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Canadian Tactical Vehicles - Archived 9/96

Orientation

Description. Military trucks.

Sponsor. While the development of the vehicles covered in this report was on a private basis by the related contractors, procurement has been by the Canadian Department of National Defense through the Canadian Armed Forces.

Contractors. Bombardier Incorporated, Logistic Equipment Division; General Motors of Canada, Chevrolet Division; Western Star Trucks Incorporated and Urban Transit Development Corporation/Steyr Nutzfahrzeug.

Licensees. Western Star Trucks has manufactured the IVECO-FIAT 40-10 WM under license.

Status. Development through production and service.

Total Produced. As of January 1, 1995, a total of 3,448 Chevrolet 1.25 ton vehicles, 2,750 IVECO-FIAT 40-10 WMs, 2,210 Western Star M1500s, 420 Western Star M4800s and 2,500 Iltis vehicles had been manufactured for Canadian military procurements. Some 2,800 additional Iltis vehicles were manufactured for export.

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

Price Range. In equivalent 1995 United States dollars, the Medium Logistic Vehicle Wheeled 5/7 ton truck has an average unit price of \$111,000.

Technical Data

Designation	Drive	Weight Class
<u>Manufacturer - Bombardier</u>		
Iltis Light Vehicle	4x4	500 kilogram
2-1/2-ton Truck	6x6	11 tonne
<u>Manufacturer - Chevrolet</u>		
1-1/4-ton Truck	4x4	5.5 tonne
<u>Manufacturer - Western Star Trucks</u>		
IVECO-Fiat 40-10 WM	4x4	1.5 tonne
M1500 Truck	4x4	1.5 tonne
M4800 Truck	4x4	5.0 tonne
M4800 Truck	4x4	7.0 tonne
<u>Manufacturer - Urban Transit Development Corporation of Canada and Steyr Nutzfahrzeug</u>		
Heavy Logistic Wheeled Vehicle	6x6	11.8 tonne

Variants/Upgrades

Numerous minor upgrades are constantly being integrated into the vehicles covered in this report. Also, these vehicles can be and often are modified into

specialized variants by the user in the field. Any manufacturer developed variants are described in the appropriate program in the section below.

Program Review

Background. Armed forces are highly dependent on an adequate fleet of tactical and support vehicles to provide

mobility and support for a wide range of general and specific missions, from personnel transport and cargo

transfer to artillery and combat vehicle transport. The militarized vehicles are used primarily for tactical support and tasks unique to the military such as ammunition resupply. Available commercial vehicles are generally used for rear area work and transport roles that do not require vehicles with high-mobility characteristics. Development and production of such vehicles for Canada have been geared toward fulfilling specific requirements of the Canadian Armed Forces, as well as those of the export market.

Bombardier

Iltis (4x4) 500 kilogram Light Vehicle. In late 1981, the German firm Volkswagen sold the marketing and manufacturing rights as well as the manufacturing technology for its Iltis (4x4) light vehicle (used by the German armed forces) to the Canadian firm Bombardier Incorporated. The agreement granted Bombardier the exclusive rights to market, sell and distribute the vehicle worldwide.

The Iltis is based on an original Volkswagen design, but incorporates components from both Volkswagen and Audi vehicles. The vehicle is a 4x4 configuration, weighs 1,550 kilograms unloaded and can carry loads weighing up to 500 kilograms. The vehicle can also tow weights up to 2,000 kilograms, depending on whether the trailer is equipped with brakes. The Iltis carries a crew of one, but provisions are made for carrying up to three additional passengers. It is powered by a Volkswagen four cylinder spark ignition engine which is rated at 55.95 kilowatts (75 horsepower). The engine is coupled to a manual gearbox with five forward and one reverse gear ratios. The maximum road speed is 130 kilometers per hour and a maximum road range of up to 700 kilometers is possible. The fuel capacity of the vehicle is 85 liters. The vehicles come equipped with hydraulic, dual-circuit main brakes and mechanical brakes for parking.

In November of 1983, it was announced that the Canadian Government had awarded a contract for 1,900 (later increased to 2,500) Iltis vehicles to the Logistics Equipment Division of Bombardier. The contract was valued at C\$68.0 million. Production for this contract began in mid-1984, and was completed by the end of 1985. Also during 1985, an order of 2,673 vehicles was placed by the Belgian armed forces. Production of the vehicle for Canadian armed forces and export is now complete. However, Bombardier remains able to produce vehicles for any foreign requirements that may arise.

Bombardier (6x6) 2-1/2-ton Truck. In 1981, Bombardier was granted a contract to provide 2,765 AM General M35 2-1/2-ton trucks to the Canadian armed forces. The contract has been filled and the manufacturer is continuing to market the vehicle worldwide.

The Canadian designation for the vehicle is Medium Logistic Vehicle Wheeled, or M35CDN. The Bombardier-produced vehicle is known to have undergone at least 1,500 improvements over the original M35 design. Major changes include a new engine, gearbox power-assisted steering, improved rear suspension, new tires, and so on. The vehicle is in a 6x6 configuration and weighs 6,228 kilograms empty. The vehicle carries a crew of one, but provisions are provided for carrying up to two additional passengers. The vehicle can carry loads of up to 4,536 kilograms and can tow loads of up to the same weight.

The vehicle is powered by a Detroit Diesel 8.2 liter V-8 spark ignition engine rated at up to 123.09 kilowatts (165 horsepower). The engine is coupled to a Detroit Diesel Allison MT-643 gearbox with four forward and one reverse gear radius. The maximum road speed is 87 kilometers per hour and ranges up to 536 kilometers are possible. The fuel capacity is 177 liters. The vehicle's main brakes are hydraulic, while the parking brakes are mechanical.

Production for Canadian armed forces is complete, but the vehicle can be produced for additional orders as required.

General Motors/Chevrolet

Chevrolet 1-1/4-ton Truck. In 1976, the Canadian Armed Forces selected the Chevrolet 1-1/4-ton 4x4 truck to replace their fleet of M37CDN (4x4) 3/4-ton trucks. The first order was for 600 vehicles followed later in 1976 by a second order for 2,848 vehicles. The vehicle remains in service with the Canadian armed forces but is being replaced by the 40-10 WM as noted above.

The vehicle is based on an available commercial design that has been modified to suit specific military requirements. The vehicle is powered by a 111.9 kilowatt (150 horsepower) engine that is coupled to an automatic gearbox. It is also equipped with power steering and power brakes. The vehicle is essentially a militarized pickup truck featuring a rear cargo compartment with a drop tailgate. Reported variants include an ambulance, communications vehicle, light repair vehicle and a cable-laying vehicle.

Urban Transit Development Corporation/Steyr Nutzfahrzeug

Heavy Logistic Wheeled Vehicle. The Heavy Logistic Wheeled Vehicle is a 10,700 kilogram 6x6 heavy truck built in Canada as a joint venture between the Urban Transit Development Corporation of Canada and Steyr Nutzfahrzeug of Austria. The vehicle is the winner of the Canadian Heavy Logistic Wheeled Vehicle competition which ended in early 1988. The vehicle beat out several others, including a 8,500 kilogram 6x6 truck which was

quite similar to United States Army's Heavy Expanded Mobility Tactical Truck made by a team of Bombardier and Oshkosh. The Urban Transit Development Corporation of Canada/Steyr Nutzfahrzeug vehicle was originally the Steyr 1491.310/040/6x6M truck.

In February of 1988, a contract was awarded to Urban Transit Development Corporation of Canada/Steyr Nutzfahrzeug for 1,200 Heavy Logistic Wheeled Vehicles at a cost of 250.0 million Canadian dollars. The production of the vehicle began in February of 1989, with the first truck being delivered in September of 1989, and production ending in late 1991.

The Heavy Logistic Wheeled Vehicle comes in eight variants: tractor, cargo, cargo with winch, cargo with recovery winch and crane, dump truck, recovery, heavy mobile repair team and medium floating bridge transporter. Prices of the variants range from 155,000 to 225,000 Canadian dollars.

Western Star

The Light Support Vehicle Program - M1500. In the late eighties, the Canadian Military Operational and Support Truck Office initiated a requirement to replace the older Chevrolet 4x4 truck which had been in service since the latter seventies. In response to the requirement, four teams led by Canadian companies proposed versions of militarized versions of commercial European or United States trucks for the program. The Urban Transit Development Corporation of Canada joined with Volkswagen's LT series truck while Invar Manufacturing and Chrysler Canada proposed the Dodge Ram W350 vehicle. Western Star Truck teamed with IVECO proposing the 40-10 WM vehicle. Freightliner of Canada Limited teamed with Mercedes-Benz to offer the Mercedes Unimog. Interestingly, two of North America's largest truck manufacturers, Ford Motor Company and General Motors, declined to bid on the program because

too many modifications would have been required on their commercial vehicles to fit military requirements.

In March of 1992, the Canadian Armed Forces signed a contract to purchase 2,750 Italian designed 40-10 WM light military trucks. The 1 1/4-ton trucks were delivered starting in late 1993 and will be completed in October of 1995 according to the head of Canada's Military Operational and Support Truck Office. The contract, worth the equivalent of 250 million Canadian dollars, was announced on March 20, 1992. Western Star Truck Company of Kelowna, British Columbia is the prime contractor to build the vehicles designed by IVECO-FIAT of Italy. Approximately 50 percent of the vehicles were shipped from Italy, with the rest made in Canada. Western Star calls the vehicle the M1500.

The Medium Logistic Vehicle Program - M4800. In support of a Canadian Armed Forces need for a heavier truck, Western Star has manufactured the M4800 truck. This 4x4 truck is being procured in two capacities - five and seven tonnes. The vehicle is powered by a Caterpillar M3116TA JWAC diesel engine, rated at 164.05 kilowatts (220 horsepower at 36.57 revolutions per second (2,200 revolutions per minute). As an option, the Cummins C series diesel engine can be installed. The gearbox is the Eaton/Fuller CEEMAT automatic unit with nine forward gear ratios. As an option, various manually operated units offering up to 15 forward gear ratios can be installed. The M4800 is offered in two wheelbase lengths/capacities of 4.32 meters (14.17 feet) for the five tonne (5.51 ton) version and 5.08 meters (16.67 feet) for the seven tonne (7.72 ton) version. Other wheelbase lengths are an option. A central tire inflation system is a standard fitting. Numerous variants of the M4800 are available as is numerous options including a double channel frame. In addition to procurement by the Canadian Armed Forces, two fire truck versions of the M4800 have been procured by the British Army for its activities in Canada.

Funding

While development of the vehicles in this report was on a private basis, the procurement is funded by the Canadian Department of National Defense.

Recent Contracts

None have been announced in the last year.

Timetable

The following data are for vehicles manufactured in Canada only; for details of the IVECO-FIAT program, please refer to the pertinent report in this section.

	1976	2,848 1-1/4 ton trucks ordered
Nov	1983	Bombardier awarded contract for 2,500 Iltis light vehicles
Feb	1988	Contract awarded for 1,200 Heavy Logistic Wheeled Vehicles
	1991	Contract for 2,750 IVECO trucks to be licensed produced in Canada awarded
Mar	1992	Contract for 2,815 Light Support Vehicle-Wheeled trucks awarded to Western Star
Mid	1995	Production and development continues on an as needed basis

Worldwide Distribution

Countries. Research indicates that the following nations have purchased tactical vehicles from Canada:

Belgium. Reports indicate that the Belgian armed forces placed an order for 2,500 Iltis light vehicles in 1984; the eventual procurement was 2,673.

Germany. As part of the transfer agreement between Bombardier and Volkswagen, a number of orders for the Iltis light vehicle have been filled for the German armed forces by Bombardier. Research indicates that the German armed forces currently operate about 8,950 Iltis

light vehicles. Of these, about 8,450 have been produced by Volkswagen in Germany, the remaining 350 by Bombardier in Canada. This was followed by another order of 150 vehicles which were also supplied by Bombardier.

Oman. An unspecified number of Iltis vehicles were supplied to the Omani Royal Guard Brigade in 1989.

United Kingdom. The British Army procured two M4800 fire trucks for its activities in Canada.

Forecast Rationale

The area of tactical vehicles continues to suffer under the new administration. While some of the cuts have been a result of the reduction of the Canadian global commitment, especially to NATO, the cuts have gone beyond this. What is impacting the tactical vehicle area in a major way is the reduction in the overall Canadian

defense establishment and military commitment. Our research indicates that the Medium Logistic Vehicle Wheeled 2-1/2 ton truck, based on 1940's technology, is overdue for retirement. We now forecast that, having addressed the 1.5, 5 and 7 tonne areas, Canada should start replacing this truck in the late 1990s.

Ten-Year Outlook

ESTIMATED CALENDAR YEAR PRODUCTION

Designation	through 94	95	<u>High Confidence Level</u>			<u>Good Confidence Level</u>			<u>Speculative Level</u>			Total 95-04
			96	97	98	99	00	01	02	03	04	
Canadian Tactical Vehicles	14332	605	34	0	160	370	410	440	440	390	310	3159

The through 1994 total and through 1996 production are for the types covered in this report.