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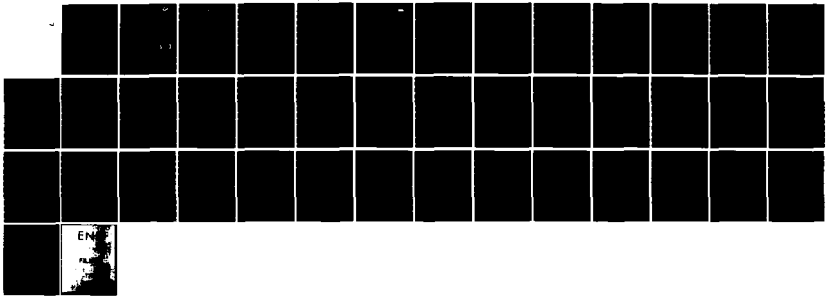

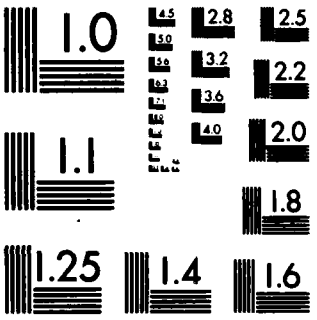

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RECONNAISSANCE OF OVERSEAS DEPOT-LEVEL MAINTENANCE

April 1984

W. Edward Cushen
James Edward Giles III

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

The Military Departments spend over $600 million annually on depot-level maintenance in the European and Pacific Theaters, and plan to increase this amount substantially within the next few years. The benefits of performing depot-level maintenance overseas are substantial -- better readiness and sustainability, reduced maintenance turnaround times, reduced need for spare equipment and parts to fill repair pipelines, and strengthened international relationships. We believe the value of those programs can be made even

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greater if the Assistant Secretary of Defense (Manpower, Installations and Logistics), ASD(MI&L), took the lead in coordinating overseas depot maintenance requirements and assignments and encouraged increased use of the existing overseas industrial base.

Specifically, we recommend that the ASD(MI&L) conduct annual overseas depot maintenance planning conferences, alternating between European and Pacific Theaters. The objectives of those conferences should be to promote coordination of theater-wide depot maintenance requirements and workload assignments, both organic and contract, and to improve the use of the existing overseas industrial base. We recommend also that he affirm to the Military Departments that current Department of Defense policy for a competitive depot maintenance industrial base applies overseas as well as within CONUS.

PREFACE

This report describes the overseas depot maintenance programs of the Military Departments, the planned growth of those programs, and the implications of having depot maintenance performed overseas. It also presents several recommendations to improve the contribution of overseas maintenance to equipment readiness and combat sustainability.

In describing the existing overseas depot maintenance programs, we focus on organic and contract depot maintenance performed in the European and Pacific Theaters, excluding Hawaii. We include, as part of the overseas depot maintenance programs, the workload of intermediate-level maintenance activities that have special authorizations to perform some depot-level repairs.

Executive Summary

RECONAISSANCE OF OVERSEAS DEPOT-LEVEL MAINTENANCE

The Military Departments spend over $600 million annually on depot maintenance in the European and Pacific Theaters, and plan to increase this amount substantially within the next few years. The benefits of performing depot maintenance overseas are substantial -- better readiness and sustainability, reduced maintenance turnaround times, and reduced need for spare equipment and parts to fill repair pipelines. It also strengthens international relationships. We believe that the Assistant Secretary of Defense (Manpower, Installations and Logistics), ASD(MI&L), should strongly support the overseas depot maintenance programs of the Military Departments. Nevertheless, we believe the value of those programs can be made even greater by coordinating the Military Departments' depot maintenance requirements and workload assignments and by encouraging use of the industrial capacity of our Allies.

Since logistics support in the European and Pacific Theaters is primarily a Military Department responsibility, the overseas depot maintenance requirements and workload assignments seldom are coordinated. As a result, the Military Departments sometimes fail to take advantage of interservicing opportunities, including joint contracts, and periodically provide commonly used, Allied industries with conflicting projections of future workloads. We believe that the ASD(MI&L) should take the lead in coordinating overseas depot maintenance requirements and assignments so that the Department of Defense (DoD) can take maximum advantage, both economically and politically, of its overseas depot maintenance program. Specifically, we recommend that the ASD(MI&L) conduct annual overseas depot maintenance planning conferences,

alternating between European and Pacific Theaters. The objectives of those conferences should be to promote coordination of theater-wide depot maintenance requirements and workload assignments, both organic and contract, and use of the existing overseas industrial base.

A competitive commercial industrial base to supplement organic capabilities and capacities has been a cornerstone of DoD policy on depot maintenance for many years. The Military Departments have had considerable success developing such a base within the Continental United States (CONUS). Except for the Air Force in Europe, however, they have not placed a high priority on using the existing industrial base of our Allies in their overseas depot maintenance programs. Moreover, current expansion plans, particularly in the European Theater, call for much of the new work to be accomplished in U.S. Government-controlled facilities, perhaps delaying further expanded use of our Allies' industrial base. The ASD(MI&L) should encourage the Military Departments to use the overseas industrial base. We recommend he provide this encouragement by affirming to the Military Departments that current DoD policy for a competitive depot maintenance industrial base applies overseas as well as within CONUS.

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1. INTRODUCTION

HISTORICAL PERSPECTIVE

The amount of depot-level maintenance[1] performed in overseas theaters has been influenced strongly by both military and political concerns. During the Vietnam conflict, the Military Departments had an extensive in-theater depot maintenance capability to support aircraft, ships, and vehicles. Following the withdrawal of American troops from Vietnam, the Military Departments curtailed their use of Sagami General Depot in Japan and various maintenance facilities in Taiwan. Since that time, most of the unserviceable assets in the Pacific Theater have been returned to depots in the Continental United States (CONUS) for rework.

In 1974, the Army cut back on the amount of depot maintenance that it was performing in the European Theater. It restricted in-theater depot maintenance to combat vehicle rework at the Mainz Army Depot and tire retreading at Ober-Ramstadt in the Federal Republic of Germany. At the same time, Congressional concern over a low "tooth-to-tail ratio" overseas and the underutilization of CONUS facilities contributed still further to a reduction in overseas depot maintenance.

But within a few years of this drawdown in capability, the Military Departments had a renewed interest in performing depot maintenance overseas. The Air Force Logistics Command (AFLC) established a European liaison office to develop a depot maintenance capability for deployed assets. The Air Force also authorized some "extended intermediate-level repairs" at the Pacific

[1]Depot-level maintenance is the highest level of maintenance performed by the Military Departments. It is normally accomplished in covered, fixed facilities and categorized as rework, rebuild, overhaul, or modification.

Logistics Support Center (PLSC), Kadena Air Base in Okinawa. During this same period, the Army expanded its use of Specialized Repair Activities in Germany to perform some repairs normally accomplished in depots. It also created Theater Army Repair Programs (TARPs) in both European and Pacific Theaters for funding and managing major repairs of theater assets.

Two 1983 developments indicated a strong commitment on the part of the Military Departments to perform more depot maintenance overseas on theater assets. The Army, working closely with the German Government, purchased the Magirus Deutz bus factory. That facility, located near the Mainz Army Depot, will enable the Army to expand substantially its depot maintenance capacity in Europe. The Air Force was presented with a similiar opportunity at a former Royal Air Force (RAF) Station, RAF Kemble, in the United Kingdom. The British Government was closing that aircraft maintenance facility at the same time the Air Force was seeking an in-theater location to do corrosion control on A-10 aircraft. In return for using RAF Kemble, the U.S. Government agreed to contract initially for 300 British technicians and support personnel. The long-range objective of the Air Force is to establish a small maintenance depot and a forward stockage location at RAF Kemble.

POLICY ENVIRONMENT

Department of Defense (DoD) policy on depot maintenance does not address explicitly where that maintenance should be performed. DoD Directive (DoDD) 4151.1, "Use of Contractor and DoD Resources for Maintenance of Materiel," July 15, 1982, states that depot maintenance should be performed by both contractual and organic sources. DoDD 4151.1 also requires the Military Departments to establish a competitive commercial depot-maintenance-industrial base, but it does not state where such a base should be located.

DoDD 2010.8, "Department of Defense Policy for NATO Logistics," March 12, 1979, provides more explicit guidance to the Military Departments on supporting forces assigned to the North Atlantic Treaty Organization (NATO) alliance. That Directive states:

> . . . To the extent that it is effective in the long term NATO context and can provide satisfactory logistic support, the United States should make maximum use of NAMSO (the NATO Maintenance and Supply Organization) capabilities. . . .

It also requires those forces to "rely to the maximum extent feasible on assured host-nation support for the performance of logistic functions."

Both the Army and Air Force have promulgated interpretations of the DoDD 4151.1 policies to include overseas areas. Army Regulation 750-1, "Army Materiel Maintenance Concepts and Policies," April 15, 1983, prescribes use of contract support, both domestic and foreign, to the maximum extent possible, as long as missions still can be accomplished and U.S. interests are not adversely affected. AFLC, in a report on its overseas workload program dated April 14, 1983, states that the development of more depot maintenance capability within the European and Pacific Theaters is key to improving logistics support to overseas operating commands.

The Navy's policy on performing depot maintenance overseas is long-standing. Except for emergent repairs and that maintenance required by permanently deployed aircraft and ships, all depot maintenance is to be performed within U.S. boundaries.

DoD Instruction (DoDI) 7220.29, "Guidance for Cost Accounting and Production Reporting for Depot Maintenance and Maintenance Support," October 20, 1975, and an accompanying handbook (DoD 7220.29H) prescribe procedures for accounting for and reporting annually the costs of depot maintenance. The major objectives of DoD 7220.29H include establishing uniform accounting

procedures and improving the visibility of the costs of performing depot maintenance. The provisions of DoD 7220.29H apply to all organic depot maintenance activities, including those located overseas, and to all depot maintenance performed on contract. The only overseas organic facilities specifically identified in the handbook, and thereby explicitly required to report their production and costs, are the three Navy Ship Repair Facilities (SRFs) in the Pacific: Guam, Subic Bay, and Yokosuka. In practice, however, the reporting of overseas depot maintenance in accordance with this instruction has been inconsistent.

INTERNATIONAL CONSIDERATIONS

Depot maintenance performed on foreign territory must abide by numer[illegible] government-to-government agreements and understandings, as well as the laws [illegible]f both the United States and the host nation.

The Status of Forces Agreement with Germany officially recognizes the Mainz facility as a depot maintenance activity. Under this agreement, the German Government has purchased land for use by U.S. forces, waived rents and taxes, and provided civilian labor groups to supplement or replace U.S. personnel.

As part of our Status of Forces Agreement with Japan, the Japanese Government will provide $1 billion (during Japan's current fiscal year) to support U.S. forces stationed in Japan. This money will be used, for example, to fund a facilities improvement program (FIP) and to reimburse Japanese landowners for land used by U.S. forces.

The Government of the Republic of Korea has established a Combined Defense Improvement Program similar to Japan's FIP. It also has invested heavily in developing its defense industry, partly to maintain U.S. equipment positioned within its boundaries.

Various provisos and customs further condition the way in which depot maintenance is accomplished overseas. For example, German workers may not be forced to work more than a ten-hour day, while Japanese workers may not be required to work overtime. In addition, foreign laws on environmental pollution often are more stringent than those in the United States.

Finally, when foreign industry is in a depressed condition or a foreign government seeks economic offsets, maintenance of military equipment is frequently suggested as one way to improve conditions or to minimize economic imbalances. Within the past two years, several foreign governments and firms have initiated discussions of such topics and received favorable responses from the United States. These situations are likely to occur more often in the future as foreign governments and firms gain additional experience and expertise in negotiating contracts for and maintaining DoD equipment.

THE TASKING

DoD has not had a consistent position on providing depot maintenance overseas in support of deployed assets. When conditions dictated, such as during the Vietnam conflict, the concept was strongly embraced. However, when military necessity was no longer dominant, and Congress pressed to increase the "tooth-to-tail ratio" for deployed forces, interest in performing depot maintenance overseas slackened. Now, once again, the Military Departments have a renewed interest, sparked by desires to reduce the cost of support and to enhance the readiness and sustainability of deployed forces. This study is designed to aid the Military Departments in achieving those objectives by answering four questions:

- How much depot maintenance is being done overseas?
- What are the Military Departments' plans for the future?
- What are the implications of those plans?

- What should the Assistant Secretary of Defense (Manpower, Installations and Logistics), ASD(MI&L), do to ensure that DoD obtains the maximum benefit from performing depot maintenance overseas?

The rest of this report provides the answers to these questions. Chapter 2 describes the current overseas depot maintenance program; Chapter 3 discusses what is planned for the future; Chapter 4 addresses the implications of performing depot maintenance overseas; and Chapter 5 details what actions the Office of the Secretary of Defense (OSD), and the ASD(MI&L) in particular, needs to take to improve the DoD's overseas depot maintenance program.

2. CURRENT PROGRAM

This chapter describes how much depot maintenance is being performed overseas, where it is being performed, and who is doing it. The data presented in this chapter are Fiscal Year 1983 (FY83) totals. Because of variations in reporting systems, definitions, and foreign exchange rates these data should be regarded as indicators of activity levels, not precise measurements.

TOTAL PROGRAM

As shown in Table 2-1, DoD's total overseas depot maintenance program for FY83 was approximately $660 million. Slightly more than 60 percent of that total was accomplished in the European Theater, with the Army and Air Force dominating. In contrast, the Navy accounted for over 90 percent of the Pacific program. (The Marine Corps does not currently perform depot maintenance overseas on its equipment.)

The data presented in Table 2-1 are substantially greater than those reported to the ASD(MI&L) in FY82 under the provisions of DoD 7220.29H ($660 million versus $310 million). Program growth accounts for some of the increase, but the Army's TARP workload, which technically is not depot maintenance, is not covered by the reporting requirements of DoD 7220.29H. Furthermore, Navy aircraft contracts overseas have not been included in the DoD 7220.29H data submitted to OSD. Other depot maintenance work is also routinely omitted from the DoD 7220.29H reports for many reasons. (In aggregate dollar value, the overseas depot maintenance workload is less than 6 percent of the total DoD expenditures on depot maintenance of $12.2 billion in FY82.)

TABLE 2-1. DoD'S OVERSEAS DEPOT MAINTENANCE PROGRAM, FY83[1]

THEATER	MILITARY DEPARTMENT			TOTAL
	Army	Navy	Air Force	
Europe	$222	$ 12	$159	$393
Pacific	8	243	16	267
Total	$230	$255	$175	$660

[1]In millions of dollars.

The $660 million covers only some of the costs of depot maintenance. It does not include, for example, costs for:

- military personnel;
- depot field teams from CONUS;
- calibration laboratories; and
- military construction investments.

Also not included are numerous host-nation contributions such as tax waivers, wage supports, and some facility costs.

EUROPEAN PROGRAM

Army

Table 2-2 shows that the Army's European depot maintenance program for FY83 totaled approximately $222 million. Over 60 percent of that total was accomplished as depot-level maintenance at the Mainz Army Depot using Operation and Maintenance funds, with the balance being performed under the TARP effort using General Purpose Forces funds.

The Mainz facility has an extensive maintenance capability to support a wide range of Army equipment. The Army's use of Mainz dates back to 1951 when all employees worked directly for the Army. It was converted to a

contractor-operated facility in 1956 and became Mainz Army Depot in 1977. The present contractor is Mainz Industries Panzerwerk, which replaced the former Luther-Werke Company.

TABLE 2-2. ARMY'S EUROPEAN DEPOT MAINTENANCE PROGRAM, FY83

MAINTENANCE PROGRAM	FACILITY[1]	COST (MILLIONS)
Depot	Mainz	$138.0
TARP	Mainz	$ 22.0
	PCMC[2]	14.7
	GSC Kaiserslautern	10.2
	GSC Germersheim	6.8
	ESA Frankfurt	3.2
	CMC Nürnberg	6.3
	Miscellaneous Contractors	21.0
	Theater Total	$222.2

[1]PCMC (Pirmasens Communications-Electronics Maintenance Center); GSC (General Support Center); ESA (Equipment Support Activity); CMC (Consolidated Maintenance Center).

[2]The $14.7 million at PCMC includes approximately $3.7 million of Operation and Maintenance funds for depot maintenance of communications equipment.

The Mainz Depot actually consists of 8 separate facilities (all located in Germany), administered by a staff of 194 persons. At the end of FY83, the contractor's workforce totaled 3,802, including 572 third-country nationals. The best known and largest of Mainz's facilities is the Mainz/Gonsenheim plant, which primarily overhauls combat vehicles.

The newest Mainz facility is the former Magirus Deutz bus factory at Mombach, less than one mile from Gonsenheim. The land was purchased by the German Government, and the Army paid $14 million for the buildings and equipment. This expansion has made possible a reallocation of workloads among the

Mainz facilities, including moving the Pirmasens Missile Repair Branch (PIMRB). The PIMRB workload, which has been primarily missile-related since 1976, will be the principal growth area because of its emphasis on communications and electronics. The PIMRB workload will be moved to Mombach in the fall of 1984. The remaining Mainz facilities recap tires and tank track pads and repair missiles.

The Army does not restrict its depot maintenance exclusively to the Mainz location. In FY83, the Mainz Depot issued 6 educational contracts to German, Belgian, and British firms, with a total contract value of $700,000. These contracts call for the firms to become capable of serving as backup sources for depot-level maintenance.

The TARP is a U.S. Army, Europe (USAREUR)-managed maintenance program, established at the time of the 1974 drawdown of overseas depots. Its purpose is to enhance the readiness of USAREUR units and to maintain prepositioned and war reserve materiel. The TARP workload includes the repair of tactical and combat vehicles, and communications-electronics and construction equipment. Even though USAREUR explicitly prohibits depot-level maintenance from being performed under the TARP umbrella, the technical content of the TARP workload closely resembles work normally categorized as depot level. This resemblance is the primary reason for including the TARP work under Army's depot maintenance in this report. As will be seen in a later chapter, however, the decision to include TARP work does not influence study conclusions and recommendations.

In FY83, approximately $22 million of TARP work was performed at the Mainz Army Depot. Almost 35 percent of the TARP workload was accomplished at three Specialized Repair Activities in Germany, under the 21st Support Command -- Pirmasens Communications-Electronics Maintenance Center (PCMC),

primarily communications and electronics equipment; General Support Center (GSC) Kaiserslautern, tactical and combat vehicles; and GSC Germersheim, also tactical and combat vehicles.

The Equipment Support Activity (ESA) Frankfurt, Germany, and Consolidated Maintenance Center (CMC) Nürnberg, Germany, are V Corps and VII Corps activities, respectively, that also support the TARP work. ESA Frankfurt concentrates on commercial automotive engines and materials-handling equipment; while CMC Nürnberg repairs transmissions for automotive vehicles and the M880 truck.

The rest of the TARP work, $21 million, was contracted to German industry, as well as to the German Army maintenance plant at Jülich, near Köln. This work, which is nearly all on automotive and construction equipment, is administered by the 29th Area Support Group, a subordinate activity of the 21st Support Command. At the end of FY83, these contracts included $3 million with Zeppelinwerke, $2.6 million with Aurepa, $1.8 million with Badische Woggon, and various others. New contracts were awarded to the Hinstwerke at Jülich for $3.2 million and to the Reserve Storage Activity in Luxembourg for $2.9 million. Still pending were bids on another $34 million for maintaining wheeled vehicles.

Navy

The Navy's European depot maintenance program totaled approximately $12 million in FY83. As shown in Table 2-3, these funds provided support for aircraft and surface ships only. The fleet ballistic missile submarines, which operate out of Holy Loch, Scotland, are supported primarily by depot field teams from CONUS shipyards and contractors.

The Naval Aviation Logistics Center European Repair and Rework Activity (NERRA) in Naples, Italy, administers depot maintenance contracts for theater aircraft. These contracts totaled almost $2.1 million in FY83,

TABLE 2-3. NAVY'S EUROPEAN DEPOT MAINTENANCE PROGRAM, FY83

COMMODITY	DEPOT MAINTENANCE COST (THOUSANDS)
Aircraft	$ 2,093
Ships	10,000
Total	$12,093

covering a variety of scheduled depot-level maintenance actions and emergent repairs. Table 2-4 identifies NERRA's contractors, where they are located, the weapon systems they maintain, and the values of their contracts.

TABLE 2-4. NERRA'S DEPOT MAINTENANCE CONTRACTS, FY83

CONTRACTOR	COUNTRY	EQUIPMENT SUPPORTED	COST (THOUSANDS)
Oficinas Gerais de Materia Aeronautica (OGMA)	Portugal	C-2A, C-130	$ 750
Industria Aeronautica Meridionale	Italy	SH-3G	300
Messerschmitt-Böelkow-Blohm (MBB)	Germany	Variety	238
Aeronavali Venezia	Italy	Variety	114
Flight Refueling, Inc.	United Kingdom	Air Refueling	14
NIMO	Italy	Ground Support Equipment	677
Total	———	———	$2,093

Over 80 percent of the Navy's depot maintenance in Europe is in support of surface ships, both combatants and those from the Military Sealift Command. Approximately $7.1 million of the $10-million figure shown in

Table 2-3 covered emergent repairs for combatant ships. Regular overhauls on these ships are performed at CONUS facilities, although two-week European depot-level availabilities are scheduled on a quarterly basis. The emergent repairs were performed in some of the 40 available commercial shipyards located in more than 15 countries. The balance of the $10 million was in support of Military Sealift Command ships, and this work was accomplished in commercial shipyards.

Air Force

AFLC, Europe, now known as the Logistics Support Group, Europe, is the Air Force's focal point for depot-level work in the theater. In 1980, the Air Force introduced the concept of a "European Workload Program" to test the effectiveness of contracting with foreign industry for depot-level work on theater assets. All overseas contracts are approved through the AFLC Posture Planning Process to assure the continuing existence of a CONUS capability to do that work.

In the fall of 1983, the Air Force was using 15 foreign contractors, with an aggregate contract amount in force of $199 million (Table 2-5); an additional 18 contracts totaling $4 million were in negotiation. However, some of the contracts were Basic Ordering Agreements that had not yet been initiated. Consequently, the $199-million figure does not give a correct picture for the Air Force's FY83 expenditures on its European Workload Program. AFLC, Europe estimated that FY83 expenditures were in the range of $150 million. The AFLC Compendium of Depot Maintenance Contractors for 1983 had not been completed at that time, but a first-quarter draft showed $35 million in European contracts.

The current work at RAF Kemble represents just a first step in making that facility into a highly capable maintenance depot. As noted

TABLE 2-5. AIR FORCE'S EUROPEAN DEPOT MAINTENANCE PROGRAM, FY83

LOCATION/CONTRACTOR	COUNTRY	EQUIPMENT SUPPORTED	COST (MILLIONS)
RAF Kemble	UK[1]	A-10	$ 9.4
British Aerospace	UK	F-111	100.0
Construcciones Aeronauticas	Spain	F-4	60.2
Hellenic Aerospace	Greece	J-79 Engines	20.9
MBB	Germany	F-4	4.2
Aviation Traders	UK	F-4 Controls	0.4
Field Aircraft Services	UK	F-4 Landing Gears	0.3
Dowty Fuel Systems	UK	Fuel Controls	2.1
Bedek Aviation, Israeli Aircraft Industries	Israel	F-4 Pumps	0.2
Industria Aeronautica Meridionale	Italy	C-130	1.4
Lockheed Support Services	Germany	F-15 TCTO[2]	2.0
Israeli Aircraft Industries	Belgium	H-53	0.8
Société Anonyme Belge de Constructions Aéronautiques	Belgium	F-16 TCTO	3.1
Lear Siegler	Germany	C-130	2.9
Marconi Avionics	UK	F-16 HUD[2]	0.5
OGMA[3]	Portugal	T-56 Engines	———
Total	———	———	$208.4

[1]United Kingdom

[2]TCTO (Time Compliance Technical Order); HUD (Heads Up Display)

[3]The contract with OGMA was being negotiated in the fall of 1983.

previously, the British Government was closing its aircraft maintenance facility at RAF Kemble for reasons of economy at the same time the U.S. Air Force was looking for an in-theater location to do corrosion control on A-10 aircraft. Five months into FY83, the U.S. Government signed an agreement with the British Government to provide workload to British Maintenance

Unit No. 5, and by the end of that FY approximately three hundred UK employees were under contract. In its first 7 months of operation, RAF Kemble performed corrosion control on 11 aircraft, repainted 31 aircraft and 15 trucks, and made arrangements to rework a variety of support equipment and avionics components. In late 1983, however, RAF Kemble was relatively idle, but the Air Force is expecting a substantial growth in workload (discussed in the next chapter).

Called a "Rear Area Support Center" by the Logistics Support Group, Europe, RAF Kemble is regarded as an important element in PACER CRESCENT, an AFLC concept under which depot installations are spread in a crescent shape on the rim of the European Theater to support deployed Air Force units. RAF Kemble has 17 hangars, only 5 of which are currently in use, and a 6,000-foot runway, with British Planning Commission approval for the Air Force to extend it to 10,000 feet.

NATO Maintenance and Supply Agency

In 1958, NATO established the NATO Maintenance and Supply Organization to provide spare parts and logistics support for jointly used weapons systems, especially missiles and electronics items. An operating agency of that organization, NATO Maintenance and Supply Agency (NAMSA) has been supporting the Improved HAWK and other missiles for several years, but not for the United States. At present, NAMSA support to U.S. forces consists of a $277,000 contract for depot-level maintenance and calibration of Army test, measurement, and diagnostic equipment at its main facility at Cappellen, Luxembourg. The only new U.S. work now being discussed is having NAMSA perform the electronic repairs on the Army's Multiple Launch Rocket System.

Although both OSD and the U.S. European Command support the use of NAMSA, the Military Departments have not found NAMSA's resources to match

their needs. NAMSA is perceived as being interested more in supply than in maintenance. There are also perceptions among some Military Department contracting personnel that U.S. contract requirements restrict them from doing business with NAMSA.

PACIFIC PROGRAM

Army

Table 2-6 shows that the Army's depot maintenance program in the Pacific Theater totaled approximately $8.5 million in FY83. Most of that work was performed at the Materiel Support Center (MSC) Korea, which is a unit of the 19th Support Command located at Camp Carroll. MSC Korea has been granted Special Repair Authority for repair of communication equipment, circuit boards, crankshaft grinding for truck and personnel carrier engines, and overhaul of tank, personnel carrier, and 5-ton truck engines, transmissions, final drives, and differentials. The FY83 budget for MSC Korea was almost $13 million, with approximately one-half of that amount comparable to the work performed under the European TARP effort.

TABLE 2-6. ARMY'S PACIFIC DEPOT MAINTENANCE PROGRAM, FY83

FACILITY/CONTRACTOR	COST (MILLIONS)
MSC Korea	$6.5
Miscellaneous Contracts	2.0
Total	$8.5

The $2 million of miscellaneous contract work includes part of a 5-year contract with Daewoo Heavy Industries for modernization of the M113 family of vehicles, tire rebuilds by Chosun Tire Industry Company, and stripping and painting of three aircraft by Korean Air Lines (KAL).

Currently, the Army is not receiving any depot maintenance support outside Korea. During the conflicts in Korea and Vietnam, however, the Sagami General Depot in Japan repaired up to 120 personnel carriers and 10 to 12 tanks each month. The present U.S.-Japanese agreement calls for return to Japan of real estate no longer in use by U.S. forces. In the case of the Sagami Depot, the mayors of the two towns that surround the depot have successfully petitioned for the return of parcels of its real estate. Other parcels are also vulnerable to petition, because the only visible U.S. activity is the storage of equipment for a 2,400-bed hospital and war reserve materiel.

Navy

As stated earlier, the Navy dominates the depot maintenance performed in the Pacific Theater. In FY83, the Navy's Pacific depot maintenance program totaled approximately $235 million -- almost $25 million to maintain permanently deployed aircraft and the balance to maintain surface combatants and Military Sealift Command ships (see Table 2-7).

The aircraft program is administered by the Fleet Air Western Pacific Repair Activity (FAWPRA), Atsugi, Japan. FAWPRA's FY83 maintenance expenditures were $24.5 million, with $17.6 million allocated to one contractor, Japan Aircraft Company (JAC). That contractor has 450 employees dedicated to the Navy program. In FY83, JAC supported the A-4, C-1, C-2, E-2, and OV-10 aircraft, along with several types of helicopters, including the H-46 and H-53.

The Singapore Aerospace Maintenance Corporation (SAMCO) p ovided scheduled depot-level maintenance for A-4 and C-130 aircraft, while KAL provided similar support for the F-4.

TABLE 2-7. NAVY'S PACIFIC DEPOT MAINTENANCE PROGRAM, FY83

COMMODITY/FACILITY	DEPOT MAINTENANCE COST (MILLIONS)
Aircraft	
JAC (A-4, C-1, etc.)	$ 17.6
SAMCO[1] (A-4, C-130)	4.3
KAL (F-4)	0.9
FAWPRA Cubi Point (various)	1.7
Subtotal	$ 24.5
Ships	
SRF Guam	$ 45.6
SRF Subic Bay	78.4
SRF Yokosuka	84.9
Military Sealift Command Contractors	10.0
Subtotal	$218.9
Total	$243.4

[1]Singapore Aerospace Maintenance Corporation

FAWPRA also operates a repair activity at Cubi Point in the Philippines. That activity has a wartime mission to perform battle-damage repair and assessment. In FY83, with a staff of 17 Americans and 96 direct-hire Filipinos, FAWPRA Cubi Point processed 275 aircraft needing corrosion correction and structural work. It also dispatched field teams to carriers in the Indian Ocean to repair 62 on-board aircraft. The total FY83 budget for the activity was approximately $1.7 million.

The three SRFs in the Western Pacific provide support for deployed surface ships in that theater. Each of the SRFs is unique in terms of its facilities and capabilities.

SRF Guam is the smallest of the three, with a staff of 114 military personnel and 900 civilian employees. Approximately 90 percent of its staff are U.S. citizens. It has the only underwater acoustic test facility in the Western Pacific and a medium auxiliary floating drydock (AFDM-8) with a lift capacity of 18 thousand tons. Guam's harbor is not deep enough to accommodate aircraft carriers, but three smaller ships are homeported there, including the submarine tender USS PROTEUS (AS-19), which has the capability to provide nuclear ship repair services.

In FY83, SRF Guam had maintenance expenditures totaling $45.6 million. Three-fourths of that work was in support of regularly scheduled overhauls, with restricted availability[1] work accounting for another 20 percent. The SRF and the Navy's public works center are the largest employers on Guam, and so are extremely important to its economic well-being.

SRF Subic Bay in the Philippines is located at the center of Seventh Fleet operations, directly astride the sea lines of communication to the Indian Ocean. Two ships are homeported at Subic Bay. As the largest and most capable of the three SRFs, Subic Bay has a large (AFDB-1), medium (AFDM-5), and small floating drydock (AFDL-23). The AFDB-1 can accommodate all but the largest aircraft carriers. The SRF employs 131 military personnel and 4,650 civilian workers. Approximately 99 percent of the civilians are Filipinos.

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[1]Availabilities are ship repair periods. The Navy uses several types of availabilities (selected restricted, restricted, technical, or intermediate maintenance) depending on the technical content of the repairs to be performed.

The FY83 workload at Subic Bay was $78.4 million. Restricted and technical availability work accounted for 45 percent of that total, with regularly scheduled overhauls and selected restricted availabilities accounting for another 11 percent. SRF Subic Bay has the right of first refusal on repair of Military Sealift Command ships, and that work accounted for 12 percent of Subic's FY83 workload. It also performs work in support of foreign military sales and for other installations, such as the naval station. This additional work accounted for one-third of its FY83 workload.

The SRF at Yokosuka, Japan, is home port to the carrier USS MIDWAY and nine other ships. A detachment at nearby Sasebo, where two more ships are homeported, has a ten-person contracting office. Work on the MIDWAY and the nine other ships homeported there dominates the work at Yokosuka. SRF Yokosuka has an extensive drydock capability with six graving docks; one of its drydocks can accommodate the largest aircraft carriers. Several drydocks at Sasebo can also accommodate large ships.

Expenditures at SRF Yokosuka in FY83 totaled $84.9 million. Two-thirds of that amount was spent in support of regular overhauls and selected restricted availabilities, with restricted and technical availabilities accounting for most of the balance. SRF Yokosuka employs 76 U.S. military personnel and 23 U.S. civilians. The direct-labor force is entirely Japanese. A Master Labor Contract covers 1,645 permanent workers, who, according to local custom, are "hired for life." Some 50 "Master Ship Repair Contractors," mostly small, provide an additional 1,000 to 1,200 skilled workers to meet surges. They are not covered by the "hired for life" tradition.

In addition to $10 million in the SRF totals, the Military Sealift Command spent $10 million for commercial ship repairs in Japanese and Singaporean shipyards, and more recently in Korean shipyards. The Military

Sealift Command's experience with Korean work has been mixed, but the inclusion of Korean companies on its bidding lists appears to have heightened the competition for U.S. work and resulted in lower bids.

Air Force

In FY83, the Air Force spent less than $16 million for depot maintenance in the Pacific Theater (Table 2-8). The Air Force does not operate any organic depot-level facilities in the Pacific. It relies primarily on commercial contracts, administered by the Air Force Contract Maintenance Center, Detachment 28, at the KAL facility in Kimhae, Korea. The largest single FY83 contract ($12.4 million) was with KAL. Under this contract, KAL performed programmed depot maintenance, corrosion control, and analytical condition inspections and overhauls on F-4, F-15, and C-130 aircraft. KAL has 500 employees dedicated to the Air Force's program. It recently notified the Air Force that it was building a new hangar with floorspace to accommodate five C-130s simultaneously, and would make available double the present level of manpower. The Koreans constructed this facility in rice-paddy areas when the F-4 work was withdrawn from Taiwan. The Koreans believe that the United States has a moral obligation to keep KAL workloaded at least to its present level. The current KAL workload, however, includes the F-4, which is being gradually phased out of the theater, and replacement workload has not yet been completely identified.

A second major contract covers $3.1 million for corrosion control on C-130 aircraft previously placed in Hong Kong. Recent bids, however, have resulted in that contract being awarded to Philippine Air Lines. Work under this contract has just been initiated.

TABLE 2-8. AIR FORCE'S PACIFIC DEPOT MAINTENANCE PROGRAM, FY83

FACILITY	DEPOT MAINTENANCE COST (MILLIONS)
KAL	$12.4
Philippine Air Lines	3.1
PLSC	0.1
Total	$15.6

The PLSC at Kadena Air Base on Okinawa provides 70 percent of the intermediate-level maintenance for tactical aircraft assigned or deployed to the Western Pacific. The Air Force decided to consolidate intermediate-level maintenance at the PLSC in 1975 because it was concerned about the vulnerability of its intermediate maintenance facilities in South Korea. Since that time, the PLSC has been authorized to provide some depot-level support under an "extended intermediate-level mission," and more authorities have been requested. Some of the depot maintenance tasks assigned to the PLSC include the repair of augmentor liners on the F100 engine. The PLSC can repair as many as 30 of these liners each month. PLSC also has several sets of F-4, F-15, and F-16 special and automatic test equipment formerly assigned to the maintenance facilities at the wings. With a staff of 760 uniformed and 12 civilian personnel, PLSC had a FY83 budget of $10.4 million. The amount of depot-level work that it performed in FY83 was extremely small -- perhaps $100 thousand -- but it has an obvious expansion potential. This potential already has been recognized by AFLC, which will be establishing a detachment at the PLSC late in FY84.

3. PLANNED PROGRAM

TOTAL PROGRAM

The total dollar value of the overseas depot maintenance program is expected to increase from its present level of $651 million to a minimum of $1 billion by 1989, an increase of approximately 50 percent. The actual percentage increase may be substantially higher, with 75 percent not unlikely.

Most of the program growth will occur in the European Theater, where the workload has been and will continue to be dominated by the Army and Air Force. The Navy does not expect to increase substantially its overseas depot maintenance workload in either the European or Pacific Theaters.

UNDERLYING ASSUMPTIONS

The Basis for the Projections

The estimates of the amount of depot maintenance that will be performed overseas in the FY85-89 timeframe assume that the primary determinants for depot maintenance requirements will remain unchanged. That is, end-strength levels, flying/operating hours, steaming days, exercises, and equipment densities (in the hands of deployed forces) will not change dramatically from current levels. A few additional ships may be homeported overseas, or another aircraft squadron or two may be permanently deployed, but actions like these will not alter greatly the total workload estimates. It is assumed also that depot maintenance in support of foreign military sales will remain at current levels.

The Sources of Growth

Some of the growth will result from force modernization in which newer, more complex weapon systems will replace older systems. In Europe, for

example, the Army is replacing M60 tanks with M1s, and M113 personnel carriers with M2 fighting vehicles, while the Air Force is replacing F-4 squadrons with squadrons of F-15s and F-16s. Similar upgrading of weapon systems is occurring in or planned for the Pacific Theater. In some cases, these newer systems require an increase in depot support.

Most of the program growth will occur from increasing the amount of maintenance performed in support of deployed weapon systems. The Military Departments are finding that by supporting the weapon systems in-theater, along with associated major assemblies and components, they are enhancing their ability to meet readiness goals and to sustain themselves in the event of war.

The Type of Equipment Supported

Much of the new depot maintenance workload will be electronics related. This emphasis will be most noticeable in the Mainz workload, where electronics maintenance, particularly in support of missiles, will be the primary growth area.

At the same time the Military Departments are introducing new weapon systems and shifting to electronics-type work, they are also increasing their use of two levels of maintenance, one of which is depot level. This trend will become more pronounced by the late 1980's.

The Performers of Maintenance

A significant portion of the growth in overseas depot maintenance workload will occur in facilities already supporting the Military Departments. These include both contractor and organic (i.e., under the direction of a Military Department) facilities.

One of the major uncertainties in the future overseas depot maintenance program will be the success of foreign governments and firms in

obtaining additional depot maintenance work through political channels. If those governments and firms increase their requests for work, then the patterns of expected growth, as described in this chapter, may be altered somewhat.

EUROPEAN WORKLOAD

As noted previously, the Army and Air Force will be leading the growth in the European workload. The depot maintenance workload at Mainz is projected to increase from its current level of $138 million (3.6 million direct-labor hours) to $254 million (5.1 million direct-labor hours) in FY89. Much of this growth will occur in the electronics area. The Army expects some unit cost increases, but many of the end items and components will have the same unit costs in FY89 as in FY83. To support this workload increase, Mainz staffing is expected to increase from 3,800 in FY83 to 6,100 in FY89.

In addition to the depot work, Mainz's TARP workload is also expected to increase over this same period. The Army expects this workload to increase from $22 million in FY83 to more than $34 million in FY89. The balance of the TARP workload is expected to increase proportionately, from over $60 million in FY83 to approximately $90 million in FY89.

The Navy expects only a modest increase in its European depot maintenance workload by FY89, from $13 million to perhaps $20 million. This increase will arise not from any one action but from several small initiatives.

The Air Force's European depot maintenance program is likely to double by FY89, from $159 million to $320 million. This growth will result primarily from AFLC's success in contracting with foreign industry for depot maintenance support of deployed aircraft. The annual value of those contracts should approximate $300 million by FY89.

Included in the near-future Air Force workload are a contract with Oficinas Gerais de Materia Aeronautica (OGMA) in Portugal for approximately 15 T-56 engines annually and another for depot maintenance in support of the Ground Launched Cruise Missile (GLCM) at the European Repair Facility. It is expected that annual support of the GLCM will require 200 man-years plus vendor support from General Dynamics. The cost of this support has not yet been finalized.

The second area of growth will be at RAF Kemble, whose annual workload is expected to increase from the present $9 million to $20 million in FY89. Even though RAF Kemble is not fully utilized currently, the staffing at that facility is expected to increase to 550 in FY86 and possibly to more than 1,000 by the late 1980's.

The actual workload at RAF Kemble may well exceed the official projections. One of the primary reasons is that RAF Kemble will become one of the hubs of the Air Force's European Distribution System. That system, which will become partially operational in FY85, will provide forward wholesale stockage of items, and delivery and pickup of supplies and reparables throughout Europe. A second reason is AFLC's expressed interest in establishing a significant in-theater presence. An expanded maintenance mission for RAF Kemble, even over that planned, will provide such a presence.

PACIFIC WORKLOAD

The Military Departments are not formally projecting significant increases in depot maintenance in the Pacific Theater. However, several actions underway may result in some growth in the workload programs of the Military Departments.

The PLSC in Kadena will likely be allowed additional authorizations for "extended intermediate-level repairs." The F100 augmentor liner work is

one of the first major production efforts to be authorized. Furthermore, the AFLC Detachment at the PLSC may be the first step toward an RAF Kemble-type facility in the Pacific. Such a facility would increase greatly the amount of Air Force depot-level maintenance performed in the theater. The Air Force is also planning to develop an F-15 depot capability at KAL's facility in Kimhae. It has ordered 190 pieces of equipment to be installed at this facility. Much of the F-15 work, at least in the next few years, will be replacing work formerly performed in support of F-4s, which are being phased out of the Pacific Theater.

Some installations in the Pacific would be hard pressed to take on additional work. For example, SRF Guam presently cannot accommodate aircraft carriers and is supported by a very small labor pool. The Army has very little expansion capability in the Western Pacific; the 19th Support Command could not support a substantial increase in workload. An alternative would be to find commercial sources or to reactivate Sagami General Depot.

4. IMPLICATIONS

In earlier chapters, we presented an overview of the performance of depot maintenance overseas, described the current overseas depot maintenance programs, and provided estimates of the magnitude of those programs in FY89. In this chapter we discuss the implications of the current and planned overseas depot maintenance programs and identify some opportunities to improve those programs.

ENHANCES READINESS AND SUSTAINABILITY

By performing depot maintenance overseas in support of theater assets, the Military Departments shorten depot repair turnaround times and reduce the number of end items and spares required to fill repair pipelines. These shortened turnaround times and reduced pipelines translate directly into enhanced readiness of theater equipment. Performing depot maintenance overseas also improves the sustainability of deployed forces by providing in-theater capabilities to support theater assets. In the event of war, those forces will not be dependent solely on tenuous logistics lines of communication back to CONUS facilities.

CONTRIBUTES TO OVERSEAS INDUSTRIAL BASE

A sizable portion of the current and planned overseas depot maintenance programs will be performed by foreign industry, which has significant potential in both theaters. This support offers many advantages: it increases the dispersion of work, thereby reducing vulnerability to enemy action; it develops a political constituency within the nation in which the work is performed; and it assists in transferring economic and technical assistance to Allied Nations. DoD should continue to respond to requests from Allied

Nations for economic offsets by examining their capability to perform depot maintenance. As noted above, the military benefits from performing that maintenance overseas are numerous.

REQUIRES SUBSTANTIAL FUNDING

The Military Departments cannot support the expansion of their overseas depot maintenance programs without substantial investments in tools, test equipment, plant equipment, and facility improvements. At the Mainz facility alone, the Army is planning to spend at least $95 million within the next few years. The Air Force could easily spend that amount converting the present RAF Kemble facility into a highly capable maintenance depot. No dollar estimate for the 190 items of F-15 plant equipment being procured by the Air Force for the KAL facility at Kimhae was obtained, but it will be large. Even the organic facilities not programmed for expansion have substantial facility and equipment requirements. In the FY84-88 timeframe, the three SRFs have identified a total of $56.5 million for plant equipment and other improvements, far in excess of available funds.

REQUIRES MORE OSD PARTICIPATION

Much of the initiative to provide depot-level support in overseas theaters has come from the Military Departments. In many situations, they have found that only by use of in-theater depots can they afford to support theater assets. Even though OSD has often been an advocate of specific overseas depot maintenance initiatives, the perception exists in the European and Pacific Theaters that performing depot maintenance overseas may be contrary to DoD policy. OSD needs to clarify this situation. Specifically, we believe that OSD should update DoD maintenance policy to state explicitly that performing depot maintenance in overseas theaters on theater assets is a desirable alternative to CONUS support, so long as a CONUS core capability is preserved.

Furthermore, increased use of the overseas industrial base, through the use of competitive contracting, is a worthy objective. Both the Army and Air Force have included this objective in their policy documents. DoD maintenance policy is not so explicit. It directs the Military Departments to establish a competitive commercial industrial base, but implies that the base should be within CONUS. We believe that DoD policy needs to be broadened to address the overseas industrial base, in addition to CONUS.

In both theaters, the Military Departments are developing, independently, their own depot maintenance capabilities. In some areas, they are pursuing very similar objectives. In Europe, for example, the Army is expanding substantially Mainz's capability to maintain electronics equipment. In the near future, the Air Force will be seeking contractors to perform similar types of repairs and enhancing RAF Kemble's capability in this same area. Furthermore, NAMSA will probably be supporting some electronics components of the Army's Multiple Launch Rocket System. In each situation, millions of dollars (for tools, training, and test equipment) must be invested to develop the required capabilities. The potential exists to reduce these development costs, possibly through joint facility use, but the Military Departments are not in position to provide the necessary leadership. OSD, however, is in such a position.

CALLS FOR BETTER INFORMATION

As a result of the growth in the overseas depot maintenance program, the Military Departments need access to better, more current information. For example, all three departments have been contracting with KAL for aircraft maintenance, but they have not exchanged much planning information. As another example, the Military Departments do not share evaluations of the capabilities of a particular contractor, such as OGMA in Portugal. They

seldom share the capacities of underused facilities or the lessons learned from contracting with a particular foreign firm.

In summary, the implications of performing depot maintenance overseas are, for the most part, highly beneficial to DoD. A few areas exist in which DoD can still improve its planning for and performance of depot maintenance overseas. In the following chapter, these areas are addressed and recommended ASD(MI&L) actions are presented.

5. RECOMMENDATIONS

This chapter briefly describes several actions that the ASD(MI&L) should take to correct shortcomings in or misperceptions of DoD's overseas depot maintenance programs.

The planned expansion of the overseas depot maintenance programs is the preferred approach to meeting theater maintenance requirements. We believe that the ASD(MI&L) should be a strong advocate of those programs because of their contribution to meeting readiness and sustainability objectives. An obvious starting point for such an advocacy is for the ASD(MI&L) to assert to the Military Departments that use of in-theater depots and contractors should be considered in the support of all deployed weapon systems.

Use of an existing overseas industrial base offers many political and military advantages to the United States. To date, the Air Force in Europe has placed the highest priority on using such a base, and it has enjoyed considerable success. The 15 contractors listed in Table 2-5 attest to that success. We believe that the other Military Departments should have similar priorities. To establish such priority, we recommend the ASD(MI&L) affirm to the Military Departments that current DoD policy for a competitive depot maintenance industrial base applies overseas as well as within CONUS.

The Military Departments have the primary responsibility for identifying their overseas depot maintenance requirements and developing the capability to satisfy those requirements. Traditionally, they have met those responsibilities without coordinating either their requirements or their capabilities with other departments. As a consequence, it is not uncommon for two Military Departments unknowingly to seek similar capabilities, or for one department to

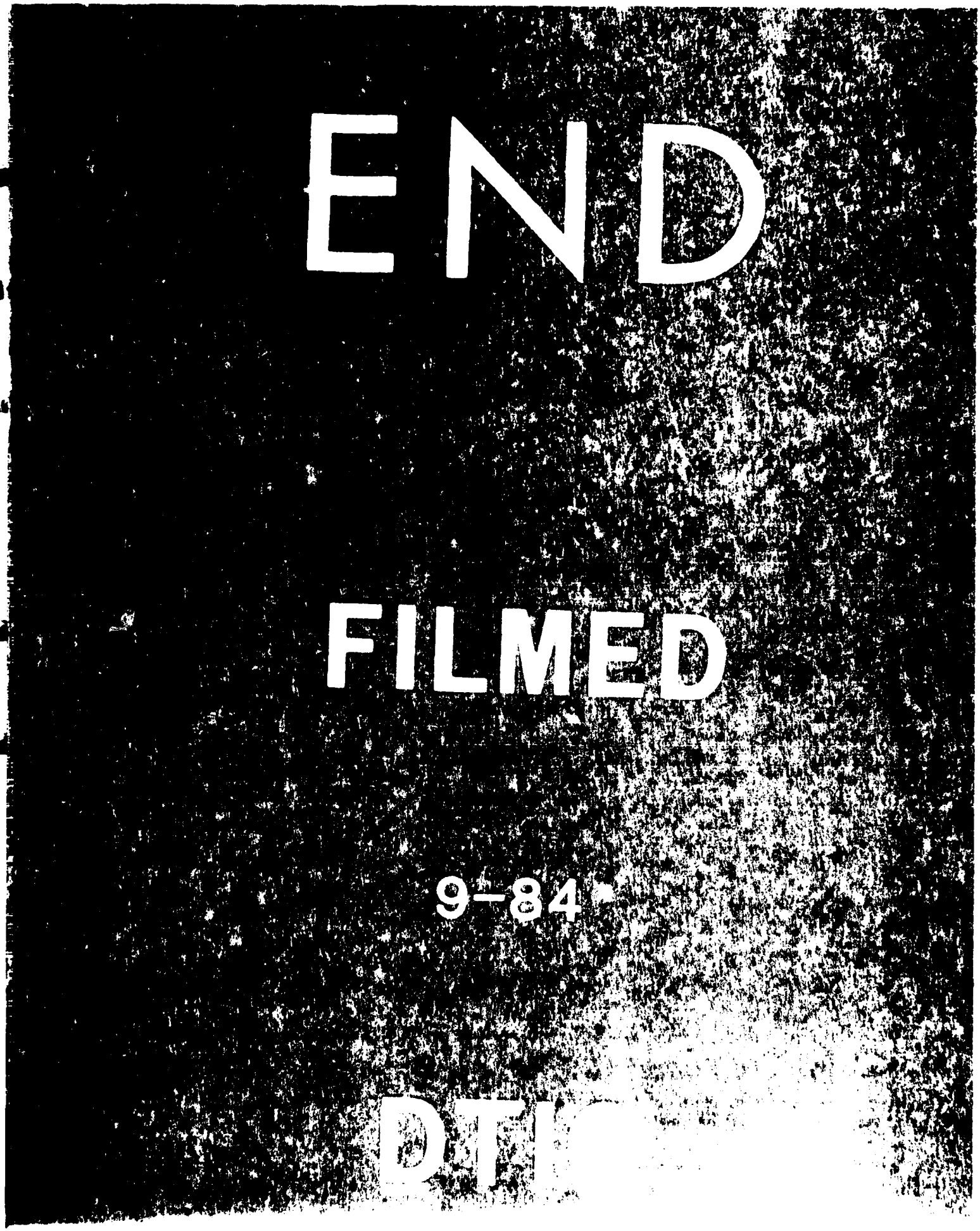
develop a capability in an area in which another department has excess capacity. Given the magnitude of the DoD's overseas depot maintenance workload and its potential to contribute to strengthened international relationships, this lack of coordination should not continue. As corrective action, we recommend that the ASD(MI&L) establish annual overseas depot maintenance conferences, alternating between European and Pacific Theaters. The overall objective of those conferences should be to improve the communication among the Military Departments and OSD. Conference topics should include workload requirements and assignments by commodity type and performing activity, diplomatic and international logistics initiatives, candidates for interservicing and cross-servicing with Allied Nations, and maintenance lessons learned.

One of the primary reasons for this reconnaissance was that the reporting of overseas depot maintenance in accordance with the provisions of DoD 7220.29H was perceived as inadequate. The findings of this reconnaissance confirm those perceptions. Many overseas installations and/or contracts are either not included in the DoD 7220.29H data base or their production is only partially reported. This situation needs to be changed. We believe that the best approach toward improving the reporting of depot maintenance production under the provisions of DoD 7220.29H would be to link the reported data to the DoD planning, programming, and budget system. Currently, the Military Departments do not see any significant use being made of the reported data, so they do not make the effort to ensure that the data meet OSD's requirements.

The Army has only limited depot maintenance capability to support land combat systems in the Pacific Theater. Even though the 19th Support Command has some capability, its location is too vulnerable. We believe that the Sagami General Depot in Japan has potential to fill part of this void and that

the ASD(MI&L), working closely with the Joint Chiefs of Staff and the Military Departments, should examine the feasibility of that use, and other uses of Sagami General Depot. The future of that depot should be determined by plan rather than by default.

In summary, an effective, well-coordinated overseas depot maintenance program can dramatically affect the readiness of our deployed forces and their sustainability in the event of war. The recommendations presented in this report have the potential to enhance an already strong and commendable program.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