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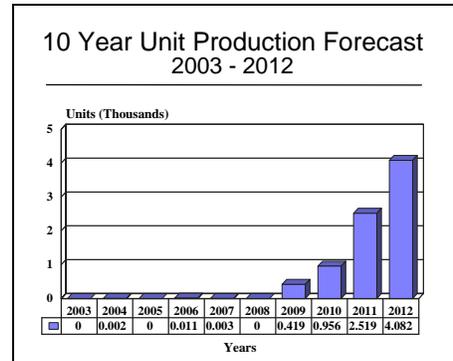
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United States Tactical Vehicles - Archived 11/2004

Outlook

- Operation Iraqi Freedom highlighted importance of logistics train
- Marines' procurement depends on future role and operational profile
- Palletized Load System will dominate truck cargo handling
- Future Tactical Truck System backbone of future procurement
- Graph to the right is for the Future Tactical Truck System



Orientation

Description. Military lightweight vehicles, trucks, and cargo carriers of wheeled configuration.

Sponsor. The development of United States tactical vehicle programs is sponsored by the U.S. Department of Defense through the U.S. Army Transportation Center at Fort Lee, Virginia, and the U.S. Army Tank, Automotive and Armaments Command, Warren, Michigan, United States of America.

Contractors. AM General Corporation (M35/M44 series, M809 series, M915 series, M939 series, M998 series); Bowen McLaughlin York-Wheeled Vehicles (M939A2); Con Diesel Mobile Equipment (M561 Gama Goat, M747); Dodge Division of DaimlerChrysler Corporation (M880); Freightliner Corporation (M915A2/M916A1); General Motors Truck and Bus Group (M1008 series Commercial Utility Cargo Vehicle); Oshkosh Truck Corporation (M977 series Heavy Expanded Mobility Tactical Truck, Mark 48 series, M911 and M1070 Heavy Equipment Transporters, M1074 series Palletized Load System, M923 series); and Stewart & Stevenson Services Incorporated (M1078 series Family of Tactical Vehicles).

Status. Development through production, service and modernization/retrofit.

Total Produced. The total production figures shown below (except for the M973) include all export sales. The M977, M998, and M1078 series (the Family of Medium Tactical Vehicles) are covered individually in the pertinent reports in this tab, as is the M992. Total production and in-service vehicles as of January 2003 are as follows:

M35/M44 series – total of 173,700 manufactured; 64,900 in United States service.

M37 series – total of 136,220 manufactured; 4,200 in United States service.

M38 series – total of 108,490 manufactured; none in United States service.

M54 series – total of 156,900 manufactured; 27,200 in United States service.

M151 (Jeep) – total of 103,700 manufactured; 12,100 in United States service (being retired).

M520 series (GOER) – total of 1,300 manufactured; all in United States service (being retired).

M561 series (Gama Goat) – total of 11,084 manufactured; 9,650 in United States service (being retired).

M715 – total of 30,553 manufactured; 23,800 in United States service.

M746 – (Heavy Equipment Transporter) total of 196 manufactured; 125 in United States service.

M809 – total of 38,800 manufactured; 24,600 in United States service.

M878 series – total of 219 manufactured; all in United States service.

M880 series – total of 44,027 manufactured; 37,200 in United States service.

M911 (Heavy Equipment Transporter) – total of 962 manufactured; 747 in United States service.

M915/M916 series – total of 9,505 manufactured; 8,820 in United States service.

M915A2/M916A1 series – 797 in United States service.^(a)

M923 series – 1,277 in United States service.^(a)

M939/M939A1 series – total of 24,100 manufactured; 23,980 in United States service.

M939A2 series – total of 20,490 manufactured; 17,820 in United States service.

M973 (Small Unit Support Vehicle) – total of 1,152 manufactured; all in United States service.

M1008 series (Commercial Utility Cargo Vehicle) – total of 70,889 manufactured; 63,780 in United States service.

M1070 (Heavy Equipment Transporter) – total of 2,033 manufactured; 1,964 in United States service.^(a)

M1074/M1075 series (Palletized Load System) – total of 3,531 manufactured; all in United States service.^(a)

Mark 48 (Dragon Wagon) – total of 1,482 manufactured; all in United States service.

^(a)The vehicle is currently being manufactured.

In addition, several tactical vehicle designs have been or are being manufactured exclusively for the export market, although some have been evaluated by one or more of the United States armed services. These vehicles include the following:

Manufacturer

AM General
 BMY Wheeled Vehicles
 DaimlerChrysler/Jeep Division
 Freightliner Corporation
 Freightliner Corporation

General Motors Corporation

General Motors Corporation
 Mack Trucks Incorporated
 Mack Trucks Incorporated
 Navistar International

Program

AM 715, a follow-on to the M715; serial production complete.
 3-Tonne Cargo Truck, evaluated by the United States Marine Corps.
 AM 720, a follow-on to the AM 715; serial production ongoing.
 All Terrain Tow Vehicle, under evaluation by the United States Air Force.
 Military Truck Family, a family of trucks based on the M915A2 and M916A1 trucks; in production.
 Commercial Utility Cargo Vehicle II, a follow-on to the original M1008 series; in production for export.
 Commercial Enhanced Mobility Medium-Duty Truck, in production.
 RD8226SX Tank Transporter; in production.
 RM6866SX, a 10-ton truck in service and available for new orders.
 F5070 Tank Transporter; in production for export.

Application. Military lightweight vehicles, trucks, and cargo carriers of both wheeled and tracked/half-tracked construction that are used for a variety of military transport/logistic missions.

Price Range. In the various Fiscal 2002 and Fiscal 2003 documents, the unit prices of the tactical vehicles range from \$110,479 for light vehicles (such as M998) to \$454,037 for heavy military trucks (such as the M1074 series).

Technical Data

<u>Designation</u>	<u>Configuration</u>	<u>Max Load</u>
M35/M44 series:	6x6	4,535 kilograms
M123:	6x6	54,545 kilograms
M151:	4x4	554 kilograms
M520 series:	4x4	8,260 kilograms
M973:	Tracked	2,250 kilograms
M977 series:	8x8	10,100 kilograms
M809 series:	6x6	9,070 kilograms
M880 series:	4x4, 4x2	1,133 kilograms
M916A1:	6x6	29,629 kilograms
M923:	6x6	9,072 kilograms
M925:	6x6	9,072 kilograms

<u>Designation</u>	<u>Configuration</u>	<u>Max Load</u>
M927:	6x6	13,608 kilograms
M928:	6x6	13,608 kilograms
M939A2:	6x6	4,536 kilograms
M973:	Tracked	2,250 kilograms
M977:	8x8	9,480 kilograms
M998 series:	4x4	1,134 kilograms
M1008 series:	4x4	544-1,792 kilograms
M1074:	10x10	14,696 kilograms
M1078 series:	4x4	2,268 kilograms
Mark 48/14:	8x8	20,412 kilograms

Variants/Upgrades

Variants. The various types in a series are given different M designations. In addition, trucks are sometimes modified into specialized variants by the users in the field. Often, especially if the modification becomes widespread in the inventory, these modified vehicles receive a new submodel designation.

Modernization and Retrofit Overview. Service life extension programs have been a large part of the Army's strategy to achieve the goals of the Army Tactical Wheeled Vehicle Modernization Plan, described below. This portion of the plan provides vehicles with increased reliability and reduced operating costs compared to today's aging fleet. For example, the program can extend the service life of the M35/M44 2½-ton truck for 12 years, and the life of the M54/M809/M939 5-ton truck for 13 years. Basically, the scope of work is as follows:

- Trucks disassembled and stripped to frame.
- Current technology diesel engine installed.
- Redesigned brake system installed.
- New wiring harness installed.
- If necessary, gearbox, transfer case, body parts, axles replaced/rebuilt.
- Rustproofing and chemical resistant paints applied.
- Truck road-tested.

The remanufacturing process is so complete that the user receives what is essentially a new truck for about half to two-thirds the price.

Because of budgetary constraints in the 1990s, the Army's ambitious plan to procure over 100,000 new 2½- and 5-ton trucks under the Family of Medium Tactical Vehicles program was considered in jeopardy. The Army began to examine several options for the modernization and retrofit of its 2½- and 5-ton trucks instead. The inventory of heavier trucks was at that time much more modern and did not need to be addressed for some time.

2½-Ton Service Life Extension Program Contracts Awarded. In May 1992, the United States Army awarded Cummins Military Systems Company and AM General contracts to design, engineer, build, and deliver eight M39 and M44 2½-ton 6x6 trucks, remanufactured under the Service Life Extension Program, for test and evaluation. The program was called the Extended Service Program. The vehicles were improved with the installation of the more efficient Cummins 6B5.9 diesel engine, among other components.

Following the completion of the service trials, the AM General proposal was selected and the Army began awarding contracts that covered 2,483 vehicles under the initial multiyear Extended Service Program. Further options have been exercised for an additional 1,005 trucks, and more are expected. Cummins was chosen to supply about 300 remanufactured 2½-ton trucks to the United States Army for a Foreign Military Sales contract. These vehicles are powered by the Cummins B-series 5.9 liter, six-cylinder, direct injection supercharged diesel engine. Other improvements include installation of a new cooling and filtration system; electrical, brake, fuel, clutch, exhaust, and safety enhancements; and a special multipurpose body. The refurbishment cost is about half that of a comparable new vehicle, \$62,096 in a recent contract. However, in the Fiscal 2000 budget, Congress deleted all funding for the multiyear Extended Service Program, leaving it in limbo.

In addition to the now-dormant AM General remanufacture program, Army National Guard units in Kansas and Mississippi have, in a unique effort, been remanufacturing 13,000 M35 trucks. The trucks began to be torn down in the summer of 1998 at Camp Funston in Kansas and Camp Shelby in Mississippi. When rebuilt, a new Caterpillar 3116 diesel engine, Allison 1545 automatic gearbox, new cooling system, rebuilt axles and transfer case, new central tire pressure regulation system, and wiring and other components are integrated with the truck. New serial numbers and

registrations are given to the remanufactured truck, which is designated M35A3.

While industry (AM General in particular) was obviously less than pleased with the program, it eventually accepted it. AM General quoted a unit price of \$60,000 per truck, while the National Guard figure was \$52,000. And the Guard has extensive experience in heavy maintenance and rebuild of other items, including the M60 tank, M113 armored personnel carrier, and artillery pieces. The mechanics doing the work at the two camps have an average experience level of almost 17 years. Each facility has been remanufacturing 260 trucks per year.

5-Ton Extended Service Program. Shortly after the 2½-ton portion of the modernization and retrofit plan was under way, the 5-ton portion was begun. All three services have a need to modernize their 5-ton trucks, and a joint program has been developed. The Medium Tactical Truck Remanufacture program office was set up in 1996 to coordinate the combined services program. The three services have a need to modernize at least 19,000 M809 and M939 trucks, although the total could run to 24,000 trucks. The program was to be essentially the same as that being conducted for the 2½-ton trucks.

On June 20, 1996, the prototype design solicitation was released to industry. Each contractor (Oshkosh Truck Corporation, Stewart & Stevenson, and AM General) upgraded two prototype trucks for competitive evaluation. One design was a general one to extend the operational life, while the other was specific to the requirements of the Marine Corps, which desires to enhance capacity and off-road performance. In late 1986 the Oshkosh proposal was selected as the winning design for the general upgrade program. Five test trucks were delivered to the Marines and five more to the

Army under the joint program. All the evidence indicated that the Army was proceeding with the Oshkosh program, but again Congress truncated the effort by cutting the funding. Meanwhile, the Marines' concurrent program for its 7,300-odd trucks was dealt a mortal blow in May 1998 when the service opted for the procurement of new trucks instead of the remanufacture program.

Truck Safety Concerns. During the period 1980-1997, a total of 1,274 military personnel were killed operating medium and heavy U.S. Army trucks, and 8,353 personnel were injured. All this cost \$708,069,000 for the 18-year period, or about \$39.3 million per year. To address this problem, the U.S. Army turned to commercial technologies in 1998 in order to improve the safety of its truck cabs.

The U.S. Army Tank, Automotive and Armaments Command has contracted with the Phoenix (Arizona) firm Simula Technologies to investigate and integrate commercial technologies to enhance the level of safety in its medium and heavy trucks. These technologies are both passive and active. As there are no standards for U.S. Army truck cabs, a number of the improvements are quite simple in nature. For example, the M977 series trucks have a crowded and austere interior with very little padding. In addition, a number of right angles in the interior of the cab can cause injury in the event of a collision. In short, little attention was directed toward occupant safety when the truck was designed.

The safety enhancement program is being conducted under the Dual Use Applications Program, a jointly funded effort in which the Department of Defense and private industry cooperate to adapt and integrate commercial technologies to military needs.

Program Review

Background. The armed services are dependent on an adequate inventory of tactical and support vehicles to provide mobility and support for a variety of general and specific operations. These vehicle types range from personnel transport and cargo transfer to artillery and combat vehicle transport. Military specification vehicles are used primarily by the Army and Marine Corps for on- and off-road tactical support for tasks unique to the military such as ammunition resupply. Commercial (non-tactical) vehicles are used mainly for rear area work and on-road transport roles that do not require high mobility.

The overall strategy of acquiring tactical wheeled vehicles is to maximize the non-developmental item concept. This allows the Army to leverage commercial industry developments and to keep its tactical wheeled vehicle inventory current with modern technology.

Inherent in the non-developmental item concept is the recognition that the Army will accept the commercial truck industry's proven state-of-the-art technology, with the exception of a few existing military-unique requirements. The non-developmental item concept allows for a range of available vehicles, including purely commercial vehicles (with military paint) typified by line haul vehicles; commercial vehicles adapted for military use with minimum modifications, typified by the Commercial Utility Cargo Vehicle and the various Heavy Equipment Transporters; and an assemblage of commercial components into a military-unique vehicle such as the M998 series High Mobility Multipurpose Wheeled Vehicle, the M1078 series Family of Medium Tactical Vehicles, and the M977 series Heavy Expanded Mobility Tactical Truck.

Under the direction of the United States Army Tank-Automotive and Armaments Command, the Army uses a mix of about 45 percent non-developmental item commercially available vehicles and 55 percent specially designed tactical vehicles. The Marine Corps is similar. In contrast, the Air Force, Navy, and Coast Guard rely almost exclusively on commercially available vehicles.

Army Tactical Vehicle Modernization Plan. In April 1989, the United States Army released a major study on the tactical wheeled vehicle problem, entitled the *Army Tactical Wheeled Vehicle Modernization Plan*. The plan was designed to be used as a roadmap for the continuous modernization of the tactical wheeled vehicle inventory through the year 2020. It differed from previous analyses by imposing fiscal constraints and documenting the trade-offs and decisions required to reduce procurement and sustainment costs.

The plan focuses on Army tactical wheeled vehicle modernization and on developments in the perceived threat, projected operating environments, advances in domestic heavy automotive and related technologies, refinements in the force designs and force structure, and changed fiscal guidance. The report's stated objectives are as follows:

- Establishment of an integrated concept for developing and fielding current and future tactical wheeled vehicles to support Army doctrine, force design and structure, with priority on distribution to first-to-fight units;
- Establishment of a baseline and objective funding concept that encourages optimum use of resources

According to the original plan, the Army's retirement schedule by fiscal year is as follows:

	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>
M880	6000	6000	1200	-	-	-	-	-	-
M151	2000	2000	2000	2000	691	-	-	-	-
2½ ton	-	-	1500	1600	1600	1800	1800	1800	1800
5 ton older	-	-	500	500	500	600	600	600	700

However, as detailed above in the Modernization and Retrofit Overview section, the lack of funds prompted the Army to undertake a major remanufacture program for its 2½- and 5-ton trucks, but these programs were cut by Congress.

Desert Storm Report Card. According to Army logistics officers, the Army's fleet of medium and heavy trucks performed better than expected in the Second Gulf War (1991). However, the Army's light trucks and tank transporters really began to show their age. Systems that received praise from logistics personnel include the M939 series of 5-ton trucks, the M915 tractor, and the M977 series Heavy Expanded Mobility Tactical Truck. These vehicles went all the way into Iraq hauling

for Army tactical wheeled vehicle modernization and keeps the total cost from escalating;

- Reduction of the number of vehicle types through use of a single vehicle in the light portion of the inventory (High Mobility Multipurpose Wheeled Vehicle type), and two families of heavier vehicles (Family of Medium Tactical Vehicles and Family of Heavy Tactical Vehicles);
- Establishment of key criteria for useful life, procurement objectives, service life extension programs, and retirement and washout in order to ensure needed warfighting capabilities; and
- Incorporation of emerging technologies into vehicle design and production to enhance tactical mobility.

Under the plan as it was originally implemented, those vehicles that have reached or exceeded their life expectancy or procurement objective quantities were to be systematically eliminated from service and replaced with new vehicles. The Army stated that selected types of vehicles would soon be retired. By September 1991, the M561 Gama Goat and older "gas burning" 2-1/5-ton trucks had been retired. The GOER and M123, members of the heavy fleet, were retired at the same time. Additionally, the M880 and M151 vehicles began to be retired. Those retired first were from war reserve stocks or the operational readiness float, or in maintenance backlogs. The Army has been disposing of the vehicles through Foreign Military Sales or by property disposal.

critically needed supplies and ammunition. However, the trucks could not keep pace with the rapid advance of troops into Kuwait and Iraq. Since the trucks are not designed to match the off-road speed of the M1 Abrams tank or the M2 Bradley mechanized infantry combat vehicle, they followed 29 to 40 kilometers (18 to 25 statute miles) behind the lead elements, establishing supply bases from which supplies were then ferried forward.

While the above-mentioned vehicles received high marks for their performance in the desert theater, two vehicles received less than perfect marks – the 2½-ton trucks and the M911 Heavy Equipment Transporters. The Vietnam-era 2½-ton trucks received no praise from

anyone who had to work on them. According to one source, the vehicles performed so poorly in the Middle East that Army Secretary Michael Stone issued a directive that the trucks be retired and left behind in Saudi Arabia. If returned, the annual maintenance cost for each vehicle would be \$5,000 to \$6,000.

The M911 Heavy Equipment Transporter's poor performance stemmed from its high rate of tire failure. The problem centered on the vehicle's M747 trailer, which has 16 tires and a history of blowouts. If the load is not positioned absolutely right, the tires will often overheat and eventually fail. The 7th Transportation Group, Fort Eustis, Virginia, reported an average of four to six tire blowouts on one trip. The problem became so chronic that the unit was forced to leave the needed transporters idle for want of tires. Army officials were aware of the problem, since the M911, designed to transport 54.43-tonne (60-ton) loads, had problems carrying the 61.3-tonne (67.57-ton) M1A1 Abrams tank. The next-generation tank transporter, the M1070 Heavy Equipment Transporter, entered service in 1992. Accompanying it was the new M1000 trailer.

One other category that was found wanting was the Army's inventory of forklifts. The two predominant designs, the 4,545.5 kilogram (10,000 pound) forklift and the 1,818.2 kilogram (4,000 pound) forklift, lacked a variable reach capacity to fetch supplies at different heights, which made unloading some supplies awkward. Forklifts in general were in short supply, causing bottlenecks at airfields and ports in Saudi Arabia. This situation has subsequently been corrected with the acquisition of several newer types of forklifts, including the All-Terrain Lifter Army System rough terrain forklift, a product of TRAK International.

U.S. Army/U.S. Marine Corps Truck Programs. The following are the major active U.S. Army and Marine Corps tactical vehicle programs:

M915 Series. In January 1977, the Tank and Automotive Command issued a request for technical proposals for a series of heavy trucks ranging from 22,680 to 34,019 kilogram (48,896 to 74,842 pound) gross vehicle weights. The Army subsequently received technical proposals from six truck manufacturers: AM General, Four Wheel Drive Corporation, General Motors Truck and Coach, International Harvester, Kenworth Truck Corporation, and White Autocar Corporation. All six manufacturers offered bids. The bids were opened in June 1977, with AM General the lowest at \$252.8 million. In June 1977, a four-year contract was awarded to AM General for 5,507 trucks, with options on an additional 5,507 trucks.

The first test vehicles were delivered in 1978. In September 1981, AM General was awarded an additional contract for 2,511 M915A1 (6x4) tractor

trucks. The M915 series is based on the Centaur series of trucks built by the Crane Carrier Company of Tulsa, Oklahoma. The M915 is used primarily for the long-distance movement of containers and normally tows the 30.84 tonne (34-ton) M872 semi-trailer. It replaced the 5-ton military series tractors and certain commercial tractors used in moving cargo from the port of embarkation to the division rear boundary. The M915 series consists of six variants: the M915, M916, and 920 tractor trucks; the M917 tipper; the M918 bituminous haul truck; and the M919 concrete mixer. A license agreement between AM General and Crane Carriers gives rights to AM General to manufacture and sell vehicles to the United States government. The contract also requires complete aftermarket support of the M915, including spare part provisioning and a full complement of maintenance and service publications plus training. Production of the original model is complete, and it remains in service with the United States Army.

M915A2/M916A1 Series. In May 1989, Freightliner Corporation began delivery of the M915A2 line haul 6x4 tractor and M916A1 engineering tractor. Although more subdued in appearance than their commercial counterparts, the Freightliner FLD 120 series, the Army's 796 M915A2 vehicles and the 840 M916A1 vehicles have received only minor modifications to bring them up to military specifications. Both trucks are powered by a 12.7 liter Detroit Diesel Series 60, 298.4 kilowatt (400 horsepower), six-cylinder diesel engine which is matched to an Allison HT740 automatic gearbox. Freightliner has developed and put into production a number of variants based on the M916A1. A dump truck, concrete mixer (M916A2), wrecker, and heavy-duty medium equipment transporter (M915A2) are targeted by the company to fill truck shortfalls in the United States Armed Forces. Freightliner has subsequently developed its Military Truck Family based on the M915A2 and M916A1 trucks.

M939. In order to correct deficiencies in the M809 series 5-ton truck and improve vehicle reliability and maintainability, a product improvement program was developed during the 1970s. Among major design changes incorporated on the vehicle were an Allison automatic gearbox, a higher torque-capacity transfer case, a three-member cab, an improved cooling system, a fail-safe braking mechanism, a stronger fifth wheel, and self-diagnostic capability. In the fall of 1979, the improved vehicle was type-classified the M939 series 5-ton truck. In April 1981, a five-year production contract was awarded to AM General which called for 11,394 trucks (later increased to 22,789). The total value of the contract eventually reached \$1.6 billion.

Limited production began at AM General's South Bend (Indiana) plant in the first half of 1982, and full-scale

production began in September 1982. The new truck achieved Initial Operational Capability in June 1983, and became available for export sales in late 1983. The original contract was modified in September 1985 by replacing the bias ply tires with single radial tires, which affected the last 5,000 production vehicles. These radial-tired vehicles were called the M939A1. Follow-on procurement of the M939 series (specifically the M939A2) was initiated with the release of the production solicitation package on May 1, 1985. Based on congressional guidance, the solicitation package allowed potential bidders to propose alternative engines, matched to the current drive train, which meet federally mandated emission standards. A congressional mandate required that these alternative engines be tested by potential bidders in a government-furnished M923 5-ton cargo truck prior to the production award. Also, it required all bidders to incorporate a central tire inflation system to allow a change of air pressure in the radial tires while on the move, thereby attaining cross-country mobility.

In May 1986, a five-year production contract was awarded to ARVECO (a joint venture of BMY and General Automotive Company) which called for a total of 15,218 trucks with a 100 percent option. The initial \$145 million, one-year contract awarded to ARVECO was for 2,046 M939A2 vehicles. AM General completed its five-year contract in September 1986, but production was extended until April 1987 by the award of a further contract for 1,107 vehicles worth \$107 million, with an option for 289 more. Following the contract, BMY acquired most of ARVECO from General Automotive, and first deliveries were made from the new BMY plant at Marysville, Ohio, in 1987. The original M939 had been manufactured in or converted to 22 variants; 14 of those are available with the M939A2. The M939A2, with its central tire inflation system, new engine, and chemical agent-resistant paint, was first fielded in 1989. The truck is designed to fill the gap between the aging fleet of 5-ton trucks and the fielding of the Family of Medium Tactical Vehicles. Production of the M939A2 was continued by BMY Wheeled Vehicles to fill both domestic and export orders before the company ceased operations in the early 1990s.

M973 Small Unit Support Vehicle. The M973 Small Unit Support Vehicle is a tracked, all-season/all-terrain vehicle. The vehicle has been fielded to meet the requirements of an infantry platoon operating in northern and mountainous regions, namely, Alaska and Europe. A marketing study in 1981 resulted in the nomination of one candidate vehicle, the Haggblunds Vehicle Bv 206. Under an approved sole-source acquisition authority, a production contract for 302 vehicles was awarded in March 1983 to the Swedish

firm. Initial testing was successfully completed in December 1983. The first production vehicles were delivered to the Army in January 1984, and deliveries continued into 1986. Initial Operational Capability was reached in Alaska in August 1984. However, delayed procurement of replenishment stocks of repair parts postponed subsequent fieldings in Alaska until mid-1986.

In support of the increased requirement of the 6th Infantry Division (Alaska), a rebuy of up to 850 vehicles was deemed necessary. On August 26, 1987, the Undersecretary of the Army determined that the sole-source acquisition would be solicited from Haggblunds. The solicitation was released on September 23, 1987, with Haggblunds responding in October 1987. A contract for 385 vehicles was awarded to Haggblunds in June 1988, with options that eventually stretched the total to 1,152 vehicles. The initial product testing was completed in March 1989. Shipments began in April 1989 and were completed in early 1993. Haggblunds is now a component of the Alvis Group.

M977 Series Heavy Expanded Mobility Tactical Truck. One vehicle that received absolutely no complaints from logistic troops was the M977 series Heavy Expanded Mobility Tactical Truck manufactured by Oshkosh Truck Corporation, Oshkosh, Wisconsin. This vehicle, first fielded in 1982, is the Army's premier 10-ton 8x8 truck. According to Melvin Brucz, the Army's program executive officer for combat support, the vehicle performed exceptionally well in the Middle East. Brucz stated, "Users in the field referred to it affectionately as 'the ship of the desert.' We have received zero complaints about the performance of the HEMTT." This program is covered in detail in a separate report in this tab.

M998 Series High Mobility Multipurpose Wheeled Vehicle. The M998 High Mobility Multipurpose Wheeled Vehicle is a light, highly mobile vehicle, consisting of a 4x4 1¼-ton common chassis and various kit applications for joint service vehicle roles such as weapons carrier, utility vehicle, ambulance, and communications vehicle. The vehicle performs the mission of a variety ¼- to 1¼-ton vehicles, including the M151 Jeep. In July 1981, competitive development contracts were awarded to Teledyne Continental, AM General, and Chrysler to design and build 11 prototypes each. Vehicles were delivered in April 1982, and integrated development and operational competitive testing was completed in the spring of 1983. On March 22, 1983, a five-year, multiyear, fixed-price \$1.2 billion contract was awarded to AM General for production of 54,973 vehicles, with option for an additional 54,973 vehicles. A fixed-price development contract was also awarded to AM General for the refurbishment of 11 prototypes and the design and build of a Stinger Carrier

and squad carrier configurations. The first-year production contract was for \$59.8 million and included 2,334 vehicles. The first production vehicles rolled off the line in July 1984. For additional information, see the "M998" report in this tab.

M1008 Series Commercial Utility Cargo Vehicle. The Commercial Utility Cargo Vehicle family is composed of tactical, standard mobility and light-duty 4x4 trucks, which are commercially available and are modified to meet unique military requirements. The Commercial Utility Cargo Vehicle family has replaced portions of the M151A 2¼-ton truck family and of the M880/M890 ¼-ton commercial truck series. The Commercial Utility Cargo Vehicle family is composed of the following: M1008 1¼-ton tactical truck (cargo), M1009 ¾-ton tactical truck (utility), M1010 1¼-ton tactical truck (ambulance), M1028 1¼-ton tactical truck (cargo shelter carrier), and M1031 1¼-ton tactical truck (truck chassis).

In July 1982, a contract worth \$689 million was awarded to General Motors for 53,248 vehicles. The first production Commercial Utility Cargo Vehicle rolled off the Flint (Michigan) assembly line in August 1983, and was delivered that month. A total of 70,889 vehicles were produced, with the last vehicle rolling off the line in October 1987. Additional production was scheduled, but budget cuts forced the zeroing of the program. In August 1987, a program to modify 419 existing M1031 chassis into heavy-duty M1028 shelter carriers was approved. These vehicles incorporate dual rear wheels for increased payload and side slope stability. Conversion began in mid-1988 and continued through mid-1989. In response to Army requirements, the Tank and Automotive Command scheduled a renewed buy of the Commercial Utility Cargo Vehicle to begin in Fiscal 1992, but it was zeroed by Congress. However, because the rebuy was considered vital to the entire program, it may yet occur. If a major procurement is restarted, it will almost certainly be for the Commercial Utility Cargo Vehicle II, an improved version developed by General Motors. The improvements are related to the engine (both diesel and spark ignition models are offered) and other automotive components. The serial production of the Commercial Utility Cargo Vehicle II, which was available in four basic versions, was completed in 2000. Export customers include Egypt, Ecuador, Lithuania, Saudi Arabia, the United Kingdom, and Venezuela, as well as some undisclosed customers.

M1070 Heavy Equipment Transporter. The next-generation tank transporter, the M1070 Heavy Equipment Transporter, entered service in 1992. A product of Oshkosh, the M1070 was needed in order to transport the newer and heavier versions of the M1 Abrams tank. A total of 1,964 basic model M1070 vehicles, worth

\$275 million, have been procured by the United States Army; more may be ordered in the future. In addition, a number have been sold on the export market.

In 1996, Oshkosh began developing the follow-on to the M1070. The new truck, essentially a new model of the M1070, employs the latest technology, including the Series 60 DDEC III supercharged and aftercooled two-cycle diesel engine rated at 447.42 kilowatts (600 horsepower) and certified by the Environmental Protection Agency, a new state-of-the-art HD 4070PR automatic gearbox with one reverse and seven forward gear ratios, permanently lubricated components, a military standard J1939 databus, advanced engine/chassis/running gear diagnostics, an anti-skid braking system, and a safer, more user-friendly cab. Oshkosh developed and integrated the new technologies under the Heavy Equipment Transporter Technical Insertion Project. The new truck, the M1070E, was followed by the further improved M1070F. This model, through the FASTRAX consortium, has been selected by and is in production for the United Kingdom (92). Meanwhile, the earlier model M1070 remains in production for the U.S. Army.

M1074 and M1075 Palletized Load System Trucks. The Palletized Load System consists of a 16.783 tonne (18.5 ton) payload capacity 10x10 configuration truck that is based on the Heavy Expanded Mobility Tactical Truck. Other components include the M1076 trailer (from Lohr of France), a material-handling crane from Grove (the M1074), and interchangeable/demountable cargo flatracks (M1077). The system was initially used for artillery ammunition resupply, but is now being used for carrying all classes of supply. The unique capability of the system is attributable to its integral self-load/unload design, which enables the driver to load or unload the entire cargo bed from within the cab in a matter of minutes. The M1074 truck (with crane) and M1075 truck (without crane) Palletized Load System vehicles are designed to be efficient and lightweight, and can rapidly move from one mission to the next since the vehicles are not dedicated to a single load/mission. The new system will eventually supplement the existing inventory of dedicated single-purpose vehicles in the 7.26 tonne (8 ton) through 10.89 tonne (12 ton) payload class range. The Palletized Load System program was originally developed under PE#64622A - Heavy Tactical Vehicle. In January 1989, three Phase I prototype contracts were awarded, one to a consortium of General Motors/Military Vehicle Operations (United States) and Maschinenfabrik Augsburg-Nurnberg (Germany) for \$12 million, one to PACCAR for \$6 million, and one to Oshkosh Truck Corporation for \$10.4 million.

The Oshkosh Truck Corporation was selected in August 1990 to provide the Army with its next-generation

tactical truck, the Palletized Load System. A total of 4,333 trucks, 1,900 trailers, and 103,000 flatracks were originally planned for procurement. The initial five-year contract was valued at \$860 million and provided the Army with 2,626 trucks, 1,050 trailers (the Lohr RM22), and 11,030 flatracks. During the Army acceptance tests held between June and September 1992, the system worked as advertised, although a number of small technical problems became apparent. Oshkosh corrected almost all the problems before the second series of tests, held from February through May 1993. The final problems, related to the pallet and handling arm, were corrected by the contractor prior to the final series of acceptance tests, which were concluded in late 1993. Oshkosh is responsible for bringing all vehicles, including those already manufactured, up to specification.

Despite the initial problems, the success of similar British and French vehicles in the Second Gulf War (1991) served to bolster support for the United States program, and it has continued to run on schedule. In 1996, the final year of the first round of funding, a total of 173 trucks and 50 trailers were procured.

Another version of the Heavy Expanded Mobility Tactical Truck, the XM1120, which is based on a modified version of the 8x8 M977 Heavy Expanded Mobility Tactical Truck, has been proposed for a variety of Palletized Load System applications. This vehicle is being created under the Heavy Expanded Mobility Tactical Truck Extended Service program.

M1078 Series Family of Medium Tactical Vehicles.

The Family of Medium Tactical Vehicles program is to provide a new, modern family of trucks with enhanced capabilities along with reduced maintenance and operating costs. Basically, both the Army's existing 2½-ton and 5-ton trucks were designed in 1949 and have undergone many minor improvements through the years. Still, the basic chassis, axles, and other components have remained unchanged overall. The new Family of Medium Tactical Vehicles is giving the Army an opportunity to take advantage of all the technology that has been developed over the past 40 years. The new trucks will also increase the amount of parts interchangeability and common logistics support between the light (2½-ton) and medium (5-ton) payload categories. A large number of configurations in both light and medium variants are in various stages of development and production. The Family of Medium Tactical Vehicles is being complemented by the procurement of two tactical trailer models, one for each weight class.

Three firms competed for this program. In October 1988, Phase I development contracts were awarded to Tactical Truck Corporation (a joint venture of General

Motors and BMY Wheeled Vehicles), Teledyne Continental Motors, and Stewart & Stevenson. These developmental contracts were completed in January 1991 and, following durability, performance, troop, and other evaluations, the Stewart & Stevenson entrant was selected in October 1991. The winning entry is based on the then-Steyr Antriebstechnik (Austria) model 12 M 18 truck.

The Light Medium Tactical Vehicle member of the family is a 4x4 configured, diesel-powered truck with a 2,268 kilogram (4,989.6 pound) load capacity. The Light Medium Tactical Vehicle has four main configurations, although additional specialized configurations are envisioned. The base configuration is the M1078 standard cargo truck; the M1079 is a cargo van; the M1080 is a common chassis for an ambulance, transport model equipped with a shelter body and other configurations; and the M1081 is the standard cargo version strengthened for low-altitude parachute extraction from transport aircraft. All versions of the A0 model use the Caterpillar 3116 ATAAC 6.6 diesel engine rated at 167.58 kilowatts (225 horsepower) and the Allison MD-D7 automatic gearbox and an Allison transfer case.

The Medium Tactical Vehicle is a 6x6-configured, diesel-powered truck with a 4,536 kilogram (9,979 pound) carrying capacity. It is being procured in 13 main configurations. These include the M1083, M1084, M1085, and M1086 cargo models, differing in wheelbase length and type of material-handling equipment; the M1087 expandable van; the M1088 tractor truck; the M1089 wrecker; the M1090 tipper; the M1091 5,640 (1,500) fuel bowser; the M1092 base chassis for use as an expandable van, tanker, ambulance and other applications; the M1093 cargo truck strengthened for low-altitude parachute extraction from transport aircraft; the M1094 tipper truck strengthened for low-altitude parachute extraction from transport aircraft; and the M1096 long wheelbase chassis for use as the basis for a communications shelter transport, maintenance truck, mess truck, and weapons prime mover. The engine used on the A0 model of all the Medium Tactical Vehicle trucks is the Caterpillar 3116 ATAAC 6.6 diesel engine uprated at 216.34 kilowatts (290 horsepower). It uses the Allison MD-D7 automatic gearbox and an Allison transfer case.

For more information on the Family of Medium Tactical Vehicles program, please see the pertinent report in this tab.

Mark 48/Logistics Vehicle System. The Logistics Vehicle System is used only by the United States Marine Corps. The Logistics Vehicle System is composed of two separate chassis modules that are coupled together through an articulation joint to form an

integral, all-wheel-drive, 8x8 vehicle. The system includes the following four 4x4 rear modules: the Mark 48/14 logistics platform truck, the Mark 48/15-powered wrecker/recovery unit, the Mark 48/16 tractor truck, and the Mark 48/17 powered dropline cargo truck. In September 1983, Oshkosh Truck Corporation received a sole-source multiyear contract for 1,482 systems. Vehicle operational testing commenced in May 1984 and was completed in March 1985. The test program comprised a 32,180 kilometer (20,000 statute mile) durability test as well as numerous performance tests such as air transportability, cold room, and fording. Additionally, testing was conducted at Yuma Proving Ground (full load cooling and dust) and at Savannah, Illinois (ammunition and rail certification).

In the mid-1990s, the Marines began examining a potential replacement for the Mark 48/Logistics Vehicle System. Originally, a new vehicle was planned for long-term (2010-2020) development under the Expeditionary Logistics Transport Vehicle program. However, by 1997 this idea had been abandoned in favor of a nearer-term (2005) replacement or several options for upgrades to the existing inventory.

Marine Corps Medium Tactical Vehicle Replacement Program. As noted above, the U.S. Marine Corps opted out of a remanufacture program for its M809 and M939 trucks. Instead, the service decided to procure an all-new truck that met its specific requirements. Following an evaluation, it was announced in December 1998 that Oshkosh Truck Corporation had won the contract to provide the U.S. Marine Corps with up to 8,168 new medium payload-class trucks. The multiyear contract for 5,666 trucks is worth \$853 million, with the initial award being for \$49.2 million. An option for 2,502 additional trucks is included in the contract.

The M923 Medium Tactical Truck Replacement truck is a 6x6 vehicle that is available as a recovery vehicle, fuel tanker, tipper truck, and tractor. The four initial models are the M923 (also called the Mark 23), the standard 4.674 meter (15.33 foot) wheelbase cargo truck; the M925 (Mark 25) standard 4.674 meter (15.33 foot) wheelbase cargo truck with winch; the M927 (Mark 27) extended 5.49 meter (18.01 foot) wheelbase cargo truck; and the M928 (Mark 28) extended 5.49 meter (18.01 foot) wheelbase cargo truck with winch. The on-road payload rating is 13.61 tonnes (15 tons), while the off-road rating is 6.35 tonnes (7 tons). Caterpillar provides the C-12 electronically controlled diesel engine rated at 316.92 kilowatts (425 horsepower), and the

HD 4070P automatic gearbox is provided by Allison. Oshkosh has developed its proprietary advanced design Oshkosh Modular Independent Suspension system for this truck. The truck is thoroughly modern in design with a number of advanced features, including a central tire-pressure regulation system.

The Future Tactical Truck System. In late 2001, the U.S. Army began a serious examination of its future truck requirements. Under the development effort, several agencies, working under the management of the U.S. Army Transportation Center located at Fort Lee, Virginia, are examining various concepts for the next-generation trucks. A major stated goal is to develop a common chassis that can be easily reconfigured to a variety of missions, including troop or cargo transport, weapons carriage, or medical transport. The development of what is being called the Intelligent Load Handling System is integral to the development of the vehicle itself. The program is still in its formative stages, but it is being run at a steady pace, with an in-service goal of 2008, concurrent with the stated in-service date of the Future Combat Systems.

At this time, the exact requirements for the new trucks are still being worked out. Indeed, the weight classes of the trucks involved in the program have yet to be determined. The Future Tactical Truck System could yet evolve into a larger program encompassing all Army trucks, using a common chassis for medium and heavy trucks. This aspect of the program is being called the Future Tactical Truck System Maneuver Sustainment program.

Trailers. Trailers are an economical and necessary means for increasing the capability of all tactical wheeled vehicles, and provide bulk haul capability to the logistical support structure. Trailers transport cargo, ammunition, bulk fuel, oil and lubricants, and other cargo and have payloads ranging from 227.73 kilograms (½ tons) to 30.84 tonnes (34 tons) for breakbulk/container trailers. Other specialized trailers, such as the M1000, have capacities of 80 tonnes and are used to haul tanks. Approximately 185 different types of trailers, from the diminutive M416 to the massive M1000, are in use with the Army. Although many of the existing trailers are very old, they have been well maintained and are still in use. For this reason, plus the fact that there is a shortfall of trailers in the inventory, the modernization plan described at the start of this section recommends that some \$50 million per year be earmarked for trailer procurement.

Funding

The following data are from the Fiscal 1993 through Fiscal 2003 P-1 documents. The data for the M998 series, M1078 series, and M977 series are provided in the pertinent sections in this report. Effective with this report, we are eliminating the numerous commercial crash, rescue, and general-purpose truck line items for the various services. The historical data will be retained, but the data from Fiscal 2001 on will be in the new format. If the deleted information is required, it can be accessed through the client query service.

	<u>U.S. FUNDING</u>					
	<u>FY92</u>		<u>FY93</u>		<u>FY94</u>	
	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>	<u>QTY</u>	<u>AMT</u>
<u>United States Army</u>						
Heavy Equipment						
Transporter	-	167.1	-	-	-	-
Family of Heavy						
Tactical Vehicles	281	99.2	961	309.5	945	403.0
Tactical Trailers/						
Dolly Sets	-	35.4	-	40.9	-	14.1
Semitrailer, Tank						
5,000 gallon	203	20.7	226	24.4	-	-
Semitrailer, Van						
12 ton, 4 wheel	-	-	-	-	39	1.6
Semitrailer, container						
transport, 22½ ton						
Medium Truck						
Extended Service						
Program	-	-	-	-	241	17.6
<u>United States Navy</u>						
General-Purpose						
Trucks	-	22.8	-	15.2	-	12.6
Trailers/Truck						
Tractors	-	7.4	-	3.2	-	3.0
<u>United States Marine Corps</u>						
Logistics Vehicle	127	13.8	164	18.0	81	12.1
System						
Trailers	-	7.8	-	2.0	-	1.3
<u>United States Air Force</u>						
Truck, stake/						
platform	411	5.4	277	3.8	-	-
Truck, cargo-						
utility ¾ ton	844	13.3	536	10.6	-	-
Truck, cargo-						
utility ½ ton	307	4.2	195	3.2	-	-
Truck, pickup						
½ ton	-	-	-	-	781	8.9
Truck, pickup						
compact	-	-	-	-	1291	13.4

	FY92		FY93		FY94	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Air Force (continued)</u>						
Truck, multi-stop 1 ton	504	9.0	-	-	67	1.4
Truck, pane	258	2.8	16	1.8	-	-
Truck, carryall	658	9.4	439	6.5	175	2.9
Medium tactical vehicle	69	6.5	28	2.5	-	-
Truck, cargo 2½ ton	-	-	94	3.1	-	-
Truck, tractor	244	13.8	89	5.6	1	0.1
Truck, dump 5 ton	174	7.8	117	5.1	-	-
Truck, utility	-	-	239	5.7	-	-
Truck, phone line construction	-	-	32	3.9	-	-
Truck, tank fuel R-11	2	3.2	-	-	157	22.8
Truck, crash P-19	1	0.2	-	-	-	-
Truck, crash P-23	10	4.3	48	22.1	3	1.3
Truck, water P-26	11	1.6	17	2.8	18	3.0
Heavy rescue vehicle	-	-	-	-	8	1.3
Truck, pumper P-24	-	-	19	3.3	15	2.5
Truck, pumper P-22	-	-	24	3.8	26	3.9
Total	-	455.7	-	497.0	-	526.8

	FY95		FY96		FY97	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Army</u>						
Heavy Equipment Transporter	-	-	-	-	-	-
Family of Heavy Tactical Vehicles	-	15.6	-	119.7	-	241.4
Tactical Trailers/Dolly Sets	-	30.1	-	13.9	-	5.1
Semitrailer, Tank 5,000 gallon	-	-	-	-	-	-
Semitrailer, Van 12 ton, 4 wheel	55	4.8	33	3.1	51	4.9
Semitrailer, container transport, 22½ ton	-	-	-	-	-	0.2
Semitrailer, 40 ton, M870A1	-	-	-	-	-	-
Semitrailer, tank, 7,500 gallon	-	-	-	-	-	-
Truck, tractor, M915/915	-	-	-	-	-	-
Truck, tractor M878 Program	-	-	242	19.4	667	39.8

	FY95		FY96		FY97	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Navy</u>						
Medium Truck						

Extended Service						
General-Purpose						
Trucks	-	11.4	-	7.8	-	-
Trailers/Truck						
Tractors	-	2.8	-	1.0	-	-
Tactical Vehicles	-	-	-	-	-	1.3
<u>United States Marine Corps</u>						
Logistics Vehicle						
System	109	16.5	-	-	-	-
Logistics Vehicle						
System Replacement	-	-	-	-	-	-
Medium Tactical Vehicle						
Replacement	-	-	-	-	-	-
Commercial Cargo						
Vehicles	-	7.7	-	6.8	-	8.8
Trailers	-	2.5	-	10.2	-	17.1
<u>United States Air Force</u>						
Truck, stake/						
platform	-	-	-	-	-	-
Truck, cargo						
utility ¾ ton	-	-	111	2.8	332	8.6
Truck, cargo						
utility ½ ton	-	-	-	-	266	6.1
Truck, pickup						
½ ton	167	2.2	187	2.6	577	7.7
Truck, pickup						
compact	493	5.9	433	4.9	489	5.6
Truck, multi-						
stop 1 ton	436	9.5	164	3.7	420	11.2
Truck, panel	-	-	-	-	-	-
Truck, carryall						
vehicle	-	-	-	-	138	2.6
Commercial Utility						
Cargo Vehicle						
Truck, cargo						
2½ ton SLEP	200	10.7	50	2.7	-	-
Truck, tractor	-	-	58	3.7	38	2.7
Medium Tactical						
Vehicle	-	-	56	5.9	-	-
Truck, dump						
5 ton	-	-	-	-	-	-
Truck, utility	-	-	-	-	-	-
Truck, phone						
line construction	-	-	-	-	-	-
Truck, tank fuel						
R-11	154	22.3	137	18.2	-	-
Truck, crash P-19	-	-	-	-	-	-
Truck, crash P-23	-	-	-	-	-	-
Truck, water P-26	-	-	-	-	-	-

	FY95		FY96		FY97	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Air Force</u> (continued)						
Heavy rescue vehicle	14	2.9	15	3.1	-	-
Truck, pumper P-24	14	2.5	-	-	-	-
Truck, pumper P-22	26	4.3	-	-	-	-
Total	-	144.0	-	222.7	-	363.1

	FY98		FY99		FY00	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Army</u>						
Heavy Equipment						
Transporter	-	-	-	-	-	-
Family of Heavy Tactical Vehicles	286	112.3	489*	191.1	450*	192.6
Tactical Trailers/ Dolly Sets	704	12.6	1085*	16.4	632*	29.3
Semitrailer, Tank 5,000 gallon	27	2.9	30*	5.5	168	27.2
Semitrailer, Van 12 ton, 4 wheel	49	3.7	80	6.3	94	7.5
Semitrailer, container transport, 22½ ton	50	1.9	63	2.6	NL	0.0
Semitrailer, 40 ton, M870A1	3	0.9	41	3.1	NL	0.0
Semitrailer, tank, 7,500 gallon	-	0.6	63	4.1	NL	0.0
Semitrailer, flatbed	NL	-	NL	-	NL	7.7
Truck, tractor, M915/916	-	-	440*	64.9	NL	45.5
Truck, tractor M878 Medium Truck	-	-	35	3.3	15	2.0
Extended Service Program	-	-	595	40.8	-	-
Line Haul Extended Service Program	-	-	55	4.9	115	10.1
Truck, dump, 20 ton	-	-	-	-	62	13.1
<u>United States Navy</u>						
General Purpose Trucks Trailers/Truck	-	-	-	0.1	NL	2.1
Tractors	-	-	-	-	-	-
Tactical Vehicles	-	-	-	-	NL	5.9
<u>United States Marine Corps</u>						
Logistics Vehicle System	-	-	-	-	-	-
Logistics Vehicle System Replacement	-	-	-	3.6	-	-
Medium Tactical Vehicle Replacement	-	-	240	69.5	788	137.9
Light Tactical Vehicle Replacement	503	29.4	1122	68.8	-	-
Trailers	-	-	-	-	-	-

	FY98		FY99		FY00	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Air Force</u>						
Truck, stake/ platform	-	-	-	-	-	-
Truck, cargo- utility ¾ ton	156	4.2	144*	4.0	-	-
Truck, cargo- utility ½ ton	114	2.4	31*	1.5	-	-
Truck, pickup ½ ton	316	4.5	114*	1.8	-	-
Truck, pickup compact	163	2.0	112*	1.6	-	-
Truck, multi- stop 1 ton	307	8.9	315*	9.4	-	-
Truck, panel	-	-	-	-	-	-
Truck, carryall vehicle	125	2.9	160*	2.6	-	-
Commercial Utility Cargo Vehicle	43	1.6	-	-	-	-
Truck, cargo 2½ ton SLEP	-	-	-	-	-	-
Truck, tractor	25	1.8	54*	3.8	-	-
Truck, dump 5 ton	-	-	-	5.2	NL	5.3
Truck, utility	-	-	15*	2.5	-	-
Truck, phone line construction	-	-	-	-	-	-
Truck, tank fuel R-11	-	-	-	-	-	-
Truck, crash P-19	5	2.6	9*	2.3	-	-
Truck, crash P-23	-	-	-	-	-	-
Truck, water P-26	-	-	-	-	-	-
Heavy rescue vehicle	-	-	-	-	-	-
Truck, pumper P-24	-	-	-	-	-	-
Truck, pumper P-22	-	-	-	-	-	-
Total	-	173.7	-	519.7	-	486.2

	FY01		FY02		FY03	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Army</u>						
Heavy Equipment Transporter	-	-	-	-	-	-
Family of Heavy Tactical Vehicles	NL	206.2	NL	161.5	-	242.8
Tactical Trailers/ Dolly Sets	NL	8.0	NL	4.7	-	8.7
Truck, tractor, M915/916	-	-	-	-	-	-
Truck, tractor M878	-	-	-	-	-	-

	FY01		FY02		FY03	
	QTY	AMT	QTY	AMT	QTY	AMT
<u>United States Army (continued)</u>						
Medium Truck Extended Service Program	-	-	-	-	-	-
Line Haul Extended Service Program	402	32.5	240	18.4	-	-
<u>United States Navy</u>						
Tactical Vehicles	NL	19.3	NL	33.9	NL	42.2
<u>United States Marine Corps</u>						
Logistics Vehicle System	-	-	-	-	-	-
Logistics Vehicle System Replacement	-	-	-	-	-	-
Medium Tactical Vehicle Replacement	2001	320.8	1959	309.7	1405	347.6
Light Tactical Vehicle Replacement	-	-	-	-	-	-
Trailers	-	-	-	-	-	-
<u>United States Air Force</u>						
<u>Commercial Utility</u>						
Cargo Vehicle Truck, cargo 2½ ton SLEP	-	-	-	-	-	-

The quantities in the chart are not totaled because some numbers are not released. All dollar amounts are in millions.

* The quantity was not reflected in the Fiscal 2001 or 2002 defense budget documents.

Recent Contracts

Below is a listing of major tactical vehicle contracts awarded by the United States government in the past several years. The listing is as of September 2002. For contract awards on the M977 series and the M998 series, please refer to the appropriate report in this tab.

<u>Date</u>	<u>Amount</u>	<u>Contract</u>	<u>Description</u>
<u>AM General</u>			
1993/09/20	\$59.9	DAAE07-93C-R110	Remanufacture of 998 2 ½-ton trucks.
1994/03/07	\$14.9	DAAE07-93C-R110	Remanufacture of 241 2 ½-ton trucks.
1996/06/20	\$22.5	DAAE07-93C-R110	Remanufacture of 476 2 ½-ton trucks.
1996/07/16	\$26.5	DAAE07-93C-R110	Remanufacture of 440 2 ½-ton trucks.
1996/11/15	\$6.8	DAAE07-93C-R110	Remanufacture of 138 2 ½-ton trucks.
1997/07/31	\$34.7	DAAE07-93C-R110	Remanufacture of 647 2 ½-ton trucks.
1998/02/13	\$8.3	DAAE07-93C-R110	Remanufacture of 132 2 ½-ton trucks.
1998/04/14	\$8.2	DAAE07-93C-R110	Remanufacture of 137 2 ½-ton trucks.
1998/05/12	\$7.8	DAAE07-93C-R110	Remanufacture of 124 2 ½-ton trucks.
1998/10/30	\$26	DAAE07-98D-M001	Remanufacture of 400 2 ½-ton trucks.
<u>BMV Wheeled Vehicles</u>			
1991/02/19	\$129.8	DAAE07-86C-J111	2,633 M939A2 trucks.
1991/05/26	\$20.2	DAAE07-86C-J111	2,633 M939A2 trucks.
1991/05/31	\$54.8	DAAE07-86C-J111	781 M939A2 trucks.
1991/06/28	\$123.5	DAAE07-86C-J111	2,486 M939A2 trucks.
1991/10/01	\$98.9	DAAE07-86C-J111	2,633 M939A2 trucks.

<u>Date</u>	<u>Amount</u>	<u>Contract</u>	<u>Description</u>
1991/10/31	\$5.2	DAAE07-86C-J111	100 M939A2 trucks.
1992/01/29	\$7.9	DAAE07-86C-J111	169 M939A2 trucks.
1992/03/20	\$91.2	DAAE07-86C-J111	Unspecified number of M939A2 trucks.
1992/05/26	\$20.2	DAAE07-86C-J111	338 M939A2 trucks.
1992/09/11	\$87.4	DAAE07-86C-J111	4,006 M939A2 trucks.
1993/04/16	\$29.9	DAAE07-86C-J111	293 M939A2 trucks.
<u>Freightliner</u>			
1991/05/31	\$24.3	DAAE07-88C-J915	223 M916A1 trucks.
1992/06/10	\$86.6	DAAE07-88C-J915	21 M915A2 and 62 M916A1 trucks.
1993/12/15	\$9.5	DAAE07-88C-J915	68 M916A1 trucks.
1995/12/19	\$49.5	DAAE09-96C-X076	269 M915 trucks.
1997/10/16	\$48.7	DAAE07-96C-X076	271 M917A1 trucks.
1998/04/29	\$123.3	DAAE07-96C-X076	678 M915A4 trucks and 1,133 glider kits.
1999/02/11	\$36.8	DAAE07-96C-X076	291 M915A3 trucks.
1999/06/15	\$26.3	DAAE07-96C-X076	187 M915A3 trucks.
1999/09/01	\$9.6	DAAE07-96C-X076	71 M915A3 trucks.
<u>Oshkosh</u>			
1991/03/05	\$119.5	DAAE07-91C-0987	760 Heavy Equipment Transporter Systems.
1991/05/09	\$129.9	DAAE07-90C-R035	248 M1074 and 177 M1075 trucks, 170 M1076 trailers, 1,786 M1077 flatracks.
1991/08/26	\$32.9	DAAE07-90C-0204	172 M1070 Heavy Equipment Transporter truck tractors.
1991/09/24	\$60.4	DAAE07-91C-0987	760 Heavy Equipment Transporter Systems.
1992/01/22	\$10	DAAE07-91C-0987	71 22 ½-ton truck tractors.
1992/07/28	\$141.8	DAAE07-90C-0204	731 M1070 Heavy Equipment Transporter truck tractors.
1992/08/27	\$27.5	DAAE07-90C-R035	39 M1074 and 49 M1075 trucks, 35 M1076 trailers, 369 M1077 flatracks.
1992/08/27	\$21.4	DAAE07-90C-0204	111 M1070 Heavy Equipment Transporter truck tractors.
1992/12/18	\$56.7	DAAE07-90C-R035	116 M1074 and 69 M1075 trucks, 74 M1076 trailers, 775 M1077 flatracks.
1993/04/30	\$28.4	DAAE07-90C-R035	530 M1074 and 402 M1075 trucks, 373 M1076 trailers, 3,917 M1077 flatracks.
1993/05/27	\$8.9	DAAE07-90C-R035	37 M1075 trucks, 15 M1076 trailers, 37 M1077 flatracks.
1993/11/03	\$31.6	DAAE07-90C-0204	163 M1070 Heavy Equipment Transporter truck tractors.
1994/03/01	\$279.4	DAAE07-90C-R035	529 M1074 and 403 M1075 trucks, 373 M1076 trailers, 3,917 M1077 flatracks.
1994/03/18	\$7	DAAE07-90C-0204	36 M1070 Heavy Equipment Transporter truck tractors.
1994/04/06	\$24.3	DAAE07-90C-R035	3,300 M1077 flatracks.
1994/07/22	\$8.5	DAAE07-90C-R035	100 M1076 trailers, 615 M1072 flatracks.
1994/09/22	\$45.4	DAAE07-90C-R035	Conversion of 5,000 A-frame flatracks to ISO standards.
1994/12/21	\$6.9	DAAE07-90C-R035	171 M1076 trailers.
1996/04/10	\$44.3	DAAE07-90C-R035	173 M1074/M1075 tractors, 50 M1076 trailers.
1996/11/20	\$5.4	DAAE07-97C-X003	Phase I submission of prototype 5-tonne remanufactured trucks.
1997/07/01	\$40.2	DAAE07-96C-X159	150 M1075 trucks, 50 M1076 trailers.
1997/07/22	\$9.1	DAAE07-97C-X104	330 container-handling units.
1998/02/05	\$27.9	DAAE07-97C-X159	100 M1074/M1075 truck tractors.
1998/03/16	\$25.2	DAAE07-96C-X159	100 M1070 Heavy Equipment Transporter truck tractors.
1999/02/02	\$42.5	DAAE07-96C-X159	96 M1075 trucks, 96 M1076 trailers, M1077 flatracks.
1999/08/09	\$24.5	DAAE07-96C-X159	100 M1070 Heavy Equipment Transporter truck tractors (Egypt).
1999/12/16	\$43.5	DAAE07-96C-X159	158 M1070 Heavy Equipment Transporter truck tractors.
2000/03/31	\$108.6	DAAE07-99C-M007	2nd year call up for M923 series (709 trucks).
2001/03/29	\$120.7	DAAE07-01D-S014	769 M1075, 1,180 M1076, 683 M1070.

<u>Date</u>	<u>Amount</u>	<u>Contract</u>	<u>Description</u>
2001/04/13	\$197.6	DAAE07-99C-M007	1,315 M923/Mark 23 series trucks.
2001/06/25	\$30.4	DAAE07-99C-M007	199 M923/Mark 23 series trucks.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
May	1981	Oshkosh's Heavy Expanded Mobility Tactical Truck selected for production
	1983	Bv 206 chosen for Small Unit Support Vehicle requirement
November	1985	Family of Medium Tactical Vehicles program initiated
October	1988	Family of Medium Tactical Vehicles competition begun
	1990	Commercial Utility Cargo Vehicle rebuy canceled by Congress
September	1990	Oshkosh wins contract for Palletized Load System
October	1991	Stewart & Stevenson wins Family of Medium Tactical Vehicles competition
September	1993	First M35/M44 rebuild contract awarded
Early	1996	5-ton remanufacture program begun
May	1997	Marines opt out of 5-ton remanufacture program for new-production trucks
December	1998	Oshkosh wins Marine Corps Medium Truck Replacement program
	2001	Future Tactical Truck System program begun
Mid	2003	Development and production continue

Worldwide Distribution

United States tactical vehicles are in widespread service worldwide. The Foreign Military Sales program and various other military aid programs have helped spread United States tactical and logistic vehicles across the globe. Some of the countries that operate these vehicles include **Abu Dhabi, Algeria, Bahrain, Bolivia, Bosnia and Herzegovina, Brazil, Chad, Colombia, Democratic Republic of Congo, Djibouti, Dominican Republic, Ecuador, Egypt, El Salvador, Greece, Grenada, Guatemala, Haiti, Honduras, Israel, Jamaica, Japan, Jordan, Kuwait, Lebanon, Liberia, Luxembourg, Mexico, Morocco, Oman, Pakistan, Panama, People's Republic of China, Philippines, Portugal, Republic of China, Republic of Korea, Saudi Arabia, Senegal, Somali Republic, Spain, Sudan, Switzerland, Thailand, Tunisia, Turkey, United Arab Emirates, Venezuela, and Yemen.**

Forecast Rationale

The spectacular advance of the U.S. Army and Marines in Iraq was made possible by the lowly military truck. According to one estimate provided to Forecast International, keeping an armored division supplied and fighting for one day requires a truck convoy 100 kilometers long. Keeping the Third Infantry Division and the Marines supplied and in combat in the face of distance, sporadic guerrilla resistance, and the worst sandstorm in recent history was a major logistical triumph.

Operation Iraqi Freedom thus highlighted the importance of the logistic tail that keeps a modern army fighting. Although modern forces are frequently criticized for the low ratio of teeth to tail units, in fact it is the investment in the logistics tail that results in the extreme lethality of modern units. One of the lessons of Operation Iraqi Freedom should be that the truck forces require major investments in both capability and quantity. No matter how sophisticated or compact a military force may be, it still needs to transport essentially everything at some point in time, and

modern and efficient trucks are needed. Those trucks need to be protected from attack and provided with the means of self-defense. If this increased emphasis on modernizing the logistics tail is to happen, it will be a first. Truck fleets have traditionally come off second best in terms of procurement funding. This is evidenced by the termination by the U.S. Army of the 2½- and 5-ton service life extension plans as well as the reduced procurement of other types.

The Army's established procurement objective of 286,843 trucks is well below the acquisition objective of 429,721 vehicles. Despite the apparent precision of these numbers, a caveat must be inserted here: our studies have shown that few armies know precisely how many trucks they actually have in their inventory. Under the plan's "minimum procurement strategy," the Army should have allowed for about \$750 million per year for vehicles, and \$50 million for trailers (in constant Fiscal 1989 dollars) for 30 years beginning in 1992. Partly as a result of the changing threat scenario of the 1990s and partly as a result of a generalized pressure on defense

programs, this plan was never realized. However, in its place, the U.S. Army has begun developing what it is calling the Future Tactical Truck System. While the projected in-service date is sometime in 2008, we are not so optimistic, and we are slipping it a year or so. This evolving program will bear close watching as it is clearly of importance to the future truck inventory of the U.S. Army.

As is so often the case, the Marines are going their own way and procuring a family of new 5-ton-payload trucks. This program, initially funded for 5,666 trucks, is forecast to be extended to up to 7,360 trucks. However, this will depend on the progress of current plans to re-orientate the Marines and their role in U.S. operational planning. Depending on how these plans eventually evolve, it is possible that a significant portion of the Marines' logistical tail may be revised to use new technology means of cargo transportation. It should be

noted that in Afghanistan, the Marines were able to establish and support the strategically crucial Firebase Rhino 400 nautical miles from their amphibious warfare group using organic air transport facilities (mostly CH-53 helicopters and KC-130 transport aircraft). This was obviously a different order of magnitude from the demands of Operation Iraqi Freedom, but it suggests that the Marines' freedom from the "tyranny of distance" resulting from their inherent ability to deploy small, self-supporting units may impact on their logistic operational planning.

The forecast chart below is for production for United States procurement only. It does not include the M1078 series Family of Medium Tactical Vehicles, the M998 series High Mobility Multipurpose Wheeled Vehicle, or the M977 Heavy Expanded Mobility Tactical Truck. Forecasts for these vehicles are found in the pertinent reports in this tab.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Designation	through 02	High Confidence Level				Good Confidence Level				Speculative		Total 03-12
		03	04	05	06	07	08	09	10	11	12	
2½-ton service life extension program	67	0	0	0	0	0	0	0	0	0	0	0
5-ton service life extension program	0	0	0	0	0	0	0	0	0	0	0	0
Medium Tactical Vehicle Replacement truck	2,556	1,244	1,475	1,472	613	0	0	0	0	0	0	4,804
Palletized Load System family of vehicles	3,952	418	423	283	0	43	120	119	0	0	0	1,406
M1070 Heavy Equipment Transporter	2,180	141	127	96	32	0	0	0	0	0	0	396
Future Tactical Truck System	0	0	2	0	11	3	0	419	956	2,519	4,082	7,992

Note: Due to the different types of programs, the data above are not totaled vertically.

The forecasts for the M1078 series Family of Medium Tactical Vehicles, the M998 series High Mobility Multipurpose Wheeled Vehicle, and the M977 Heavy Expanded Mobility Tactical Truck series are found in the pertinent reports in this tab.