges. The U.S. government also sells C-4 to foreign governments as discussed in our earlier report.

According to Munitions and Chemical Command officials, C-4 explosive and other sensitive materials are most vulnerable to pilferage or loss at the retail level where it is used for training. Also, our previous reports showed that maintaining controls over C-4 issued for training is difficult because it is considered to have been consumed during training if not returned to the supply system.<sup>4</sup>

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## Results in Brief

We did not find major losses or thefts of C-4 and other explosives from the supply systems at Forts Lewis and Stewart, other than those recovered on the bases. Our work at Forts Lewis and Stewart shows that they have implemented a number of measures designed to strengthen controls over ammunition and explosives. We found evidence that significant command emphasis and initiatives have been instituted to correct many ammunition and explosives control, accountability, and management deficiencies identified in our previous reports and in reports by the Department of the Army Inspector General<sup>5</sup> and Army Audit Agency. These reports had identified weak internal controls that had resulted in large thefts of ammunition and explosives and recommended further improvements, particularly at the unit level, where they are most vulnerable to theft after leaving the ammunition supply point for training exercises.

Army criminal investigative activity reports showed that from 1986 to 1989 the number of incidents and amounts of lost, stolen, or recovered

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<sup>4</sup>Ammunition and Explosives: Improved Controls and Accountability at Fort Bragg (GAO/NSIAD-87-44BR, Nov. 13, 1986) and Ammunition and Explosives: Improved Controls Are Needed to Reduce Thefts at Fort Bragg and Camp Pendleton (GAO/NSIAD-89-3, Nov. 22, 1988).

<sup>5</sup>Followup Inspection of Ammunition, Arms and Explosives (A2E) Accountability—Action Memorandum, Department of the Army, Office of the Inspector General (Washington, D.C.: July 1987).

C-4 explosive and other sensitive<sup>6</sup> munitions have generally declined. However, these reports do not provide a complete picture of the Army's lost, stolen, and recovered C-4 and other sensitive munitions because installation officials may not always forward the required reports of such incidents to the headquarters law enforcement activities. Our past work showed that military activities sometimes did not know C-4 had been stolen until it was recovered and reported to them by law enforcement officials. Sometimes the reports do not reach them.

Data from the Bureau of Alcohol, Tobacco and Firearms on stolen and recovered explosives for 1979 through May 1990 showed that military explosives continue to be recovered in substantial amounts. For example, from 1979 through May 1990, the Bureau reported 3,710 pounds of stolen C-4 explosive and recoveries of 4,913 pounds. Identifying where recovered explosives came from is often difficult and recently recovered C-4 could have been stolen in years prior to the recent Department of Defense and military service initiatives to strengthen controls over ammunition and explosives. The Bureau recently recovered a large amount of C-4 explosive in an ongoing undercover investigation. Also, a continuing investigation in Georgia has led to the recovery of 15 pounds of C-4 by the Bureau.

## Scope and Methodology

Although we focused our work primarily on the Army, we did obtain information on the amounts of C-4 reported lost, stolen, and recovered for the Navy and Air Force for fiscal years 1985 through 1989.<sup>7</sup> To assess internal controls over sensitive munitions at field locations, we selected Fort Lewis and Fort Stewart based on our prior work as two locations with potential problems in managing ammunition and explosives.

<sup>6</sup>The Army classifies munitions into four categories. Category I items include non-nuclear missiles and rockets in a ready-to-fire configuration (e.g., Redeye, Stinger, Dragon, and Law) and explosive rounds for such items. Category II items include hand or rifle grenades, high explosive, and white phosphorus; mines—antitank or antipersonnel (unpacked weight of 50 pounds or less each); and explosives used in demolition operations (e.g., C-4 explosive, military dynamite, and TNT). Category III items include ammunition, .50 caliber and larger, with an explosive-filled projectile (unpacked weight of 100 pounds or less each); grenades, incendiary, and fuses for high explosive grenades; blasting caps; supplementary charges; bulk explosives; and detonating cord. Category IV items include ammunition with non-explosive projectile; fuses, except for category II; grenades, illumination, and smoke; incendiary destroyers; and riot control agents, 100 pounds or less. We defined sensitive munitions items as categories II and III.

<sup>7</sup>The Air Force reported that 3.75 pounds of C-4 explosive were lost, and 2.5 pounds of C-4 explosive were recovered from 1985 through 1989. The Navy reported that between 1985 and 1989, 80 pounds of C-4 were lost, 440 pounds of C-4 were missing following inventories, and 460 pounds of C-4 were recovered.

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We performed the majority of our work at the U.S. Army Armament, Munitions and Chemical Command; the U.S. Army Military Police Operations Agency; the U.S. Army Criminal Investigation Command headquarters; Fort Lewis, Washington; Fort Stewart, Georgia; and the Bureau of Alcohol, Tobacco and Firearms.

At the Munitions and Chemical Command we reviewed the policies, procedures, and practices for accountability and control of C-4 explosive and other sensitive ammunition and explosives at the wholesale level. At the U.S. Army Military Police Operations Agency, we reviewed reports of lost, stolen, and recovered ammunition and explosives for fiscal years 1986 through 1989.

Our work at Fort Lewis and Fort Stewart consisted of (1) interviewing installation and local law enforcement officials and gathering data on incidents of lost, stolen, and recovered ammunition and explosives, (2) reviewing the policies and procedures in place for controlling them, (3) interviewing personnel responsible for the control, accountability, and recovery of ammunition and explosives, (4) determining the extent that other organizations have audited the management of ammunition and explosives, and (5) determining the extent of local initiatives to improve accountability and control over ammunition and explosives. However, we did not do an in-depth analysis of the day-to-day implementation, because our review of all relevant data did not indicate significant thefts of ammunition and explosives. We did not do an accounting of all prosecutions in recent years for thefts of C-4 explosives because we found that the necessary data were not readily available and the time and effort necessary to review the individual investigative case files were prohibitive.

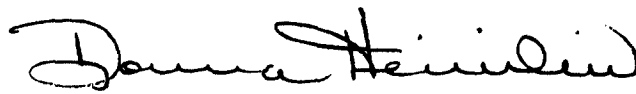
As requested, we did not obtain official agency comments on this briefing report. However, we discussed our findings with Army and Department of Defense officials and incorporated their views where appropriate. We conducted our review from November 1989 to July 1990 in accordance with generally accepted government auditing standards.

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As arranged with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from its issue date. At that time, we will send copies to the Chairmen, House and Senate Committees on Appropriations and on Armed Services; the Secretaries of Defense and the Army, Navy, and Air Force; the Director,

Defense Logistics Agency; the Director, Office of Management and Budget; and the Director, Bureau of Alcohol, Tobacco and Firearms. We will also make copies available to others upon request. If you have any questions, please call me on (202) 275-8412. Major contributors to this report are listed in appendix IV.

Sincerely yours,



Donna M. Heivilin  
Director, Logistics Issues

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**Abbreviations**

A&E      Ammunition and Explosives  
DOD      Department of Defense

# Thefts and Recoveries of C-4 Explosive

Our review of Army-reported incidents of lost, stolen, and recovered C-4 and other sensitive munitions showed that these incidents have generally declined from previous years. Table I.1 shows the pounds of C-4 explosive reported as lost, stolen, or recovered by the Army.

**Table I.1: C-4 Explosive Reported Lost, Stolen, and Recovered for Fiscal Years 1986 Through 1989**

| Fiscal year  | Pounds of C-4 lost | Pounds of C-4 stolen | Pounds of C-4 recovered | Number of reported incidents |                         |
|--------------|--------------------|----------------------|-------------------------|------------------------------|-------------------------|
|              |                    |                      |                         | C-4 explosive                | All sensitive munitions |
| 1986         | 1.25               | 202.00               | 252.50                  | 26                           | 35                      |
| 1987         | 9.00               | 100.00               | 117.50                  | 14                           | 25                      |
| 1988         | 39.00              | 1.00                 | 23.53                   | 10                           | 18                      |
| 1989         | 0                  | 0                    | 1.00                    | 2                            | 10                      |
| <b>Total</b> | <b>49.25</b>       | <b>303.00</b>        | <b>394.53</b>           | <b>52</b>                    | <b>88</b>               |

Source: U.S. Army Military Police Operations Agency

These figures do not reflect all of the C-4 lost, stolen, or recovered in the Army during this time period. A U.S. Army Military Police Operations Agency official said that, although installations are required to complete reports of missing and recovered ammunition and explosives, these reports are not always forwarded to his agency. During our review we found evidence that confirmed this. For example, at Fort Lewis during 1988 and 1989, 24 pounds of C-4 were recovered through the amnesty program. However, the Agency's files did not contain a report of the recovery. Also, at Fort Stewart 7 pounds of C-4 were recovered in 1988 and 1989. Again, the Agency's files contained no such report.

Data from the Bureau of Alcohol, Tobacco and Firearms on stolen and recovered explosives for 1979 through May 1990 show continued recovery of C-4 explosive, including a recent recovery of a large amount as a result of an ongoing undercover operation. In addition, in an ongoing investigation in Georgia that began in March 1990, 15 pounds of C-4 were recovered by the Bureau. Although the Bureau recovers more C-4 explosive annually than the services report as lost or stolen, our past work showed that the services sometimes did not know C-4 had been lost or stolen until it was recovered and reported to them by law enforcement officials.

Table I.2 shows the C-4 explosive reported as stolen or recovered during fiscal years 1979 through May 1990.

**Appendix I**  
**Thefts and Recoveries of C-4 Explosive**

**Table I.2: C-4 Explosive Reported as Stolen and Recovered in Bureau of Alcohol, Tobacco and Firearms Reports**  
(Fiscal Years 1979 Through May 1990)

| Fiscal year       | Pounds of C-4 <sup>a</sup> |              |
|-------------------|----------------------------|--------------|
|                   | Stolen                     | Recovered    |
| 1979              | 1,415                      | 385          |
| 1980              | 93                         | 182          |
| 1981              | 20                         | 409          |
| 1982              | 1,744                      | 2,072        |
| 1983              | 64                         | 108          |
| 1984              | 34                         | 159          |
| 1985              | 174                        | 231          |
| 1986              | 1                          | 358          |
| 1987              | 1                          | 263          |
| 1988              | 161                        | 213          |
| 1989              | 3                          | 308          |
| 1990 <sup>b</sup> | 0                          | 226          |
| <b>Totals</b>     | <b>3,710</b>               | <b>4,913</b> |

<sup>a</sup>Figures are approximations because quantities less than 1 pound were unavailable and therefore counted as 1 pound.

<sup>b</sup>Figure is for part of the fiscal year (October to May 1990).

A Bureau official said that there is no statutory requirement for the Bureau to contact the services when military explosives are recovered. In some instances, the Bureau may contact the services if a military explosive ordnance detachment team is needed to destroy the explosive or if an active member of the military is involved in an incident the Bureau is investigating. Because explosives are sent from the production plant to the various installations, it is often difficult to identify the installation from which the explosive was lost or stolen.

The Department of Defense (DOD) and the Bureau are working on an agreement that will require the DOD criminal investigative organizations to report significant incidents<sup>1</sup> of loss and theft of arms, ammunition, and explosives to the Bureau. Also, the agreement will require the Bureau to provide DOD, when requested, a list of military munitions recovered during investigations and information on trends relating to the loss or theft of military munitions that may require corrective action to prevent further losses or thefts. DOD expects the agreement to be signed in August 1990.

<sup>1</sup>The agreement defines the arms, ammunition, and explosives considered significant or serious.

# Accountability and Control Over Ammunition and Explosives at Fort Lewis and Fort Stewart Have Been Strengthened

Based on our review, we believe that accountability and control over ammunition and explosives (A&E) at Fort Stewart and Fort Lewis have been strengthened in recent years. Generally, the appropriate A&E policies and procedures are in place and, when followed, should provide a substantial amount of control at the installations.

## A&E Policies and Procedures at Fort Lewis and Fort Stewart

Current A&E policies and procedures in place at Fort Lewis and Fort Stewart appear to be adequate. We found that both installations have policies and procedures which provide checks and balances for the issuance of A&E for training. For example, at Fort Lewis, an office independent of the ammunition supply point and units is responsible for requisitioning installation A&E and independently accounting for unit allocations and usage. The ammunition supply points at both installations receive, store, issue, and maintain stock record accountability for all installation A&E. At both installations, the user units are responsible for maintaining control over the A&E while it is in their possession.

## Independent Office Manages A&E at Fort Lewis

Fort Lewis created an office independent of the ammunition supply point and the units to eliminate the fragmentation of A&E management identified in a 1985 Army Audit Agency review.<sup>1</sup> Based on our interviews with officials and our review of its records, the office appears to be adequately performing its required functions and responsibilities. The office is responsible for refining procedures for forecasting, safety, security, accountability, receipt, and turn-in of A&E. Also, the office provides using units with technical assistance on A&E management; conducts ammunition users' conferences to keep major subordinate commands apprised of changes in policy and procedures affecting A&E management; monitors A&E reconciliation, policy, and procedures; and monitors the extent that user units are late in documenting their A&E turn-ins.

In 1988, the office noted 177 incidents where units had been overdue in completing their reconciliation and turn-in documentation. Such delays distort information on the amounts of potential A&E losses. The office responded by stressing the importance of adhering to reconciliation requirements by bringing it to the attention of the units and the deputy commanding general. These actions were apparently successful because

<sup>1</sup>Training Ammunition Management, I Corps and Fort Lewis, U.S. Army Audit Agency (Washington, D.C.: Nov. 1985).

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**Appendix II  
Accountability and Control Over Ammunition  
and Explosives at Fort Lewis and Fort  
Stewart Have Been Strengthened**

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in 1989, as compared to 1988, overdue incidents decreased to 31 incidents, or over 82 percent.

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### **Ammunition Supply Points**

We did not note any significant problems at the ammunition supply points of both installations. Based on our review of supply point records, interviews with officials, and our observations of their operations, the ammunition supply points at both installations are secure and personnel appear to be adequately performing their required functions and responsibilities.

The ammunition supply points receive, store, issue, and maintain stock record accountability for all installation A&E. They also perform periodic inventories of stock and conduct physical inspections to verify the general condition and location of their A&E.

### **Inventories**

At Fort Lewis our analysis of the ammunition supply point quarterly inventories for 1988 and 1989 indicated that it has maintained accountability and control over its A&E stocks. For the 2 years the lines of A&E stocks inventoried (about 9,000) were on the average 99.5 percent accurate. The quarterly inventory adjustments for the years were generally small. For example, for the first quarter of 1989, the inventory loss was about \$48 out of a total inventory valued at about \$15 million. For the third quarter of 1989, the inventory loss was about \$4 out of a total inventory valued at about \$13 million. Further, of the 46 lines of A&E stocks that did contain discrepancies for the years, almost all were category IV items, except for seven lines which were category III items. Category II items had no discrepancies. For each item with an inventory discrepancy, the ammunition supply point records indicated research was performed to determine the cause for the loss or gain (see footnote 6 for category definitions).

Based on Fort Stewart ammunition supply point inventory records for fiscal year 1989, accountability and proper controls were being maintained over the A&E stored at the supply point. The quarterly inventory adjustments for the year were small. For example, for the first quarter of fiscal year 1989, the inventory loss was about \$13 out of a total inventory valued at \$21 million. For the fourth quarter of fiscal year 1989, the inventory loss was about \$8 out of a total inventory valued at about \$18 million. For the entire fiscal year 1989, there were no discrepant category I or category II items. For each item with an inventory discrepancy, ammunition supply point records indicated that research was performed to determine the cause for the loss or gain.

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**Appendix II  
Accountability and Control Over Ammunition  
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Stewart Have Been Strengthened**

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**Physical Security**

During our inspection of ammunition supply point facilities at both installations, we found what appeared to be adequate physical security systems. For example, at the Fort Lewis ammunition supply point, 38 bunkers or magazines store basic load and training ammunition. The magazines, contained in a controlled, fenced, and continuously guarded area, are electronically monitored by a security system connected to military police facilities. The Fort Stewart ammunition supply point consists of a main office building where the records are maintained and an ammunition holding area. The holding area is surrounded by a chain link fence topped with rolled barbed wire. The area is patrolled by two armed guards during off-duty hours and contains a building where the ammunition is issued and received, as well as four ammunition storage bunkers.

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**A&E User Units**

Based on interviews and our review of records, the units at Fort Lewis and Fort Stewart appear to understand and comply with the bases' policies and procedures for controlling and accounting for A&E.

At each base we contacted two active Army units that were heavy users of training A&E to determine their compliance with required procedures for the issue, management, and turn-in of A&E. Unit requests for A&E are required to be within authorized and allocated amounts, and each issue request must be independently matched against an allocation before it goes to the ammunition supply point. Units that request and receive A&E from the ammunition supply point are required to maintain training ammunition management and control documentation. Also, units receiving A&E assume responsibility for controlling the A&E issued to them. After completing each training exercise, units must ensure that the amount of A&E they consumed or did not use matches the amount issued to them. Forms documenting unexpended A&E must be completed.

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**Control of A&E on Ranges**

The Fort Lewis and Fort Stewart training ranges have procedures for controlling A&E. For example, units designate a unit range safety officer to (1) observe the placement of charges and their detonation and (2) certify the quantity of all items expended. In addition, after all unexpended A&E has been returned to the supply point, a safety inspection is required to be conducted to ensure that soldiers have not retained any on their person, in their equipment, or on their vehicles. A range control officer conducts frequent patrols to ensure that used A&E is not left on the ranges and that ranges are left in proper condition for the next training event.

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## Amnesty Program

Both Fort Lewis and Fort Stewart operate an amnesty program designed to let individuals turn in lost or stolen A&E to the ammunition supply point or other designated areas without fear of prosecution. Our review of amnesty recoveries at Fort Lewis for 1988 and 1989 indicated that most of the sensitive A&E turned in were category III items. Out of 640 total items recovered, 33 were category II items, including 24 pounds of C-4 explosive. At Fort Stewart, most of the items turned in during fiscal years 1988 and 1989 were small arms ammunition or other nonsensitive items. The only sensitive items recovered were 43 expended launch tubes for a 66mm M72 HE rocket.

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## Sensitive Munitions Continue to Be Reported Lost, Stolen, and Recovered

Fort Lewis and Fort Stewart both reported lost, stolen, and recovered sensitive munitions in 1988 and 1989. The incidents at both installations appeared to be isolated and not indicative of widespread problems. Where deficiencies or control weaknesses were identified, we found that the installation commands were taking steps to address these problems. Also, officials from the local sheriff's and police departments in the area surrounding Fort Lewis and the Provost Marshall's office at Fort Stewart advised us that there has been a significant decline in their recoveries of A&E in 1988 and 1989 compared to previous years.

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## Fort Lewis

Nearly 700 items (categories II and III) were recovered during 1988 and 1989. Of these items, approximately 640 were turned in through the amnesty program, 6 were recovered by the Army Criminal Investigation Command, 32 were recovered by the explosive ordnance detachment, and 20 were recovered by the county sheriff's office. Included in the recoveries were 41 category II items, including 24 pounds of C-4 explosive turned in through the program.

Of the Criminal Investigation Command's six cases involving A&E recoveries between July 1987 and November 1989, only one involved a sensitive explosive lost or stolen during 1988-1989. It involved the theft of six 40-pound demolition charges from inside the fenced, guarded ammunition supply point area at Fort Lewis. While on guard duty at the ammunition supply point, three Fort Lewis soldiers cut the lock off a tractor trailer, which was parked inside the ammunition supply point grounds during a weekend, to gain access to the demolition charges. Other ammunition supply point guards reported the theft. Within 3 days the demolition charges were recovered, and the soldiers involved were placed in custody. Fort Lewis officials have taken measures to punish the soldiers and improve the internal control weaknesses identified as a

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**Appendix II  
Accountability and Control Over Ammunition  
and Explosives at Fort Lewis and Fort  
Stewart Have Been Strengthened**

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result of this incident. The five other cases involved recovered A&E that had been either lost or stolen prior to 1986 or were category IV items.

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**Fort Stewart**

At Fort Stewart, we identified three incidents involving the recovery of sensitive munitions during 1988 and 1989. These items included 7 pounds of C-4. In March 1989, three claymore mines, 1,000 feet of detonating cord, and two blasting caps were recovered on one of the Fort's training ranges. In May 1988, two soldiers from Fort Stewart stole two 1.25-pound blocks of C-4 explosive during a training exercise while they were detailed at Fort Campbell, Kentucky. In October 1988, a pound of TNT explosive was found in a trailer park in the town where Fort Stewart is located and turned over to the military police.



# Amount of C-4 Explosive Required by the Military Services

| Pounds in thousands |                         |              |              |              |              |
|---------------------|-------------------------|--------------|--------------|--------------|--------------|
| Service             | Requirements by service |              |              |              |              |
|                     | Fiscal year             |              |              |              |              |
|                     | 1985                    | 1986         | 1987         | 1988         | 1989         |
| Army                | 2,000                   | 3,500        | 5,000        | 3,900        | 7,900        |
| Navy                | 800                     | 0            | 300          | 0            | 700          |
| Marine Corps        | 2,800                   | 600          | 0            | 100          | 0            |
| Air Force           | 200                     | 300          | 0            | 0            | 0            |
| <b>Total</b>        | <b>5,800</b>            | <b>4,400</b> | <b>5,300</b> | <b>4,000</b> | <b>8,600</b> |

<sup>a</sup>Figures are the total amounts required by the services to produce the items that use C-4.  
Source: AMCCOM, Rock Island, Illinois

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