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# Unarmored Fighting Vehicles

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been producing intelligence, known by the cover name Magic, primarily by deciphering Japanese diplomatic traffic. In exchange, the American team received general technical briefings about the German military Enigma system.

The British and Americans gradually became more cooperative in cryptographic intelligence matters, particularly after U.S. entry in December 1941. Several Anglo-American intelligence agreements were concluded at different bureaucratic levels, but problems resulted in their modification or disregard. Central to all of the changes were two overriding conditions. First, the strain of war prevented the British from developing and delivering on time to the United States some promised high-speed, costly, and sophisticated cryptographic equipment essential for combatting the U-boats in the Battle of the ATLANTIC. Second, the United States, with its enormous resources and engineering talent in the field of cryptographic equipment, pushed ahead to design and build new intelligence matériel for domination in the Atlantic and defeat of Hitler's U-boats.

The British role should not be minimized. They supplied the Americans with key elements, such as wheel wirings, and their wartime experience in the entire Enigma field was without equal. They also had captured German cryptographic equipment and documents. Yet, some of what the British gave the Americans was based on the original Polish gifts. The efforts and sacrifices of many obviously helped to end the war. Since the public revelation of the Ultra secret in 1974, independent scholars have estimated that the Western Allies' ability to act on information obtained by reading German military Enigma traffic shortened the war in Europe by two to four years. Had far-reaching cooperation among the Poles, British, and French been fully exploited before the summer of 1939, Hitler's lust for war and conquest might have been severely tempered.

See also INTELLIGENCE; WORLD WAR II, U.S. INVOLVEMENT; EUROPE; WORLD WAR II, U.S. INVOLVEMENT; PACIFIC THEATER.

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— Carl Boyd

### unarmored fighting vehicles

Unarmored fighting vehicles are a form of military fighting vehicle used in scouting, raiding, perimeter defense, terrain seizure, ambushes, and, in some instances, indirect artillery support. They are also used in noncombat roles such as personnel and cargo transport, ammunition resupply, and general hauling. Generally these vehicles tend to be lighter, faster, more maneuverable and transportable, and cheaper than their armored counterparts. However, their soft unarmored skins make them highly vulnerable to small arms fire, shell fragmentation, and vehicular mine blasts. In some cases, while some armor protection is afforded to critical components of these vehicles, the crews are often left totally exposed or sit in unarmored compartments.

Five basic forms of unarmored fighting vehicles have existed in U.S. motor pools and inventories since the early 20th century: tracked, half-tracked, wheeled, amphibious, and marginal terrain. Tracked vehicles are represented by gun carriages, artillery movers, and personnel and cargo carriers. An unarmored gun carriage mates an artillery piece to the top of a vehicle, while an unarmored artillery mover tows an artillery piece. An example of an early gun carriage would be the 75mm self-propelled Holt 5-ton artillery tractor of the 1920s, which had an exposed driver and gun crew. Numerous artillery movers with exposed driver cabs were utilized from WORLD WAR I into the 1930s. In both cases, newer generations of these vehicles provided armor protection for their personnel.

Unarmored cargo and personnel carriers developed after the World War I but never existed in great numbers. The better-known ones were the Model T Ford and Dodge tracked cars and trucks, the Studebaker T15 Cargo Carrier, and various tracked Jeeps. While not normally utilized, machine guns could be fitted to these vehicles. By 1950, true armored personnel carriers began to develop and made extinct these earlier unarmored oddities.

Unarmored half-tracks were principally produced during the years between World War I and WORLD WAR II. They were superseded by armored half-track production that took place relatively late, toward the end of the 1930s. Half-tracks were developed by the army; their concept dated back to 1916. These vehicles were used for troop transport and hauling. While they were typically unarmed,

one variant known as the T1E2 (or M1) carried two Browning .30-caliber (M1919 series) machine guns and was organized into the 1st Machine Gun Company, 1st Cavalry Regiment, Mechanized, found during the mid-1930s.

Wheeled vehicles have been the mainstay of U.S. unarmored fighting forces. Early cars such as the Model T Ford and various motorcycles gave way to the much celebrated U.S. Army one-quarter-ton truck, the Jeep. The Jeep was so important to the World War II effort that its contribution was singled out by General George C. MARSHALL. This four-wheel-drive vehicle was produced in the hundreds of thousands and had a maximum speed of 60 miles per hour. It was used for scouting, patrolling, officer transport, and myriad other duties. For combat purposes, it could be fitted with a pedestal-mounted .50-caliber machine gun or a 106mm recoilless rifle, or could tow a 37 mm antitank gun. More than 650,000 jeeps were produced during World War II. The original M38A1 vehicle saw service throughout the war and the KOREAN WAR. It was subsequently upgraded to the larger M151 model with a longer wheelbase and more unitized body. This vehicle saw service during the VIETNAM WAR.

The Jeep was replaced by the M998-series High Mobility Multipurpose Wheeled Vehicles (HMMWV), nicknamed the Hummer, with production of more than 70,000 of these vehicles beginning in 1985. An odd assortment of M274 (quarter-ton Mules), M561 (one-and-a-quarter-ton Gama Goats), and M880 (one-and-a-quarter-ton pickup trucks) were also replaced by the HMMWV. Fifteen HMMWV configurations were designated, ranging from cargo and troop carriers to weapons carriers, ambulances, and shelter carriers. Armament for this vehicle can include either a 7.62 mm or .50-caliber machine gun, MK19 40mm automatic grenade launcher, or TOW antitank missile launcher. While the basic HMMWV is unarmored, variants exist with minimal bullet and fragmentation protection and up-armored kits.

Although it was not strictly a fighting vehicle, mention must be made here of the World War II two-and-a-half-ton truck ("deuce-and-a-half"), a troop and cargo carrier that served into the Vietnam War. Developed by the Yellow Truck Company in 1940, and a generation ahead of other military trucks, it was both rugged and reliable and had three axles and a six-wheel drive. Its controls were similar to that of the jeep, so that it was easy for a driver to shift from one vehicle to another. The deuce-and-a-half was the mainstay of the "Red Ball Express" across Europe, and General of the Army Dwight D. EISENHOWER pointed to it as a key factor in the Allied victory.

Amphibious vehicles can be of either the tracked or air-cushion variety. Unarmored wheeled amphibians existed only in prototype form. These vehicles allowed personnel and cargo to be transported from ships through the

surf and onto a beach. In the case of tracked amphibious vehicles, they have the capability to penetrate deeper inland and serve as normal troop carriers.

Tracked amphibians and landing vehicles emerged during the 1920s and 1930s and were basically a Marine Corps endeavor. Many of these early designs were unarmored. Some of these unarmored or under-armored variants were probably used in amphibious operations against Japanese-held islands early in World War II. Unarmored versions of the LVT-3 and LVT-4 were known to be employed by the army in that war. Typically, they had two machine gun mounts.

Air-cushion vehicles have great cargo-hauling capability—in the tens of tons—and can achieve speeds between 15 and 40 knots. Normally, they have been used to transport armored fighting vehicles and bulk containers to the shore since the Vietnam era. The army's Lighter Amphibious Air Cushion Vehicle (LACV-30) and the navy's Landing Craft Air Cushion (LCAC) are representative of this type of vehicle. A handful of SK-5 air-cushion assault and transport vehicles were also produced and used in Vietnam operations. Armament consisted of .50-caliber or 7.62mm machine guns and/or an M5 automatic grenade launcher. These vehicles were unarmored except for key mechanical component protection.

Within the marginal terrain category, more exotic vehicular types exist. Many of these vehicles were designed to be used in the difficult terrain found in Southeast Asia and in harsh arctic climates. All were unarmed and intended for transport use. Archimedes-screw vehicles were developed for use in riverine and snow-covered terrain and include the Sno-Jeep, Marsh Screw Amphibian, and Riverine Utility Craft. Propeller-driven sleds, used in the arctic, are represented by the Sno-Peep and Kee Bird. Individual lift (jet propulsion) and walking-machine vehicles were also developed but were not practically employed in the field.

See also TANKS.

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— Robert J. Bunker

**Underhill, John** (1597–1672) *Colonial militia officer and military adviser*

Born in England around 1597, John Underhill was raised in the Netherlands, where his father was a mercenary soldier.