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THE ROLE OF CIVILIANS
IN MAINTAINING
MILITARY EQUIPMENT

VOLUME II

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1. INTRODUCTION

The role of civilians in maintaining military equipment has been changing dramatically in recent years. Once concentrated at depot level, civilians are now being used at all levels of maintenance. They are providing a wide range of services, such as transferring technical skills, operating test equipment, maintaining systems, acting as liaison with manufacturers and support commands, and providing interim support.

This report clarifies the extent to which the Department of Defense (DoD) uses civilians for these services, particularly in overseas areas, assesses the implications of that use, and proposes several actions to strengthen the role of civilians in maintaining DoD equipment. It is published in two volumes. Volume I provides highlights of recent and current uses of civilian mechanics; it also discusses the factors that influence decisions to use civilians and the wartime implications of that use. *From this, an assessment of DoD policy is given and recommended management initiatives proposed.* Volume II documents the extent to which civilians currently are used to maintain military equipment in the European and Pacific Theaters

The remainder of this volume is divided into two chapters. These describe, for the European and Pacific Theaters respectively, how each of the Military Services uses civilian mechanics. The descriptions include the number of civilians, the equipment they support, and their locations.

2. CIVILIAN USE IN THE EUROPEAN THEATER

Information on the use of civilians to maintain military equipment in Europe is presented here in four major sections, one for each of the Military Services. The Army section is subdivided into separate subsections for technical assistance, direct maintenance, contract maintenance, and related support. The Air Force section is similarly organized but without a subsection for related support. The Navy section is divided into subsections for ships and aircraft; the Marine Corps section is not subdivided because the Marine Corps receives little support from civilians in Europe. Each section concludes with a summary of civilian maintenance support within the theater.

ARMY

Technical Assistance

Army units in the field often receive technical assistance in installing, operating, and maintaining new weapons systems, equipment, and components. While that assistance usually takes the form of advice and training, it may also involve the performance of direct maintenance. Such direct maintenance usually provides opportunities for "over-the-shoulder" training of military personnel. Technical assistance also includes diagnostic help, force modernization planning advice, supply assistance, and a direct communication link with the wholesale system.

Technical assistance in the Army is governed primarily by the Logistic Assistance Program (LAP). The LAP, which provides for technical assistance in a wide variety of logistics functions, is managed through a network of Logistic Assistance Offices (LAOs) at 51 worldwide locations. Individuals who provide technical assistance are assigned to specific LAOs and are called Logistic Assistance Representatives (LARs). Except for very few military personnel supporting tank and automotive equipment, the LARs in Europe are Department of the Army civilians (DACs).

The number of LARs in Europe and the commodities they support are shown in Table 2-1. Of the 342 LAR personnel, nearly one-half support two commodity groups: communications-electronics and missiles. LAR personnel are supported by an additional 48 military

supervisory personnel and 21 administrative/clerical personnel bringing the LAP total in Europe to 411.

TABLE 2-1. LAR PERSONNEL IN EUROPE BY COMMODITY

COMMODITY	NUMBER OF PERSONNEL
Communications-Electronics	104
Missiles	62
Armament, Munitions, and Chemical	41
Tank-Automotive	40
Aviation	33
Troop Support	31
Communications Security	8
LAOs	23
TOTAL	342

Table 2-2 shows the organizational assignment of the LARs. The table entries for the two corps include LARs assigned to divisional units, corps level units, and corps staffs. While more than one-half of the LARs are assigned to division and corps organizations, a sizable number are also assigned to the Army Materiel Command-Europe (AMC-Europe) and the 32nd Army Air Defense Command (AADCOM). The "Other" category represents a variety of organizations, none of which has more than a dozen LARs assigned.

When no DACs with the required skills are available, the LAP is augmented by contractor personnel. The number of contractor augmentation personnel in Europe and the systems they support are shown in Table 2-3.

Direct Maintenance

In addition to providing technical assistance in Europe, civilians also are employed to perform direct equipment maintenance tasks. The sources of this type of support are foreign

TABLE 2-2. LAR PERSONNEL BY ORGANIZATION

ORGANIZATION	NUMBER OF PERSONNEL
VII Corps	101
V Corps	90
Army Materiel Command-Europe	41
32nd Army Air Defense Command	38
21st Support Command	26
Other	46
TOTAL	342

TABLE 2-3. CONTRACTOR AUGMENTATION TO LAP

SUPPORTED SYSTEM	NUMBER OF PERSONNEL
Hawk	3
Pershing	3
Tri-Tac	3
DAS3 ¹	2
Firefinder	2
MLRS ²	2
Patriot	2
BFVS ³	1
TOTAL	18

¹Decentralized Automated Service Support System

²Multiple Launch Rocket System

³Bradley Fighting Vehicle System

nationals, Civilian Support Units (CSUs), and host nation support.¹ (Few DACs are employed to

¹For the purpose of this study, the term "host nation support" includes all maintenance support involving some type of commitment or endorsement by governmental or quasi-governmental agencies of foreign governments

perform direct maintenance.) Foreign nationals are local national or third country national civilians hired directly by the Army as individuals who collectively comprise the bulk of the work force of a support organization or are employed to augment a military support unit. CSUs are quasi-military units organized similarly to U.S. military support units. CSU personnel are hired collectively from local or third country populations. Host nation support includes that support provided by governmental or quasi-governmental agencies of foreign governments.

This section describes the nature and extent of direct maintenance support provided to the Army by each of these three sources.

Foreign National. The use of foreign nationals in Army maintenance is concentrated at Installation Materiel Maintenance Activities (IMMAs). The 59 IMMAs in Europe are located primarily in the Federal Republic of Germany (FRG) and are known under a variety of names, including motor maintenance activity, equipment support activity, consolidated maintenance center, logistic support activity, general equipment support activity, general equipment repair point, and theater maintenance center. They are staffed by foreign nationals, and they employ from 3 to nearly 400 personnel. The IMMAs primarily provide direct support (DS) and general support (GS) maintenance for equipment in several commodity areas, including automotive, construction, combat vehicles, communications-electronics, audio-visual and training, general equipment, commodity groups, and weapons/armament.

Although an IMMA may be assigned maintenance missions in a few, or even all, commodity areas, only those that have significant missions in five particular commodity areas are of interest. These five commodity areas are automotive, construction, combat vehicles, communications-electronics, and weapons/armament. The 18 IMMAs that support those commodities are called consolidated maintenance centers, equipment support activities, or theater maintenance centers.

Table 2-4 shows the locations and staffing of the consolidated maintenance centers (CMCs). The Logistic Support Activity Roedelheim (LSAR), FRG², is included in this table because its role and organizational placement are similar to those of a CMC. The CMCs in the corps have been assigned DS/GS maintenance missions for automotive, construction, and communications-electronics equipment. None has been assigned weapons/armament missions except LSAR, which supports small arms; nor has any corps CMC been assigned a mission to support combat vehicles. The CMCs in the 21st Support Command (SUPCOM) also have DS/GS mission assignments for automotive, construction, and electronics-communication equipment, with CMC Bremerhaven assigned the additional mission of combat vehicles (except tanks). In the 7th Army Training Command (ATC), CMC Grafenwöhr has been assigned missions only for automotive and construction equipment, whereas both CMCs in the Southern European Task Force (SETAF) have mission assignments in all commodity areas except combat vehicles. CMC Berlin has a DS/GS mission for all commodities.

Table 2-4 shows that the Army employs 1,616 foreign nationals in its CMCs, with LSAR and the VII Corps CMCs comprising nearly two-thirds of that total. The LSAR is the only activity listed in the table with a large supply mission; approximately two-thirds of its personnel support the maintenance mission, while the balance supports supply.

The CMCs are predominantly civilian organizations. Only LSAR and CMC Vicenza, Italy, with 15 and 30 military personnel, respectively, are assigned more than 5 military personnel. Furthermore, the CMCs employ very few DACs — a total of 13 for all 12 organizations.

Some of the CMCs deserve extra attention because they support the U.S. Army Europe (USAREUR) Theater Army Repair Program (TARP). These CMCs and the extent of their contributions to the Fiscal Year (FY) 1985 TARP are shown in Table 2-5.

²Throughout the balance of this chapter, only locations in countries other than the FRG will be specifically identified.

**TABLE 2-4. FOREIGN NATIONALS ASSIGNED TO
CONSOLIDATED MAINTENANCE CENTERS**

CONSOLIDATED MAINTENANCE CENTER	NUMBER OF PERSONNEL
<u>V Corps:</u>	
Frankfurt (LSAR)	290 ^a
<u>VII Corps:</u>	
Nürnberg	221
Stuttgart	210
Augsburg	172
Würzburg	158
<u>21st SUPCOM:</u>	
Bremerhaven	156
Chievres (Belgium)	33
Burtonwood (United Kingdom)	21
<u>7th ATC:</u>	
Grafenwöhr	74
<u>SETAF:</u>	
Livorno (Italy)	50
Vicenza (Italy)	50
<u>U.S. Command Berlin</u>	
Berlin	181
TOTAL	1,616

^aApproximately 97 support LSAR's supply mission.

The LSAR is the largest CMC contributor to the TARP. Its theater repair assignments include overhauling commercial automotive engines (35 to 40 different models), tactical engines (M880 and M151 series), and material handling equipment (MHE). The MHE overhauls include the 6,000 and 10,000 pound rough terrain forklifts. In addition to theater-wide GS assignments, LSAR also performs several V Corps GS functions and in its DS role, which is approximately 30 percent of its maintenance workload, it supports a wide variety of equipment.

Another illustration of the nature of the work performed by CMCs is the mission of the CMC Nurnberg. That CMC supports the TARP by overhauling automatic transmissions from M880 trucks and nontactical vehicles, as well as transmissions from M915 heavy equipment

**TABLE 2-5. CONSOLIDATED MAINTENANCE
CENTER SUPPORT OF THE FY85 TARP**

CONSOLIDATED MAINTENANCE CENTER	FINANCED MAN-HOURS
Frankfurt (LSAR)	148,677
Nürnberg	50,505
Stuttgart	30,727
Würzburg	22,500
Augsburg	6,750
TOTAL	259,159

transporters. CMC Nürnberg also has a TARP end item mission for the M35A2 2½-ton truck. Its corps-level missions include tank gun fire simulators and some training devices.

A second category of IMMA staffed by foreign nationals is the equipment support activity (ESA). The three ESAs in Europe are located at Kaiserslautern and Mannheim in the 21st SUPCOM and at Vilseck in the 7th ATC. The DS/GS missions of the Kaiserslautern and Mannheim ESAs are identical: they support automotive, construction, and communications-electronics equipment. ESA Vilseck has DS/GS missions for automotive, combat vehicles, and weapons/armament.

Table 2-6 shows the foreign national staffing at the ESAs. The ESA at Kaiserslautern is the largest, nearly twice the size of the one at Mannheim. ESA Vilseck is the smallest. As in the CMCs, the ESAs have very few military personnel assigned: a total of nine for all three activities. ESA Mannheim has ten DACs, while the other two have none. Both of the ESAs in the 21st SUPCOM support the FY85 TARP, with Mannheim having 100,278 financed man-hours and Kaiserslautern having 69,802 man-hours.

The last category of IMMA with a significant military equipment DS/GS role is the theater maintenance center. The three such centers in Europe are Germersheim Maintenance

TABLE 2-6. FOREIGN NATIONALS ASSIGNED TO EQUIPMENT SUPPORT ACTIVITIES

EQUIPMENT SUPPORT ACTIVITY	NUMBER OF PERSONNEL
Kaiserslautern	397
Mannheim	214
Vilseck	84
TOTAL	695

Center (GMC), Kaiserslautern Maintenance Center (KMC), and Pirmasens Communications-Electronics Maintenance Center (PCMC).³ The missions of these centers vary significantly. While both GMC and KMC have automotive and combat vehicle missions, KMC also has a mission for construction equipment. Neither supports communications-electronics equipment or weapons/armament. On the other hand, PCMC is almost exclusively devoted to electronics and communications work although that mission often entails some sheet metal, structural, and electromechanical tasks for shelter refurbishment jobs.

Foreign national staffing for the theater maintenance centers is shown in Table 2-7. PCMC is the largest center; GMC is the smallest. The data in Table 2-7 do not include the 12 military and 2 DAC personnel assigned to PCMC nor the 5 military and 7 DAC personnel assigned to KMC; GMC has neither military nor DAC personnel. Also excluded from the totals in Table 2-7 are foreign national personnel in a CSU attached to the PCMC; those personnel are discussed in the next section.

The theater maintenance centers are distinguished from the CMCs and ESAs in three important ways. First, they do not generally support individual units directly but rather support the supply system by performing GS-level repairs. Second, they are geographically and

³A fourth theater maintenance center, the Luxembourg Maintenance Center (LMC), is often considered an organic activity. It is, however, actually a form of host nation support and its role is discussed in a subsequent section of this chapter.

TABLE 2-7. FOREIGN NATIONALS ASSIGNED
TO THEATER MAINTENANCE CENTERS

THEATER MAINTENANCE CENTER	NUMBER OF PERSONNEL
Pirmasens	356
Kaiserslautern	270
Germersheim	180
TOTAL	806

organizationally located behind the corps. Third, much of the work of the theater maintenance centers is dedicated to support of the TARP

TARP support by the theater maintenance centers represents a significant contribution to the accomplishment of that program. The extent of that support is indicated by the financed man-hours provided by each center to the FY85 TARP. As shown in Table 2-8, the total financed man-hours for all three centers is 800,617 with Kaiserslautern being the largest contributor with 301,611 man-hours and the other two close behind. To add some perspective to the theater maintenance centers' contributions to the TARP, the man-hours they provide represent approximately 20 percent of the FY85 TARP workload.

TABLE 2-8. THEATER MAINTENANCE
CENTER SUPPORT OF FY85 TARP

THEATER MAINTENANCE CENTER	FINANCED MAN-HOURS
Kaiserslautern	301,611
Pirmasens	259,867
Germersheim	239,139
TOTAL	800,617

Foreign nationals are the primary source of staffing at the IMMAs. At activities other than IMMAs, however, foreign national individual hires are used only to augment the maintenance capability of the activity. The most notable of these activities is the 70th Transportation Battalion.

The 70th Transportation Battalion, located in Mannheim, is an Aviation Intermediate Maintenance (AVIM) unit assigned to the 21st SUPCOM. Its maintenance mission includes direct AVIM and backup unit maintenance support for 23 units, direct AVIM support for all theater CH-47 and fixed-wing aircraft, and backup AVIM support to corps AVIM battalions. The 70th also has other aviation logistics missions, and missions for air transport and airfield operations. Of its 604 personnel (excluding U.S. Forces Dependent Hires), 413 are military and 191 are foreign nationals. For its AVIM mission, the 70th has 98 military personnel and 161 foreign nationals, a total AVIM staffing of 259. The 70th Transportation Battalion also receives contract support to augment its maintenance capability for the CH-47. That support is discussed in a subsequent section of this chapter.

Another example of the use of foreign nationals to augment maintenance organizations is the 517th Maintenance Battalion, with headquarters in Zweibrücken. The primary mission of the 517th is to provide calibration and maintenance support for general-purpose test, measurement, and diagnostic equipment (TMDE) and some special-purpose TMDE. It also has a nucleonics laboratory that provides radiac instrument calibration and repair and it operates a radioactive material disposal facility for the U.S. European Command. To accomplish these missions, the 517th Maintenance Battalion is organized into a headquarters element and three operating companies. Battalion staffing totals 470 military personnel assigned with an augmentation of 63 civilians (9 DACs and 54 foreign nationals). For the most part, the DACs are used in supervisory positions, while the foreign nationals are used in support roles.⁴ Exceptions are found in the maintenance company located in Pirmasens. That company (in addition to providing the same TMDE calibration and repair

⁴The 517th Maintenance Battalion is also augmented by CSU, host nation support, and contractor personnel. That augmentation is discussed separately in subsequent sections of this chapter.

support as the other two companies) has two unique missions for which it employs foreign nationals: to operate the nucleonics laboratory and to assist PCMC in support of its special repair authority for selected items. Part of the staffing for both missions consists of 21 foreign nationals, 8 for the laboratory and 13 for the special repair authority.

Civilian Support Unit. Another form of civilian staffing used by the Army in the direct maintenance mission is the CSU. Those units are quasi-military in that they are organized and operate, in many respects, like military units. They have unit missions, a rank structure, uniforms, unit billeting and messing facilities, and orderly and administrative tasks in addition to their primary jobs. Also, CSU hiring procedures and pay scales are different from those for individual direct-hire foreign nationals. However, CSUs cannot be assigned military missions nor be deployed.

The 103 CSUs in Europe have a total assigned strength of nearly 12,000 personnel, and have a variety of missions including security, ordnance, engineer, supply, transportation, medical service and supply, signal support, and maintenance. Maintenance CSUs are organized into battalion level units called Civilian Support Centers (CSCs) and company level units called Civilian Support Groups (CSGs). The latter are typically staffed at about 60 percent of equivalent-mission, full strength U.S. military companies.

Some maintenance CSUs have mixed missions. That is, part of a unit may be devoted to direct maintenance while another part may be assigned to related functions such as Care of Supplies in Storage (COSIS). When these mixed missions occur, the COSIS mission is generally consistent with the unit's primary mission. For example, if a unit's primary mission is DS maintenance of automotive equipment, then its COSIS mission is likely to be centered around the upkeep of wheeled vehicles in storage. COSIS missions frequently require some CSUs to station detachments away from the unit's primary location.

Table 2-9 shows the current staffing, missions, locations, and command assignments of maintenance CSUs.⁵ The staffing data include all assigned personnel even though some may be

⁵CSUs also are assigned to the U.S. Army Combat Equipment Group, Europe, to maintain equipment in storage. Those CSUs are described in a subsequent section of this report.

performing related tasks or assigned to detached locations. The location shown in the table is that of unit headquarters where most personnel are usually assigned.

The staffing of maintenance CSUs totals 2,238 personnel, with slightly more than one-half in units assigned to the 21st SUPCOM. The other maintenance CSUs are either in VII Corps or the 5th Signal Command. The V Corps has no maintenance CSUs although other types of CSUs are assigned.

CSUs have a variety of maintenance missions. Many support operating units directly; some are assigned TARP or COSIS missions, and others, such as units in the 5th Signal Command, have diverse missions.

CSUs in VII Corps generally support operating units, while those in the 21st SUPCOM serve in several roles. For example, the 4506th and 8593rd both support automotive equipment, with the 4506th also supporting light tracked vehicles. Both have COSIS missions, though not to the same degree. As much as 85 percent of the 8593rd's capacity is devoted to COSIS workload, versus just a small fraction of the 4506th's. Both also have detachments located at equipment storage sites. Approximately one-third of the personnel of the 8593rd is detached to the North Point site in Moersfeld. The 4506th has a smaller detachment at Berg, the South Point site. The 8592nd supports bridging equipment, operates the USAREUR bridge park, and performs some TARP repairs.

The 8901st operates much like a heavy equipment maintenance company, providing support to automotive, armament, and fire control equipment. So, too, does the 8903rd, but with special emphasis on fire control equipment. Both units, along with the 8908th, are assigned TARP missions. The 8907th does automotive work and supports the TARP, being the primary contributor to the Jeep body replacement program. It also operates a battery shop for KMC.

The 8909th differs from other units, both in its diverse missions and unusual organizational relationships. As a unit, it reports directly to General Support Center Germersheim but assigns most of its personnel to PCMC in support of the TARP communications-electronics mission. The 8909th also provides 26 personnel to the 517th Maintenance Battalion, a unit of AMC-Europe. Those personnel serve in three different roles. Eight personnel are used in supply and

TABLE 2-9. STAFFING OF MAINTENANCE CIVILIAN SUPPORT UNITS

COMMAND/UNIT	MISSION	LOCATION	NUMBER OF PERSONNEL
<u>VII Corps</u>			
6930th	Battalion Staff	Esslingen ¹	57
8902nd	DS	Esslingen	124
8904th	DS	Augsburg	125
8905th	DS/GS	Esslingen	114
<u>21st SUPCOM²</u>			
4506th	DS/GS ³	Germersheim ¹	126
8592nd	DS/GS	Schwetzingen	136
8593rd	DS ³	Kaiserslautern ¹	77
8901st	GS	Kaiserslautern	168
8903rd	DS/GS	Kaiserslautern	164
8907th	DS/GS	Kaiserslautern	161
8908th	GS	Mannheim	128
8909th	GS ⁴	Pirmasens	255
<u>5th Signal Command</u>			
6981st	Battalion Staff	Karlsruhe	39
4038th	Signal Support	Kaiserslautern	144
8563rd	Signal Support	Karlsruhe ¹	131
8564th	Signal Support	Karlsruhe	140
8565th	Signal Support	Karlsruhe ¹	149
TOTAL	—	—	2,238

¹Part of this unit is detached.

²The CSUs listed do not include those in a battalion projected in FY85 for the 54th Area Support Group (ASG). The battalion mission includes maintenance and other logistics support. Its maintenance mission is assigned to the 8900th CSG, a DS maintenance unit with a staffing requirement of 166 personnel. While specific unit locations have not been determined, the headquarters of the 54th ASG is in Rheinberg.

³This unit also has a COSIS mission.

⁴This unit has a multiple mission with two detachments and unique organizational relationships.

support functions at battalion headquarters in Zweibrücken, 18 are in Pirmasens assisting the 524th Maintenance Company; of the 18, 10 are employed in the nucleonics laboratory and the remaining 8 support the special repair authorization mission for TMDE.

Only CSGs in the 21st SUPCOM support the TARP. The extent of that support is shown in Table 2-10. Together, the five CSGs provide 350,826 man-hours to the TARP, which represents approximately 9 percent of the total TARP workload, with the preponderance contributed by the 8907th. Not shown in the table is the TARP contribution of the 8909th. That unit provides substantial communications-electronics support to the TARP by the contribution of its personnel assigned to PCMC. Data for that support are commingled with PCMC's TARP production data, however, and are not separately available.

TABLE 2-10. CSG SUPPORT
OF FY85 TARP

CIVILIAN SUPPORT GROUP	FINANCED MAN-HOURS
8907 th	182,550
8908 th	64,629
8901 st	62,040
8903 rd	35,640
8592 nd	5,967
TOTAL	350,826

The maintenance mission of the CSUs assigned to the 5th Signal Command cannot be readily separated from their other signal support functions. Typically, those units lay cables, repair antenna towers, operate and maintain microwave sites, and test and repair cables. For example, the 8563rd in Karlsruhe has 131 assigned personnel, of which 54 lay, test, and repair cables; 16 maintain antennas in the Kaiserslautern area; and 61 operate and maintain 21 microwave sites.

Host Nation Support. The third civilian source of direct maintenance is host nation support. That support is provided by the FRG, the Grand Duchy of Luxembourg, and the NATO [North Atlantic Treaty Organization] Maintenance and Supply Agency (NAMSA).

Direct maintenance support received from the FRG and the Grand Duchy of Luxembourg is for the TARP. In the FRG, the work is performed at the Juelich Maintenance Plant 800, a repair and maintenance service organization of the German Northern Territorial Command of the Ministry of Defense. TARP support in Luxembourg, is provided by the Warehouses Service Agency, a quasi-governmental agency of the Government of Luxembourg. (That agency also provides warehousing services in support of USAREUR war reserve materiel.) The part of the Warehouses Service Agency that supports the TARP is referred to as the Luxembourg Maintenance Center (LMC).

The nature and extent of TARP support provided by Juelich and LMC is shown in Table 2-11. While Juelich's TARP work is exclusively devoted to the 2½-ton truck, LMC's is more varied. Approximately three-fourths of its effort is devoted to a variety of 1¼-ton truck configurations with about 15 percent more on tank and pump units. The balance of the LMC workload is mostly concentrated on other mechanical items although a small percentage is applied to communications equipment. An estimated 153 host nation support personnel are supporting the FY85 TARP, with 87 at LMC and 66 at the Juelich plant.

Host nation support is also provided by NAMSA. The primary mission of NAMSA is to assist NATO nations by supplying spare parts and providing maintenance services and technical assistance for the follow-on support of multinational weapons systems and equipment. The maintenance services are provided by both in-house and contractor personnel. To accomplish these missions, NAMSA has an electronic and optical workshop in Capellen, Luxembourg, and a depot in Taranto, Italy.

Currently, NAMSA is supporting the Army by repairing and calibrating TMDE for the 517th Maintenance Battalion. The annual cost of these services is \$273,394, which provides for six technicians

TABLE 2-11. HOST NATION SUPPORT OF FY85 TARP

HOST NATION/ EQUIPMENT	FINANCED MAN-HOURS	ESTIMATED STAFFING ¹
<u>Luxembourg</u>		
Truck, 1½ ton	106,180	
Tank and Pump Unit	20,000	
Other	12,570	
Subtotal	138,750	87
<u>FRG</u>		
Truck, Cargo, 2½ ton, M35 series	105,000	66
TOTAL	243,750	153

¹Based on the assumption that 1,600 man-hours is equivalent to one full-time person.

In the future, NAMSA will support the Multiple Launch Rocket System (MLRS). Under a NATO shared-cost initiative, NAMSA will participate in the support of MLRS for the U.S. Army Missile Command. The implementing arrangement is awaiting signature of a NATO partnership agreement but it is expected to be final by the end of FY85. The program involves the development of joint logistics capabilities for MLRS at NAMSA in Luxembourg. The U.S. Government's share of the cost of capitalizing this program is \$2,955,000. It was not determined how much of this program is specifically devoted to maintenance.

Contract Maintenance

Contract maintenance, like technical assistance and direct maintenance, is a major category of the Army's use of civilians for maintenance in Europe. In this section, contract maintenance is described in three parts: Government-owned, contractor-operated (GOCO) facilities, TARP contracts, and specific equipment contracts.

GOCO Facilities. The Army has two major GOCO maintenance facilities in Europe, the Mainz Army Depot (MZAD) and the Area Maintenance Support Facility in Mannheim

The MZAD reports to AMC's Depot Systems Command but is under the operational command of AMC-Europe. Its primary mission is to provide depot-level maintenance support to USAREUR for combat and tactical vehicles, missile systems, communications-electronics equipment, and other selected items. MZAD also provides backup GS maintenance and is a major participant in the TARP. Additionally, MZAD provides technical assistance for maintenance and supply, and receives, stores, and issues new tactical vehicles that are fielded in Europe

MZAD's staffing includes U.S. military personnel, DACs, foreign nationals, and contractor employees. The military personnel are primarily employed in supervisory and staff positions, while the DACs are used in a variety of roles. The foreign nationals perform mostly administrative and support tasks, while contractor employees perform most of the maintenance.

The primary contractor is Mainz Instandsetzungsbetriebe GmbH., commonly referred to as Mainz Industries Panzerwerk (MIP). MIP operates several MZAD facilities:

- Mainz-Gonsenheim, which overhauls combat and tactical vehicles.
- Mainz-Mombach, a newly acquired facility that is being used to augment the Gonsenheim facility and is planned to eventually house the missile and communications-electronics maintenance function.
- Ober Ramstadt, which rebuilds tires, road wheels, and tank track treads and performs other rubber work.

Other facilities that come under the purview of MZAD are:

- Mainz Electronics Repair Branch (MERB), housed in a part of the Mombach facility, which employs DACs for missile and communications-electronics repair.
- Uhlerborn, a storage area being used as a theater-wide hand-off point for new tactical vehicles. Tank and Automotive Command (TACOM) military and civilian personnel make up the materiel fielding teams that accomplish this function.
- Hausen, where Martin-Marietta contractor employees repair missiles.
- Wackenheim, where Letterkenny Army Depot (LEAD) DACs work on radars and other equipment for the Improved-Hawk missile system.

The Army provides approximately 200 personnel (i.e., 78 military, 30 DACs, and 93 foreign nationals) to administer the contract and perform other supervisory, administrative, and support functions at MZAD. The maintenance functions are performed by several contractors and

some DACs. As Table 2-12 shows, 5,367 contractor civilians are directly involved in MZAD's maintenance mission and of that number MIP provides 98 percent. At the Wackenheim, Mombach, and Uhlerborn facilities, 84 DACs are employed. MZAD is the only organization in Europe where an appreciable number of DACs perform hands-on maintenance.

TABLE 2-12. CIVILIAN STAFFING AT MAINZ ARMY DEPOT

FACILITY	SUPPORTING ORGANIZATION	NUMBER OF PERSONNEL	
		DAC	Contractor
Mainz	MIP	—	4,966
Ober Ramstadt	MIP	—	301
Hausen	Martin-Marietta	—	88
Wackenheim	LEAD	46	—
Mombach (MERB)	MZAD	31	—
Uhlerborn	TACOM	7	—
Technical Representatives	Various Contractors	—	12
TOTAL	—	84	5,367

MZAD makes extensive use of subcontractors to augment its production. In some cases, subcontractor support is needed because of capacity limitations (e.g., insufficient number of test stands). In other cases, subcontractor support is needed because of capability limitations (i.e., MZAD has no firing range to perform certain weapon tests). In still other cases, subcontracts have been awarded for educational purposes, that is, to develop alternative repair sources.

In March 1985, MZAD had 53 subcontracts in effect. Those subcontracts are summarized in Table 2-13, which also shows the contracted man-hours and estimated contractor staffing. These subcontracts provide for 689,050 man-hours of production, the equivalent of 430 full-time personnel. Slightly more than 75 percent of the contract man-hours are devoted to the "Equipment Repair" category.

TABLE 2-13. FY85 MZAD SUBCONTRACTS

TYPE	REASON	NUMBER OF CONTRACTS	CONTRACT MAN-HOURS	ESTIMATED STAFFING ¹
Equipment Repair	Capacity Limitation	20	538,299	336
Educational	Develop Alternative Repair Source	12	102,850	64
Tire/Track Shoe	Capacity Limitation	17	46,666	29
Firing Test	Capability Limitation	4	1,235	1
TOTAL	—	53	689,050	430

¹Based on the assumption that 1,600 man-hours is equivalent to one full-time person.

The "Equipment Repair" and "Educational" type subcontracts bear further examination: the former because of its scope and the latter because of its objective. The "Equipment Repair" subcontracts provide for 538,299 man-hours of production because of capacity limitations. These hours are spread over 20 contracts covering more than 3,500 items. The equipment supported under these subcontracts range from vehicle end items to engines and transmissions. Table 2-14 shows that the 924 vehicle end items require 380,772 man-hours, or slightly more than 70 percent of the total man-hours. Each of the other item categories requires less than 10 percent of the man-hours.

Most of the 12 "Educational" type subcontracts are for repair of vehicle components in the FRG, the United Kingdom (U.K.), and Belgium (Bel). Table 2-15 shows that 1,025 items have been offered for "educational" repair, most of them being final drives and transfers. Engines are the second largest category of items, with 275 under contract. There is only one vehicle end item contract; it has 50 vehicles. Most of the items under educational type subcontracts are being repaired in the FRG.

MZAD also is a major contributor to the TARP. Based on a December 1984 TARP report, MZAD accounts for one-third of the man-hours and nearly two-fifths of the financed cost of the FY85 TARP. Most of MZAD's TARP workload is in support of tactical vehicles, as shown in Table 2-16. MZAD's TARP workload of \$46.7 million represents more than 20 percent of its total workload.

TABLE 2-14. MZAD FY85 EQUIPMENT REPAIR SUBCONTRACTS

DESCRIPTION	NUMBER OF CONTRACTS	ITEM QUANTITY	TOTAL MAN-HOURS
Vehicle End Items	5	924	380,772
Parts Fabrication	1	N/A ¹	50,000
Shelter/Van	3	N/A	44,393
Combat Vehicle Turret/Hull	5	527	35,284
Engine/Transmission	3	120	15,200
Other	3	1,940	12,650
TOTAL	20	3,511	538,299

¹Not Available. This term is used throughout this volume to indicate data that either were not made available or were not available without extraordinary effort.

TABLE 2-15. MZAD FY85 EDUCATIONAL REPAIR SUBCONTRACTS

DESCRIPTION	NUMBER OF CONTRACTS	QUANTITY REPAIRED				
		FRG	U.K.	Bel	Other	Total
Final Drives/Transfers	3	250	—	150	—	400
Engines	4	25	200	—	50	275
Other Vehicle Components	3	250	—	—	—	250
Vehicle End Items	1	50	—	—	—	50
Generator, 4.2 kW	1	50	—	—	—	50
TOTAL	12	625	200	150	50	1,025

The other major Army GOCO maintenance facility in Europe is the Area Maintenance Support Facility (AMSF) in Mannheim. It exclusively supports the 5th Signal Command, is managed and operated by ITT Federal Electric International, Inc., and uses Army facilities, utilities, tools, test equipment, and repair parts and materials.

TABLE 2-16. FY85 FINANCED TARP WORKLOAD
AT MZAD

EQUIPMENT SUPPORTED	FINANCED WORKLOAD (\$000)
Tactical Vehicles	27,098
Combat Vehicles	19,342
Other	262
TOTAL	46,702

NOTE: As of 2 April 1985.

The AMSF mission is to provide GS maintenance and supply support to nontactical fixed communication sites, including Defense Communications System (DCS) sites. Its other missions include support of airfields and television sites. The sites, numbering more than 300 throughout Europe and the Middle East, include, for example, the Automatic Voice Network (AUTOVON), the Automatic Digital Network (AUTODIN), telephone, secure voice communications, antenna and power generation, and satellite and microwave locations. The types of equipment supported by AMSF include:

- Wide-band radios
- Teletypewriters
- AUTODIN and terminal equipment
- Television systems
- High-frequency radios
- Airfield communication, air traffic control, and navigational equipment
- European Command and Control Console System (ECCCS)
- Generators and air conditioners
- Antennas
- Special-purpose test equipment.

To accomplish its mission, AMSF has a primary maintenance facility at Mannheim and 17 other maintenance work centers in the FRG and Italy. It also has mobile maintenance support capability. The AMSF is organized into four principal operations departments, one activity, and a training facility. Table 2-17 shows that 426 contractor personnel are employed at AMSF, with the Maintenance Operations Department by far the largest at 181.

TABLE 2-17. CONTRACTOR STAFFING AT AMSF

DEPARTMENT	NUMBER OF PERSONNEL
Maintenance Operations	181
Supply Operations	80
DCS Site Operations	76
Airfield Operations Control	10
Antenna Maintenance Activity	20
Technical Training Facility	11
Management, Staff, and Administration	48
TOTAL	426

A closer look at the Maintenance Operations Department provides a better understanding of the maintenance role of AMSF. That department is organized into four branches: Central Off-Site Maintenance, Mobile Maintenance, Armed Forces Television Maintenance Support, and Remote Off-Site Maintenance Support.

The Central Off-Site Maintenance Branch has a Maintenance Control Section and five equipment maintenance sections: high-frequency/single-sideband radio, telecommunications, multiplex/technical control, microwave/ultrahigh-frequency radio, and computer assist.

The Mobile Maintenance Branch is organized into four mobile equipment maintenance sections: telecommunications, ECCCS, FAST-MED, and communications-electronics. The latter section is subdivided into DCS communications and high-frequency communications/power systems.

The Armed Forces Television Maintenance Support Branch is comprised of six regional mobile maintenance teams.

The Remote Off-Site Maintenance Support Branch has four equipment maintenance sections: switching, air traffic control, TAC-SAT/NCA, and EDSM.

A staffing breakdown of the Maintenance Operations Department is provided in Table 2-18.

TABLE 2-18. MAINTENANCE STAFFING AT AMSF

BRANCH	NUMBER OF PERSONNEL
Central Off-Site Maintenance	47
Mobile Maintenance	55
Armed Forces Television Maintenance Support	37
Remote Off-Site Maintenance Support	40
Department Management	2
TOTAL	181

TARP Contracts. Approximately one-fifth of the financed man-hours in the FY85 TARP are provided by contractors. Those man-hours are equivalent to approximately 520 man-years of repair work. Table 2-19 illustrates the scope and type of work currently performed by TARP contractors. The table shows \$6.6 million in contracted workload funded in FY85. Nearly two-thirds of that workload is for 5-ton and 8-ton trucks. Construction equipment accounts for approximately one-fifth of the total.

Additional TARP workload is planned or pending contract award for FY85 (Table 2-20). If awarded, the amount of TARP workload on contract will nearly double. As Table 2-20 indicates, aircraft will account for slightly more than one-half of the total planned contract workload; another one-third will be for trailers.

Specific Equipment Contracts. The Army has a large number and wide variety of specific equipment contracts in Europe. It has contracts with several aircraft equipment

TABLE 2-19. FY85 TARP CONTRACT WORKLOAD

EQUIPMENT SUPPORTED	FINANCED COST (\$000)
Truck, 5-ton	2,418
Truck, 8-ton	1,836
Construction Equipment	1,195
Automotive Components	471
Bridging Equipment	250
Other	443
TOTAL	6,613

TABLE 2-20. PLANNED FY85 TARP CONTRACT WORKLOAD

EQUIPMENT SUPPORTED	EXPECTED COST (\$000)
Aircraft	3,400
Trailers	2,255
Generators	695
Other	179
TOTAL	6,529

maintenance organizations (Table 2-21) at a total cost of almost \$3.4 million (for those contracts for which data were available). At \$2.2 million the CH-47 contract is the largest, while the SOTAS (Stand-Off Target Acquisition System) contract is next at nearly \$1 million. The contract for the 2nd Armored Division (Forward) needs amplification. It includes support for the TOW missile, 20-mm gun, fire control, "Head-Up" system, and rocket launchers for the AH-1S aircraft at Lemwerder.

The 5th Signal Command has several specific equipment contracts, as shown in Table 2-22. (The AMSF contract, not shown in the table, is described previously in this chapter.) Three of those contracts for which data are available total \$2.7 million.

TABLE 2-21. AVIATION EQUIPMENT CONTRACTS

SUPPORTED ORGANIZATION	EQUIPMENT	COMPANY	SCOPE	
			Cost (\$000)	Number of Personnel
70th Transportation Battalion (AVIM)	CH-47	Dynalelectron Corp.	2,200	63
Not determined	SOTAS	General Dynamics	946	8
U.S. European Command	UH-1	Aero Dienste	109	N/A
2nd Armored Division (Forward)	UH-1, OH-58, AH-1S	Vereinigte Flugtechnische	106	N/A
5th Aviation Detachment	UH-1	Schreiner Airways, BV	35	N/A
205th Transportation Co. (Aviation)	Mohawk (RV-1D)	Dynalelectron Corp.	N/A	2
Not determined	C-12/RC-12	Beech Aircraft Services, Inc.	N/A	N/A
TOTAL	—	—	3,396	73

TABLE 2-22. COMMUNICATIONS EQUIPMENT CONTRACTS

EQUIPMENT	COMPANY	COST (\$000)
Standard Remote Terminals	Astronautics Corp. of America	1,800
Tactical Operations Facility	Martin-Marietta	813
Frequency and Signal Profile System	Eaton Corp.	118
Automated Multi-Media Exchange	Sperry-Univac	N/A
Telephone and Switching Equipment	Siemens	N/A
TOTAL	—	2,731

The Army TMDE contracts are shown in Table 2-23. Those for which data are available total \$1.7 million, with approximately \$1.2 million being for support of the 517th Maintenance Battalion. Two of the contracts support the 5th Signal Command.

TABLE 2-23. TMDE CONTRACTS

SUPPORTED ORGANIZATION	EQUIPMENT	COMPANY	SCOPE	
			Cost (\$000)	Number of Personnel
517 th Maintenance Battalion	TMDE	ITT Federal Electric International, Inc.	758	31
5 th Signal Command	Test Equipment (includes leasing)	Industrial Leasing Corporation	281	N/A
56 th Field Artillery Brigade	Pershing II (TMDE and Computer)	Hewlett-Packard, GmbH	261	N/A
517 th Maintenance Battalion	GUARDRAIL EQUATE AN/USM-410	Hewlett-Packard, GmbH	200	N/A
517 th Maintenance Battalion	GUARDRAIL/ Miscellaneous TMDE	Tektronics	200	N/A
5 th Signal Command	ST-51 ATE	Honeywell ¹	N/A	1
TOTAL	—	—	1,700	32

¹Perkin-Elmer and Hewlett-Packard companies provide subsystem support as needed.

Missile system contracts are shown in Table 2-24. Two of them are for the 4th Ordnance Battalion in Miesau, under the 32nd AADCOM, in support of the Patriot missile system. The other two contracts reflect portions of a basic ordering agreement with Maschinenfabrik Augsburg-Nürnberg AG (M.A.N.) to support the 10-ton missile transporter trucks and wrecker trucks in the 56th Field Artillery Brigade. One contract covers the provision of a company technical representative at each of four sites; the other is for maintenance of the M.A.N. vehicles. (Pershing II missile contract

support is also provided by Martin-Marietta; that support was identified in the presentation on MZAD in the section on GOCO facilities.)

TABLE 2-24. MISSILE SYSTEM CONTRACTS

SUPPORTED ORGANIZATION	EQUIPMENT	COMPANY	SCOPE	
			Cost (\$000)	Number of Personnel
4th Ordnance Battalion	Patriot	Raytheon	N/A	10
4th Ordnance Battalion	Patriot Support Equipment (gas turbine engine)	N/A	N/A	2
56th Field Artillery Brigade	Pershing II (10-ton transporter truck)	M.A.N.	N/A	4
56th Field Artillery Brigade and Vehicle Storage Sites	Pershing II (10-ton transporter truck)	M.A.N.	309 (1st half of FY85)	N/A
TOTAL	—	—	—	16

The last group of specific equipment contracts is that for other equipment. Ten contracts fall into this category; five are with FRG firms, three with U.S. firms, and two with firms from the U.K. The magnitude of those contracts, by type of equipment is approximately \$2.2 million (Table 2-25). Cranes and construction equipment require nearly 60 percent of that total.

TABLE 2-25. OTHER EQUIPMENT CONTRACTS

EQUIPMENT	COST (\$000)
Cranes	668
Construction	650
Command, Control, and Communications	438
Miscellaneous	464
TOTAL	2,220

Related Support

The Army uses civilians for maintenance support in ways that are not always readily apparent. One of these is maintenance of equipment in the program entitled "Prepositioning of Materiel Configured in Unit Sets (POMCUS)." Another is the care and maintenance of equipment at War Reserve Materiel (WRM) storage sites. The use of civilians for maintenance of POMCUS and WRM is described in this section.

POMCUS. The POMCUS program provides for prepositioned equipment tailored to meet the combat needs of specific units of battalion size, or smaller. The purpose of POMCUS is to have equipment available and ready for units that are aurally deployed to rapidly reinforce the Army in Europe.

POMCUS is a large program. At the end of FY84, it included 303 sets of equipment for 93 battalions, 182 companies, and 28 detachment-size units. The major equipment required to configure these sets consists of 17,342 wheeled vehicles, 5,383 tracked vehicles, 10,824 trailers, and 211,546 other items, totaling 245,095 major items of equipment. By the end of FY85, the number of items of major equipment is expected to reach 441,931, enough to outfit 475 units.

The U.S. Army Combat Equipment Group-Europe (CEGE) is responsible for managing the POMCUS program. Its mission is to receive, configure (in unit sets), store, maintain, and issue POMCUS equipment. In carrying out this mission, CEGE uses several types of facilities including conventional warehouses, controlled-humidity warehouses, stress tension structures, open storage, and maintenance facilities. At the end of FY84, CEGE had 5.5 million square feet of storage and maintenance area. By the end of FY85, it expects to have 8.5 million square feet of space, with the most notable increase being the addition of nearly 70 controlled humidity warehouses.

To maintain POMCUS equipment in a ready state, CEGE must perform periodic maintenance on it. The maintenance frequency depends upon the amount of environmental exposure the equipment receives. Some equipment is cycled through CEGE maintenance facilities every 2 years, while other equipment only requires maintenance every 4 years. This cyclic maintenance consumes 50 percent of CEGE's effort.

The more than 5,000 personnel that CEGE has to perform its mission come from several sources, including military and various categories of civilians. They include 3,371 foreign nationals (which include 428 CSU personnel), 1,194 host nation personnel, 645 U.S. military, and 30 DACs. These personnel are organized into four battalions, each with several companies. The battalions are responsible for POMCUS sites in specific geographic regions, with the companies operating individual sites. CEGE is also augmented by the 6900th CSC, which has four CSGs.

The work force in the CEGE companies is predominantly foreign national or host nation support personnel. Table 2-26 shows the staffing for each of the battalions, including the number of companies in each, the location of the battalion headquarters, and the authorized personnel. The table entry for "Management" includes CEGE command and staff, battalion staffs, and supporting activities. The East Battalion and West Battalion are both located in the FRG, with civilian staffing mostly by German nationals. The North Battalion has two companies in the FRG and three companies in Belgium. The latter companies are predominantly staffed with Belgian nationals. The Northwest Battalion is located in The Netherlands. It is staffed by Dutch employees of the Netherlands Government under an agreement with the U.S. Government. The table shows that CEGE employs 3,371 foreign nationals and 1,194 host nation personnel, nearly 90 percent of CEGE staffing.

WRM. The Army is making (or has made) arrangements with several European governments to provide for host nation support of WRM. Arrangements have been completed with The Netherlands and Luxembourg, and one with the FRG is being negotiated.

The Netherlands government operates a Reserve Storage Activity (RSA) in Eyselshoven that is responsible for storage and maintenance services to receive, store, secure, care, preserve, inventory, maintain, and issue Theater Reserve stocks. Its facilities include warehousing and administrative areas, a battery replacement shop, and 11 maintenance bays. The current annual cost of this support is \$2,530,295.

The agreement with Luxembourg provides for the operation of two RSAs by the Warehouses Services Agency, a quasi-governmental agency of the Government of Luxembourg. One RSA

TABLE 2-26. AUTHORIZED STAFFING AT CEGE

ORGANIZATION	NUMBER OF COMPANIES	HEADQUARTERS LOCATION	AUTHORIZED PERSONNEL			
			Foreign National	Host Nation	Mil. and DAC	Total
Management	—	Mannheim	439	56	255	750
6900 th CSC	4	Mannheim	428	—	—	428
East Battalion	3	Karlsruhe	532	—	104	636
West Battalion	4	Landstuhl	893	—	128	1,021
North Battalion	5	Mönchen-Gladbach	1,071	—	106	1,177
Northwest Battalion	4	Coevorden (The Netherlands)	8	1,138	82	1,228
TOTAL	—	—	3,371	1,194	675	5,240

is at Bettembourg/Dudelange (a 20-warehouse complex) and the other at Sanem (a complex with 16 warehouses planned and 4 completed). The responsibilities of the Warehouses Services Agency include receipt, storage, preservation, maintenance, and inventory of WRM.

The Luxembourg agreement also provides for direct maintenance of equipment under the TARP.⁶ The current annual value of the agreement for support of both WRM and TARP is \$11,528,909. An FY85 TARP report shows \$2,380,000 financed for LMC. Presumably, the difference between these two figures (\$9,148,909) is for the operation of the RSAs, a portion of which is for maintenance of WRM.

In the FRG, a broad agreement has been reached recently between USAREUR and the FRG's Federal Ministers of Defense and Finance that provides for storage services and base operations support for eight WRM storage sites by Industrie Verwaltungs Gesellschaft (IVG), a quasi-governmental agency of the FRG. Five of the sites are in the V Corps area and three in the VII Corps area. IVG responsibilities include receipt, storage, inspection, maintenance, and issuance of WRM

⁶The TARP contribution of LMC was discussed previously in this chapter

The agreement covers a 5-year period and has a value of \$5.2 million. (However, it is not clear whether the value of the agreement is for 1 year or 5 years.)

WRM support is also provided by foreign nationals at several Army RSAs. These activities are located at Kaiserslautern and Germersheim in the FRG; in Luxembourg; and at Burtonwood, Caerwent, and Hythe in the U.K.

Detailed staffing data were obtained for RSA Kaiserslautern only. That activity has 999 personnel assigned, predominantly foreign nationals. Part of its mission is the COSIS program, which is assigned to a Care and Preservation (C&P) Division. That division has 452 assigned personnel, consisting of 2 DACs, 61 dependent hire personnel, 81 CSU personnel, and 308 foreign nationals. The foreign nationals perform most of the maintenance.

Even though detailed staffing data were not obtained for other RSAs, it was estimated that RSA Germersheim has approximately 750 total personnel assigned and RSA Luxembourg has 500 assigned, with no further breakdown given. Using the proportion of foreign national staffing in the C&P Division of RSA Kaiserslautern, the COSIS support of WRM at RSA Germersheim and RSA Luxembourg are estimated at 150 and 225 foreign nationals, respectively.

No staffing data were obtained for the RSAs in the U.K.

Summary

The Army makes extensive use of civilian mechanics to maintain weapons systems and equipment in the European Theater. It uses several categories of civilians (DACs, foreign national, CSU, contractor, and host nation personnel) to provide a wide range of maintenance services (technical advice, direct maintenance, and maintenance of WRM and POMCUS equipment). This subsection summarizes the extent to which Army uses each category of civilians to provide those services.

The Army uses DACs and contractor personnel to provide technical advice. As shown in Table 2-27, the total LAP staffing in the European Theater is 360, with 342 being DACs.

**TABLE 2-27. ARMY TECHNICAL ASSISTANCE
BY CIVILIAN CATEGORY**

CATEGORY	NUMBER OF PERSONNEL
DAC	342
Contractor	18
TOTAL	360

In providing direct maintenance, the Army uses all five categories of civilians. Table 2-28 shows that a minimum of 12,117 civilians perform direct maintenance in support of Army weapons systems and equipment in Europe. Most of those employees are contractor personnel, both foreign nationals and U.S. citizens, who work in Government-owned facilities (such as MZAD and AMSF) and contractor-owned facilities (such as those owned by MZAD subcontractors).

**TABLE 2-28. ARMY DIRECT MAINTENANCE
BY CIVILIAN CATEGORY**

CATEGORY	NUMBER OF PERSONNEL
DAC	77 ^a
Foreign National	3,299
CSU	2,238
Contractor	6,344
GOCO Facilities	(5,793)
Other Facilities	(551)
Host Nation	159
TOTAL	12,117

^aExcludes the materiel fielding team at Uhlerborn (MZAD).

Additional civilian support for direct maintenance is provided under various contracts for which personnel data were not obtained. These include TARP contracts (current and planned) at \$13.1 million and various specific equipment contracts at \$5.0 million.⁷

The support of Army WRM is provided by CSU, foreign national, and host nation personnel (Table 2-29). Most of the identified 764 personnel maintaining WRM are foreign nationals employed at three RSAs.

TABLE 2-29. WRM SUPPORT BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
Foreign National	683 ^a
CSU	81
Host Nation	— ^b
TOTAL	764

^aDoes not include staffing at three storage sites in the U.K.

^bStaffing data for storage sites in the FRG, Luxembourg, and The Netherlands were not obtained, but agreements for these services are valued at \$16.9 million.

Table 2-30 shows that foreign nationals employed at POMCUS sites in Belgium and the FRG provide approximately two-thirds of all POMCUS support in Europe. Much of the balance of that support is provided by host nation personnel in The Netherlands.

NAVY

This section describes the Navy's use of civilians for maintenance support in the European Theater, first for ships and then for aircraft.

⁷The contractor personnel shown is not comprehensive. It does not include, for example, interim contractor personnel funded by program managers or manufacturers.

TABLE 2-30. POMCUS SUPPORT BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
Foreign National	2,943
CSU	428
Host Nation	1,194
TOTAL	4,565

Ships

Navy civilian maintenance support for surface ships and submarines in Europe (i.e., the Mediterranean, Middle East, and North Atlantic areas) is provided in three ways. First, the Navy uses civilians to augment military-staffed Mobile Technical Units (MOTUs); second, it awards repair contracts — Master Ship Repair (MSR) contracts — to foreign commercial shipyards; and third, it augments submarine tender capacity and capability with contractor technicians, U.S. naval shipyard (NSY) personnel, and other support teams.

MOTU Augmentation. MOTUs provide a cadre of skilled technical personnel whose mission is to improve fleet readiness by providing on-the-job training in electronic and weapons system operation and maintenance and technical assistance for needed repairs. MOTUs are staffed with military personnel and are highly mobile, since they carry no tools, test equipment, or repair parts.

Six MOTUs are assigned to the Atlantic Fleet. While only one is homeported overseas, each is susceptible to deployment either as a unit or as individual technicians. Consequently, the capability of these six MOTUs is available to all ships whether they are deployed overseas or in U.S. waters.

In addition to military personnel, MOTUs also are assigned Department of the Navy civilians (DNCs) and contract engineering and technical services (CETS) personnel on a continuing basis. The extent of civilian augmentation is shown by Table 2-31. That table also shows MOTU location and military staffing, which provides a basis for assessing the scope of civilian augmentation. The Atlantic Fleet MOTUs are augmented by 101 civilians, or 27 percent of total staffing. The civilians consist of 19 DNCs and 82 CETS. Some MOTUs have a relatively high percentage of civilians, particularly MOTU 2 in Norfolk, Virginia, MOTU 4 in New London, Connecticut, and MOTU 6 in Naples, Italy.

TABLE 2-31. CIVILIAN AUGMENTATION TO MOTUs

MOTU	LOCATION	ENLISTED PERSONNEL	CIVILIAN PERSONNEL			TOTAL PERSONNEL
			DNC	CETS	Total	
2	Norfolk, VA	80	14	33	47	127
4	New London, CT	16	—	9	9	25
4	Newport, RI (Detachment)	19	—	1	1	20
6	Naples, Italy	21	—	14	14	35
10	Charleston, SC	54	2	13	15	69
12	Mayport, FL	63	3	10	13	76
14	King's Bay, GA	20	—	2	2	22
—	TOTAL	273	19	82	101	374

The role of these civilians is best described by their equipment specialties. Approximately 40 different equipment items require the support of civilian technicians. Several of these technicians are uniquely qualified on a specific item and may be the only source of expertise available to the fleet. For presentation purposes, the equipment specialties of the civilian technicians have been grouped into generic systems (Table 2-32). That table shows that radar system expertise leads the list of civilian capabilities in the MOTUs. The table also shows that communication,

electro-magnetic interference (EMI) correction, tactical data, and sonar systems, along with radar, comprise two-thirds of MOTU civilian capability.

TABLE 2-32. CIVILIAN CAPABILITIES IN MOTUs

TYPE OF SYSTEM	NUMBER OF PERSONNEL
Radar	18
Communication	16
EMI Correction	12
Tactical Data System	12
Sonar	10
Fire Control	7
Aircraft Navigation and Landing	4
Gyro/Interior Communication	4
Inertial Navigation	4
Computer	3
Countermeasures	3
Satellite	3
Other	5
TOTAL	101

In addition to civilians assigned to MOTUs, the fleet also has "on-call" contractor technical support available through prearranged contracts. These contracts have been negotiated with more than 30 U.S. firms to provide emergency support to 20 different types of equipment. Based on usage through the first 6 months of FY85, the Atlantic Fleet's requirements for "on-call" CETS will probably not exceed 3 or 4 man-years of effort in FY85.

MSR Contracts. MSR contracts are used in Mediterranean and Middle East areas to augment the fleet's organic capability. These contracts are prearranged with foreign commercial shipyards who can perform emergent repairs on hull, mechanical, and electrical equipment when the

need arises, as, for example, when the situation calls for casualty repair services beyond ship force's capability or when the industrial capabilities of fleet intermediate-level assets (i.e., tenders and aircraft carriers) are not available in a timely manner. MSR contractors do not repair ships' weapons and sensors.

The Navy has 54 MSR contracts in the Mediterranean and Middle East. For calendar year 1984, it placed 662 jobs (i.e., repair orders), at a cost of \$8.4 million, against those contracts. The number of jobs and associated costs by country are listed in Table 2-33. The table shows that more than 50 percent of these jobs were done in Italy. Furthermore, Italy and the Middle East together account for nearly 85 percent of all jobs.

TABLE 2-33. MSR CONTRACT WORKLOAD FOR 1984

LOCATION	NUMBER OF JOBS	COST (\$000)
Italy	364	2,600
Middle East	195	2,200
France	46	1,700
Turkey	14	800
Spain	15	500
Greece	9	300
Other	19	300
TOTAL	662	8,400

Submarine Tender Augmentation The submarine tender USS HUNLEY (AS-31) is the principal maintenance support activity at the ballistic missile submarine (SSBN) replenishment site in Holy Loch, Scotland. It supports the eight SSBNs in the Commander, Submarine Squadron (COMSUBRON)-14 organization. COMSUBRON-14 submarines make a total of approximately 35 support visits per year to the SSBN replenishment site at Holy Loch.

The USS HUNLEY has extensive intermediate maintenance facilities in its repair and weapon repair departments. It is complemented by a floating drydock and two barges. These provide

docking and additional berthing capability, parts storerooms, machine shops, and other added work space. The USS HUNLEY is authorized approximately 625 military billets in its repair and weapon repair departments, and drydock staffing provides additional personnel. It also is augmented by a number of civilian maintenance personnel. These personnel fall into three categories:

- Contractor technicians, who are assigned full-time to assist, or perform, the maintenance function⁸
- NSY teams, which are sent periodically from the United States to assist during SSBN refit periods
- Other maintenance support teams, which are periodically sent from the United States to assist with special problems.

Seventeen contractor technicians are assigned to the USS HUNLEY on a full-time basis. They support a wide variety of weapons and sensor systems whose maintenance is beyond the tender's capability. This support is shown in detail in Table 2-34. The table shows four technicians each for navigation and sonar systems. The next three systems listed in the table — all associated with missile launch and control — account for slightly more than one-third of the contractor technicians.

Teams from NSY Portsmouth, Virginia augment the USS HUNLEY during SSBN extended refit periods (ERPs). ERPs are intermediate-level maintenance periods interjected into SSBN operating cycles to lengthen their time between shipyard overhauls. The ERP teams primarily serve to expand the capacity of AS-31. NSY Portsmouth sends approximately 300 DNC repairmen to Holy Loch to assist the USS HUNLEY with two ERPs per year.

Other maintenance support teams are also sent to Holy Loch to assist with particular maintenance problems beyond the tender's capability. For example, Norfolk NSY routinely sends teams to install modernization-related equipment alterations and other activities send small teams to perform various electronic system "grooms."

Details on these civilian maintenance support teams, including ERP teams, are presented in Table 2-35, which shows that the equivalent of 159 civilians are in Holy Loch, at any

⁸Strictly speaking, contractor technicians and NSY personnel may actually be assigned to the COMSUBRON-14 staff.

TABLE 2-34. CONTRACTOR TECHNICIANS
ASSIGNED TO USS HUNLEY

SUPPORTED SYSTEM	NUMBER OF PERSONNEL
Navigation	4
Sonar	4
Fire Control	2
Missile Launcher	2
Missile	2
Antenna	1 ^a
Missile Data Analysis	1
Communication	1
TOTAL	17

^aThis technician is a DNC.

one time, to augment the USS HUNLEY. NSY Portsmouth ERP teams represent an estimated 138 civilians while NSY Norfolk modernization teams represent another 19 civilians.

Aircraft

The Navy uses civilians in support of aviation maintenance in the European Theater primarily for technical assistance and contract maintenance.

Technical Assistance. Naval aviation units and activities routinely receive technical assistance in the installation, operation, and maintenance of new weapons systems, equipment, and components. Navy technical assistance personnel generally perform the same functions as LARs in the Army. That is, they provide advice and training, diagnostic help, and a direct communications link with the manufacturer or wholesale system.

The Navy uses two types of civilians to provide technical assistance: CETS personnel and DNC personnel, called Navy Engineering and Technical Services (NETS). In the European Theater, the Navy uses CETS and NETS at Naval Air Stations (NASs), Naval Air Facilities (NAFs), calibration laboratories, and aboard aircraft carriers.

TABLE 2-35. CIVILIAN MAINTENANCE SUPPORT TEAM AUGMENTATIONS

ACTIVITY	AVERAGE NO. CIVILIANS PER TEAM	ANNUAL NUMBER OF VISITS	ESTIMATED CIVILIAN MAN-DAYS PER VISIT	TEAM SPONSOR	ESTIMATED ANNUAL MAN-YEARS ¹
Extended Refit Period	300	2	18,000	Portsmouth NSY	138
Forward Modernization	38	20	255	Norfolk NSY	19
Major Nuclear Repair ²	N/A	2	N/A	Charleston NSY	N/A
Weapons System Review ³	7	2	70	Naval Sea Center, Atlantic	1
Electronic System Review ³	2	2	15	MOTU 14	—
Sonar Test and Grooming ³	7	2	70	Naval Underwater Systems Center	1
Direct Fleet Support	2	10	4	Naval Sea Center, Atlantic	—
Other Support	2	40	3	MOTU 14	—
TOTAL	—	—	—	—	159

¹Based on an equivalent of 1 man-year for every 260 man-days.

²Nuclear welding, for example.

³These activities include many functions normally performed by "groom" teams, such as alignment, training, and procedures.

The Navy employs 34 CETS and 15 NETS personnel at four NASs/NAFs in Europe. The locations of their assignments are shown in Table 2-36. That table shows that nearly 70 percent of the technical assistance personnel (i.e., 34 of 49) are CETS, mostly at NAS Sigonella, Italy.

CETS and NETS support a variety of naval aircraft and support systems at those air stations/facilities. The specific systems they support, along with the number of personnel assigned, are shown in Table 2-37. Fourteen CETS and NETS personnel support the P-3 aircraft, nearly 30 percent of the total. Another nine personnel are assigned to ground support equipment (GSE).

Technical assistance personnel are also assigned to calibration laboratories. A total of 67 CETS are assigned to four Navy calibration laboratories in the European Theater. The specific

TABLE 2-36. CETS AND NETS AT NAVAL AIR STATIONS/FACILITIES

LOCATION	NUMBER OF PERSONNEL		
	CETS	NETS	Total
NAS Sigonella, Italy	23	6	29
NAS Rota, Spain	7	8	15
NAF Naples, Italy	2	1	3
NAS Lajes (Azores), Portugal	2	—	2
TOTAL	34	15	49

TABLE 2-37. CETS AND NETS SUPPORT OF AVIATION SYSTEMS ASHORE

SYSTEM	NUMBER OF PERSONNEL
P-3	14
GSE	9
SH-2F	7
EP-3E	5
H-53	4
PME ¹	2
E-2C	1
F 4	1
SH-3	1
Other	5
TOTAL	49

¹Precision Measurement Equipment

locations of these CETS are shown in Table 2-38. The table shows that the laboratory at NAF Naples has the most CETS personnel, but only slightly more than the NASs at Rota and Sigonella.

**TABLE 2-38. CETS AT CALIBRATION
LABORATORIES**

LOCATION	NUMBER OF PERSONNEL
NAF Naples, Italy	24
NAS Rota, Spain	21
NAS Sigonella, Italy	21
NAS Keflavik, Iceland	1
TOTAL	67

The Navy also makes use of technical assistance personnel aboard aircraft carriers (CVs) deployed to the Mediterranean and Middle East areas. While we did not obtain detailed information about the specific systems that CETS and NETS personnel support aboard CVs, information on three recent CV deployments to the European Theater provides an approximation of the scope of their use. On those three deployments, the CVs had 52, 62, and 72 CETS and NETS personnel aboard to support the aviation mission. (The CV with 72 personnel aboard was deployed with the new F/A-18 aircraft.) These three deployments suggest that an average of 62 CETS and NETS personnel may typically be aboard deployed CVs. Since there are usually two CVs deployed in the European Theater, CETS and NETS personnel afloat is estimated to be approximately 124 at any one time.

Direct Maintenance. The only civilian direct maintenance in support of Navy aircraft in Europe, other than the contract maintenance described in the following section, is provided by five DNCs at NAS Sigonella, Italy.

Contract Maintenance. The Navy has five aviation maintenance contracts, all with European companies. Two contracts are for scheduled depot-level maintenance (SDLM): one for C-1, C-2, C-130, and C-131 transport aircraft and the second for SH-3G helicopters. Other contracts provide a variety of maintenance services. The nature and extent of the repair work performed by

these European companies is presented in Table 2-39, which shows that slightly more than \$3 million was expended in 1984 to support aviation maintenance. Thirty percent of that amount (\$920,000) was devoted to transport aircraft SDLM. Slightly more than one-fifth of the total cost of these contracts was for emergency aircraft repair and field team services.

TABLE 2-39. AVIATION MAINTENANCE CONTRACTS FOR 1984

SYSTEM/ EQUIPMENT	SERVICE PERFORMED	COST (\$000)
Transport Aircraft	SDLM	920
Various Aircraft	Emergency Repair/Field Teams	666
GSE	Rework and Repair	625
Helicopter	SDLM	787
Other	Miscellaneous	75
TOTAL	—	3,073

This contract work was primarily performed in three countries. (Some of the emergency repair and field services were performed at casualty sites, air stations, or aboard CVs.) Table 2-40 shows the country locations of the five European firms with contracts for naval aviation maintenance. As the table shows, the largest contract effort was in Portugal, which had 40 percent of the total expended in 1984. The next two table entries are for Italian companies, which together had 45 percent of the contract effort.

Summary

The Navy uses both DNC and contractor civilian mechanics in Europe to provide technical assistance and perform direct maintenance.

Table 2-41 shows that of the 345 technical assistance personnel who support the Navy in Europe, 311 are CETS. Those CETS includes 82 who augment the MOTUs, 4 who are on-call with the surface fleet, 34 who are assigned to NASs/NAFs, 67 who work in calibration laboratories, and 124 who are aboard the two CVs that typically are deployed in European waters.

TABLE 2-40. LOCATION OF AVIATION MAINTENANCE CONTRACTS

COUNTRY	COMPANY	COST (\$000)
Portugal	Oficinas Gerais de Materia Aeronautica	1,220
Italy	Industria Aeronautica Meridionale	700
Italy	N.I.M.O. s.r.l.	666
FRG	Messerschmitt-Boelkow-Blohm, GmbH	286
Italy	Aeronavali Venegio	201
TOTAL	—	3,073

TABLE 2-41. NAVY TECHNICAL ASSISTANCE
BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
DNC/NETS	34
CETS	311
TOTAL	345

The number of civilians providing direct maintenance (mostly in support of Navy submarines) is summarized in Table 2-42. Altogether, they total 181, including 159 DNCs on various temporary assignments.

TABLE 2-42. NAVY DIRECT
MAINTENANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
DNC	165
Contractor	16
TOTAL	181

Additional civilian support is provided under MSR contracts in support of surface ships and aviation maintenance contracts with European companies. These two types of contract total nearly \$11.5 million annually, with \$8.4 million for ships and \$3.1 million for aircraft.

MARINE CORPS

Since the Marine Corps does not have units stationed in the European Theater, it does not now have a requirement for any equipment maintenance support there. However, Marine Corps equipment is being prepositioned in Norway and that equipment will require periodic maintenance, much like the Army's support at WRM and POMCUS sites. The Marine Corps has not yet determined the amount of support that this equipment will require, but it estimates that between 20 and 100 Norwegian nationals, all host nation personnel, ultimately will be required.

AIR FORCE

Technical Assistance

The Air Force makes extensive use of contractor technical assistance personnel. In Europe, the Air Force uses both CETS personnel and Department of the Air Force employees, called Air Force engineering and technical services (AFETS) personnel. Although the Air Force uses mostly CETS personnel, the distribution between CETS and AFETS varies significantly depending upon whether the support is for weapons systems or information/communication systems. For weapons system support, 80 percent of the technical assistance personnel are CETS, while AFETS personnel represent 71 percent of the information/communication systems support.

The Air Force uses 80 technical assistance personnel to support its tactical and airlift forces in Europe. They support a variety of systems, as shown in Table 2-43. That table shows that the F-16 aircraft receives nearly one-third of the total technical assistance for weapons system support. The F-16, F-15, and F-111 together require slightly more than 60 percent of the total, with the vast majority of this support provided by CETS personnel.

CETS and AFETS personnel are employed at 17 weapons system locations. The number of CETS and AFETS personnel at each location is shown in Table 2-44. Ramstein Air Base leads the list with 11; several others have almost as many. More than one-half of the technical assistance

TABLE 2-43. CETS AND AFETS SUPPORT OF WEAPONS SYSTEMS

SYSTEM	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
F-16	23	2	25
F-15	11	2	13
F-111	10	2	12
F-4/RF-4	5	3	8
A-10	5	1	6
C-5A	4	—	4
C-9	3	—	3
C-130/141	—	1	1
EC-135	—	1	1
MC-130E	1	—	1
Other	2	4	6
TOTAL	64	16	80

personnel can be found at five locations: the air bases at Ramstein, Torrejon, Spain; Bitburg; and Hahn and the Royal Air Force (RAF) facility at Lakenheath, U. K.

Information/communication system support comes under the purview of the European Information Systems Division (EISD). The mission of EISD includes automated data processing support; support for airfield equipment, such as navigational aids, aircraft landing systems, and weather equipment; and operations and maintenance of fixed-site ground communications. The communications support includes various radio equipments, satellite communications, telephone, teletype, and supporting equipment.

EISD support to the Air Force in Europe requires 42 technical assistance personnel, with nearly 75 percent of them being AFETS. Table 2-45 shows the technical assistance required for EISD Traffic Control Aircraft Landing System (TRACALS) and wideband systems require the preponderance of the support. All CETS support of EISD is for TRACALS.

TABLE 2-44. CETS AND AFETS PERSONNEL BY LOCATION

LOCATION	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
Ramstein Air Base	9	2	11
Torrejon Air Base, Spain	9	—	9
Bitburg Air Base	7	1	8
Hahn Air Base	7	1	8
RAF Lakenheath, U.K.	6	1	7
RAF Bentwaters, U.K.	5	1	6
Rhein-Main Air Base	5	1	6
Camp New Amsterdam, The Netherlands	4	1	5
RAF Upper Heyford, U.K.	4	1	5
Sembach Air Base	1	4	5
RAF Mildenhall, U.K.	1	1	2
Spangdahlem Air Base	1	1	2
Zweibrücken Air Base	2	—	2
Base X	1	—	1
Keflavik (Naval Air Station), Iceland	1	—	1
RAF Alconbury, U.K.	—	1	1
RAF Spadeadam, U.K.	1	—	1
TOTAL	64	16	80

EISD technical assistance is provided at 23 sites in several countries in Europe. Not all have both CETS and AFETS personnel. In fact, CETS personnel are found at only 9 of the sites while AFETS personnel are found at nearly all, i.e., 21, sites. Table 2-46 shows the number of CETS and AFETS personnel supporting EISD systems in each country. Eighteen of the 42 technical assistance personnel are located in the FRG, while more than two-thirds of the total personnel are located in the FRG, Turkey, and the U.K.

TABLE 2-45. CETS AND AFETS SUPPORT OF EISD SYSTEMS

SYSTEM	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
TRACALS	12	6	18
Wideband	—	16	16
TACCS ¹	—	3	3
Aerospace Defense	—	2	2
Communication Equipment	—	2	2
Satellite Communications	—	1	1
TOTAL	12	30	42

¹Tactical Air Command and Control System

TABLE 2-46. CETS AND AFETS PERSONNEL SUPPORTING EISD BY COUNTRY

COUNTRY	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
FRG	6	12	18
Turkey	1	5	6
U.K.	1	4	5
Portugal (Azores)	2	2	4
Greece	—	3	3
Italy	1	2	3
Spain	1	2	3
TOTAL	12	30	42

The Strategic Air Command (SAC) also uses civilian technical support in Europe although we did not determine whether that support is purely advisory or involves direct equipment

maintenance. On the basis of the relatively few personnel used, we have classified this support as technical assistance.

SAC receives technical assistance at three locations in the U.K. and two in Greece. The support is provided by U.S. contractors for mission-related subsystems, not for aircraft, per se. The extent of this technical assistance is shown in Table 2-47. That table shows that more than 26 civilian personnel support SAC. Support for TR-1 mission equipment at RAF Alconbury dominates the total with 14 personnel, or more than 50 percent of the support shown.

TABLE 2-47 CONTRACT TECHNICAL ASSISTANCE
TO SAC UNITS

LOCATION	AIRCRAFT TYPE	NUMBER OF PERSONNEL
RAF Alconbury, U.K.	TR-1	14
Greece	RC-135	7
RAF Mildenhall, U.K.	RC-135	5
RAF Mildenhall, U.K.	SR-71	N/A
Greece	U-2	N/A
TOTAL	—	26

Direct Maintenance

In addition to providing technical assistance, civilians are employed to perform direct equipment maintenance tasks for the Air Force throughout Europe. The sources for this type of civilian support are foreign national and host nation personnel. This section identifies the extent and nature of that support.

Foreign National. Many U.S. Air Forces in Europe (USAFE) air bases and air stations use foreign nationals in weapons system maintenance. The extent of foreign national employment is indicated by the 213 funded and mostly occupied civilian positions identified for USAFE units. While not all of these 213 positions are filled by foreign nationals, USAFE information leads us to estimate that 90 percent of the incumbents are foreign national; the remainder are U.S. citizens.

Seventy-three of the 213 civilian positions are for administrative support such as typists, clerks, translators, secretaries, and key-punch operators. The remaining 140 positions are for aviation maintenance. Table 2-48 shows the breadth of the maintenance functions and the number of civilian positions funded for each. The table shows that munition systems receive the most support, with 22 percent of the total. Aircraft and aerospace ground equipment (AGE) personnel, together add another 30 percent.

TABLE 2-48. USAFE CIVILIAN POSITIONS IN AVIATION MAINTENANCE

DESCRIPTION	NUMBER OF POSITIONS
Munitions Systems	31
Aircraft	22
AGE	19
PME	17
Corrosion Control	13
Airframes	6
Metalworking	6
Aircraft Electrical Systems	5
Aircraft Engines	5
Aircraft Pneudraulics	3
Digital Flight Simulators	3
Other	10
TOTAL	140

Civilian maintenance personnel are employed at 18 locations throughout Europe. Table 2-49 identifies the air bases and other facilities for which civilian positions have been funded. Hahn Air Base leads with 32 positions, and another 31 are at Wenigerath (all of those positions are for munition systems). Together, the Hahn and Wenigerath locations have 45 percent of the total

TABLE 2-49. LOCATIONS OF USAFE CIVILIAN MAINTENANCE POSITIONS

LOCATION	NUMBER OF POSITIONS
Hahn Air Base	32
Wenigerath	31
Templehof Central Airport	12
Bitburg Air Base	11
RAF Bentwaters, U.K.	9
Sembach Air Base	8
Ramstein Air Base	7
Hellenikon Air Base, Greece	5
Livorno Air Base, Italy	5
Zaragoza Air Base, Spain	5
RAF Lakenheath, U.K.	4
Aviano Air Base, Italy	3
Torrejon Air Base, Spain	3
Other	5
TOTAL	140

One perspective on the extent of civilian dependence presented above can be obtained by comparing the number of civilian and military maintenance positions at each location. Hahn Air Base provides an illustration. This base primarily supports the 50th Tactical Fighter Wing (TFW), an F-16 aircraft unit. The maintenance capability of the 50th TFW is provided by a military organization composed of three maintenance squadrons and a maintenance supervisory and support staff. Table 2-50 shows the civilian and military staffing of each squadron and the maintenance staff. Altogether, the 50th TFW maintenance organization has 1,725 military personnel and 32 civilian repairmen. The civilians, concentrated in the component and equipment repair squadrons, represent less than 2 percent of the total staffing of the 50th TFW maintenance organization. This percentage is

somewhat higher than the overall USAFE average for direct-hire maintenance civilians. The manner in which they are used, however, is typical.

TABLE 2-50. MAINTENANCE STAFFING: 50th TFW, HAHN AIR BASE

ORGANIZATION	NUMBER OF FUNDED POSITIONS	
	Civilian	Military
Aircraft Generation Squadron	—	815
Component Repair Squadron	14	303
Equipment Repair Squadron	17	454
Maintenance Staff	1	153
TOTAL	32	1,725

The Military Airlift Command (MAC) also employs foreign nationals in support of aircraft maintenance at Rhein-Main Air Base, the only MAC base in Europe. Table 2-51 shows the nature and extent of foreign national support at Rhein-Main. As the table shows, there are 13 foreign national civilians and 5 of them are used for maintaining AGE.

TABLE 2-51. CIVILIANS MECHANICS AT RHEIN-MAIN AIR BASE

DESCRIPTION	NUMBER OF PERSONNEL
AGE	5
Metalworking	2
Survival Equipment	2
Propulsion Equipment	1
Other	3
TOTAL	13

The EISD also employs civilians in support of information/communication systems. Most of these civilians are foreign nationals although some are U.S. citizens. They augment the operations and maintenance capabilities of EISD military units throughout the European Theater.

EISD has 4,223 military and 156 civilians assigned, which means the civilians represent approximately 4 percent of total staffing. Since EISD operates at 142 sites, on average each site would be staffed with 30 military personnel and 1 civilian.

We did not determine the number of civilians by location nor by specific roles. However, some illustrations of civilian use at three air bases in the FRG are shown in Table 2-52. (The EISD civilians at these locations are all foreign nationals.) The table shows that each of these locations has more civilians than the EISD average. It also shows, for those locations, that telephone and radio systems receive a larger share of civilian support.

TABLE 2-52. ILLUSTRATIONS OF CIVILIAN SUPPORT OF EISD SYSTEMS

SUPPORTED SYSTEMS	BITBURG AIR BASE	SPANGDAHLEM AIR BASE	ZWEIBRÜCKEN AIR BASE
Telephone	2	1	2
Radio	2	1	1
Cable	3	—	—
Microwave	1	—	—
TOTAL	8	2	3

Host Nation Support. Host nation support to the Air Force's maintenance effort in Europe is provided predominantly by the U.K. at RAF Kemble. Such support is also provided at other locations on a relatively small scale. At Templehof Central Airport, Berlin, a few FRG military personnel perform some aircraft and support equipment maintenance. At the A-10 forward operating locations (6 to 8 aircraft per location) in Alhorn, Leipheim, Nörvenich, and Sembach, FRG military personnel perform some support equipment maintenance and provide such services as fuel storage and delivery and munitions build-up and storage.

The host nation support at RAF Kemble is quite sizable. Under a government-to-government agreement, the U.K. provides the civilians to staff the facility. The number of civilians currently employed is not known, but the Air Force plans to employ 550 civilians by FY86. Given that 343 civilians were working at RAF Kemble in mid-1983, it seems reasonable to assume that there may be 450 civilians there by now.

Staffing at RAF Kemble also consists of 40 to 50 Department of the Air Force civilians (DAFCs) from the Air Force Logistics Command (AFLC). These employees are civil servants and, presumably, U.S. citizens. There are also several Air Force military supervisors and support personnel at RAF Kemble.

The mission of RAF Kemble is to perform depot-level maintenance on aircraft, special-purpose vehicles, and selected avionics components. Recent workload at RAF Kemble consisted of corrosion control and maintenance of A-10 aircraft, aircraft and truck painting, and overhaul of special-purpose vehicles such as refuelers, snow plows, and fire trucks.

Contract Maintenance

In addition to technical assistance and direct maintenance, contract maintenance is a third major category in which the Air Force uses civilians for maintenance in Europe. In this section, civilian use in three areas of contract maintenance is described. These areas are specific equipment contracts, contractor field teams, and other contract support.

Specific Equipment Contracts. Two types of specific equipment maintenance contracts are presented. One type covers aircraft systems, components, and support equipment, and the other covers simulator maintenance.

The Air Force has many contracts for maintenance of aircraft, components, and support equipment in Europe, and those contracts generally require the maintenance to be performed in the industrial facilities of European companies. The nature and extent of the repair work done by European companies is shown in Table 2-53. That table shows that more than \$66 million is expended to maintain a wide range of aircraft systems and components. The F-4 and F-111 aircraft and their components command the greatest share of this type of contract repair. Together, these

systems receive slightly more than 70 percent of the contract maintenance resources. The J79 engine, at \$7.9 million, receives another 12 percent.

TABLE 2-53. AIRCRAFT MAINTENANCE CONTRACTS

SYSTEM/ EQUIPMENT	COST (\$000)
F-4	28,317
F-111	18,619
J79 Engine	7,922
F-16	4,582
C-130	1,442
AGE	1,264
CH-53	1,229
Fuel Control	990
Head-Up Display	845
Other Engines	794
Other Components	261
TOTAL	66,265

This work is performed by a large number of European companies in a variety of locations as shown in Table 2-54. British Aerospace in the United Kingdom is the largest single provider of contract maintenance to the Air Force in Europe, with \$18.6 million in support of F-111 aircraft. (It is the only European contractor supporting that aircraft.) Construcciones Aeronauticas, commonly referred to CASA, provides nearly \$17.7 million in support of F-4 aircraft. (Note that although the F-4 was shown in Table 2-53 as the largest single recipient of contract support, there are at least four companies other than CASA supporting that aircraft.) Together, British Aerospace and CASA provide 55 percent of the contract maintenance of aircraft and components. With Hellenic Aerospace on the J79 engines, Messerschmitt-Boelkow-Blohm on the F-4, and Sabca on the F-16

providing an additional 31 percent, this means that 86 percent of the Air Force's contract maintenance support is obtained from five companies.

TABLE 2-54. LOCATION OF AIRCRAFT MAINTENANCE CONTRACTS

COMPANY	COMPANY LOCATION	PREDOMINANT WORK	COST (\$000)
British Aerospace	U.K.	F-111	18,619
Construcciones Aeronauticas	Spain	F-4	17,697
Hellenic Aerospace	Greece	J79 Engine	8,681
Messerschmitt-Boelkow-Blohm	FRG	F-4	7,250
Sabca	Belgium	F-16	4,379
Bedek Aviation (Israel Aircraft Industries)	Israel	F-4	2,350
Industria Aeronautica Meridionale	Italy	C-130	1,442
Danline Maskiner	Denmark	AGE	1,264
Israel Aircraft Industries	Belgium	CH-53	1,229
Hamilton Standard Stork	The Netherlands	Fuel Control	990
Marconi Avionics	U.K.	Head-Up Display	845
Interturbine Holland	The Netherlands	F100 Engine	419
Dowty Fuel Systems	U.K.	TF30/F100	370
Aviation Traders	U.K.	F-4	190
Norman	U.K.	F-4	137
Allen Airmotive Industry	The Netherlands	F-16	126
Other	Several	Various	277
TOTAL	—	—	66,265

The second type of specific equipment contract is for the maintenance of aircraft simulators. Such contracts are different from other specific equipment contracts because the

maintenance does not directly support aircraft per se, the work is performed at Air Force sites, and the contractors are U.S. firms.

The Air Force has several simulator maintenance contracts in Europe, and their values, locations, aircraft types, and companies are shown in Table 2-55. The Air Force has nearly \$1.9 million in aircraft simulator maintenance contracts, with the two largest contracts being held by the Singer Corporation, for the F-16 simulator at Hahn Air Base, and Dynalectron Corporation for the F-4 simulators at Ramstein and Spangdahlem Air Bases. Nine civilians support simulators under these contracts.

TABLE 2-55. AIRCRAFT SIMULATOR MAINTENANCE CONTRACTS

LOCATION	AIRCRAFT TYPE	COMPANY	COST (\$000)
Hahn Air Base	F-16	Singer Corp.	511
Ramstein/Spangdahlem Air Bases	F-4	Dynalectron Corp.	510
Spangdahlem Air Base	F-4/A-10	Dynalectron Corp.	252
Ramstein/Spangdahlem Air Bases	F-4E	Singer Corp.	252
Three sites	F-4	GTE	242
Bitburg/Hahn Air Bases	F-15/F-16	Honeywell	94
TOTAL	—	—	1,861

Contractor Field Teams. The concept of a contractor field team (CFT) is to bring contractor personnel to the equipment site rather than to bring the equipment to the contractor's site. Typically, CFTs perform hands-on maintenance as well as provide engineering-type support. They are formed as required under 5-year contracts with three companies: Dynalectron Corp., Lear-Siegler, Inc.; and Lockheed Support Systems, Inc. These companies currently employ nearly 400 CFT personnel at approximately 125 sites, mostly within the Continental United States (CONUS)

The Air Force makes some use of CFTs in Europe to perform system modifications and equipment maintenance. The extent of this support and where it is provided is shown in Table 2 56

The scope of the support encompasses more than 108 contractor employees at a total annual cost of slightly more than \$6.3 million. In terms of cost alone, the F-4 work at Zweibrücken Air Base ranks first among CFT efforts; it is valued at nearly \$2.4 million and involves 38 Lear-Siegler employees. The Lear-Siegler work on C-130s at Rhein-Main Air Base also ranks high. In terms of personnel, the F-15 support at Bitburg Air Base ranks highest with 49 Lockheed employees.

TABLE 2-56. CONTRACTOR FIELD TEAM SUPPORT

LOCATION	TYPE OF SUPPORT	COMPANY	SCOPE	
			Cost (\$000)	Number of Personnel
Zweibrücken Air Base	F-4 Modification and Maintenance	Lear-Siegler, Inc.	2,383	38
Rhein-Main Air Base	C-130 TCTO ¹	Lear-Siegler, Inc.	1,748	14
Bitburg Air Base	F-15 TCTO	Lockheed Support Systems, Inc.	1,474	49
Spain	F100 Engines	Lear-Seigler, Inc.	376	N/A
Hahn Air Base	F100 (Jet Engine Intermediate Maintenance)	Lear-Siegler, Inc.	346	7
TOTAL	—	—	6,327	108

¹Time Compliance Technical Order

Other Contract Support. In this section, three types of other contract support are presented: miscellaneous contract support, total contract support, and pending contract support.

Miscellaneous contract support is so termed for several reasons. For one, it does not come under the heading of specific equipment contracts because the support is often not purely repair nor is it performed in European industrial facilities. Second, although the work is performed at Air Force sites, it is not termed CFT support by the Air Force; nor is it called CETS support. The third reason is that no one organization appears to have oversight responsibility for this type of effort in the European Theater. For the latter reason (and in the absence of a comprehensive data collection effort

aimed at this type of contract support), miscellaneous contract support identified in this section is best termed as illustrative. Table 2-57 lists some of the miscellaneous contract support provided to the Air Force in Europe. The support covers a wide range of systems and equipment, mostly in the complex or sophisticated technology domain. The support is also characterized by relatively few personnel supporting a given system at any one location. The table shows 21 contractor personnel supporting several systems at four Air Force sites. The support provided by these contractors often involves the provision of other services such as operator and maintenance training as well as direct maintenance support.

Other instances of miscellaneous contract support occur elsewhere but are not shown in the table since specific data were not readily available. These instances include, for example, maintenance support of MAC cargo handling equipment by the Boeing Services Company at several sites in Greece, Spain, and Turkey; the provision of wash rack de-ionization services by the Frankfurt Airport for MAC aircraft at the Rhein-Main Air Base; and base operating support provided under contracts with *Boeing Services Company* at three SAC locations, two in Spain and one in Greece.

The second type of other contract support is total contract support. Total contract support refers to systems for which contractors provide all of the logistic support services required to keep the system operational. This support may involve the provision of supplies and parts, support of AGE, and flight line maintenance, or, it may include all support above the organizational level, leaving that support in the hands of Air Force military personnel.

Several aircraft systems are totally supported by contractors in Europe. (In fact, many of these systems are totally contractor-supported worldwide.) The type and number of such systems and their locations in Europe are shown in Table 2-58. The contractors and number of support personnel, where available, are also shown. The number of C-23As — the European Distribution System Aircraft — is expected to increase to 18, with a concomitant growth in the number of personnel supporting this aircraft.

The third type of other contract support involves pending, or recently awarded, contracts. These contracts include continuation of C-130 work in Italy, maintenance of F-15s in

TABLE 2-57. MISCELLANEOUS CONTRACT SUPPORT

LOCATION	EQUIPMENT/ TYPE OF SUPPORT	COMPANY	SCOPE	
			Cost (\$000)	Number of Personnel
Zweibrücken Air Base	Side Looking Airborne Radar	Goodyear Aerospace	500	3
Zweibrücken Air Base	TIPI/MARRES ¹	Texas Instruments	354	2
RAF Lakenheath, U.K.	F-111 Depot-Level Avionics Repair Activity	General Dynamics Corp.	N/A	4
		Singer Corp.	N/A	1
RAF Bentwaters, U.K.	A-10 Navigation-Integrated Automated Test Station	Fairchild Republic Co.	N/A	5
Bitburg Air Base	TITE ²	Northrop Aviation	N/A	2
		Loral Electro-Optical Systems	N/A	1
Zweibrücken Air Base	TEREC ³ Equipment	Litton Industries	159	1
Zweibrücken Air Base	TEREC-Program Exploitation System (T-PEP)	Digital Equipment Corp.	24	1 (On-call)
Bitburg Air Base	Flight Simulator	Goodyear Aerospace	N/A	1
TOTAL	—	—	—	21

¹Tactical Information Processing and Interpretation/Manual Radar Reconnaissance Exploitation System

²Tactical Electronics Integrated Test Equipment

³Tactical Electronics Reconnaissance

Spain, F-16 radar antenna repair in Denmark, and support of Ground Launched Cruise Missiles (GLCM) at four European sites. Details of these recent contracts are given in Table 2-59. While the other contracts are straightforward maintenance contracts, the GLCM contracts bear amplification. These contracts include on-site technical assistance, supply support, and instruction as well as maintenance and repair. The General Dynamics contract provides for a total of 16 personnel, 4 per site, while the McDonnell Douglas effort provides for 4 contractor employees, 1 at each site.

TABLE 2-58. TOTAL CONTRACT SUPPORT

SYSTEM	LOCATION	NUMBER OF AIRCRAFT	CONTRACTOR	NUMBER OF PERSONNEL
C-12	Ramstein Air Base	6	Beech Aircraft Services, Inc.	8
C-21	Ramstein Air Base Stuttgart Airport	3 3	Lear-Siegler, Inc.	8
C-23A	Zweibrücken Air Base	6	Short Brothers	25 ^a
KC-10	Spain Saudi Arabia	5 2	McDonnell Douglas Corp.	N/A
TOTAL	—	—	—	41

^aMay perform functions other than maintenance.

TABLE 2-59. RECENT OR PENDING CONTRACTS

TYPE OF SUPPORT	LOCATION	COMPANY	COST (\$000)
F-15 Overhaul	Spain	CASA	4,000 ^a
GLCM Support	Four Sites ^b	General Dynamics Corp.	2,600
C-130 PDM ^c	Italy	Industria Aeronautica Meridionale	1,750
GLCM Support	Four Sites ^b	McDonnell Douglas Corp.	600
F-16 Radar Antenna	Denmark	NEA-Lindberg	500
TOTAL	—	—	9,450

^aAmount reported was \$20 million for FY85 through FY89.

^bBelgium, the FRG, Italy, and the U.K.

^cProgrammed Depot Maintenance.

Summary

The Air Force uses civilians to provide maintenance support in Europe in two areas, technical assistance and direct maintenance.

Table 2-60 summarizes the number of civilians providing technical assistance support to the Air Force in Europe. It shows that a total of 148 civilians, including 102 CETS, are engaged in

technical assistance activities in support of tactical, airlift, and strategic forces and information/communication equipment.

TABLE 2-60. AIR FORCE TECHNICAL ASSISTANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
AFETS	46
CETS	102
TOTAL	148

The Air Force's use of civilians for direct maintenance is shown in Table 2-61. About 45 percent of civilian direct maintenance personnel are host nationals employed at RAF Kemble. A second major category, foreign national, provides support to tactical and airlift forces as well as information/communication equipment.

TABLE 2-61. AIR FORCE DIRECT MAINTENANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
DAFC	59
Foreign National	295
Contractor	199
Host Nation	450
TOTAL	1,003

The number of civilians shown in Table 2-61 represents the minimum number of civilians performing direct maintenance in support of the Air Force. Personnel staffing information for most of the contract support that the Air Force receives in the theater was not obtained. The value of this support includes the current aircraft maintenance contracts at \$66.3 million. It also includes

contracts in process for F-15 overhauls, C-130 PDMs, and F-16 radar repairs. These contracts have a total value of \$6.3 million.

3. CIVILIAN USE IN THE PACIFIC THEATER

This chapter presents information on the use of civilians to maintain DoD equipment in the Western Pacific. While the Army uses civilians in more than one Western Pacific location, the Army section of this chapter focuses on the Republic of Korea (ROK). The material is presented in four major sections, one for each of the Military Services. The Army and Air Force sections are similarly organized with separate subsections for technical assistance, direct maintenance, and contract maintenance. The Navy section is divided into subsections for ships, aircraft, and other support, whereas the Marine Corps section is subdivided into ground equipment and aircraft. Each section concludes with a summary.

ARMY

Technical Assistance

The Army uses all DACs as LARs in the Eighth U.S. Army (EUSA) in the ROK. The commodities the LARs support are shown in Table 3-1. Of the 72 LAR personnel, 24 support communications-electronics equipment and 11 support tank-automotive equipment. In addition to these LARs, 10 military supervisory personnel and 27 administrative/clerical personnel bring the LAP total in EUSA to 109.¹

The LAP in EUSA is augmented by 18 contractor personnel. Some of them are assigned to the Logistic Assistance Office-Korea (LAO-K) for management, others are assigned to the LAO-K for administrative purposes. Table 3-2 lists the number of contractor personnel in both groups, along with the units to which they are assigned and the equipment they support. The 2nd Infantry Division (2nd ID) receives support from the greatest number of contractor technical assistance personnel, with the UH-60A Blackhawk aircraft leading the list of supported equipment.

¹Two additional LARs support communications-electronics equipment in Okinawa, Japan.

TABLE 3-1. LAR PERSONNEL BY COMMODITY

COMMODITY	NUMBER OF PERSONNEL
Communications-Electronics	24
Tank-Automotive	11
Troop Support	8
Aviation	7
Armament, Munitions, and Chemical	6
Missiles	6
Communications Security	2
LAO	8
TOTAL	72

Direct Maintenance

In addition to providing technical assistance, civilians also perform direct equipment maintenance tasks in EUSA. The sources for this type of civilian support are foreign national, DAC, and host nation personnel.

Foreign Nationals. The use of foreign nationals in EUSA is found at all levels of maintenance, but it is concentrated at the GS level. The two major GS organizations in EUSA are the Materiel Support Center-Korea (MSC-K) and the 45th Transportation Company (AVIM). Both use civilians for maintenance.

MSC-K is the only GS base in the ROK for automotive, combat vehicle, armament, construction and engineer, communications-electronics, ground mobility, and general equipment maintenance. While primarily a GS organization, it also performs some depot-level maintenance in accordance with its specialized repair authority (SRA) for items such as automotive components and printed circuit boards. MSC-K is the only organic source of support for the TARP in EUSA.

The 45th Transportation Company is the only theater AVIM unit in Korea. Its mission is to provide nondivisional AVIM support to the 17th Aviation Group, 3rd Military Intelligence (MI)

TABLE 3-2. CONTRACTOR TECHNICAL ASSISTANCE PERSONNEL ASSIGNED TO LAO-K

ASSIGNED UNIT	EQUIPMENT	COMPANY	NUMBER OF PERSONNEL
2nd ID	UH-60A Aircraft (Blackhawk)	Sikorsky (United Technologies)	3
	UH-60A Aircraft (Blackhawk)	General Electric	1
	UH-60A Aircraft (Blackhawk)	Turbomach (Solar Turbines)	1
	M901A1 (Improved Tow Vehicle)	Emerson Electric	1
	AN/TPQ-36/37 Radar	Hughes Aircraft Co.	1
	DAS3 Computer	Management and Technical Services Co. (General Electric)	1
EUSA	AN/MSQ-64 SATCOM Terminal	Magnavox	2
	M977 Heavy Transporter	Oshkosh Truck Corp.	1
	Commercial Utility Cargo Vehicle	General Motors	1
61st Maintenance Company	AN/MSQ-103A	Emerson Electric	2
19th Support Command	AN/MSM-105 Test Equipment (EQUATE)	RCA Corp.	1
45th Transportation Company	AN/TLQ-17A Electronic Jammer	Fairchild Weston Systems	1
N/A	N/A	Litton Industries	2
TOTAL	—	—	18

Battalion, and 18th Medical Command. The 45th also provides backup AVIM support to the 2nd ID and theater-wide AVIM support to all other aviation units. In addition to its AVIM responsibilities, the 45th Transportation Company also has some SRA missions.

Foreign national staffing for these GS organizations is shown in Table 3-3. The table shows a total of 739 foreign nationals, with the vast majority of them assigned to MSC-K

TABLE 3-3. FOREIGN NATIONALS IN GS MAINTENANCE

ORGANIZATION	LOCATION	LEVEL	MISSION	NUMBER OF PERSONNEL
MSC-K	Waegwan, Korea	GS	Combat/Tactical Vehicles, Armament, Engineer, Communications, General Equipment	663 ^a
45 th Transportation Company (AVIM)	Pyongtaek, Korea	DS/GS	Aircraft Power Plants, Airframes, Avionics, Ground Support Equipment	76
TOTAL	—	—	—	739

^aTwenty-nine personnel are for Air Force-funded requirements.

MSC-K is predominantly a civilian organization. It is authorized a total of 743 positions, of which 37 are military, and, as shown in Table 3-3, 663 are foreign nationals. The balance of the staffing comes from several other civilian sources (discussed in subsequent sections of this chapter). MSC-K employs approximately ten military personnel in direct labor positions, primarily because of security restrictions for certain equipment. Otherwise, the foreign nationals perform virtually all the maintenance tasks.

The 45th Transportation Company is predominantly a military organization, with 300 to 325 military personnel assigned. The 76 foreign nationals shown in Table 3-3 augment the maintenance capability of the military. The foreign nationals generally perform the same repair tasks as the military personnel, including airframes, engines, avionics, and component work such as hydraulic and pneumatic items.

Foreign nationals also are assigned to DS maintenance organizations. In those organizations, they repair communication, automotive, engineer, and other equipment. They are assigned to several types of units including signal, maintenance, ordnance, and engineer. The equipment supported, number of personnel, and their locations are shown in Table 3-4. Of the 276 foreign nationals performing DS maintenance, 100 are assigned to the 1st Signal Brigade. Those civilians exclusively support microwave sites, with teams of two or three personnel assigned to each

site. The remainder of the units in the table are military organizations, using the foreign national civilians to augment unit capability.

TABLE 3-4. FOREIGN NATIONALS IN DS MAINTENANCE

UNIT	EQUIPMENT	LOCATION ^a	NUMBER OF PERSONNEL
1 st Signal Brigade	Microwave Communication	Various	100 ^b
61 st Maintenance Company	Automotive/General Equipment	Uijongbu	49 ^c
595 th Maintenance Company	Automotive/General Equipment	Seoul (Yongsan)	42 ^c
520 th Maintenance Company	Automotive/General Equipment	Pyongtaek	41 ^c
USAG Direct Support Unit	Automotive/General Equipment	Pusan	20
6 th Ordnance Battalion	Ammunition Peculiar	Pyongtaek/Chunchon	7
802 nd Engineer Battalion	Engineer	Pyongtaek	7
44 th Engineer Battalion	Engineer	Kimpo	6
74 th Maintenance Battalion	TMDE	Waegwan	4
TOTAL	—	—	276

^aAll locations are in Korea.

^bPersonnel perform both operations and maintenance functions.

^cTotal assigned to the unit; some may not be performing maintenance.

EUSA also employs foreign nationals to perform organizational maintenance. Table 3-5 identifies 12 military units that have foreign nationals in their motor pools. The two engineer battalions (44th and 802nd) together account for nearly one-half of the 141 total foreign nationals used in organizational maintenance. The 2nd Quartermaster Group, with 15 foreign nationals, has slightly more than 10 percent of the total, and the balance of the civilians are scattered among the other nine units.

Department of Army Civilians. Several DACs are employed in direct labor maintenance positions within EUSA, but their specific assignments are generally atypical. Most are employed in

**TABLE 3-5. FOREIGN NATIONALS
IN ORGANIZATIONAL MAINTENANCE**

UNIT	NUMBER OF PERSONNEL
44 th Engineer Battalion	36 ^a
802 nd Engineer Battalion	30
2 nd Quartermaster Group	15
8 th Military Police Brigade	12
60 th Transportation Company	10
501 st MI Group	10
348 th Supply and Services Company	7
6 th Ordnance Battalion	6
46 th Transportation Company	6
305 th Supply and Services Company	4
520 th Maintenance Company	3
45 th Transportation Company	2
TOTAL	141

^aTwo are assigned to the 2nd Engineer Group motor pool.

the maintenance of fixed-site communication equipment located at either automated multimedia exchanges (AMMEs) or AUTODIN communication centers. Security considerations are a significant factor in these assignments. Other DACs in direct labor maintenance positions are employed in a variety of assignments. The employment of DACs in maintenance is shown in Table 3-6.

Host Nation Support. The EUSA uses some host nation support to perform direct equipment maintenance. That maintenance is performed in Okinawa, Japan by Japanese nationals and in the ROK by Korean nationals. (Because of certain features of the government-to-government agreement between the United States and Japan, Japanese nationals supporting U.S. Forces are technically employees of the Government of Japan and therefore host nation personnel.)

In Okinawa, Japanese host nation personnel support the AMSF. The AMSF is the only GS maintenance organization for fixed-site, nontactical communications in EUSA. While some

TABLE 3-6. DEPARTMENT OF THE ARMY CIVILIANS IN MAINTENANCE

UNIT	TYPE OF SUPPORT	NUMBER OF PERSONNEL
1 st Signal Brigade	AMME/AUTODIN DS/GS	20 ^a
MSC-K	Automotive GS	4
6 th Ordnance Battalion	Ammunition Production Control	4
45 th Transportation Company	Motor Pool	2
501 st MI Group	Microfix	1 ^b
61 st Maintenance Company	N/A	1
74 th Maintenance Battalion	Nucleonics	1
TOTAL	—	33

^aThis is the maximum number of DACs supporting 1st Signal Brigade equipment.

^bThis individual is on-call from a CONUS Army depot.

military personnel are assigned, AMSF remains predominantly a civilian organization staffed with 50 Japanese host nation personnel. The AMSF is a subordinate organization of the 1st Signal Brigade in Seoul, Korea and has a detachment at Camp Humphreys in Pyongtaek, Korea. (Staffing of the detachment is discussed in a subsequent section.)

In the ROK, host nation support is provided by Korean nationals in two programs: Korean Augmentation to the U.S. Army (KATUSA) and Korean Service Corps (KSC). Personnel in the KATUSA program are military members of the ROK Army who are individually assigned to serve with EUSA organizations. Approximately 7,400 personnel serve in the KATUSA program, but only 45 are assigned to maintenance units (Table 3-7).

The KSC is a quasi-military organization under U.S. military control. Approximately 3,200 indirect-hire Korean nationals are provided by the ROK Government to the KSC. Those Korean nationals are organized into 21 companies under the overall command of a U.S. Army officer. The KSC primarily performs functions related to facility maintenance and renovation, ammunition surveillance, logistical support, and garrison support. Nearly 40 percent of all KSC personnel can be categorized as heavy laborers.

**TABLE 3-7. KATUSA PERSONNEL ASSIGNED
TO MAINTENANCE UNITS**

UNIT	NUMBER OF PERSONNEL
520 th Maintenance Company	19
595 th Maintenance Company	8
61 st Maintenance Company	7
74 th Maintenance Battalion	6
MSC-K	5
TOTAL	45

KSC companies are often assigned to projects with specific completion dates although many assignments are of indefinite duration. For equipment maintenance, the KSC has 163 personnel possessing 12 occupational skills currently on indefinite assignment to maintenance tasks throughout EUSA. Table 3-8 shows that the KSC provides substantial maintenance support to the 2nd ID, Pusan Storage Facility, and MSC-K. These three organizations account for more than one-half of all KSC personnel on indefinite maintenance assignments; the remainder are spread over a number of units.

Contract Maintenance

Contract maintenance is the third major category of civilian use for maintenance in EUSA. In this section, contract maintenance is presented for TARP contracts, support contracts, and specific equipment contracts.

TARP Contracts. TARP contracts are generally arranged when workload exceeds the capacity of MSC-K. This factor, together with recent statements by the Secretary of Defense about increasing the capability of the ROK industrial base through contracting, have resulted in a significant TARP contract program. Table 3-9 shows that existing TARP contracts total almost \$2.8 million. The largest one is almost \$1.4 million for refurbishment of the M113 family of vehicles, which involves upgrading the cooling and suspension systems and overhauling the vehicle. Another

TABLE 3-8. KSC MAINTENANCE SUPPORT

KSC COMPANY	COMPANY LOCATION	SUPPORTED UNIT	TYPE OF SUPPORT	NUMBER OF PERSONNEL
1st	Tongduchon	2nd ID	Transportation Motor Pool	50
		702nd Maintenance Battalion	Technical Supply	11
6th	Pusan	Pusan Storage Facility	Marine Maintenance	23
8th	Chunchon	61st Maintenance Company	Tire Repair and Welding	2
11th	Uijongbu	61st Maintenance Company	Technical Supply	10
15th	Uijongbu	Unspecified Motor Pool	Vehicle Maintenance	6
16th	Uijongbu	Artillery Headquarters Battery	Vehicle Maintenance	4
19th	Seoul/Kimpo	21st Transportation Company	Vehicle Maintenance	6
22nd	Pyongtaek	43rd Mobile Army Surgical Hospital	Vehicle Maintenance	1
30th	Seoul/Kimpo	44th Engineer Battalion	Vehicle Maintenance	4
33rd	Seoul/Kimpo	K-16 Motor Pool	Vehicle Maintenance	3
37th	Taegu	MSC-K	End Item and Component Repair	19
		MSC-K	Technical Supply	9
		69th Transportation Battalion	Trailer Maintenance	8
		46th Transportation Company	Vehicle Maintenance	4
38th	Pyongtaek	802nd Engineer Battalion	Vehicle Maintenance	3
TOTAL	—	—	—	163

noteworthy item in the table is the rebuilding of roadwheels and trackshoes for combat vehicles in-theater at a cost of \$0.8 million, which represents slightly more than one-quarter of the total.

TABLE 3-9. CURRENT THEATER REPAIR CONTRACTS

TYPE OF SUPPORT	COMPANY	COST (\$000)
M113 Vehicle Refurbishment ¹	Dae Woo Heavy Industries	1,360
Roadwheel/Trackshoe Rebuild	Gold Star Cable Co.	808
Tire Retreading	Heung Ah Tire Co.	321
Construction Tractor Overhaul	Samsung Heavy Industries	211
Tactical Vehicle Rustproofing	BoSung Motor Co.	98
TOTAL	—	2,798

¹Total program (FY81 through FY85) includes 502 vehicles for EUSA, 78 for the 25th ID, and 25 for the Air Force.

An additional \$4.6 million in theater repair contracts are in process. The work to be accomplished under these contracts is shown in Table 3-10. Nearly two-thirds of these contracts will involve overhaul of tactical wheeled vehicles, as indicated by the expected \$3.0 million in cost. Approximately 70 percent of those vehicles will be M880 series trucks, while the remaining 30 percent will be 2½-ton trucks.

Still more contracts are planned totaling slightly more than \$1 million. The work contemplated on those contracts consists of overhauling and repairing construction equipment, including D8K and D7F tractors, upgrading the Fire Support Team Vehicle (FISTV), and vehicle rustproofing. Costs are shown in Table 3-11.

Support Contracts. Support contracts have three distinguishing features: they support specific units or organizations, the maintenance is generally performed on unit equipment at the site

TABLE 3-10. IN-PROCESS THEATER REPAIR CONTRACTS

TYPE OF SUPPORT	COST (\$000)
Tactical Wheeled Vehicle Overhaul	3,023
Tire Retreading	638
Construction Equipment Overhaul	581
Communications Equipment Overhaul	258
Material Handling Equipment Overhaul	98
TOTAL	4,598

TABLE 3-11. PLANNED THEATER REPAIR CONTRACTS

TYPE OF SUPPORT	COST (\$000)
Construction Tractor Overhaul	545
Fire Support Team Vehicle (M981) Upgrade	323
Commercial Utility Cargo Vehicle Rustproofing	195
TOTAL	1,063

of operations, and the requirement (although not necessarily satisfied by the same contractor) is expected to continue indefinitely.

The 1st Signal Brigade has several support contracts, and their nature and scope are shown in Table 3-12. The table shows a total of \$9.5 million in maintenance support contracts, with the largest, at approximately \$3 million, being for support of microwave systems in The Philippines. This \$3 million contract represents nearly one-third of the total. The next largest (almost \$2.4 million) is for support of AMME equipment. (AMMEs are fixed-site, nontactical message centers.) This contract and the several other AMME support contracts represent nearly one-half of the 1st Signal Brigade total.

TABLE 3-12. 1st SIGNAL BRIGADE SUPPORT CONTRACTS

EQUIPMENT	COMPANY	SCOPE	
		Cost (\$000)	Number of Personnel
Microwave Systems	Rockwell International	3,058 ^a	N/A
AMME Equipment	Sperry Univac	2,371	4
AMME - Data Processing Equipment	Sperry Univac	1,542	3
Various Systems/Equipment	Korea Communications Engineers	1,390	119
Standard Remote Terminals	Astronautics Corp. of America	— ^b	5
Secure Voice Communications	Ford Aerospace	422 ^c	On-call
AMME Equipment	Ricoh Corp.	418	2
AUTODIN Interface Equipment	Analytics, Inc.	223	N/A
AMME Computer	Sperry Univac	85	2
Siemens Teleprinters	Gold Star Cable Co.	N/A	N/A
AMME Optical Message Entry Terminal	Compuscan	N/A	2
Other	Several	11	—
TOTAL	—	9,520	137

^aThe contract amount (\$6,115,800) is for installation and maintenance of two microwave systems in The Philippines. Approximately one-half of that amount is for maintenance, as shown in the table.

^bThe reported amount of \$12,808,100 is not consistent with the known number of personnel; reasons for the apparent disparity were not ascertained.

^cThe amount shown is for worldwide services. The amount attributable to support of the 1st Signal Brigade was not obtained.

The nearly \$1.4 million contract with Korea Communications Engineers for support of various systems and equipment bears additional discussion. It currently provides 119 personnel to support several functions. Seventy of the contractor personnel are organized into 15 roving teams, varying in size from three to six individuals. The teams maintain virtually all types of communications equipment, including teletypewriters, telephones, cables, and electronic switchboards. They

support equipment in a wide geographic area, from Camp Red Cloud (near Uijongbu) in the 2nd ID area to Pusan in the south. Another 15 contractor personnel perform GS maintenance of fixed-site communication equipment at Camp Humphreys in Pyongtaek. Those personnel are a detachment of the AMSF, Okinawa. Several other contractor personnel operate teletypewriter repair shops in Taegu and Seoul.

Another group of support contracts is for various units of the 501st MI Group primarily for support of sophisticated electronics equipment and observation and reconnaissance aircraft. Table 3-13 shows 15 contractor personnel and the type of equipment they support. Nearly one-half of the contractor personnel support aircraft.

TABLE 3-13. CONTRACTOR SUPPORT OF THE 501st MILITARY INTELLIGENCE GROUP

EQUIPMENT	COMPANY	NUMBER OF PERSONNEL
Aircraft	Mantech Field Engineering Corp.	5
Electronics	Motorola, Inc.	3
Aircraft	McDonnell Douglas Corp.	2
Avionics (Inertial Navigation)	Litton Industries	1
Electronics	Astronautics Corp. of America	1
AN/MSQ-103A (Teampack)	Emerson Electric	1
Electronics (Guardrail)	Electromagnetic Systems Laboratory	1
Computer	Eaton Corp.	1
TOTAL	—	15

The third group of support contracts is for other maintenance support. These contracts support a wide variety of organizations and equipment. As shown in Table 3-14, they provide for 75 contractor personnel. The aviation equipment contract for \$2,690,300 is the largest of the three contracts for which costs were obtained. Most of the personnel under this contract collect and analyze operations and maintenance data, however, the contract also provides for the performance of

scheduled and unscheduled system maintenance. The extent to which the contract applies to maintenance was not determined.

TABLE 3-14. OTHER MAINTENANCE SUPPORT CONTRACTS

SUPPORTED ORGANIZATION	EQUIPMENT	COMPANY	SCOPE	
			Cost (\$000)	Number of Personnel
EUSA (Aviation Materiel)	Aviation	Cobro Corp.	2,690	11
U.S. Forces, Korea (Joint Command Information Systems)	Computer (Command, Control, Communications)	Honeywell Information Systems	713	N/A
74th Maintenance Battalion	TMDE	Metrology Services Corp.	535	13
45th Transportation Company (AVIM)	Aircraft (CH-47)	Dynalectron Corp.	N/A	27
U.S. Forces, Korea (Special U.S. Liaison Advisor)	Project Ermine	Bendix Corp.	N/A	12
55th Aviation Company	Aircraft (C-12)	Beech Aircraft Services, Inc.	N/A	5
EUSA	Multiple Integrated Laser Engagement System (MILES)	Loral Electro-Optical Systems Co.	N/A	3
EUSA (Tunnel Neutralization Team)	Electronic Sensors (Tunnel Detection)	VSE Corp.	N/A	2
EUSA (Tunnel Neutralization Team)	Seismic Listening Devices (Tunnel Detection)	Zapex Corp.	N/A	2
TOTAL	—	—	—	75

Another aviation support contract in the table needs amplification. This contract supports the 45th Transportation Company. Currently, 27 Dynalectron Corporation personnel are modifying several systems on the CH-47 aircraft. When those modifications are complete, the personnel will no longer be needed for that particular task. However, many will continue to support

the Army by working on other aviation tasks. Typically, Dynalectron Corporation has from 6 to 27 personnel supporting EUSA at any one time.

The contract in support of 74th Maintenance Battalion is for calibration and repair of TMDE. The 13 contractor personnel augment the 96 military personnel in the 2nd Maintenance Company of the battalion. Both military and contractor personnel perform the same calibration and repair tasks but the type of assignment differs. Contractor personnel are assigned only to fixed sites, whereas the military personnel may be assigned to either fixed sites or mobile teams.

Specific Equipment Contracts. Contracts for equipment repair differ from support contracts. Equipment repair contracts are usually for a specified number of items and the work is generally performed at the contractor's facilities; when the items are repaired, the contract is complete. Although similar repair requirements tend to generate repeatedly, the contractual requirements of equipment-repair contracts are typically very explicit. In contrast, support contract requirements are generally indefinite.

Several EUSA organizations have equipment-repair contracts totaling nearly \$2.5 million; these contracts are summarized in Table 3-15. For the most part, they do not cover combat or combat support equipment. There are some exceptions, however. The construction equipment category includes seven roadgraders and four bulldozers. The aircraft work for the 3rd MI Battalion is for application of a chemical agent resistant coating to reconnaissance and observation aircraft. These two categories of equipment-repair contracts together represent more than 40 percent of the total.

Summary

The Army's use of civilians in Korea is concentrated on the provision of technical assistance and the performance of direct maintenance. Table 3-16 shows that 90 civilians — 72 DACs and 18 contractor personnel — provide technical assistance to EUSA personnel.

For direct maintenance, EUSA relies upon DACs as well as foreign national, contractor, and host nation personnel. As summarized in Table 3-17, more than 1,600 civilians provide direct maintenance support to EUSA. Almost 70 percent are Korean nationals, with host nation personnel

TABLE 3-15. EQUIPMENT REPAIR CONTRACTS

SUPPORTED ORGANIZATION	EQUIPMENT	COST (\$000)
Facility Engineer Agency	Construction	655
Pusan Storage Facility	Floating Crane and Watercraft	629
Facility Engineer Agency	Electrical and Miscellaneous	412
3 rd MI Battalion	Aircraft Coating	368
25 th Transportation Center	Rail Equipment	146
25 th Transportation Center	Rail Wheel Sets/Bearings	135
55 th Aviation Company	Aircraft Painting (C-12)	99
TOTAL	—	2,444

TABLE 3-16. ARMY TECHNICAL ASSISTANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
DAC	72
Contractor	18
TOTAL	90

constituting another 15 percent. The 1,645 civilians performing direct maintenance excludes numerous contractor personnel who have not been identified. However, those contracts total almost \$11 million in FY85, with \$8.5 million worth of contracts in support of the TARP and \$2.4 million in equipment repair contracts.

NAVY

This section describes the Navy's use of civilians for maintenance support in the Western Pacific. The information is presented in three subsections: ships, aircraft, and other support

**TABLE 3-17. ARMY DIRECT MAINTENANCE
SUPPORT BY CIVILIAN CATEGORY**

CATEGORY	NUMBER OF PERSONNEL
DAC	33
Foreign National	1,127 ^a
Contractor	227
Host Nation	258 ^b
TOTAL	1,645

^aExcludes 29 Air Force funded positions at MSC-K.

^bIncludes 45 KATUSA personnel

Ships

The Navy provides civilians for maintenance support of surface ships and submarines in the Western Pacific in four ways: (1) MOTU augmentation, (2) Direct Fleet Support (DFS), (3) Ship Repair Facilities (SRFs), and (4) contract maintenance.

MOTU Augmentation. The Navy has six MOTUs in the Pacific Fleet. Although only two are homeported outside the U.S., all are available for deployment either as a unit or as individual technicians. Consequently, MOTU capability is available to all ships whether they are deployed overseas or in U.S. waters.

In addition to military personnel, a number of DNCs and CETS personnel are assigned to MOTUs on a continuing basis. The extent of civilian augmentation is shown by Table 3-18. That table also shows MOTU location and military staffing. In total, Pacific Fleet MOTUs are augmented by 78 civilians, or 32 percent of the total staffing. The civilians consist of 13 DNCs (all at MOTU 5) and 65 CETS. The 43 civilians at MOTU 5 represent nearly 40 percent of total unit staffing.

The role of these civilians is illustrated by the type of systems they support as shown in Table 3-19. As in the Atlantic Fleet, radar and communication systems lead the list of civilian capabilities in Pacific Fleet MOTUs. Those systems, along with computer systems, account for slightly more than one-half of the civilian augmentation personnel in Pacific Fleet MOTUs.

TABLE 3-18. CIVILIAN AUGMENTATION TO MOTUs

MOTU	LOCATION	ENLISTED PERSONNEL	NUMBER OF CIVILIANS			TOTAL PERSONNEL
			DNC	CETS	Total	
1	Pearl Harbor, HI	31	—	17	17	48
5	San Diego, CA	71	13	30	43	114
7	Yokosuka, Japan	22	—	4	4	26
9	San Francisco, CA	9	—	1	1	10
11	Long Beach, CA	10	—	—	—	10
13	Subic Bay, The Philippines	25	—	13	13	38
—	TOTAL	168	13	65	78	246

TABLE 3-19. CIVILIAN CAPABILITIES IN MOTUs

TYPE OF SYSTEM	NUMBER OF PERSONNEL
Radar	18
Communication	14
Computer	8
Countermeasures	8
Sonar	6
Aircraft Navigation and Landing	4
Fire Control	4
Gyro/Interior Communication	3
Inertial Navigation	3
Tactical Data System	3
Periscope	2
Other	5
TOTAL	78

In addition to the civilians assigned to MOTUs, the Pacific Fleet also has contractor civilians "on-call" to MOTUs. Those civilians have not been extensively used thus far in FY85. their usage will probably not exceed 3 man-years of effort.

Direct Fleet Support. DFS teams perform both technical assistance and direct maintenance. Often, the services they provide relate to resolving ship and system compatibility and alignment problems, testing, and correcting unique equipment failures. They are often used just prior to, and/or during the initial stages of ship deployments.

In the Pacific, DFS teams are sponsored mostly by the Naval Sea Center, Pacific, but also by other organizations such as field offices of the Naval Electronic Systems Command (NAVELEX) and the Naval Ship Systems Engineering Station. These organizations are staffed by DNC personnel.

Because of their irregular use, widely varying visit durations, nonstandard team size, and multiple sponsorship, the extent of DFS team usage is difficult to gauge. Based on discussions with fleet support personnel in the Western Pacific, we estimate that DFS team support of deployed ships is probably in the neighborhood of 20 to 25 man-years annually.

Ship Repair Facilities. Three SRFs in the Western Pacific have extensive capacities and capabilities to provide intermediate- and depot-level support to ships in the Western Pacific.

The SRFs are located in The Philippines, Guam, and Japan and are staffed predominantly with civilians. In The Philippines, SRF Subic Bay is staffed with foreign nationals, i.e., Filipinos; SRF Guam is staffed mostly with Guamanians, who are U.S. citizens; and, in Japan, SRF Yokosuka is staffed mostly with Japanese nationals. Because of certain features of the government-to-government agreement between the United States and Japan, Japanese nationals supporting U.S. forces are technically employees of the Government of Japan and therefore host nation personnel.

Complete staffing data for the SRFs are presented in Table 3-20, which shows that SRF staffing totals 7,025 civilian personnel. (The military personnel are mostly in staff or supervisory

positions.) SRF Subic Bay is the largest, with 64 percent of the civilians assigned to all SRFs. The SRF at Yokosuka has 1,745 civilians, 1,700 of whom are host nation personnel.

TABLE 3-20. CIVILIAN STAFFING OF SHIP REPAIR FACILITIES

SRF	MILITARY PERSONNEL	CIVILIAN PERSONNEL			
		DNC	Foreign National	Host Nation	Total
Subic Bay	140	80	4,400	—	4,480
Yokosuka	66	45	—	1,700	1,745
Guam	111	800	—	—	800
TOTAL	317	925	4,400	1,700	7,025

The SRFs at Yokosuka and Subic Bay both have detachments in other locations and staffing additional to that shown in Table 3-20. SRF Yokosuka has one in Sasebo, Japan, while SRF Subic Bay has one in Singapore. These detachments, staffed with both military and civilian personnel, arrange and administer ship repair contracts in their geographic areas. The Sasebo detachment has 5 military, 4 DNCs, and 34 host nation personnel. Singapore has 8 military, 5 DNCs, and 20 foreign nationals.

SRF Yokosuka has a unique option for coping with workload surges such as those associated with overhaul of the aircraft carrier USS MIDWAY, for example. (SRF Yokosuka is the home port of the USS MIDWAY.) This option consists of prearranged ship repair contracts with local Japanese companies. These companies can be called into the SRF to assist with the workload there or the work can be performed in the companies' facilities. Although in a strict sense, these arrangements can be categorized as contract maintenance, they are unique in that the working relationship between the SRF and the companies and the perceptions of Navy officials make it appear that the work force of these companies is treated as if it was part of the main staff of SRF Yokosuka. Altogether these Japanese companies provided 293,125 man-days to SRF Yokosuka in FY84. Using

260 direct-labor man-days as equivalent to 1 man-year, the workload performed by these companies translates into an additional 1,127 personnel at SRF Yokosuka.

Contract Maintenance. There are two categories of contract maintenance of ships in the Western Pacific. One category is for ship repair, the other is for other fleet support.

Ship repair contract data were obtained for the SRF detachments at Sasebo and Singapore. Although these data do not provide insight into the exact nature of the work or the specific locations, they show \$3.4 million in ship repair contracts for FY84 (Table 3-21). Nearly 60 percent of this was arranged by the Sasebo detachment of SRF Yokosuka.

TABLE 3-21. SHIP REPAIR CONTRACTS
FOR FY84

LOCATION	ESTIMATED COST (\$000)
Japan (Sasebo)	2,000
Singapore	1,300
Korea ¹	100
TOTAL	3,400

¹Arranged directly by SRF Yokosuka.

A few contracts for other fleet support are operative in The Philippines at Subic Bay. They cover general maintenance but not equipment or system repair. The nature and scope of these contract efforts are indicated by Table 3-22. Ship hull cleaning accounts for two-thirds of the costs shown.

Aircraft

The Navy's use of civilians to support aviation maintenance in the Western Pacific falls into three categories: technical assistance, direct maintenance, and contract maintenance.

Technical Assistance. Navy units and activities routinely receive technical assistance in the installation, operation, and maintenance of new weapons systems, equipment, and components. The Navy primarily uses CETS and NETS for technical assistance on aviation material in the

**TABLE 3-22. OTHER FLEET SUPPORT
CONTRACTS AT SUBIC BAY**

TYPE OF SUPPORT	ESTIMATED COST (\$000)
Ship Hull Cleaning	6,800
Drydock Pontoon Overhaul	2,500
Ship Side Painting	1,000
TOTAL	10,300

Pacific Theater. Ashore, they are employed at NASs, NAFs, and calibration laboratories; afloat, they are used aboard aircraft carriers.

Table 3-23 shows that 81 CETS and NETS personnel are employed at 6 NASs/NAFs in the Western Pacific. Sixty-one of those personnel are CETS personnel; the balance are NETS. NAS Cubi Point has the most technical assistance personnel with 46, or 57 percent of those in Western Pacific NASs/NAFs.

**TABLE 3-23. CETS AND NETS AT NAVAL AIR
STATIONS/FACILITIES**

LOCATION	NUMBER OF PERSONNEL		
	CETS	NETS	Total
NAS Cubi Point, The Philippines	34	12	46
NAF Agana, Guam	10	3	13
NAS Atsugi, Japan	4	2	6
NAF Diego Garcia	6	—	6
NAF Misawa, Japan	5	1	6
NAF Kadena, Japan	2	2	4
TOTAL	61	20	81

Technical assistance personnel at NASs/NAFs support many different aviation systems and support equipment. The range of supported systems and the associated number of CETS and NETS personnel are shown in Table 3-24. That table shows that 22 technical assistance personnel, or 27 percent of the total, support P-3 aircraft systems.

TABLE 3-24. CETS AND NETS SUPPORT OF AVIATION SYSTEMS

SUPPORTED SYSTEM	NUMBER OF PERSONNEL
P-3	22
C-2	10
E-3	9
GSE	9
SH-2	6
S-3	5
CH-53	4
F-14	2
H-3	2
H-46	2
A-6	1
A-7	1
F-4	1
Other	7
TOTAL	81

The USS MIDWAY, homeported in Yokosuka, Japan, has 18 CETS and 3 NETS personnel. The equivalent of two other aircraft carriers, deployed from the West Coast, are also stationed in the Western Pacific and Indian Ocean areas. It was reported that each of these ships has approximately 40 technical assistance personnel aboard. In total, CETS and NETS use aboard aircraft carriers in the Pacific Theater numbers 101 personnel.

The Navy only uses CETS personnel at its seven calibration laboratories in the Pacific Theater. The laboratories are generally located at NASs or NAFs. Specific CETS assignments at those laboratories are shown in Table 3-25.

TABLE 3-25 CETS AT CALIBRATION LABORATORIES

LOCATION	NUMBER OF PERSONNEL
NAF Agana, Guam	5
Christ Church, New Zealand	4
MCAS ¹ Iwakuni, Japan	4
NAS Atsugi, Japan	3
NAS Cubi Point, The Philippines	3
NAF Diego Garcia	3
MCAS Futenma, Japan	3
TOTAL	25

¹Marine Corps Air Station (MCAS).

Two other types of technical assistance support the Navy's aviation mission in the Western Pacific: one is the Carrier and Field Services Unit (CAFSU) and the other is the Aviation Ship Installation Representative (ASIR). CAFSU personnel provide technical assistance for aircraft launch and recovery systems such as the optical landing system, pilot landing aids, and catapults and arresting gear on aircraft carriers. ASIR personnel provide assistance for such systems as aviation lighting, fueling, and safety for air-capable surface ships. All CAFSU and ASIR personnel are DNCs, and they serve ships from two locations as shown in Table 3-26.

Direct Maintenance. The second category of civilian support of naval aviation maintenance in the Western Pacific is direct maintenance. Civilian direct maintenance is provided by personnel at several NAS/NAFs and calibration laboratories, and periodically by Naval Air Rework Facility (NARF) field teams. This subsection describes civilian usage at NASs/NAFs, in NARF field teams, and at calibration laboratories.

TABLE 3-26. OTHER TECHNICAL ASSISTANCE

LOCATION	NUMBER OF PERSONNEL	
	CAFSU	ASIR
NAS Cubi Point, The Philippines	2	1
Yokosuka, Japan	2	1
TOTAL	4	2

All types of civilian staffing are found at NASs and NAFs, including DNC, foreign national, and host nation personnel. These civilians are generally employed in the Aircraft Intermediate Maintenance Departments (AIMDs). However, in two cases, the civilians are employed in different organizations. One of these organizations is the Cubi Point detachment of the Fleet Air Western Pacific Repair Activity (FAWPRA), and the other is the GSE Rework Facility in Atsugi, Japan. The extent of civilian use at these and other organizations is shown in Table 3-27. That table shows a total of 321 civilians, with approximately 69 percent being foreign national. Ninety percent of the civilians employed in direct maintenance of aviation equipment are at three organizations, two in The Philippines and one in Japan.

While the civilians at the NASs/NAFs generally augment AIMDs, their roles in the three organizations just highlighted are amplified further. The civilians at the GSE Rework Facility, Atsugi, perform depot-level rework of powered GSE. The civilians at NAS Cubi Point, although they augment the AIMD, provide much more than the nominal civilian support typically provided at other AIMDs (Table 3-27). The 92 civilians are employed primarily in three equipment areas: power plants (40), GSE (30), and airframes (20) (these figures are approximate). The civilians in the FAWPRA detachment at Cubi Point primarily perform emergent work although they also perform some scheduled component repair. Some of the civilians are organized into teams that are sent routinely to assist with maintenance problems aboard aircraft carriers.

TABLE 3-27. CIVILIAN DIRECT MAINTENANCE OF AVIATION MATERIAL

LOCATION	NUMBER OF PERSONNEL			
	DNC	Foreign National	Host Nation	Total
FAWPRA, Cubi Point, The Philippines	9	131	—	140
NAS Cubi Point, The Philippines	—	92	—	92
GSE Rework Facility Atsugi, Japan	4	—	50	54
NAS Atsugi, Japan	—	—	10	10
NAF Kadena, Japan	—	—	10	10
NAF Misawa, Japan	—	—	9	9
NAF Agana, Guam	6	—	—	6
TOTAL	19	223	79	321

NARF civilian personnel are also employed to support the aviation maintenance mission in the Western Pacific. These DNC personnel are organized into field teams, generally to accomplish a *specific maintenance action*. While we were not able to assess the extent and purpose of all NARF field teams in the Western Pacific, some illustrations of NARF field team usage were obtained. Man-years were estimated from knowledge about the size of the various teams, frequency of visits, and approximate visit durations. Summary data about NARF field teams are given in Table 3-28. That table shows slightly more than 13 man-years of effort devoted to NARF field team visits to the Western Pacific. Two of the teams are employed continuously on a full-time basis while the others are used on a task-oriented but irregular basis. The two full-time teams are assigned to the FAWPRA detachment at Cubi Point and to the aircraft carrier deployed in the Indian Ocean.

Civilians are also employed in the various calibration laboratories throughout the Western Pacific to support aviation maintenance. These civilians tend to be either DNC or host nation personnel. Table 3-29 shows the extent of civilian use at six calibration laboratories. The table shows that of the 130 civilians, DNC personnel make up 56 percent. The two largest employers of civilians in calibration laboratories are the ones at NAS Atsugi, Japan, and NAS Cubi Point in

TABLE 3-28. NARF FIELD TEAMS

SUPPORTED UNIT	PURPOSE	ESTIMATED MAN-YEARS
FAWPRA, Cubi Point, The Philippines	Various advisory/repair functions	7
Deployed Aircraft Carrier	Crash damage repair	4
Deployed Aircraft Carrier	Various functions	2
NAS Atsugi, Japan	TCTO/Modification	— ^a
NAF Kadena, Japan	TCTO/Modification	— ^a
NAF Misawa, Japan	TCTO/Modification	— ^a
TOTAL	—	13

^aLess than 1 man-year.

The Philippines, with 39 and 34 civilian personnel, respectively. These two laboratories together have somewhat more than one-half of all civilians in calibration laboratories in the Western Pacific.

TABLE 3-29. CIVILIAN DIRECT MAINTENANCE AT CALIBRATION LABORATORIES

LOCATION	NUMBER OF PERSONNEL			
	DNC	Foreign National	Host Nation	Total
NAS Atsugi, Japan	7	—	32	39
NAS Cubi Point, The Philippines	30	4	—	34
NAF Agana, Guam	21	—	—	21
MCAS Iwakuni, Japan	6	—	11	17
MCAS Futenma, Japan	8	—	6	14
Yokosuka, Japan	1	—	4	5
TOTAL	73	4	53	130

Contract Maintenance. Contract maintenance is the third category of civilian use for naval aviation maintenance in the Western Pacific.

Three types of contract maintenance support Navy aviation. One type consists of contracts for major repair efforts in Japan, Korea, and Singapore; the second type consists of a variety

of other contracts for aviation maintenance support; and the third type is for total logistic support aircraft. This subsection describes the contract maintenance efforts of each type.

In a recent year, the Navy's major repair contracts in the Pacific Theater amounted to approximately \$21 million. The repair services were provided by the Japan Aircraft Manufacturing Company (JAC), Korean Air, and two subsidiaries of Singapore Aerospace Industries (SAI)—the Singapore Aerospace Maintenance Company (SAMCO) and Singapore Aero-Components Overhaul (SACO). JAC, located in Atsugi, Japan, had Navy contracts totaling approximately \$14 million; Korean Air, located in Kimhae, Korea, had contracts of approximately \$2.5 million; and SAMCO and SACO had contracts totaling approximately \$4.5 million, with \$3.5 million of that for SDLM work and the other \$1 million for component rework.

Each of these companies works on different types of Navy aircraft. Korean Air focuses exclusively on the F-4, while SAMCO and SACO work on A-4 and C-130 aircraft. In contrast, JAC supports many aircraft types including the A-4, A-6, A-7, C-1, C-2, E-2, H-1, H-3, H-46, H-53, and OV-10. We did not obtain detailed data about the scope of the contract effort applied to each type of aircraft. However, aggregate FY84 data were obtained on the nature of the maintenance services performed by these companies, and the FAWPRA detachment. These data, expressed in man-hours, are displayed in Table 3-30, which shows that more than 800,000 man-hours were expended in FY84 on aviation maintenance support under the purview of the FAWPRA. SDLM work amounted to almost 500,000 man-hours, or 59 percent of the total. The man-hours expended for component rework account for another 20 percent.

Based upon a man-year equivalent of 1,600 man-hours, the total FAWPRA workload (Table 3-30) translates into an estimated staffing equivalent of 521 personnel. However, some of the workload was accomplished organically by the FAWPRA detachment at NAS Cubi Point. As shown previously in Table 3-27, that detachment has approximately 140 direct laborers.² Subtracting these 140 personnel from the 521 personnel estimated for the total FAWPRA workload leaves

²Seven military personnel are also assigned, but they are in supervisory and support positions

TABLE 3-30. FAWPRA WORKLOAD FOR FY84

TYPE OF MAINTENANCE	MAN-HOURS
SDLM	491,318
Component Rework	164,171
Aircraft Repair	94,177
Modifications	23,022
Corrosion Repair	21,910
Other Aircraft Support	38,961
TOTAL	833,559

381 personnel. These 381 personnel represent a conservative estimate of the extent of contract aviation maintenance support provided by JAC, Korean Air, and SAI to the Navy in the Pacific Theater.

The second type of contract support for naval aviation maintenance in the Pacific Theater is that provided by other contracts. These contracts cover four different situations, three at NAS Cubi Point and one at NAF Diego Garcia. Descriptions of the type of support provided at these locations and the estimated number of contractor personnel are given in Table 3-31, which shows that other aviation maintenance contracts provide the equivalent of 70 personnel. The two largest, in terms of personnel, are the corrosion control contract at NAS Cubi Point and the contract for GSE and base support at NAF Diego Garcia. Each of these contracts provides for approximately 30 contractor employees.

The Navy has several C-12B aircraft in the Western Pacific. Total logistic support for these aircraft is provided under contract by Beech Aircraft Services Inc., employees at several NASs/NAFs. The number of aircraft and the number of contractor support personnel at each location are shown in Table 3-32. The table shows that Beech Aircraft provides 14 employees to support the Navy's nine C-12 aircraft in the Western Pacific.

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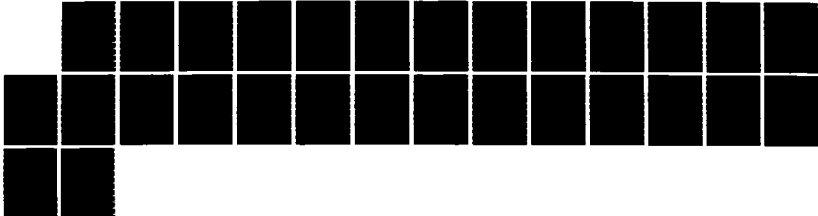
THE ROLE OF CIVILIANS IN MAINTAINING MILITARY EQUIPMENT
VOLUME 2(U) LOGISTICS MANAGEMENT INST BETHESDA MD
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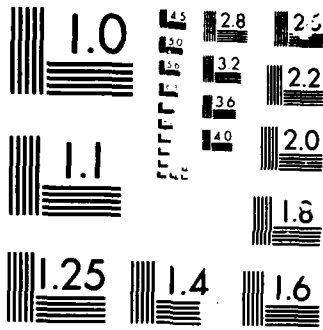


TABLE 3-31. OTHER AVIATION MAINTENANCE CONTRACTS

LOCATION	TYPE OF SUPPORT	COMPANY	ESTIMATED NUMBER OF PERSONNEL
NAS Cubi Point, The Philippines	Corrosion Control/ Washing	Local Philippine Firm	30
NAF Diego Garcia	GSE Maintenance/ Base Support	Febroe Corp	30
NAS Cubi Point, The Philippines ¹	Depot Level Support of Engine/Oxygen Test Equipment	Dynalectron Corp.	6
NAS Cubi Point, The Philippines	Avionics Repair for F/A-18 and SH-60B Components	McDonnell Douglas Corp. IBM Corp.	4
TOTAL	—	—	70

¹Present location; moves from station to station.

TABLE 3-32. TOTAL LOGISTICS SUPPORT FOR C-12 AIRCRAFT

LOCATION	NUMBER OF AIRCRAFT	NUMBER OF PERSONNEL
NAS Atsugi, Japan	3	4
NAS Cubi Point, The Philippines	3	4
NAF Agana, Guam	1	2
NAF Kadena, Japan	1	2
NAF Misawa, Japan	1 ^a	2
TOTAL	9	14

^aIn FY86.

Other Support

The Navy also uses civilians in the Pacific Theater for other types of maintenance support. In this section, the support provided by the Naval Electronics Engineering Activity, Pacific (NEEACTPAC) is described.

The mission of NEEACTPAC is to provide electronics material support including installation design, equipment installation, testing, maintenance engineering, training, technical

guidance, and other assistance to shore-based Naval and Marine Corps activities, and to fleet units and other agencies. NEEACTPAC has many diverse responsibilities in the areas of project engineering, test and maintenance engineering, and program management. Project engineering responsibilities include conducting feasibility studies and site surveys, developing electronic system engineering plans, and designing and installing electronic systems. Test and maintenance engineering responsibilities include performing special technical surveys and inspections and providing system maintenance engineering support beyond the operating forces' capabilities. Program management responsibilities include managing NAVELEX programs for maintenance of radiac, cryptographic, and electronic test and monitoring systems; operating the fleet general-purpose electronic test equipment assistance program and equipment pool; and managing and coordinating other PME and test equipment programs.

NEEACTPAC activities are conducted from four locations: Hawaii, Japan, Guam, and The Philippines. All locations have similar missions. The Hawaii location, in addition, is the NEEACTPAC Headquarters. The staffing at these locations is shown in Table 3-33. The table shows total NEEACTPAC staffing to be 274 civilian personnel (excluding 5 military supervisory personnel). These civilians are divided almost evenly between Hawaii and the three Western Pacific locations. The table also shows that DNC personnel comprise 75 percent of the civilian staffing. Security considerations are a major factor in the choice of civilian staffing source.

Much of NEEACTPAC's effort is in support of its project engineering and test and maintenance engineering missions. However, some of its responsibilities include direct and indirect fleet services for NAVELEX equipment; and some of those involve maintenance. The maintenance-related direct fleet service responsibilities include test equipment alignment, repair, and management; cryptographic and radiac equipment management; shipboard surveys and combat system testing; and PME management. Maintenance-related indirect fleet services includes the electromagnetic environment effects program, shore station test equipment program, engineering and technical services for communication security activities, and command-and-control equipment maintenance.

TABLE 3-33. NEEACTPAC CIVILIAN STAFFING

LOCATION	NUMBER OF PERSONNEL			
	DNC	Foreign National	Host Nation	Total
Hawaii	133	—	—	133
The Philippines	21	52	—	73
Japan	26	—	16	42
Guam	26	—	—	26
TOTAL	206	52	16	274

The amount of maintenance NEEACTPAC performs on specific equipment at every location has not been determined; but, estimates of some maintenance-related functions were obtained. Table 3-34 presents the estimated number of civilian and contractor personnel involved in various maintenance-related functions of NEEACTPAC. The table shows 14 civilian personnel and 11 contractor personnel supporting NEEACTPAC in its maintenance role. Only four personnel are involved in direct fleet services; most support either shore activities or the fleet indirectly.

Summary

The Navy's use of civilian mechanics in the Western Pacific is for providing technical assistance and performing direct maintenance.

Table 3-35 shows that 317 civilians, including 255 CETS, provide technical assistance in support of both ships and aircraft. Aircraft technical assistance represents two-thirds of that total.

Considerably more civilians are performing direct maintenance as shown in Table 3-36. However, more than three-fourths of those civilians (i.e., 6,900 personnel) are assigned to the SRF's. In addition, much of the contract support is also associated with the SRF's (i.e., 1,127 of the 1,603 shown are with SRF Yokosuka's local contracts). The civilians performing direct maintenance excludes personnel associated with the \$3.4 million in ship repair contracts and the \$10.3 million in other fleet support contracts.

TABLE 3-34. NEEACT MAINTENANCE IN THE WESTERN PACIFIC

FUNCTION	LOCATION	ESTIMATED NUMBER OF CIVILIAN PERSONNEL	
		DNC	Contractor
Communication Equipment Maintenance	Communication Station Kamiseya, Japan	3	—
Command and Control Equipment Maintenance	Unified Command Sites	2	—
Technical Support	Communication Security Sites	—	4
Direct Fleet Services	Various Sites	4	—
Indirect Fleet Services	Various Sites	5	7
TOTAL	—	14	11

TABLE 3-35. NAVY TECHNICAL ASSISTANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL		
	Ships	Aircraft	Total
NETS/DNC	36 ^a	26	62
CETS/Contractor	68	187	255
TOTAL	104	213	317

^aIncludes DFS personnel.

MARINE CORPS

Ground Equipment

The Marine Corps uses both contractor and host nation personnel to support its ground equipment in the Western Pacific. They provide technical assistance, perform direct maintenance, and support prepositioned equipment.

**TABLE 3-36. NAVY DIRECT MAINTENANCE
BY CIVILIAN CATEGORY**

CATEGORY	NUMBER OF PERSONNEL		
	Ships ^a	Aircraft	Total
DNC	814	105	919
Foreign National	4,400	227	4,627
Contractor	1,138	465	1,603
Host Nation	1,700	132	1,832
TOTAL	8,052	929	8,981

^aIncludes NEEACT support.

Technical Assistance. Civilian technical assistance personnel are used to support Marine Corps ground equipment in the same way they are used by the other Military Services — for on-site technical advice and training. Currently, the Marine Corps uses 14 CETS to support 12 major communications-electronics systems at Okinawa. Those CETS provide assistance at the second through fourth echelons of maintenance.

Direct Maintenance. With few exceptions, such as a recently completed one-time \$37,000 corrosion control contract for vans, all direct maintenance support by civilians is performed by host nation personnel. The Marine Corps currently uses approximately 70 Japanese nationals to perform corrosion control and component repair at Okinawa.

The corrosion control work is being performed primarily to extend the service life of engineer, motor transport, and ordnance equipment. Thirty Japanese are supporting this effort, and another 40 are repairing components of the same equipment. Both the corrosion control and component repair tasks are third and fourth echelon maintenance.

Maintenance of Prepositioned Equipment. The Marine Corps also uses U.S. contractor personnel to maintain equipment positioned aboard the first of three flights of Maritime Prepositioning Ships. Forty one contractor personnel are permanently stationed on the four ships that make

up the first flight. Table 3-37 shows the four types of equipment those civilians are supporting and the number supporting each type. Much of the maintenance is second through fourth echelon.

TABLE 3-37. CONTRACTOR SUPPORT OF PREPOSITIONED EQUIPMENT

TYPE OF EQUIPMENT	NUMBER OF PERSONNEL
Communications-Electronics	11
Engineer	8
Motor Transport	14
Ordnance	8
TOTAL	41

The second and third flights, consisting of five and four ships, respectively, will preposition similar equipment and the Marine Corps anticipates similar levels of contract support for each flight.

Aircraft

Both U.S. contractor personnel and Navy civilians are supporting Marine Corps aircraft maintenance in the Western Pacific, and most of that support is provided in the form of technical assistance.

Technical Assistance. Ashore, 45 civilians provide technical assistance at the two MCASs in Japan: Iwakuni and Futenma.³ As shown in Table 3-38, most of the civilians are CETS (34 of the 45), and they support all weapons systems and equipment except GSE. Furthermore, most of those civilians are supporting the attack and fighter aircraft stationed at Iwakuni.

Afloat, the one amphibious assault ship that is usually deployed in the Western Pacific typically has up to 20 CETS/NETS personnel aboard to support Marine Corps aircraft.

³The 45 civilians represent FY86 requirements, not the number currently providing technical assistance

**TABLE 3-38. TECHNICAL ASSISTANCE BY MCAS
AND SYSTEM/EQUIPMENT SUPPORTED**

SYSTEM/EQUIPMENT BY MCAS	NUMBER OF PERSONNEL		
	CETS	NETS	Total
Iwakuni			
F-4/RF-4	5	5	10
A-6/EA-6	9	1	10
CATE ¹	4	—	4
A-4	2	—	2
A-7	2	—	2
Subtotal	22	6	28
Futenma			
CH-46	4	1	5
OV-10	3	—	3
GSE	—	3	3
CH-53	1	1	2
UH-1/AH-1	2	—	2
KC-130	1	—	1
T-39	1	—	1
Subtotal	12	5	17
TOTAL	34	11	45

¹Computerized Automatic Test Equipment

Miscellaneous Support. U.S. contractor personnel also provide all maintenance for the C-12 aircraft. A total of six Beech Aircraft Services, Inc. personnel are supporting the four Marine Corps C-12s in the Western Pacific. Two of the aircraft are stationed at Iwakuni; the other two are at Futenma.

Other civilian support of Marine Corps aircraft includes the periodic use of NARF equipment modification teams. Some of the teams install modifications, others perform system upgrades. All depot-level maintenance of Marine Corps aircraft done in the Western Pacific is funded

and scheduled by the Navy, which also provides all calibration support to Marine Corps aircraft, as shown in the previous section in Tables 3-25 and 3-29.

Summary

Seventy nine technical assistance personnel are supporting Marine Corps aircraft and ground equipment in the Western Pacific (Table 3-39), that figure includes the CETS and NETS who provide support aboard amphibious assault ships. Another 117 civilians are providing direct maintenance, as shown in Table 3-40. The 47 contractor personnel include the 41 supporting prepositioned equipment and the 6 supporting C-12 aircraft. All of the host nation personnel shown in the table are supporting ground equipment in Okinawa.

TABLE 3-39. MARINE CORPS TECHNICAL ASSISTANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL ¹
CETS	68
NETS	11
TOTAL	79

¹Excludes calibration support provided by Navy.

TABLE 3-40. MARINE CORPS DIRECT MAINTENANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL ¹
Contractor	47
Host Nation	70
TOTAL	117

¹Excludes calibration support provided by Navy.

AIR FORCE

Technical Assistance

In the Western Pacific, the Air Force has 72 technical assistance personnel (52 are CETS and 20 are AFETS) supporting weapons systems. These personnel support 15 different systems for tactical, airlift, and strategic forces as shown in Table 3-41. That table indicates that four aircraft types — the F-4/RF-4, F-16, F-15, and B-52 — command nearly 70 percent of the total weapons systems technical assistance. These systems are predominantly supported by CETS, except in the case of the B-52. In total, slightly more than 70 percent of the 72 weapons systems technical assistance personnel is represented by CETS.

TABLE 3-41. CETS AND AFETS SUPPORT OF WEAPONS SYSTEMS

SYSTEM	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
F-4/RF-4	11	6	17
F-16	14	—	14
F-15	10	1	11
B-52	3	5	8
C-5/141	4	1	5
A-10	4	—	4
ALQ-119	—	3	3
C-9	3	—	3
C-130	—	1	1
E-3A	1	—	1
Other	2	3	5
TOTAL	52	20	72

Weapons systems technical assistance personnel are employed at nine Western Pacific locations, with Clark Air Base, The Philippines and Kadena Air Base, Okinawa, Japan together

having 50 percent of the total (Table 3-42). Misawa Air Base, which currently has seven technical assistance personnel, is expected to show an increase soon as the Air Force deploys more F-16 aircraft to that location.

TABLE 3-42. CETS AND AFETS WEAPONS SYSTEM SUPPORT
BY LOCATION

LOCATION	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
Clark Air Base, The Philippines	14	4	18
Kadena Air Base, Japan	14	4	18
Andersen Air Force Base, Guam	3	5	8
Kunsan Air Base, Korea	6	1	7
Misawa Air Base, Japan	7	—	7
Osan Air Base, Korea	2	4	6
Suwon Air Base, Korea	4	—	4
Camp O'Donnell Air Station, The Philippines	—	2	2
Yokota Air Base, Japan	2	—	2
TOTAL	52	20	72

The Pacific Information Systems Division (PACISD) also uses technical assistance personnel to support information/communication systems. This support requires 13 personnel, divided nearly equally between CETS and AFETS. Table 3-43 shows the equipment supported. Most of the support is devoted to TRACALS.

PACISD technical assistance is provided at eight sites located in five countries. Table 3-44 shows the number of CETS and AFETS personnel supporting information/communication systems in those five countries. Nearly one-half of the technical assistance personnel are located in the ROK.

Other technical support is provided but is not reflected in the centralized requirements and reporting mechanism for CETS and AFETS. That other support is often provided by contractors.

TABLE 3-43. CETS AND AFETS SUPPORT OF PACISD SYSTEMS

EQUIPMENT	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
TRACALS	4	3	7
Communication Equipment	—	2	2
Satellite Communications	—	2	2
Aerospace Defense	1	—	1
Telephone/Basewire	1	—	1
TOTAL	6	7	13

TABLE 3-44. CETS AND AFETS SUPPORT OF PACISD BY COUNTRY

COUNTRY	NUMBER OF PERSONNEL		
	CETS	AFETS	Total
ROK	3	3	6
Japan	—	2	2
Panama	1	1	2
The Philippines	1	1	2
Australia	1	—	1
TOTAL	6	7	13

but contract reporting systems do not always contain the appropriate information. In some instances manufacturers provide technical representatives at no cost to the Air Force, and in other cases, an AFLC Air Logistics Center (ALC) may sponsor the technical assistance. Since centralized data on this type of technical support are not available, we are unable to present a comprehensive description of this support. Furthermore, it is not clear whether the undocumented technical support provides advice and assistance or direct maintenance. Nonetheless, some illustrative examples of this other technical support are available and are presented in Table 3-45. That table shows a variety of support to several units at Clark and Kadena Air Bases, with almost all of the personnel who provide that

TABLE 3-45. OTHER TECHNICAL ASSISTANCE OR DIRECT SUPPORT

UNIT	LOCATION	SUPPORTED SYSTEM	COMPANY	NUMBER OF PERSONNEL
6990th Security Group	Kadena Air Base, Japan	N/A	E-Systems	10
961st AW&C ¹ Wing	Kadena Air Base, Japan	E-3A	Westinghouse	3
374th TAW ²	Clark Air Base, The Philippines	C-5	Lockheed	2
		MC-130 Inertial Navigation	Litton Industries	1
		MC-130 Terrain Following Radar	Texas Instruments	1
		MC-130 ECM ³ Equipment	Northrop Aviation	1
PLSC	Kadena Air Base, Japan	F-15 TITE	Northrop Aviation	2
		F-16	Dynamics Research	1
		Engines (J79/TF34)	General Electric Corp.	1
		F-15 TITE	Loral Electro-Optical Systems	1
SCP ⁵	Kadena Air Base, Japan	Several Engines	San Antonio ALC	14
		F-15 TITE	Northrop Aviation	1
3rd TFW	Clark Air Base, The Philippines	Engines	General Electric Corp.	1
TOTAL	—	—	—	26

¹Airborne Warning and Control

²Tactical Airlift Wing

³Electronic Countermeasures

⁴This is a DAFC

⁵Support Center, Pacific

assistance being under contract. Six of the personnel are at the Pacific Logistics Support Center (PLSC) at Kadena Air Base. PLSC has other CETS and AFETS personnel included in the data presented previously on technical assistance.

Direct Maintenance

In addition to providing technical assistance, civilians also are employed to directly perform equipment maintenance tasks for the Air Force throughout the Western Pacific. The sources for this type of civilian support are foreign national, DAFC, and host nation personnel. This section describes the nature and extent of the support they provide.

Foreign National. Foreign national personnel are used for direct equipment maintenance at many Air Force locations in the Western Pacific.⁴ For units in the U.S. Pacific Air Forces (PACAF), the extent of foreign national employment is indicated by the number of funded positions in the unit manpower document. This centralized data source, augmented by selected on-site research, provides insight on the use of foreign nationals in PACAF units. Similar data sources were used to identify foreign nationals supporting information/communication systems. The use of foreign nationals in other Air Force commands in the Western Pacific was determined largely by on-site visits and, thus, is not comprehensive.

Aviation maintenance at Air Force locations in the Western Pacific is supported by 108 foreign nationals. Table 3-46 shows the number of foreign nationals supporting aviation maintenance and the maintenance areas in which they work. The table shows that munitions systems receive the most support, with 46 percent of the total.

As shown in Table 3-47, these foreign nationals are employed at seven locations, all but one in the ROK. That location — Clark Air Base, The Philippines — has the largest number, however, with 44 foreign nationals supporting aviation maintenance.

⁴The foreign nationals employed to support the Air Force in Japan are termed host nation support because they are indirect hires under the purview of the Master Labor Contract in effect between the Government of Japan and the U.S. Government. Host nation support is covered subsequently in this section on direct maintenance.

TABLE 3-46. FOREIGN NATIONALS SUPPORTING AVIATION MAINTENANCE

DESCRIPTION	NUMBER OF PERSONNEL
Munitions	50
Inspection	9
AGE	8
PME	5
Survival Equipment	5
Electrical Equipment	3
Corrosion Control	2
Fabrication and Structures	2
Supervisory/Administrative	24
TOTAL	108

TABLE 3-47. FOREIGN NATIONAL SUPPORT BY LOCATION

LOCATION	NUMBER OF PERSONNEL
Clark Air Base, The Philippines	44
Osan Air Base, Korea	31
Kunsan Air Base, Korea	17
Taegu Air Base, Korea	8
Kwang Ju Air Base, Korea	5
Suwon Air Base, Korea	2
Chong Ju Air Base, Korea	1
TOTAL	108

Information and communication systems under the purview of PACISD also receive support from foreign nationals. Although units in PACISD are predominantly staffed with military

personnel, approximately 10 percent of the overall staffing is foreign national. For locations outside of Japan, PACISD has nearly 100 foreign nationals supporting information/communication systems. The locations of these personnel, and the number employed at each location are provided in Table 3-48. Sixty percent of the total are at two locations in The Philippines — Clark Air Base and Manila.

TABLE 3-48. FOREIGN NATIONALS SUPPORTING PACISD SYSTEMS

LOCATION	NUMBER OF PERSONNEL
Clark Air Base, The Philippines	31
Manila, The Philippines	29
Osan Air Base, Korea	17
Camp Humphreys, Korea	6
Kunsan Air Base, Korea	5
Camp O'Donnell Air Station, The Philippines	3
John Hay Air Station, The Philippines	3
Wallace Air Station, The Philippines	2
Other Korea	3
TOTAL	99

Department of the Air Force Civilians. DAFC personnel are currently used to perform direct maintenance at the SCP and at various PACISD sites. PLSC also plans to use DAFCs.

The SCP is an AFLC activity (i.e., a detachment of Ogden ALC) located at Kadena Air Base, Japan. Its mission is to provide depot-level maintenance for critical line replaceable units and printed circuit boards (PCBs) in support of PACAF in general and PLSC (an intermediate maintenance organization) in particular. The SCP currently has the capability to repair approximately

100 different PCBs, focusing on support of the F-16 aircraft (80 percent of its PCB capability) and the F-15 aircraft (the balance of its PCB capability).

SCP is currently staffed with 22 DAFC personnel, including 15 repair technicians. The Air Force plans to expand the SCP mission to include cable repair and fabrication, repair of some engine components such as blades and vanes, and repair of certain hydraulic and pneumatic items. Accordingly, SCP staffing is expected to increase to 48 DAFC personnel by 1986.

DAFCs are also employed in PACISD units to provide maintenance support to information/communication systems. These personnel are located at seven sites, as shown in Table 3-49.

TABLE 3-49. DAFC SUPPORT OF PACISD SYSTEMS

LOCATION	NUMBER OF PERSONNEL
Kadena Air Base, Japan	5
Yokota Air Base, Japan	5
Clark Air Base, The Philippines	2
Camp Humphreys, Korea	1
Camp O'Donnell Air Station, The Philippines	1
Manila, The Philippines	1
Osan Air Base, Korea	1
TOTAL	16

The PLSC is a military-staffed organization whose mission is to provide intermediate-level maintenance, theater distribution, and associated logistics support for all tactical aircraft assigned or deployed to the Western Pacific. Its current military staffing is approximately 800 personnel: 650 of those are in maintenance, 120 in distribution, and about 30 in command/staff/administrative positions. The Air Force plans to convert 34 of PLSC's military positions to civilian positions in the first quarter of FY86. DAFCs will fill 23 of these new positions, while 11 will

be filled by host nation personnel. The planned role of the DAFCs is shown in Table 3-50, which indicates that more than one-half of them will support avionics.

TABLE 3-50. DAFC INCREASES PLANNED AT PLSC,
KADENA AIR BASE

DESCRIPTION	NUMBER OF PERSONNEL
Avionics	12
Propulsion	5
Supply	3
Supervisory/Administrative	3
TOTAL	23

The Air Force plans to eventually convert 105 military positions in the PLSC to civilian positions. This means that 71 more civilian positions (in addition to the 34 just referenced) will be created. We did not determine how many of the 71 positions would be staffed with DAFC or host nation personnel, nor did we determine the specific maintenance functions they would perform. The PLSC staffing conversions are part of an overall Air Force plan to convert 169 military positions for aircraft maintenance in PACAF to 165 civilian positions.

Host Nation Support. Host nation support to the Air Force's maintenance effort in the Western Pacific is provided by both Japan and Korea. In Japan, the support is provided for aviation maintenance and information/communication system maintenance. The aviation maintenance support is found at four Air Force units located at Kadena and Yokota Air Bases. The extent of this support is shown in Table 3-51, which shows the functions, unit, and location at which those personnel perform. That table shows 86 host nation personnel support aviation maintenance in Japan, all but 15 at Kadena Air Base. The predominant support is for munition systems at the 400th Munitions Squadron in Kadena.

Some amplification of the data presented in this table is pertinent to provide perspective on the significance of the support provided and to highlight anticipated changes

TABLE 3-51. HOST NATION SUPPORT OF AVIATION MAINTENANCE

DESCRIPTION	NUMBER OF PERSONNEL				
	400 th Munitions Squadron, Kadena AB ¹	18 th TFW, Kadena AB	PLSC, Kadena AB	316 th TAG ² Yokota AB	Total
Munitions	44	—	—	—	44
Inspection	2	1	—	5	8
PME	—	1	—	6	7
Fabrication and Structures	—	3	2	—	5
AGE	—	1	—	2	3
Propulsion	—	—	2	—	2
Supervisory/ Administrative	2	6	7	2	17
TOTAL	48	12	11	15	86

¹Air Base (AB)

²Tactical Airlift Group (TAG)

The use of host nation support in the 316th TAG illustrates the impact of this support. The 316th TAG is a military unit of 685 personnel. It has a Organizational Maintenance Squadron of 253 military personnel and a Field Maintenance Squadron of 357 military personnel, with command and staff accounting for the remaining 75 personnel. The 15 host nation personnel supporting this unit account for 2 percent of the 316th TAG's current personnel strength.

Changes are anticipated in the number of host nation personnel at the PLSC. Currently, the PLSC has 11 host nation personnel, mostly in supervisory/administrative positions. In the first quarter of FY86, the PLSC will convert several military positions to civilian staffing and most of the civilians will be DAFCs, as noted earlier. A few will be host nation civilians. It is expected that 8 of the 11 new host nation positions will be for propulsion repair and 3 for supply. The PLSC is currently staffed with approximately 800 military personnel.

In Japan, host nation support is also provided for maintenance of PACISD information and communication systems at Kadena, Yokota, and Misawa Air Bases. The extent of that support, 132 personnel, is shown in Table 3-52. The preponderance of those personnel are at Kadena Air Base.

TABLE 3-52. HOST NATION SUPPORT OF PACISD SYSTEMS

LOCATION	NUMBER OF PERSONNEL
Kadena Air Base, Japan	84
Yokota Air Base, Japan	42
Misawa Air Base, Japan	6
TOTAL	132

The ROK also provides host nation support for the Air Force's maintenance mission, but not with civilians. The support is provided by ROK Air Force (ROKAF) military personnel, and it covers munitions and aviation maintenance.

For munitions support, ROKAF performs supply, storage, maintenance, and security functions at MAGNUM⁵ storage sites throughout Korea. The ROKAF uses 888 military personnel to provide this support. The cost of these services is \$16.5 million.

For aviation support, the Air Force has a unique arrangement with the ROKAF at Taegu Air Base. There, 127 members of the ROKAF's 11th TFW provide a wide variety of services to PACAF's 497th Tactical Fighter Squadron (TFS), an F-4E unit with 12 aircraft. The cost of these services is \$2.5 million and includes base security and other base operating support, including aviation maintenance. For aircraft maintenance, the 11th TFW provides approximately 60 ROKAF personnel for use as aircraft crew chiefs, load crews, and supervisors in the 497th TFS

⁵Munitions Activities Gained by Negotiations of U S Air Force ROK Air Force Memorandum of Understanding (MAGNUM)

Contract Maintenance

Contract maintenance, in addition to technical assistance and direct maintenance, is another major category of the Air Force's use of civilians for maintenance in the Western Pacific. In this section, three types of contract maintenance are described: specific equipment contracts, contractor field teams, and other contract support.

Specific Equipment Contracts. Two kinds of specific equipment contracts are used: one supports aircraft systems and components, the other provides for simulator and trainer maintenance.

The Air Force has several contracts for maintenance of aircraft and components in the Western Pacific, and all but one of them are with Korean Air to provide maintenance at its Kimhae plant. The other contract is with Philippine Air Lines in Manila. The nature and extent of repair work done by these companies is shown in Table 3-53. That table shows that slightly more than \$15 million is expended to maintain several aircraft types, mostly F-4s and C-130s. It also shows that approximately 90 percent of the Air Force's contract maintenance support in the Western Pacific is with Korean Air.

TABLE 3-53. AIRCRAFT MAINTENANCE CONTRACTS

TYPE OF SUPPORT	LOCATION	COMPANY	COST (\$000)
F-4 PDM	Kimhae, Korea	Korean Air	5,381
C-130 PDM	Kimhae, Korea	Korean Air	2,894
C-130 PDM	Kimhae, Korea	Korean Air	2,398
F-15 Corrosion Control	Kimhae, Korea	Korean Air	1,972
C-130 Mid-PDM	Manila, The Philippines	Philippine Air Lines	1,286
F-16 Avionics Modification	Kimhae, Korea	Korean Air	1,117
TOTAL	—	—	15,048

The other kind of specific equipment contract is for maintenance of aircraft simulators and trainers. Table 3-54 shows the value of the simulator and trainer maintenance contracts, along with type, location, and company. These contracts total nearly \$2.4 million. The largest, by far, is that with the Cubic Corporation for the Air Combat Maneuvering Instrumentation (ACMI) system. It alone represents nearly 70 percent of the total value of simulator and trainer maintenance contracts in the Western Pacific. The specific locations of all ACMI systems are not known, but four Cubic employees support the ACMI System at Kunsan Air Base.

TABLE 3-54. SIMULATOR AND TRAINER MAINTENANCE CONTRACTS

TYPE	LOCATION	COMPANY	SCOPE	
			Cost (\$000)	Number of Personnel
ACMI System	Several sites in Korea	Cubic Corp.	1,623	23
F-4/RF-4 WST	Kadena Air Base, Japan	Dynalectron Corp.	194	N/A
AN/ALQ-T4 ECM	N/A	Singer Corp.	167	N/A
F-16 OFT	Kunsan Air Base, Korea	Singer Corp.	139	3
F-4 WSTS and A-10 OFT	Kunsan Air Base, Korea	Dynalectron Corp.	89	2
F-4E AFTS	Taegu Air Base, Korea	Singer Corp.	53	2
C-130 Flight Simulator	Clark Air Base, The Philippines	Lear-Siegler, Inc.	45	N/A
A-10 Simulator	Suwon Air Base, Korea	Lear-Siegler, Inc.	44	1
F-16/F-15/E-3 SMAT	Kadena Air Base, Japan	Honeywell Inc.	21	N/A
TOTAL	—	—	2,375	31

Contractor Field Teams. The Air Force contracts for CFT support with three firms: Dynalectron Corporation; Lear-Siegler, Inc.; and Lockheed Support Systems, Inc. The Air Force makes extensive use of those firms for equipment maintenance and the installation of modifications at several sites. The extent and location of this support is portrayed by Table 3-55. Nearly \$6.6 million is spent on CFT contracts, with the F100/200 engine intermediate maintenance work at Kunsan Air Base being the largest at nearly \$1.6 million, about one-fourth of the total CFT effort.

TABLE 3-55. CONTRACTOR FIELD TEAM SUPPORT

TYPE OF SUPPORT	LOCATION	COMPANY	COST (\$000)
F100/200 Engine Intermediate Maintenance	Kunsan Air Base, Korea ¹	Lear-Siegler, Inc.	1,577
F-15 Modification Retrofit	Kadena Air Base, Japan	Lockheed Corp.	1,336
F-15 Support	Kadena Air Base, Japan	Lockheed Corp.	930
KC-135 AGE, Engine	Kadena Air Base, Japan	Dynalectron Corp.	910
C-130 Yellow Foam Modification	Yokota Air Base, Japan	Lear-Siegler, Inc.	875
B-52G Harpoon Integration	Andersen Air Force Base, Guam	Lockheed Corp.	498
C-130 Longeron Refurbishment	Clark Air Base, The Philippines	Lear-Siegler, Inc.	453
TOTAL	—	—	6,579

¹Present location; moves from base to base.

Other Contract Support. Two kinds of other contract support are described here, miscellaneous contract support and total contract support.

Miscellaneous contract support is difficult to identify completely because contracts of this kind are generally arranged locally. As a result, the description presented in this section is illustrative. It represents only contracts identified at the units visited. It may not, in fact, even present the total contract picture at a given location.

Table 3-56 lists some of the miscellaneous contract support undertaken by several Air Force units. The table shows slightly more than \$2 million in miscellaneous support, with most of those contracts for corrosion control. Atypical, but relatively large, is the contract for munitions maintenance in the ROK, which amounts to nearly 88 percent of the total.

TABLE 3-56. MISCELLANEOUS CONTRACT SUPPORT

TYPE OF SUPPORT	LOCATION	COST (\$000)
Munitions Maintenance	314 th Air Division sites in Korea	1,825
Aircraft Corrosion Control	Osan Air base, Korea	120
AGE Corrosion Control	Osan Air Base, Korea	50
C-130/AGE Corrosion Control	Clark Air Base, The Philippines	36
AGE Corrosion Control	Kusan Air Base, Korea	35
C-130 Cargo Net Repair	Clark Air Base, The Philippines	15
Aircraft Corrosion Control	Kadena Air Base, Japan	N/A ¹
TOTAL	—	2,081

¹Six personnel.

The second kind of other contract support is total contract support. The two aircraft systems in the Western Pacific identified in this category and their locations are shown in Table 3-57 along with the contractors and number of support personnel.

Summary

A total of 111 civilians provide technical assistance to Air Force units stationed in the Western Pacific (Table 3-58) and approximately 75 percent of those civilians are contractor personnel.

The Air Force uses, at a minimum, 597 civilians to maintain its equipment in the Western Pacific. Table 3-59 shows that most of those are either host nation or foreign national personnel, including the 207 foreign nationals and 218 host nation personnel supporting aircraft and information/communication systems and the 60 ROKAF personnel supporting the 497th TFS. The

TABLE 3-57. TOTAL CONTRACT SUPPORT

SYSTEM	COMPANY	NUMBER OF AIRCRAFT	LOCATION	NUMBER OF PERSONNEL
C-12	Beech Aircraft Services, Inc.	2	Clark Air Base, The Philippines	3
		3	Kadena Air Base, Japan	3
		3	Osan Air Base, Korea	3
		2	Yokota Air Base, Japan	3
C-21	Lear-Siegler, Inc.	2	Yokota Air Base, Japan	3
TOTAL	—	12	—	15

TABLE 3-58. AIR FORCE TECHNICAL ASSISTANCE BY CIVILIAN CATEGORY

CATEGORY	NUMBER OF PERSONNEL
CETS	83
AFETS	28
TOTAL	111

number of civilians shown that perform direct maintenance does not include those associated with \$23.7 million in contract effort

**TABLE 3-59. AIR FORCE DIRECT
MAINTENANCE BY CIVILIAN CATEGORY**

CATEGORY	NUMBER OF PERSONNEL ^a
DAFC	31
Foreign National	236 ^b
Contractor	52
Host Nation	278 ^c
TOTAL	597

^aExcludes planned increases at SCP and PLSC.

^bIncludes 29 Air Force-funded positions at MSC-K.

^cExcludes ROKAF support at MAGNUM sites.

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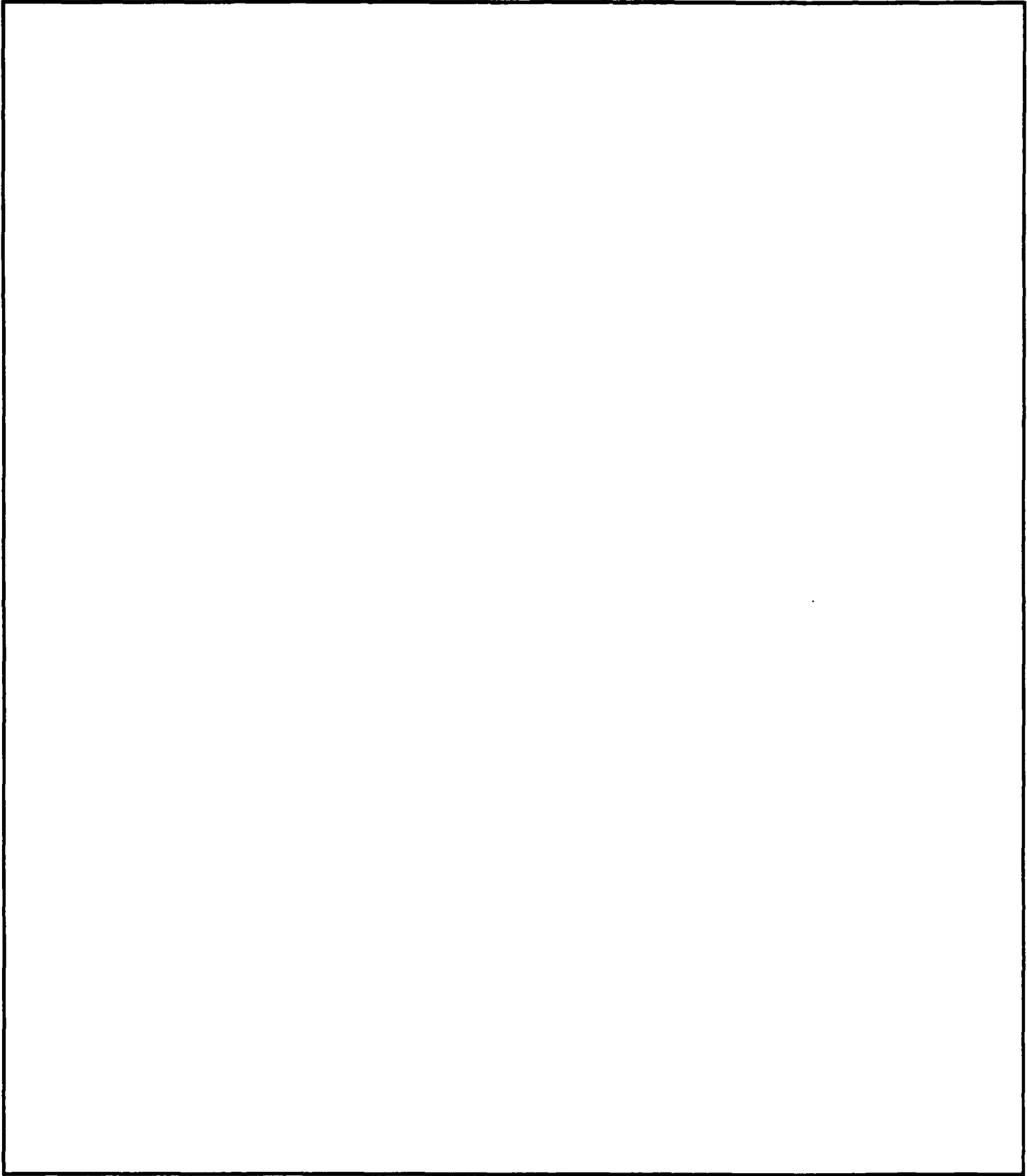
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<p>This report examines the role of civilians (DoD civilians, contractors, foreign nationals, and host nation personnel) in the maintenance of military equipment, particularly in overseas areas. The examination describes the extent to which the DoD uses civilian mechanics, assesses the implications of that usage, and proposes several actions to strengthen the role of civilians in maintaining DoD equipment.</p> <p>Volume I of this report provides highlights of recent and current uses of civilian mechanics; it also discusses the factors that influence their use, civilians and the wartime implications of their use. From this an assessment of DoD policy is given and recommended management initiatives are proposed.</p> <p>Volume II describes the extent to which civilians currently are used to maintain military equipment in the European and Pacific theaters. The descriptions include the number of civilians, the equipment they support, and their locations.</p>			
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